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## THE FAMILY AMPELISCIDAE OF THE ADRIATIC SEA

(64. CONTRIBUTION TO THE KNOWLEDGE OF THE  
AMPHIPODA)

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(64. PRILOG POZNAVANJU AMPHIPODA)

GORDAN S. KARAMAN

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ABSTRACT.

The species of the family *Ampeliscidae* from the Adriatic Sea are treated and two genera with 10 species are redescribed and figured: genus *Ampelisca* with the species: *A. brevicornis* (Costa 1853), *A. diadema* (Costa 1853), *A. gibba* Sars 1882, *A. dalmatina* G. Kar. 1975, *A. rubella* Costa 1864, *A. sarsi* Chevreux 1888, *A. spinimana* Chevreux 1887, *A. tenuicornis* Liljeborg 1885 and *A. typica* (Bate 1856); genus *Haploops* with the species *H. tubicola* Liljeborg 1855.

The species *A. gibba*, *A. spinimana* and *A. tenuicornis* are newly reported from the Adriatic Sea.

A key to the genera and species of the Family *Ampeliscidae* from Adriatic Sea is presented.

INTRODUCTION.

The representatives of the family *Ampeliscidae* are very common in the marine bottom fauna and we collected many specimens of this family on the bottom in the Adriatic Sea.

In order to identify species of adriatic ampeliscids, I have compared some specimens with material from the Mediterranean Sea and the Atlantic Ocean.

I am grateful for material assistance to Dr. J. Štirn, S. Plečko and D. Vrščaj from the Marine Biological Station in Portorož, Dr. D. Zavodnik from the Biological Institute in Rovinj, Dr. M. Christiansen from Oslo Museum (Norway) and to Dr. W. Vader from Tromsø Museum (Norway).

The family *Ampeliscidae* is an exclusively marine family, containing 5 genera and more than 100 species living in seas of the world; in the Mediterranean Sea there are 3 genera with 14 species.

The first record concerning ampeliscids from the Adriatic Sea was given by Heller in 1866. He mentioned *Ampelisca diadema* (sub *A. gaimardi*) from isle Hvar (=Lesina). Later Stalio in 1877 and Carus in 1885 repeated Heller's record and Graeffe in 1888 mentioned *A. diadema* for the Gulf of Trieste.

Pesta mentioned in 1918 the genus *Haploops* from the southern Adriatic near Tremiti islands in a depth of 98 m, *H. tubicola*. Ruffo mentioned in 1946 *A. diadema*, *A. rubella*, *A. sarsi* and *A. typica* for Rovinj and Giordani-Soika mentioned in 1950 *A. diadema* and *A. sarsi* for Laguna di Venezia.

G. Schickel-Krapp mentioned in 1969 *A. brevicornis*, *A. diadema* and *A. rubella* for the vicinity of Rovinj.

During our investigations of ampeliscids in the Adriatic Sea, we found 9 species of *Ampelisca* (*A. brevicornis*, *A. diadema*, *A. gibba*, *A. dalmatina*, *A. rubella*, *A. sarsi*, *A. spinimana*, *A. tenuicornis* and *A. typica*) as well as one species of *Haploops*, *H. tubicola*.

The differences between mediterranean and atlantic *Ampelisca* populations are very poorly studied, so that we can not exclude the possibility that some mediterranean *Ampelisca* populations, mentioned recently by numerous scientists as members of known atlantic species, are very similar but distinct different *Ampelisca* species probably endemic for the Mediterranean Sea.

## TAXONOMICAL PART.

### Fam.: AMPELISCIDAE

**Diagnosis:** Head short or elongated, eyes composed of cuticular lenses or absent. Urosomites 2—3 coalesced. Antennae 1—2 well developed, elongated, without accessory flagellum.

Mouthparts complete, with all parts well developed.

Coxae 1—4 well developed, moderately long. Gnathopods 1—2 slender, subchelate or nearly simple. Pereopods 3—4 slender, with elongated article 4. Pereopod 7 as long as or shorter than pereopods 5—6 and of different shape; article 2 of pereopods 5—7 dilated, articles 3—7 more or less slender. Pleopods with multiarticulate rami. Uropods 1—2 biramous, uropod 3 well developed, biramous. Telson either elongate or short, cleft only distally or up to the basis. Gills simple, oostegys usually narrow. Sexual dimorphism present.

**Genus-type:** *Ampelisca* Kroyer.

**Other genera:** *Byblis*, *Byblisoides*, *Haploops*, *Triodos*.

**Ecology:** living in all seas over the world, from sublittoral up to hadal.

### KEY TO THE GENERA OF AMPELISCIDAE:

1. Telson longer than broad, always cleft almost to the basis. Anterior edge of distal lobe of article 2 of pereopod 7 lacking setae . . . 2
  - Telson nearly as long as broad, or broader than long, cleft either almost to the basis or only distally. Anterior edge of distal lobe of article 2 of pereopod 7 with setae . . . 4
2. Telson only a little longer than broad (anteroventral corner of head produced) TRIADOS\*

\* These genera are not found in the Adriatic Sea



— Telson remarkably longer than broad (anteroventral corner of head not produced or produced) . . . . . 3

3. Antenna 2 stout and remarkably short, second article of mandibular palp very long and slender, more than twice as long as third article

BYBLISOIDES\*

— Antenna 2 slender and long, second article of mandibular palp broader and less than twice as long as third article

AMPELISCA

4. Second article of mandibular palp nearly twice as long as third article. Article 2 of pereopod 7 with lateral margins not parallel, expanded

BYBLIS\*

— Second article of mandibular palp nearly as long as third article. Article 2 of pereopod 7 with parallel lateral margins, not expanded distally

HAPLOOPS

#### Genus AMPELISCA Kroyer 1842

Syn.: *Araneops* Costa 1853

*Pseudophthalmus* Stimpson 1853

*Tetromatus* Bate 1856

**Diagnosis:** Mouthparts: labrum with concave distal margin, labium with well developed inner and outer lobes. Maxilla 1: inner lobe developed, outer lobe with 11 spines bearing lateral teeth each, palp 2-articulate, bearing several distal spines and setae. Maxilla 2: inner and outer lobes well developed, slender, bearing numerous distal and subdistal setae.

**Maxilliped:** inner and outer lobe well developed, palp 4-articulate, its distal article moderately long and attached at the top of article 3.

**Mandible:** molar and pars incisiva well developed, palp 3-articulate, its second article usually dilated and as long as or a little longer than article 3.

**Head** more or less elongated, with unproduced anteroventral corner. Coxae 1—4 well developed, relatively long.

**Antennae** 1—2 well developed, with multiarticulate principal flagellum. **Gnathopods** 1—2 with all articles well developed; article 6 is not broader than article 5, gnathopod 2 is slightly longer than gnathopod 1, dactyl present.

**Pereopods** 3—4 with slender articles. **Pereopods** 5—6: article 2 dilated, articles 3—6 slender, dactyl short. **Pereopod** 7: article 2 dilated, with large distoposterior lobe bearing marginal plumose setae; no setae at distoanterior margin of lobe near its connection with article 3. Articles 3—6 short and slender, dactyl slender.

**Pleopods** well developed. **Uropods** 1—2 with well developed rami. **Uropod** 3 biramous, rami of subequal length. Telson remarkably longer than broad, deeply incised. Gills simple, occurring on thoracic segments 2—6. Oostegites narrow, occurring on thoracic segments 2—5. Sexual dimorphism present.

**Type species:** *Ampelisca eschrichtii* Kroyer 1842 (monotypy).

**Other species:** about 100 species (11 species known from Mediterranean Sea).

# KEY TO THE SPECIES OF AMPELISCA FROM MEDITERRANEAN AND ADRIATIC SEA

1. Inner lobe of maxilla 1 with 1—2 setae . . . . . 2  
    — Inner lobe of maxilla 1 without setae . . . . . 4
2. Inner lobe of maxilla 1 with one simple seta. Epimera 2—3 without median lobe at posterior margin . . . . . A. SARSI  
    — Inner lobe of maxilla 1 with 2 plumose setae. Epimera 2—3 with median lobe at posterior margin . . . . . 3
3. Head long, its anteroventral margin parallel with dorsal margin, later oblique to half of the head-length. Posterior median lobe of epimera 3 as long as or longer than length of distoposterior epimeral corner . . . . . A. BREVICORNIS  
    — Head short, its anteroventral margin not parallel with dorsal margin, only oblique to half of head-length. Posterior median lobe of epimera 3 shorter than length of distoposterior epimeral corner . . . . . A. GIBBA
4. Outer margin of inner ramus of uropod 3 crenellated in distal portion . . . . . A. SERRATICAUDATA  
    — Outer margin of inner ramus of uropod 3 smooth . . . . . 5
5. Head long, its anteroventral margin parallel with dorsal head - margin, later oblique to half of head-length. . . . . A. SPINIMANA  
    — Head shorter, its anteroventral margin not parallel with dorsal head margin, but only oblique . . . . . 6
6. Dactyl of pereopods 3—4 remarkably shorter than articles 5—6 together . . . . . A. RUBELLA  
    — Dactyl of pereopods 3—4 remarkably longer than articles 5—6 together . . . . . 7
7. Antenna 1 nearly as long as antenna 2, with peduncular article 2 slightly longer than peduncular article 4 of antenna 2 . . . . . A. DALMATINA  
    — Antenna 1 remarkably shorter than antenna 2, its peduncular article 2 much shorter than peduncular article 4 of antenna 2 . . . . . 8
8. Coxa 4 with lateral margins not parallel. Anteroventral top of head vertical, later obtuse to half of head length . . . . . A. TENUICORNIS  
    — Coxa 4 with parallel lateral margins. Anteroventral top of head not vertical, only oblique to half of head length . . . . . 9
9. Telson with several spines on dorsal surface. Urosomite 1 with strong and angular dorsal tooth . . . . . A. TYPICA  
    — Telson without spines on dorsal surface. Urosomite 1 with smaller and obtuse dorsal elevation . . . . . 10
10. Antenna 1 as long as or only very slightly longer than peduncle of antenna 2. Epimera 2—3 with subrounded or angular (occasionally pointed) distoposterior corner . . . . . A. DIADEMA  
    — Antenna 1 remarkably longer than peduncle of antenna 2. Epimera 2—3 always with pointed distoposterior corner . . . . . A. SPINIPES

*Ampelisca brevicornis* (Costa 1853)

figs. I—III

Syn.: *Araneops brevicornis* Costa 1853, p. 171.*Ampelisca brevicornis* (part.), Della Valle 1893, p. 473, pl. 4, fig. 4; pl. 37, fig. 29; pl. 38, figs. 3, 5, 6, 9, 13; pl. 43, fig. 20; pl. 44, figs. 26—28; pl. 45, figs. 5—10.*Ampelisca brevicornis*, Carus 1885, p. 409; Stebbing 1906, p. 100; Chevreux et Fage 1925, p. 77, figs. 67—68; Kaim-Malka 1969/70a, p. 928; pls. 1—6; Kaim-Malka 1969/70b, p. 989; Krapp-Schickel 1969, p. 319.*Ampelisca leavigata* Liljeborg 1856, p. 123; Sars 1891, p. 169, pl. 69, fig. 1.

Description: Female: Body-length up to 10 mm, body smooth, urosomite 1 keeled, with dorsal obtuse tooth, urosomites 2—3 straight (fig. II, 4).

Head long, slightly curved in lateral view (fig. I, 1), its lower front edge concave and later oblique up to the half of the head length. Corneal lenses 4 in number.

Antenna 1 short, almost reaches the distal end of fourth peduncular article of antenna 2 (fig. I, 2). Peduncular article 1 with dorsolateral dilation, flagellum up to 7-articulate, some articles with one longer aesthetasc each.

Antenna 2 very long, weakly setose; peduncular article 4 longer than peduncular article 5, flagellum up to 17-articulate (fig. I, 3).

Mouthparts well developed, complete. Maxilla 1: inner lobe with 2 distal plumose setae, palp with 10—12 subdistal plumose setae and 4 distal strong spines. Mandible: palp 3-articulate, article 1 short, article 2 weakly dilated and bearing up to 28 longer, prevalently simple setae (fig. II, 1), article 3 nearly as long as or shorter than article 2, bearing 10—12 simple setae (fig. II, 1).

Coxae 1—4 much longer than broad (figs. I, 4—5, II, 2—3, III, 1—3). Coxae 1—3 with distoposterior incision, coxa 4 entire, with parallel lateral margins. Coxae 1—2 with a row of distal plumose setae, coxa 3 with one plumose seta, coxa 4 without plumose setae. On inner surface of coxae 1—4 appear numerous short simple setae. Coxae 5—7 smaller and much broader than long, progressively smaller towards coxa 7.

Gnathopod 1: article 2 slender, bearing plumose setae at anterior margin and long simple setae at posterior margin (fig. II, 2). Articles 3—4 short, with simple setae at posterior margin. Article 5 elongated, with numerous simple setae at posterior margin as well as with one row of simple setae on inner surface. Article 6 shorter than article 5, bearing numerous simple or slightly crenellated setae at posterior margin, anterior margin and inner surface. Dactyl shorter than article 6, bearing several plumose setae at inner margin, nail shorter than remaining part of dactyl.

Gnathopod 2: article 2 slender, with simple and plumose setae at anterior margin and with long simple setae at posterior margin (fig. II, 3). Article 3 short, article 4 nearly twice as long as broad, bearing simple setae

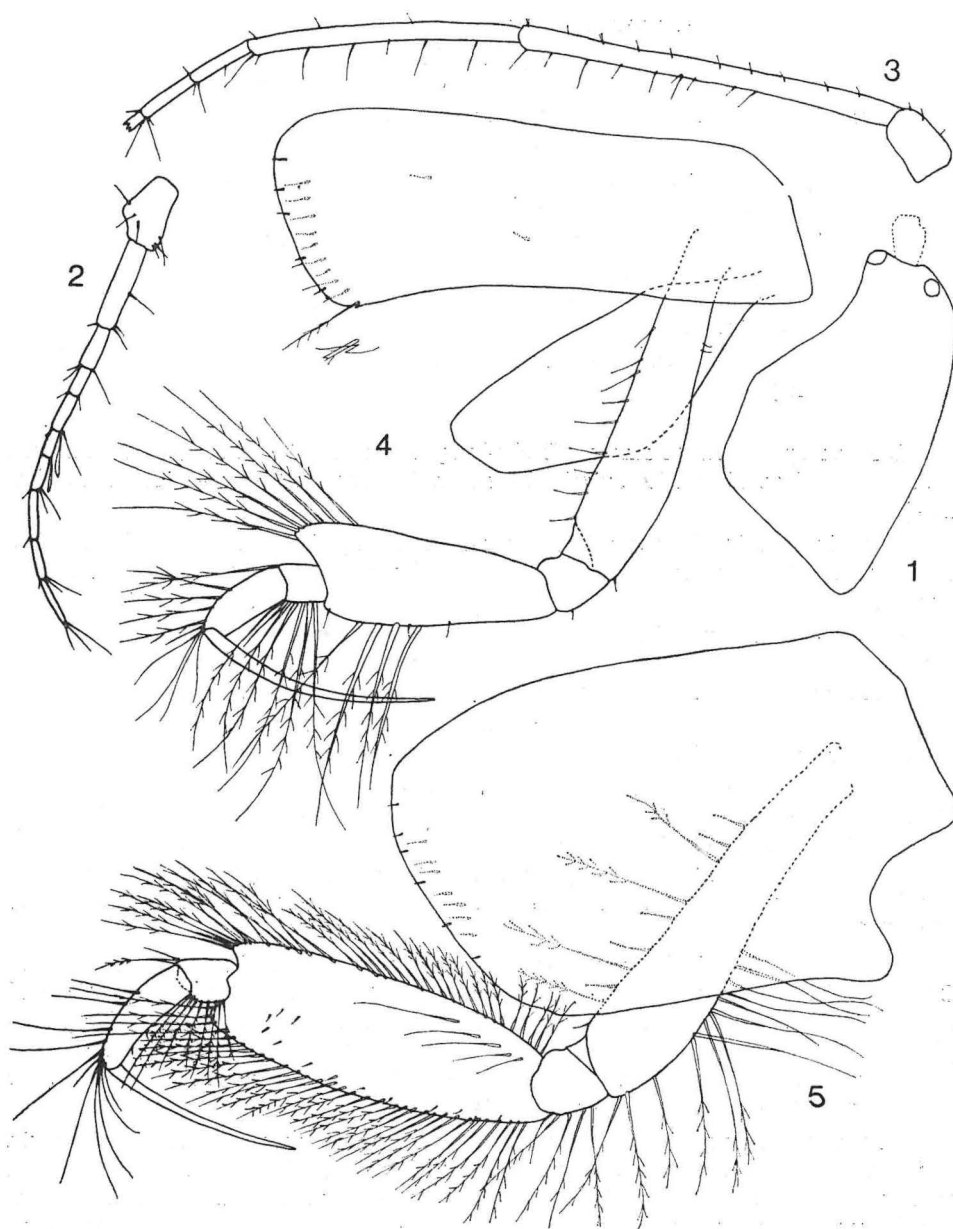


Fig. 1. *Ampelisca brevicornis* (Costa), Ulcinj, female 10 mm: 1 = head; 2 = antenna 1; 3 = antenna 2; 4 = pereopod 3; 5 = pereopod 4.

at posterior margin. Article 4 elongated and slender, bearing numerous shorter simple setae at posterior margin and inner surface. Article 6 shorter than article 5, bearing numerous longer setae at posterior margin and shorter plumose setae on inner surface, like that in *A. gibba*. Dactyl like that of gnathopod 1.

Pereopod 3: article 2 slender and weakly setose, bearing a short setae at anterior margin. Article 3 short. Article 4 long and dilated distally, bearing several plumose setae at distoanterior and distoposterior margin (fig. I, 4). Article 5 short, with several long plumose setae at posterior margin and one long plumose seta at anterior margin. Article 6 slender and about 2.5 times as long as article 5, bearing several long plumose setae at anterior margin. Nail much longer than articles 5—6 together.

Pereopod 4: article 2 slender, bearing simple and plumose setae at both margins. Article 3 short; article 4 long and slightly inflated medially, bearing numerous long plumose setae at both margins. Article 5 short, bearing plumose setae at posterior margin and one plumose seta at anterior margin (fig. I, 5). Article 6 slender, 2.5—3 times as long as article 5, bearing simple setae at anterior margin, and almost smooth at posterior margin. Dactyl like that of pereopod 3.

Pereopod 5: article 2 dilated, with proximoposterior lobe. Articles 4—6 bearing numerous spine-like setae at anterior margin. Dactyl short, with 4 distal teeth (fig. III, 1).

Pereopod 6: article 2 dilated, with distoposterior lobe, bearing several plumose setae on inner surface of article 2. Articles 4—6 bearing a row of slender spines at anterior margin (fig. III, 2). Dactyl like that of pereopod 5.

Pereopod 7: article 2 dilated and oblique, with numerous plumose setae at distoposterior margin and with several simple setae at posterior margin (fig. III, 3). Article 3 short, article 4 as long as article 3, but with well developed posterior lobe reaching distal end of article 5. Article 5 short, bearing several short spines at distoanterior margin. Article 6 ovoid, dactyl nail-shaped.

Pleopods with 2 retinacula each. Epimera 1—2 with rounded distal margin bearing several short distal setae. Epimera 3 with strongly produced distoposterior tooth and above it bearing one median lobe as long (high) as length of distoposterior tooth. Posterior margin of epimera 3 with numerous very fine setules (fig. III, 4).

Uropod 1: peduncle as long as rami (fig. II, 4), rami subequal in length, bearing several short spines, outer ramus without spines (fig. II, 4). Uropod 2: peduncle as long as rami; both rami and peduncle bearing short spines, inner ramus shorter than outer (fig. II, 4).

Uropod 3: peduncle shorter than rami, bearing 2 lateral spines (fig. II, 5). Rami foliaceous, bearing plumose setae at their inner margin. Outer ramus slightly longer than inner one.

Telson longer than broad, deeply cleft; each lobe bears 6—8 short simple setae on dorsal surface, distal end of each lobe subpointed (fig. III, 5).

Gills ovoid, occurring on thoracal segments 2—6. Oostegys very narrow, with distal and marginal setae, occurring on thoracal segments 2—5 (fig. III, 1).

Variability: Our specimens correspond with the description of this species given by Kaim-Malka for Mediterranean specimens, except: article 2

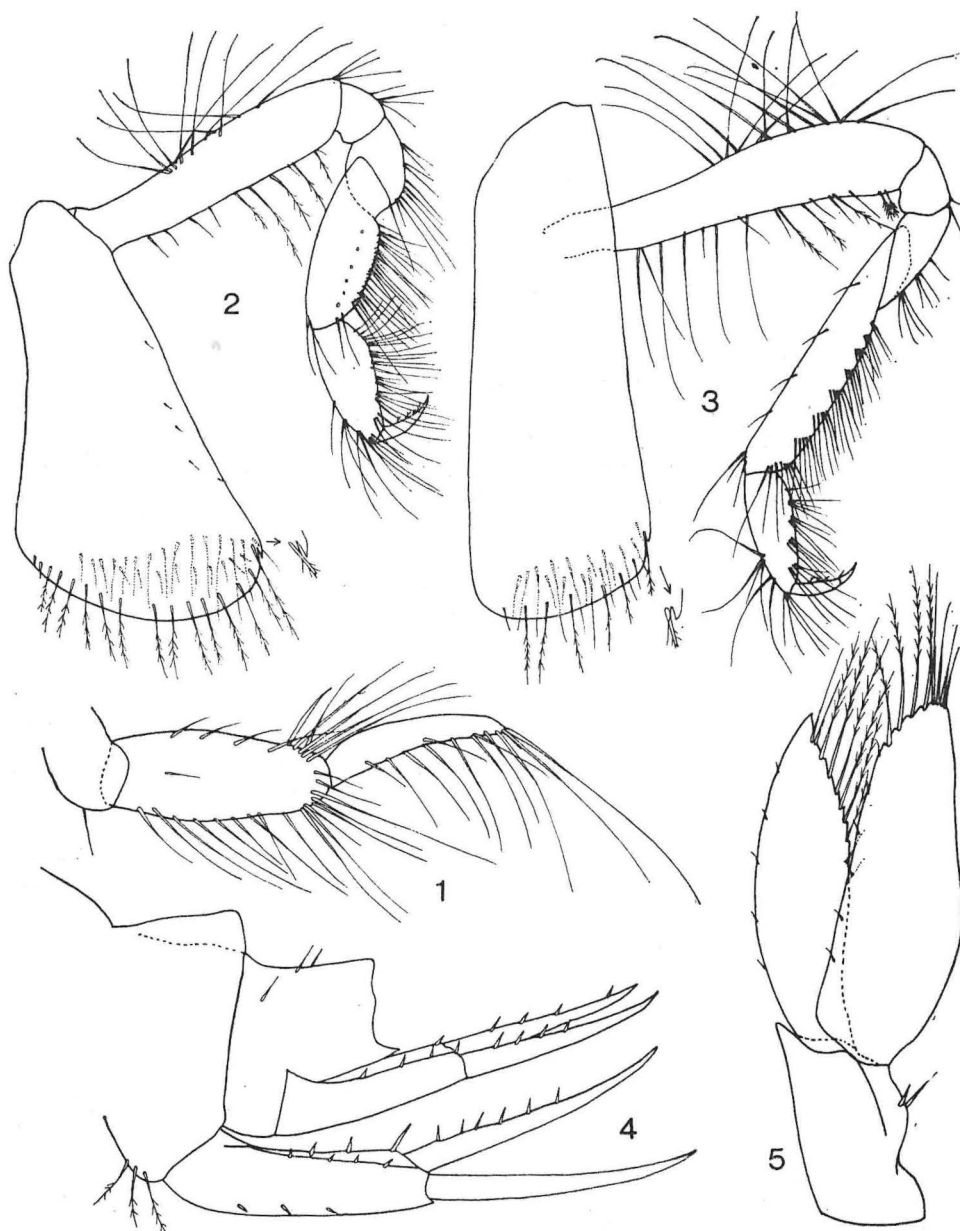


Fig. II. *Ampelisca brevicornis* (Costa), Ulcinj, female 10 mm: 1 = mandibular palp; 2 = gnathopod 1; 3 = gnathopod 2; 4 = urosome with uropods 1-2; 5 = uropod 3.

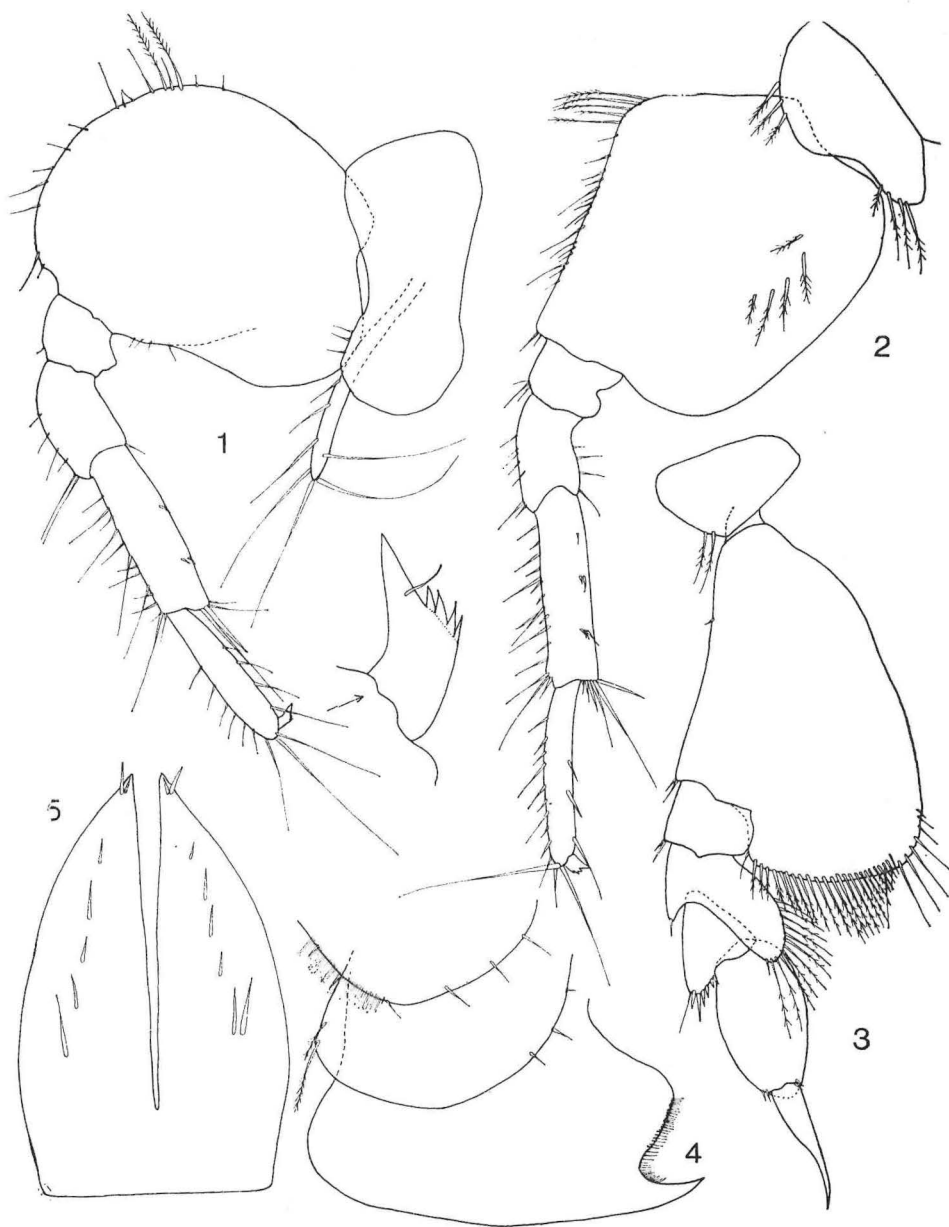


Fig. III. *Ampelisca brevicornis* (Costa), Ulcinj, female 10 mm: 1 = pereopod 5; 2 = pereopod 6; 3 = pereopod 7; 4 = epimere; 5 = telson.

of pereopod 7 in our specimens is without subdistal plumose setae near the distal margin; article 2 of the mandibular palp bears a larger number of setae; article 4 of pereopod 3 possesses a larger number of plumose setae on both margins. Adult females (ovigerous) lack sternal processes.

**Material examined:** Adriatic Sea: Sutomore near Bar, January 1974, 2 spec., depth 10 m, sandy bottom with *Posidonia*; vicinity of Ulcinj, Jan. 14, 1974, depth 9 m, 3 spec. accompanied by *A. spinimana*; Ulcinj, 30 Aug., 1973, depth 10 m, 4 spec. on muddy-sandy bottom accompanied by *A. diadema* and *A. typica*.

Mediterranean Sea: Marseille, 5 Oct., 1966, depth 10 m, 30 spec.; *ibid.*, 6 Oct., 1966, depth 8 m, one spec. in *Posidonia*; Vernon, 1966, depth 5 m, one spec. (leg. H. Masse).

**Localities cited from Adriatic Sea:** Valdibora Bay near Rovinj (Krapp-Schickel 1969), southern Adriatic (present work).

**Loc. typ.:** Napoli (Italy).

**Distribution:** Eastern Atlantic, Indian Ocean, Pacific, Mediterranean and Adriatic Sea.

**Ecology:** In the Mediterranean Sea *A. brevicornis* is present on sandy bottom (in »biocenoses des sables fins de hauts niveau« and »biocenoses des sables fins bien calibrés«).

In the Adriatic Sea *A. brevicornis* is found on sandy bottom with *Posidonia* and *Cymodocea nodosa*, occasionally accompanied by *A. typica*, *A. diadema* and *A. spinimana*, on 8—15 m depth.

**Remarks.** The figures of first peduncular article of antenna 1 given by Sars (1891) and Chevreux et Fage (1925) show an absence of dorsolateral dilation.

There are described numerous forms and varieties of *A. brevicornis* from Atlantic (Schellenberg 1925, Reid 1951) (*f. rectangula* Schell. 1925, *f. intermedia* Schell. 1925, *f. platypus* Schell. 1925, var. *cavicoxa* Reid 1951, var. *canmora* Reid 1951, var. *pectenata* Reid 1951), but the taxonomic position of all these »forms« and »varieties« is still uncertain and they must be reexamined.

#### *Ampelisca diadema* (Costa 1853) figs. IV—VII

**Syn.:** *Araneops diadema* Costa 1853, p. 171.

*Ampelisca diadema* (part.) Della Valle 1893, p. 479, pl. 4, fig. 2; pl. 37, figs. 19, 20, 22—28, 30—38; pl. 38, figs. 2, 7, 8, 11, 12, 14, 15; pl. 40, figs. 39—40; pl. 41, fig. 23; pl. 44, figs. 4, 8, 9, 11; pl. 45, figs. 17, 18; pl. 46, figs. 4—6; pl. 47, fig. 29; pl. 48, fig. 19.

*Ampelisca diadema*, Costa 1857, p. 45; Stebbing 1906, p. 107; Chevreux et Fage 1925, p. 82, fig. 74; Cecchini et Parenzan 1935, p. 171, fig. 14; Ruffo 1946, p. 50; Giordani-Soika 1950, p. 197; Krapp-Schickel 1969, p. 317; Kaim-Malka 1969, p. 142, pls. 19—24; Kaim-Malka 1969/70b, p. 994; Gamulin et Riedl 1970, p. 349, fig. 115.

*Ampelisca assimilis* Boeck 1871, p. 222; Sars 1891, p. 168, pl. 58, fig. 2.





Fig. IV. *Ampelisca diadema* (Costa), Ulcinj, female 10 mm: 1 = head; 2 = antenna 1; 3 = antenna 2; 4 = pereopod 5; 5 = pereopod 6; 6 = pereopod 7.

*Ampelisca gaimardi* (part.) Bate 1862, p. 91.

*Ampelisca gaimardi* Heller 1866, p. 28; Stalio 1877, p. 243; Graeffe 1880, p. —; Graeffe 1883, p. 86; Carus 1885, p. 408.

**Description:** Female: Body-length up to 10 mm. Urosome: urosomite 1 with dorsal median incision and with dorsoposterior subrounded elevation; dorsoanterior elevation on urosomite 2 lower than elevation on urosomite 1 (fig. VI, 3).

Head with lower front edge only oblique (not concave?) up to half of head-length. Corneal lenses 4 in number (fig. IV, 1).

Antenna 1 short, usually not or only slightly exceeding peduncle of antenna 2 (fig. IV, 2), first peduncular article ovoid, articles 2—3 slender. Flagellum up to 17-articulate, several proximal articles with one aesthetasc each.

Antenna 2 nearly as long as body, its peduncular article 5 slightly longer than article 4 (fig. IV, 3), flagellum up to 42-articulate.

Mouthparts typical. Maxilla 1: inner lobe without setae (fig. V, 1), outer lobe with 11 spines provided with several lateral teeth each; palp 2-articulate, second article with distal 5—6 spines and 14—16 subdistal setae. Mandible: palpal article 2 longer than 3, dilated and bearing several bunches of simple setae, third palpal article with 10—13 simple setae (fig. V, 2).

Coxae 1—4 long, coxa 4 with nearly parallel lateral margins (figs. V, 3—4; VI, 1—2). Coxae 1—3 with a row of plumose setae at distal margin, coxa 4 without plumose setae at distal margin. Numerous shorter simple setae occurring on subdistal portion of coxae 1—4. Coxae 5—7 short (fig. IV, 4—6).

Gnathopod 1: article 2 slightly dilated distally, bearing long simple setae at both margins (fig. V, 3). Articles 3—4 short. Article 5 elongated, bearing numerous simple or slightly crenellated setae at posterior margin, as well as simple setae at anterior margin and inner surface. Article 6 ovoid, shorter than article 5, bearing numerous pectinate setae at posterior margin. Dactyl with 4—5 plumose setae at inferior margin.

Gnathopod 2: article 2 bearing long simple setae at both margins and several plumose setae at distoanterior corner. Articles 3—4 short. Article 5 long and slender, with numerous simple setae at anterior margin (fig. V, 4). Article 6 almost half as long as article 5, provided with simple and pectinate setae at posterior margin, as well as with numerous short setae on inner surface. Dactyl like that of gnathopod 1.

Pereopod 3: article 2 with simple setae at both margins. Article 3 short, article 4 not dilated, bearing plumose setae in distal part of both margins (fig. VI, 1). Article 5 with plumose setae at both margins. Article 6 without setae at posterior margin, but bearing simple setae at anterior margin. Dactyl longer than articles 5—6 together.

Pereopod 4: article 2 with numerous setae at both margins. Distal part of article 2, as well as posterior margin of articles 3—5, bearing a row of plumose setae. Anterior margin of articles 4—5 bearing plumose setae, that of article 6 bearing simple setae. Article 4 dilated medially, article 7 (dactyl) longer than articles 5—6 together (fig. VI, 2).

Pereopod 5: article 2 dilated, with proximoposterior lobe. Articles 3—6 slender, without posterior lobes. Article 4 slightly longer than article 3,

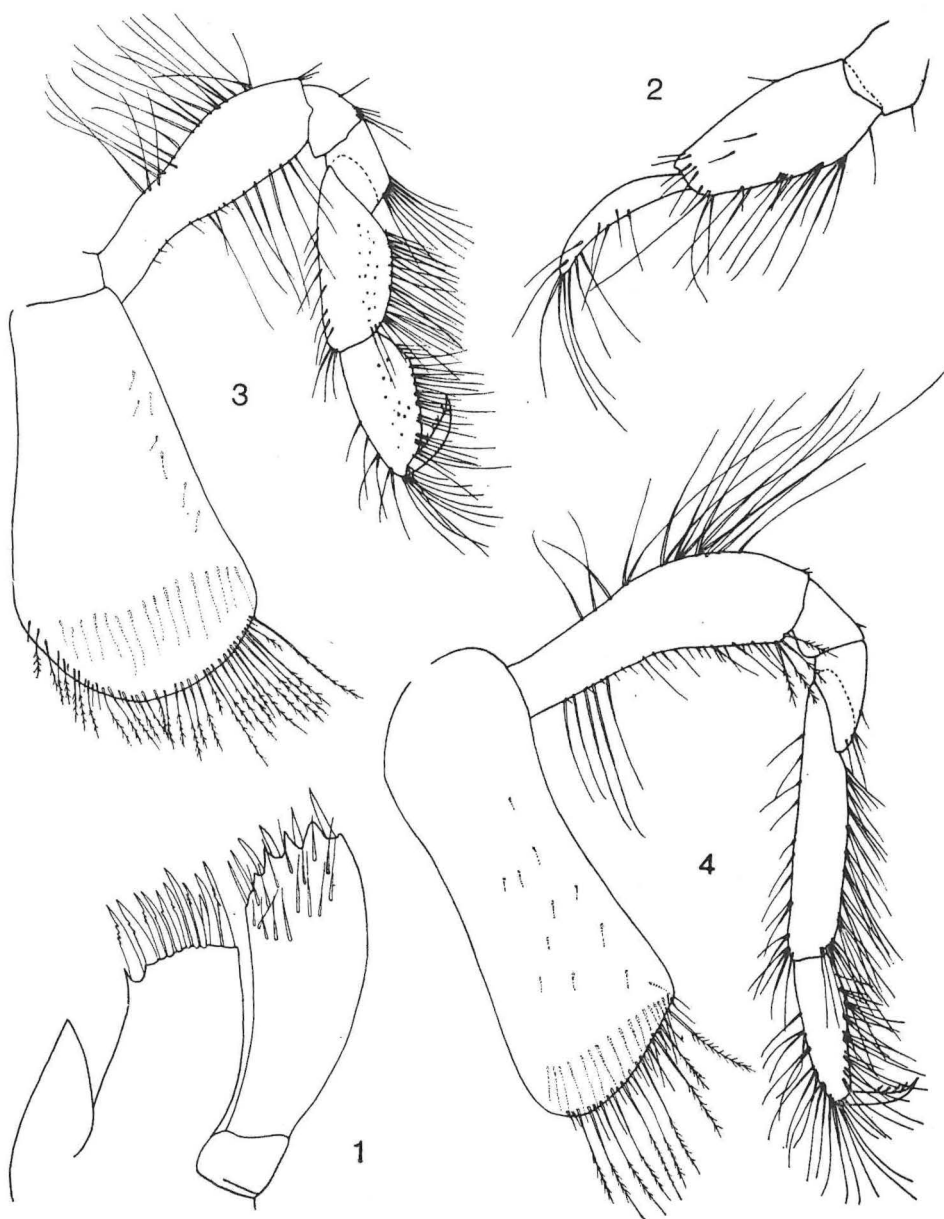


Fig. V. *Ampelisca diadema* (Costa), Ulcinj, female 10 mm: 1 = maxilla 1; 2 = mandibular palp; 3 = gnathopod 1; 4 = gnathopod 2.

bearing one strong spine at anterodistal corner (fig. IV, 4). Anterior margin of articles 4—6 bearing numerous short simple setae. Dactyl of pereopods 5—6 short, provided with 4 distal spines and 2 setae.

Pereopod 6: article 2 dilated, with posterior lobe, bearing several setae on inferior surface (fig. IV, 5). Articles 3—6 slender, without lobes, bearing spine-like setae at anterior margin. Article 4 longer than article 3. Article 5 longer than article 4, and article 6 shorter than article 5.

Pereopod 7: article 2 with distoposterior lobe bearing numerous plumose and several simple setae at distal margin (fig. IV, 6). Articles 3—6 slender, without posterior lobes or plumose setae. Article 3 as long as or only slightly shorter than articles 4—5 together. Dactyl nearly as long as article 6, recurved.

Pleopods multiarticulate, with 2 retinacula each. Epimera 1 subrounded, epimera 2 almost subrounded or with present distoposterior small tooth (fig. VII, 1, 3, 4). Epimera 3 with convex distal and posterior margins, distoposterior corner almost subrounded or angular, occasionally with a small tooth (fig. VII, 1, 3, 4).

Uropod 1: peduncle shorter than rami, bearing numerous small spines. Rami subequal in length, outer ramus often larger than inner ramus (in lateral view) and without spines. Inner ramus slender and bearing numerous short spines (fig. VI, 3).

Uropod 2: peduncle longer than rami, bearing short spines. Rami subequal in length, bearing numerous short spines (fig. VI, 3).

Uropod 3: peduncle shorter than rami, bearing one lateral spine. Rami subequal in length, lanceolate, bearing numerous plumose setae at their inferior margins. Outer margin of both rami not crenellated, that of outer ramus with short spines (fig. VI, 4).

Telson longer than broad, bearing several distal spine-like setae (fig. VII, 2).

Sternal processes in non ovigerous females are present: 2 processes on thoracal segment 7, one sternal process on thoracal segments 4—6, other segments without processes. Gills simple, ovoid, oostegys narrow.

Variability: The shape of second peduncular article of antenna 1 is very variable, from stout and short up to long and slender. The length of antenna 1 is also variable, but antenna 1 is never as long as that of *A. spinipes*.

The shape of the epimera is one very variable character, especially the shape of distoposterior corner of epimera 2—3 (from subrounded up to pointed, like that of *A. spinipes*).

The outer ramus of uropod 1 is slender or relatively broad, and this character is observed in many populations from the Adriatic Sea.

Material examined: Adriatic Sea: Northern Adriatic: Bay of Piran 9 Febr., 1973, 2 spec. (leg. D. Vrščaj); many localities near Portorož, Oct., 1971, depth 5—20 m, many specimens sometimes accompanied by *A. typica* and *A. spinimana*; Rovinj, 17 Oct., 1967, depth 12 m, 3 spec. (leg. D. Zavodnik); 35 km far W. of Rovinj, 2 Oct., 1968, depth 33 m, one spec. on coastal detritic bottoms (leg. D. Zavodnik); near Jadranovo by Rijeka, 10 Aug., 1967, depth 50 m, 2 spec. (leg. D. Zavodnik); Kvarnerić, W. of Škrda island, 26 Aug., 1968, depth 83 m, one spec. on muddy bottom (leg. D. Zavodnik); Kvarnerić, W. of Novalja on the Pag islang, 26 Aug., 1968, depth 73 m, one spec. on sandy bottom (leg. D. Zavodnik).

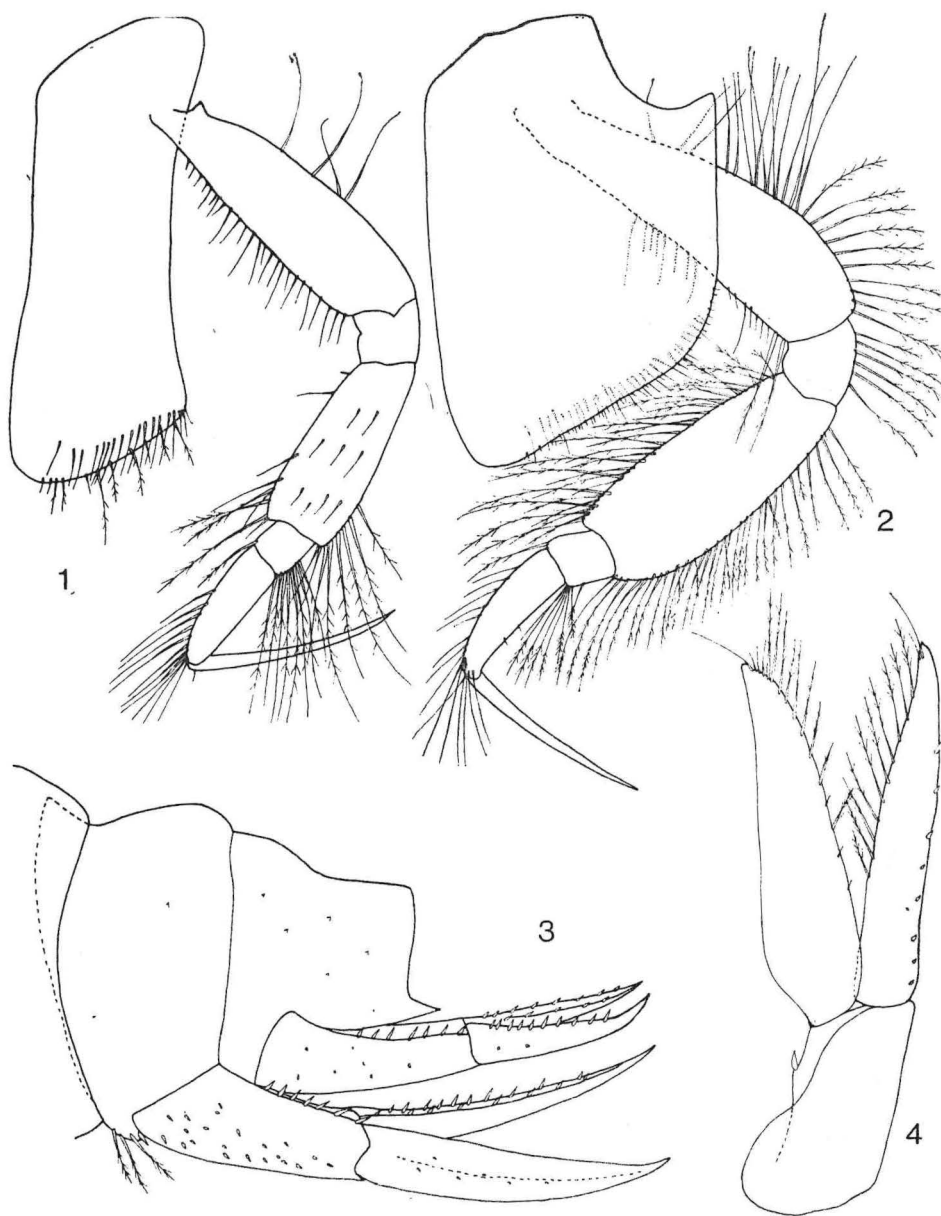


Fig. VI. *Ampelisca diadema* (Costa), Ulcinj, female 10 mm: 1 = pereopod 3; 2 = pereopod 4; 3 = urosome with uropods 1-2; 4 = uropod 3.

Southern Adriatic: Boka Kotorska Bay: P. 17 (28 Jan., 1964), depth 33 m, 2 spec. accompanied by *A. typica* and *A. spinimana*; P. 36 (28 Sept., 1963), depth 27 m, one spec. accompanied by *A. spinimana*; P. 42 (3 April, 1964), depth 38.5 m, one spec. with *A. spinimana*; P. 45 (29 May, 1963), depth 37.5 m, 3 spec. with *A. typica*; *ibid.* (9 Oct., 1963), 5 spec. with *A. spinimana* and *A. typica*; *ibid.*, (27 Jan., 1964), 3 spec.; P. 61 (24 Jan., 1964), depth 38 m, 2 spec. with *A. spinimana*; P. 64 (6 May, 1963), depth 18 m, 3 spec.; P. 65 (24 Jan., 1964), depth 37 m, one spec. with *A. spinimana*; P. 71 (24 Jan., 1964), depth 7 m, one spec. with *A. spinimana*; P. 78 (6 April, 1964), depth 30 m, one spec. with *A. typica*; P. 81 (14 June, 1963), depth 30 m, one spec. with *A. spinimana*; P. 82 (14 June, 1963), depth 42 m, one spec. with *A. spinimana*; *ibid.*, 7 Oct., 1963, one spec. with *A. spinimana*; *ibid.*, 9 April, 1964, one spec.; P. 83 (7 Oct., 1963), depth 52 m, 3 spec.; *ibid.*, April, 1964, one spec. with *A. dalmatina*.

Coast of Crna Gora: P. 13 (29 Oct., 1969), depth 150 m; one spec.; P. 14 (25 June, 1968), depth 90—100 m, sandy bottom, 2 spec. with *A. typica*; P. 20 (18 Oct., 1969) near Bar, depth 76 m, 2 spec.; P. 22 (20 Oct., 1969), depth 100 m, one spec.; Budva near harbour, 1 Sept., 1973, depth 9 m, sandy bottom, 2 spec.; Budva near Miločer, sandy bottom, 31 Aug., 1973, depth 28 m, one spec. with *A. typica* and *A. spinimana*; Ulcinj, 14 Jan., 1974, depth 10 m, muddy bottom, 15 spec. with *A. spinimana*; *ibid.*, depth 12 m, one spec. with *A. typica* and *A. spinimana*; W. of Ulcinj, 15 Jan., 1974, depth 25 m, 6 spec.; *ibid.*, 30 Aug., 1973, depth 10 m, sandy bottom, 4 spec. accompanied by *A. brevicornis* and *A. typica*.

Mediterranean Sea: Marseille, 26. Sept., 1966, depth 40 m, sandy bottom, 2 spec. (leg. G. Karaman).

Eastern Atlantic: Risør (leg/det G. O. Sars), 10 spec. (F. 13727, Oslo Museum Coll.); Bejan, Trondhjemsfjorden (leg/det G. O. Sars), 8 spec. (F. 13640, Oslo Museum Coll.).

Localities cited from Adriatic Sea: Laguna di Venezia (G. Goika 1950), Trieste (Graeffe 1880, 1883), Rovinj (Ruffo 1946), vicinity of island Dviše Sestrice near Rovinj (Krapp-Schickel 1969), Lastovo island (Lagosta) (Heller 1866, Stalio 1877), many localities in N. and S. Adriatic (present work).

Loc. typ.: Napoli (Italy).

Distribution: Mediterranean Sea, Adriatic and Black Sea, NE and SE. Atlantic.

Ecology: In the Mediterranean Sea this species is present on sandy and muddy bottoms (in bottom »detritique cotiere« and detritique envasé»), on 10—200 m depth.

In the Adriatic it was found on sandy and muddy bottoms, in depths of 5—150 m, sometimes together with *A. pusilla*, *A. typica*, *A. spinimana* or *A. brevicornis*, also in *Zostera* population.

Remarks. *A. diadema* is very closed to *A. spinipes*, and differs from the latter by the shorter antenna 1 and usually more subrounded epimera, as well as by the smaller body-size. *A. spinipes* and *A. diadema* are very good species sometimes found on the same bottom in Atlantic. The population of *A. diadema* in Adriatic Sea shows the epimera like those of *A. spinipes* or

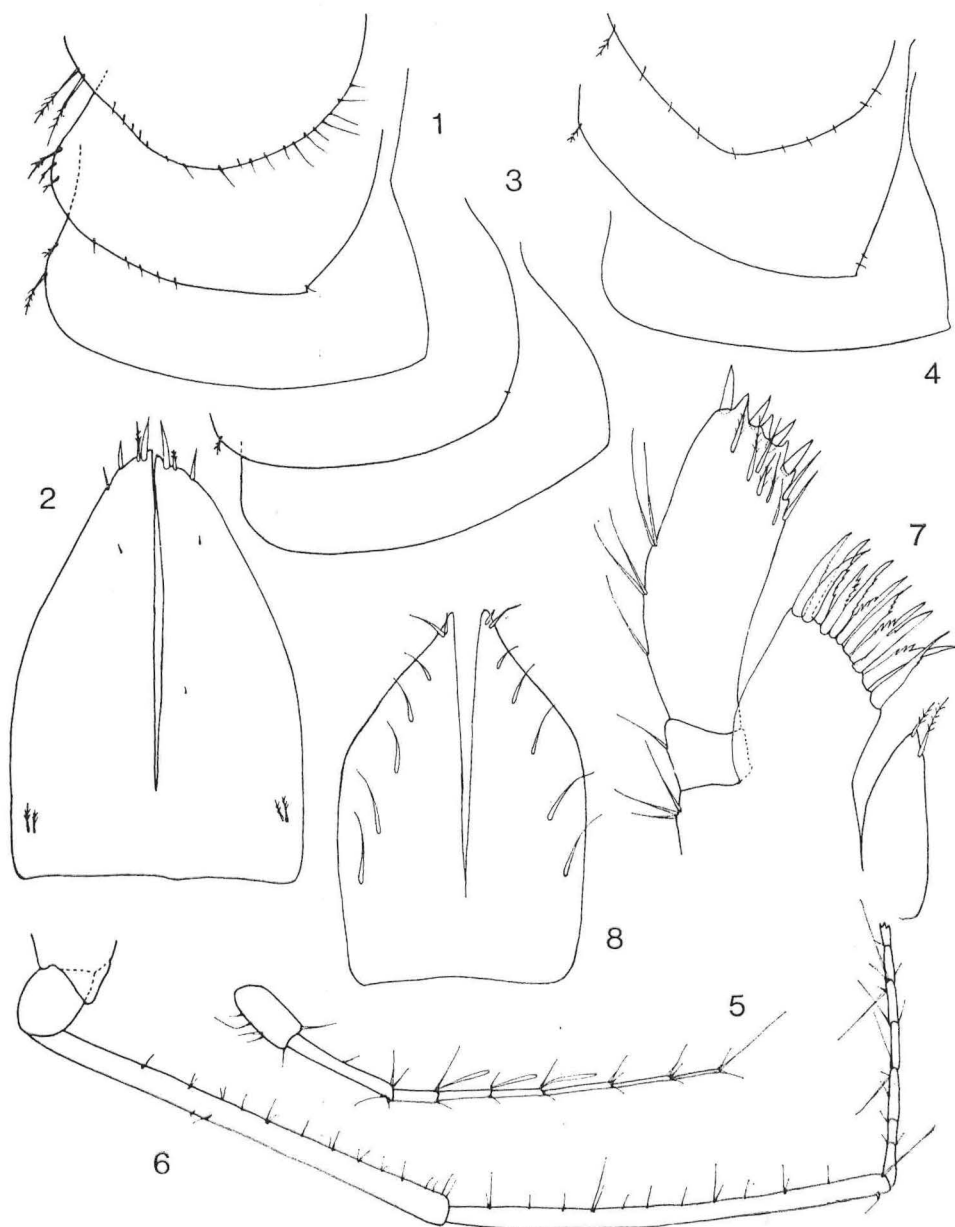


Fig. VII. *Ampelisca diadema* (Costa), Ulcinj, female 10 mm: 1 = epimere; 2 = telson; 3 = epimere, female 9 mm; 4 = epimere, female 9.1 mm. *Ampelisca gibba* Sars, coast of Crna Gora (P. 15), female 10 mm: 5 = antenna 1; 6 = antenna 2; 7 = maxilla 1; 8 = telson.

those of *A. diadema* from Atlantic, but the length of antenna 1 of Adriatic Sea specimens is always remarkably shorter than that of *A. spinipes* from the Atlantic Ocean.

*Ampelisca gibba* Sars 1882  
figs. VII—X

Syn.: *Ampelisca gibba* Sars 1882, p. 107, pl. 6, figs. 1, 1a; Sars 1891, p. 171, pl. 59, fig. 2; Stebbing 1906, p. 101; Chevreux et Fage 1925, p. 78, fig. 69; Carausu 1948, p. 459; Gurjanova 1951, p. 311, fig. 175; Kaim-Malka 1969/70a, p. 939, pls. 17—21; Kaim-Malka 1969/70b, p. 996.

Description: Female: Body-length up to 10 mm. Body smooth, urosome keeled, urosomite 1 with high dorsal tooth (fig. IX, 5), urosomites 2—3 with convex dorsomedian elevation and angular dorsoposterior edge; several setae occurring on urosome (fig. IX, 5).

Head short, with lower front edge oblique to half of head-length (fig. VIII, 1). Corneal lenses 4 in number.

Antenna 1 short and slender, almost exceeding distal end of peduncular article 4 of antenna 2. Flagellum with 5 articles bearing aesthetascs as long as articles themselves (fig. VII, 5). Peduncular article 1 ovoid, without dilation, nearly  $2/3$  as long as peduncular article 2; peduncular article 2 much shorter than peduncular article 4 of antenna 2.

Antenna 2 very long, its peduncular article 3 short; peduncular articles 4—5 of subequal length, bearing small number of short setae (fig. VII, 6), flagellum multiarticulate.

Mouthparts typical. Maxilla 1: inner lobe with 2 distal plumose setae (fig. VII, 7), outer lobe with 11 strong spines bearing several lateral teeth each, palps of left and right maxilla 1 symmetric, biarticulate, second article bearing several setae at outer margin and 4—6 distal spines and setae; several plumose setae occurring on subdistal surface of second palpal article. Maxilliped: inner lobe well developed, with several distal plumose setae (6) reaching distal end of first palpal article; outer lobe broad, bearing spear-like spines at inferior margin; palp narrow, 4-articulate, article 4 attached on top of article 3, long (fig. VII, 2).

Mandible: article 1 bearing several short setae, articles 2 and 3 of subequal length, bearing long simple setae, article 2 moderately dilated only (fig. IX, 1).

Coxae 2—4 with nearly parallel lateral margins, coxa 1 with dilated distal portion, coxae 1—3 with distal plumose setae, coxa 4 without distal plumose setae (figs. VIII, 3, 4; IX, 2, 3; X, 2—4). Coxae 5—7 progressively shorter towards coxa 7.

Gnathopod 1: article 2 long, bearing long simple setae. Articles 3—4 short, article 5 nearly 2.5 times as long as broad, bearing numerous simple setae at posterior margin and with one row of longer simple setae on inner surface. Article 6 slightly shorter than article 5, with numerous weakly pectinate long setae at posterior margin. Dactyl long, but shorter than the



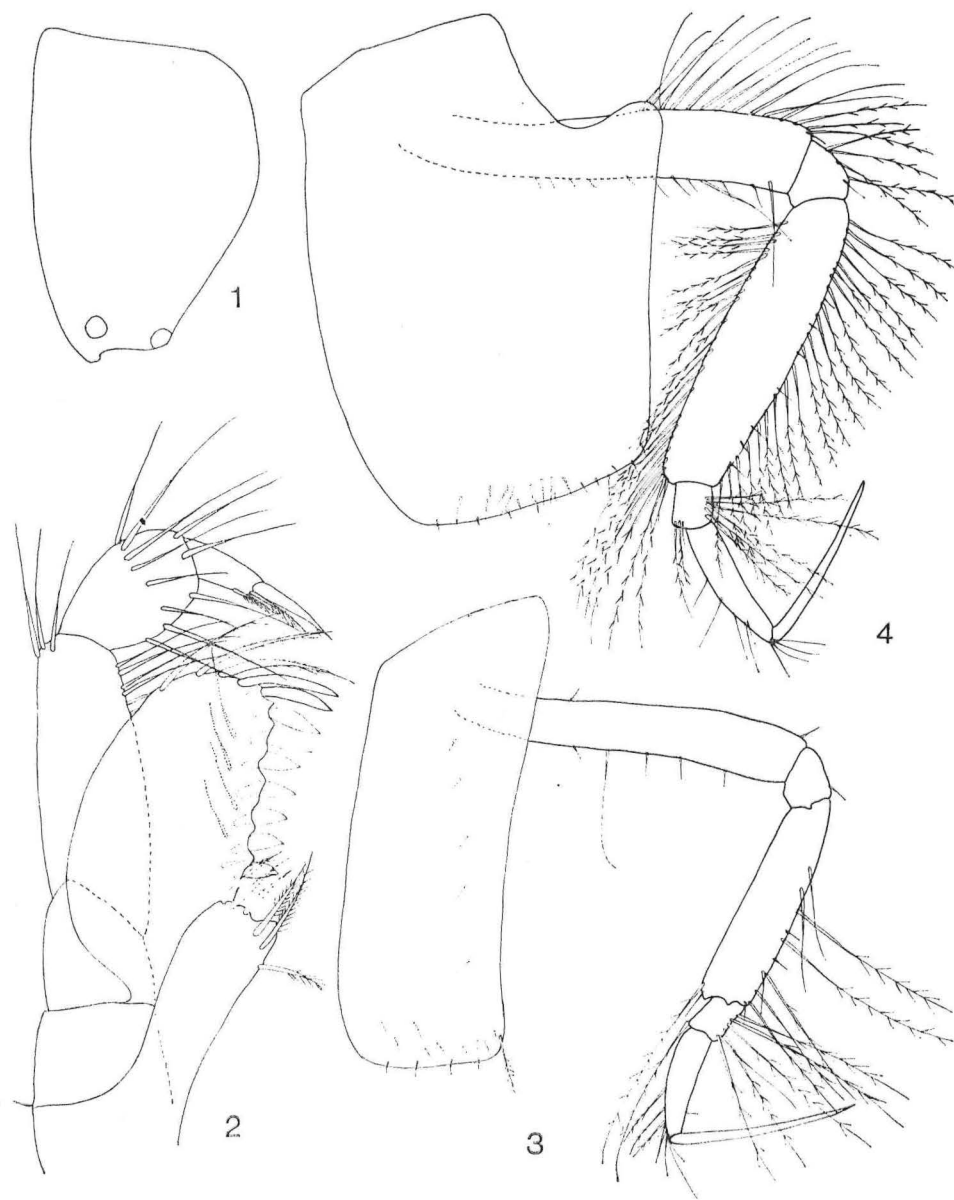


Fig. VIII. *Ampelisca gibba* Sars, coast of Crna Gora (P. 15), female 10 mm: 1 = head; 2 = maxilliped; 3 = pereopod 3; 4 = pereopod 4.

length of article 6, with 4—5 plumose setae at inferior margin; nail rather shorter than remaining part of dactyl (fig. IX, 2).

Gnathopod 2: article 2 long, with long marginal simple and plumose setae. Articles 3—4 short, article 4 twice as long as broad, bearing short setae at posterior margin. Article 5 very long and slender, nearly 5—5.5 times as long as broad, with numerous simple setae at posterior margin (fig. IX, 3). Article 6 remarkably shorter than article 5, bearing chiefly long simple setae and several plumose setae at posterior margin. Inner surface of article 6 bearing numerous short plumose setae. Dactyl shorter than article 6, bearing several plumose setae at inferior margin, nail shorter than remaining part of dactyl.

Pereopod 3: article 2 long, usually without long marginal setae. Article 3 short, article 4 long and slender, bearing several plumose setae at posterior margin. Article 5 short, but longer than broad, bearing several long plumose setae at posterior margin. Article 6 twice as long as article 5, with several setae at anterior margin, dactyl remarkably longer than articles 5—6 together (fig. VIII, 3).

Pereopod 4: article 2 bearing long setae at posterior margin, article 3 short, bearing plumose setae at posterior margin. Article 4 long and slightly inflated only, with numerous plumose setae at both margins. Article 5 short, with plumose setae at both margins. Article 6 with several simple setae at anterior margin; dactyl longer than articles 5—6 together (fig. VIII, 4).

Pereopod 5: article 2 dilated, with proximoposterior lobe; articles 3—6 slender, with numerous spine-like setae at anterior margin. Dactyl short, with usually 3 distal spines and 2 setae (fig. X, 2).

Pereopod 6: article 2 dilated, with posterior lobe; articles 3—7 like those of pereopod 5 (fig. X, 3), with spines at anterior margin.

Pereopod 7 remarkably shorter than pereopod 6. Article 2 with distoposterior lobe bearing numerous plumose marginal setae, as well as several simple setae (fig. X, 4). Article 3 short, quadrate; article 4 as long as article 3 but much larger, with distoposterior lobe covering posterior margin of article 5 and provided with several long plumose setae. Article 5 short. Article 6 elongated, almost as long as articles 3—5 together, smooth; dactyl slender, slightly shorter than article 6.

Pleopods with 2 retinacula each. Epimera 1—2 with subrounded distal margin and distoposterior corner. Epimera 3 with very strong distoposterior tooth and with median lobe at posterior margin lower than distoposterior tooth (fig. IX, 4).

Uropod 1: peduncle longer than rami; inner ramus slightly longer than outer one, with spines, outer ramus without spines (fig. IX, 5). Uropod 2: peduncle longer than rami, bearing spines; inner ramus longer than outer, both bearing several spines (fig. IX, 5).

Uropod 3: peduncle shorter than rami, with 2 lateral spines. Rami lanceolate, with short setae at inner margins, and with smooth outer margins; inner ramus very slightly shorter than outer, both with one distal seta (fig. X, 5).

Telson longer than broad, each lobe bearing several simple setae on dorsal surface and top (fig. VII, 8).

Gills simple, ovoid, occurring on thoracal segments 2—6. Oostegites narrow, occurring on thoracal segments 2—5 (fig. X, 2).



Fig. IX. *Ampelisca gibba* Sars, coast of Crna Gora (P. 15), female 10 mm: 1 = mandibular palp; 2 = gnathopod 1; 3 = gnathopod 2; 4 = epimere; 5 = urosome with uropods 1—2.

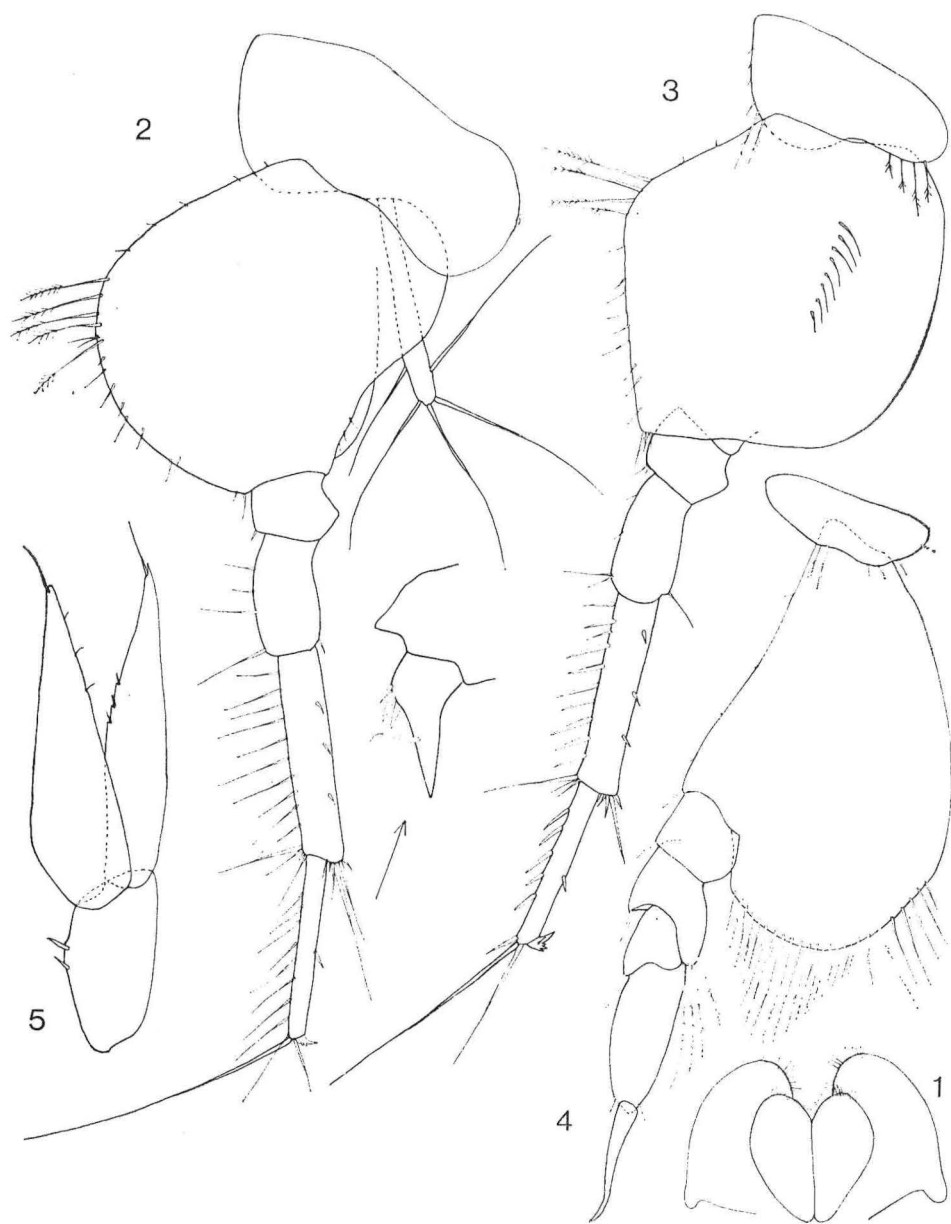


Fig. X. *Ampelisca gibba* Sars, coast of Crna Gora (P. 15), female 10 mm: 1 = labium; 2 = pereopod 5; 3 = pereopod 6; 4 = pereopod 7; 5 = uropod 3.

Variability: the shape of epimera, uropod 3 and telson are very stable characters of this species.

Material examined: Adriatic Sea: Coast of Crna Gora: P. 15 (25 June, 1968), depth 200—220 m, muddy bottom, one spec.; P. 32 (22 June, 1968), near Ulcinj, depth 80 m, one spec.

Localities cited from Adriatic Sea: coast of Crna Gora (present work).

Loc. typ.: coast of Norway (NE. Atlantic).

Distribution: Northern Atlantic, Greenland, coasts of western Africa, Mediterranean Sea, Adriatic Sea.

Ecology: *A. gibba* was found in the Atlantic on bottoms up to 3200 m depth, in the Mediterranean Sea in depths between 64 and 300 m, in the Adriatic Sea in depth of 80—220 m.

Kaim-Malka mentioned this species in several biocenoses: biocenosis of photophilic algae, biocenosis of »vase terrigene côtière«, biocenosis of »fonds détritique envasés«, biocenosis of »détritique du large«, and biocenosis of »fonds détritique côtière«, all from the Mediterranean Sea. In the Adriatic we found this species on muddy bottoms.

Remarks. The shape of the head corresponds completely with the figures of *A. gibba* given by Kaim-Malka, but not with those mentioned by Barnard J. L. (1960).

#### *Ampelisca dalmatina* G. Karaman 1975

figs. XI—XIII

#### Syn.:

*Ampelisca dalmatina* G. Karaman 1975, p. figs. 1—3.

Description: Female: Length of our single specimen 5 mm. Urosomite 1 with median shallow depression and short dorsoposterior tooth; urosomites 2—3 with slightly concave dorsal margin (in lateral view) (fig. XI, 5).

Head short and stout, with vertical and later oblique lower frontedge up half of head-length (fig. XI, 1). Corneal lenses 4 in number.

Antenna 1 nearly as long as antenna 2, a little shorter than body-length, peduncular article 1 ovoid, inflated. Peduncular article 2 very long, slightly longer than peduncular article 4 of antenna 2, and bearing several long setae (fig. XII, 1). Flagellum multiarticulate, bearing long setae; proximal articles bearing one aesthetasc longer than the article itself.

Antenna 2 rather shorter than the body-length, its peduncular article 5 longer than peduncular article 4; flagellum multiarticulate, bearing long setae (fig. XII, 2).

Mouthparts typical. Inner lobe of maxilla 1 without setae (fig. XI, 2). Mandibular palp: first article with 2—4 setae, second article dilated, bearing numerous setae; third article nearly as long as second article, bearing simple or partially plumose setae (fig. XIII, 1).



Fig. XI. *Ampelisca dalmatina* G. Kar., Boka Kotorska (P. 83), female 5 mm: 1 = head; 2 = inner lobe of maxilla 1; 3 = pereopod 3; 4 = pereopod 4; 5 = urosome with uropods 1—2.

Coxa 1 dilated distally, with plumose setae at distal margin (fig. XII, 3); coxae 2—3 with parallel lateral margins bearing plumose (coxa 2) or simple setae (coxa 3) at distal margin (figs. XII, 4; XI, 3). Coxa 4 with lateral margins not parallel, like that of *A. tenuicornis*, almost smooth at distal margin (fig. XI, 4). Coxae 5—7 short (fig. XIII, 2, 4, 5).

Gnathopod 1: article 2 broader distally than proximally, bearing long plumose setae at anterior margin (fig. XII, 3), and long simple setae at posterior margin. Article 3 short, article 4 longer than broad. Articles 4—6 bearing numerous simple or partially plumose setae at posterior margin. Article 5 longer than article 6; article 1 ovoid, with several groups of long simple setae at distoanterior margin. Dactyl shorter than article 6, bearing several plumose setae at inferior margin.

Gnathopod 2: slightly longer than gnathopod 1, pilosity of articles 2—6 like those of gnathopod 1. Article 5 slender and long. Article 6 shorter than article 5, dactyl like that of gnathopod 1 (fig. XII, 4).

Pereopod 3: article 2 slender, poorly setose. Article 3 short, article 4 weakly dilated distally, with several plumose setae at distal margins. Article 5 short, with plumose setae at posterior margin. Article 6 with only several very short simple setae at anterior margin, posterior margin bearing only one short seta (fig. XI, 3). Dactyl longer (a little) than the articles 5—6 together.

Pereopod 4: article 2 bearing simple and plumose setae at both margins (in distal portion). Article 4 weakly dilated medially, bearing plumose setae at both margins. Article 5 short, bearing plumose setae at posterior margin. Article 6 like that of pereopod 3. Dactyl remarkably longer than articles 5—6 together (fig. XI, 4).

Pereopod 5: article 2 with proximoposterior lobe. Articles 3—6 slender, bearing a small number of elements at both margins. Dactyl short, bearing 2 distal spines and 2 setae (fig. XIII, 2, 3).

Pereopod 6: article 2 very dilated, rounded, with one seta on surface, and several setae at anterior margin. Articles 4—6 bearing several spines at their anterior and posterior margins, dactyl like that of pereopod 5 (fig. XIII, 4).

Pereopod 7: nearly as long as pereopod 6, distoposterior lobe of article 2 reaching distal end of article 3, bearing numerous plumose and several simple setae at distal margin. Article 3 a little longer than broad, nearly as long as articles 4—5 together. Articles 3—6 slender, without any dilations or lobes, bearing only single simple setae at margins. Article 6 as long as articles 4—5 together, dactyl as long as article 6 (fig. XIII, 5).

Pleopods with 2 retinacula each. Epimera 1 rounded, epimera 2 with subangular distoposterior corner; epimera 3 with angular, but obtuse distoposterior corner, with convex distal and posterior margins (fig. XII, 5).

Uropod 1: peduncle shorter than rami, rami almost subequal in length: outer ramus smooth, inner ramus and peduncle bearing spines.

Uropod 2: peduncle slightly longer than rami, bearing spines. Rami of subequal length, bearing spines (fig. XI, 5).

Uropod 3 lanceolate, its peduncle shorter than rami, bearing one lateral spine. Outer ramus almost without setae, inner ramus bearing several very short setae at inferior margin. Both inferior margins very fine crenellated (but never like those of *A. serraticaudata*) (fig. XII, 6).

Telson narrow, each lobe bearing 2 distal spines and one pair of short proximal plumose setae.

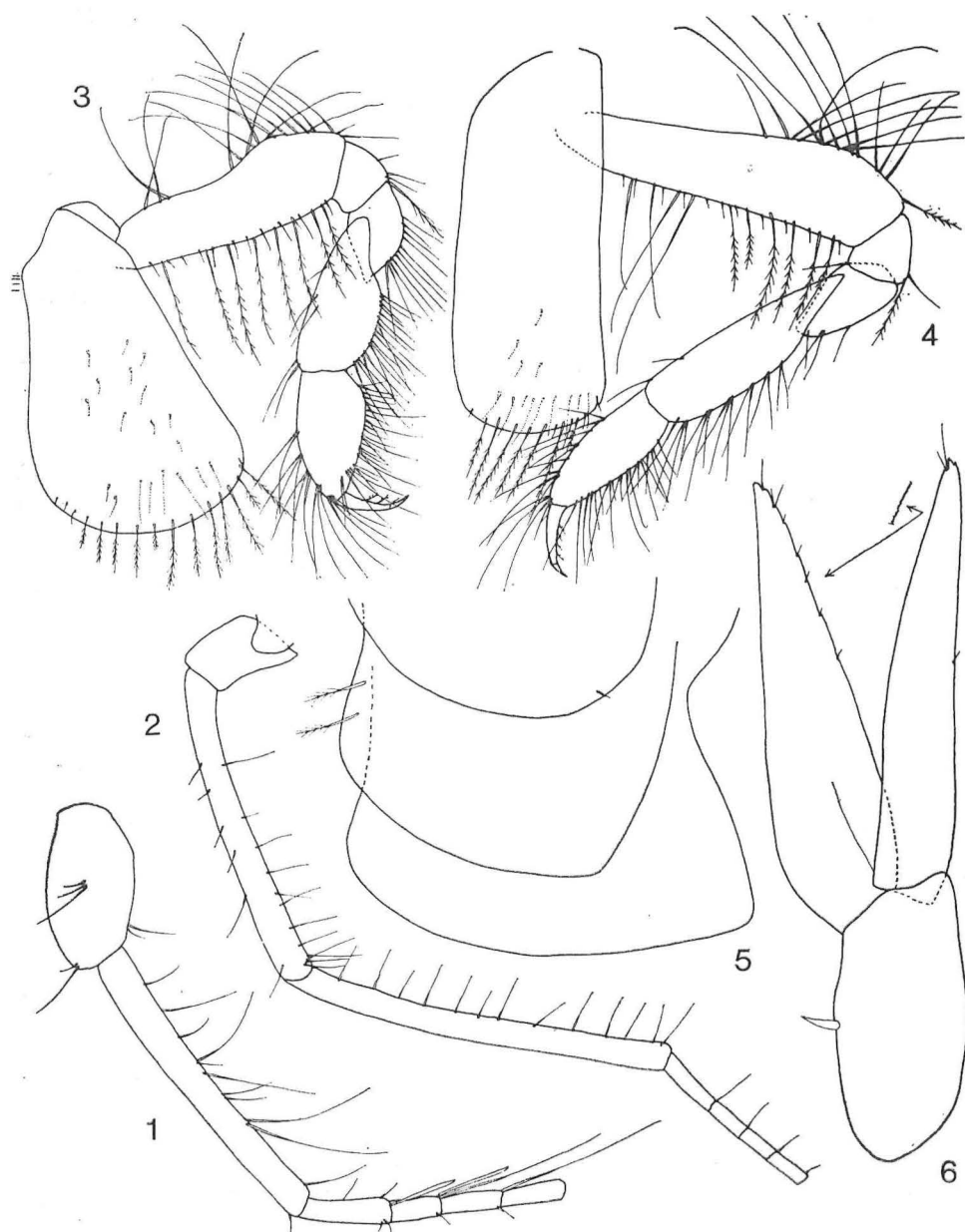


Fig. XII. *Ampelisca dalmatina* G. Kar., Boka Kotorska (P. 83), female 5 mm: 1 = antenna 1; 2 = antenna 2; 3 = gnathopod 1; 4 = gnathopod 2; 5 = epimere; 6 = uropod 3.



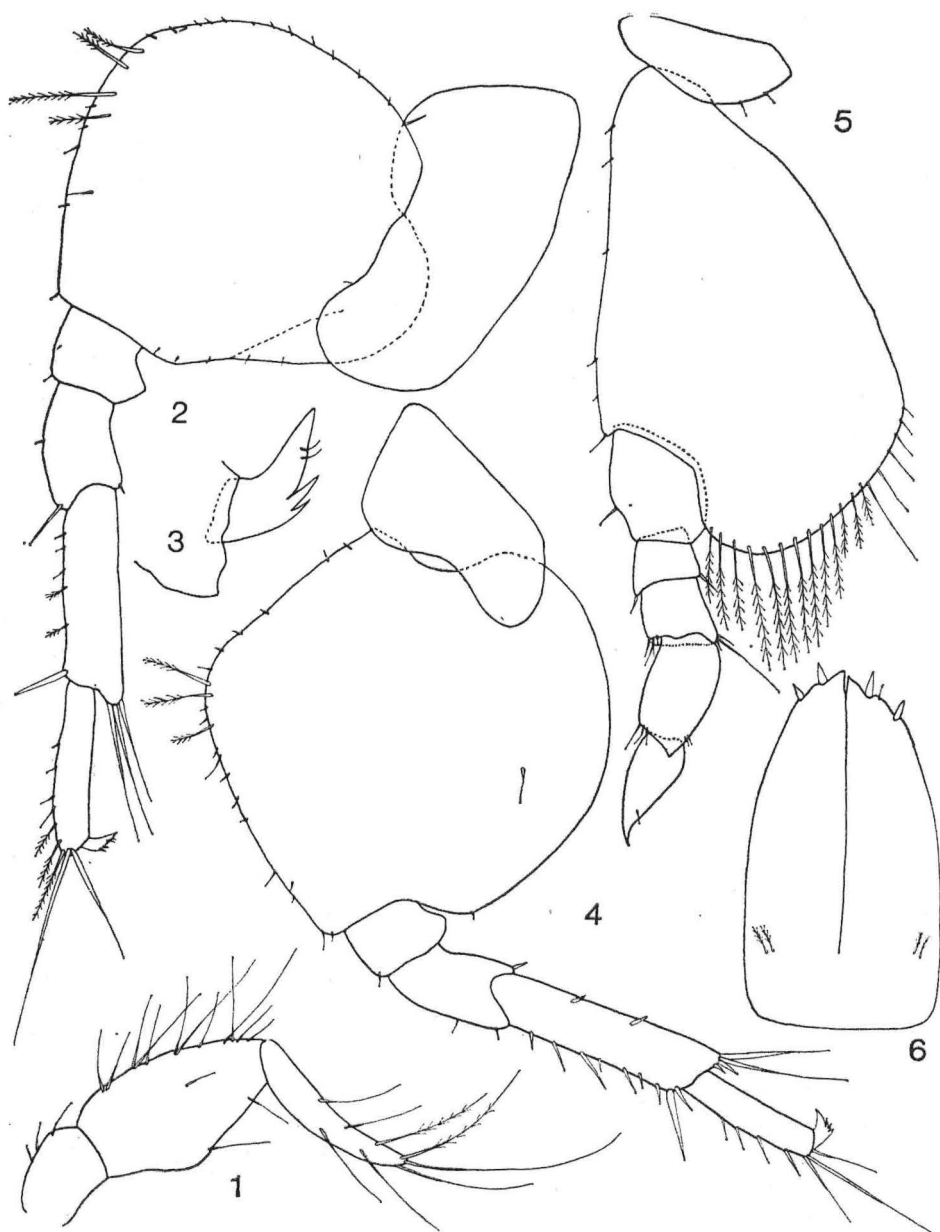


Fig. XIII. *Ampelisca dalmatina* G. Kar., Boka Kotorska (P. 83), female 5 mm: 1 = mandibular palp; 2, 3 = pereopod 5; 4 = pereopod 6; 5 = pereopod 7; 6 = telson.

Variability: unknown.

Material examined: Adriatic Sea: Mouth of Boka Kotorska Bay: P. 83 (9 April, 1964), depth 52 m, one spec. (female with 3 eggs), accompanied by *A. diadema*.

Localities cited from Adriatic Sea: Boka Kotorska (G. Karaman 1975). Unknown from other parts of Mediterranean Sea.

Loc. typ.: Boka Kotorska. Holotype is deposited in my collection in Titograd.

Distribution: Adriatic Sea.

Ecology: In Adriatic this species was found on muddy bottom in 52 m depth, accompanied by *A. diadema*.

*A. dalmatina* is very similar to *A. amblyops* Sars 1891, and Enequist (1949) mentioned that species *A. pusila* and *A. amblyops* represent only one species, i. e. that they are synonyms.

#### *Ampelisca rubella* Costa 1864

figs. XIV—XVI

Syn.: *Ampelisca rubella* Costa 1864, p. 153, pl. 2, fig. 7; Carus 1885, p. 409; Stebbing 1906, p. 104; Chevreux et Fage 1925, p. 79, figs. 66, 70; Ruffo 1946, p. 50; Schickel-Krapp 1969, p. 316; Kaim-Malka 1969/70a, p. 932, pls. 7—11; Kaim-Malka 1969/70b, p. 998.

Description: Female: Body-length of our specimen 4.7 mm. Urosomite 1 with shallow dorsomedian incision and shallow dorsoposterior obtuse tooth (fig. XV, 6), urosomites 2—3 with deeper median incision.

Head short and stout, only slightly longer than broad (fig. XIV, 1), its lateral cephalic lobe subangular, with lower front edge oblique up to half of head-length. Upper anterior top of head as long as lower anterior top of head. Corneal lenses 4 in number.

Antenna 1 as long as antenna 2, both antennae nearly 60 percent as long as body. Antenna 1: peduncular article 1 inflated, peduncular article 2 longer than peduncular article 4 of antenna 2, bearing long marginal simple setae. Flagellum 16-articulate, two proximal flagellar articles bearing 1—2 bearing only several distal marginal setae (fig. XVI, 1).

Antenna 2: peduncular articles 4—5 subequal in length relatively short, both bearing long marginal setae. Flagellum 17-articulate, articles with long marginal setae (fig. XV, 2).

Mouthparts typical. Maxilla 1: inner lobe without setae (fig. XV, 3). Mandible: first palpal article with one seta, second article inflated and bearing numerous simple setae; third article shorter than second article, slender, bearing only several distal marginal setae (fig. XVI, 1).

Coxa 1 only slightly dilated distally, bearing plumose setae at distal margin (fig. XVI, 2). Coxae 2—4 with parallel lateral margins bearing only simple distal setae (without plumose setae) (figs. XV, 4, 5; XVI, 2, 4). Coxae 5—7 short.

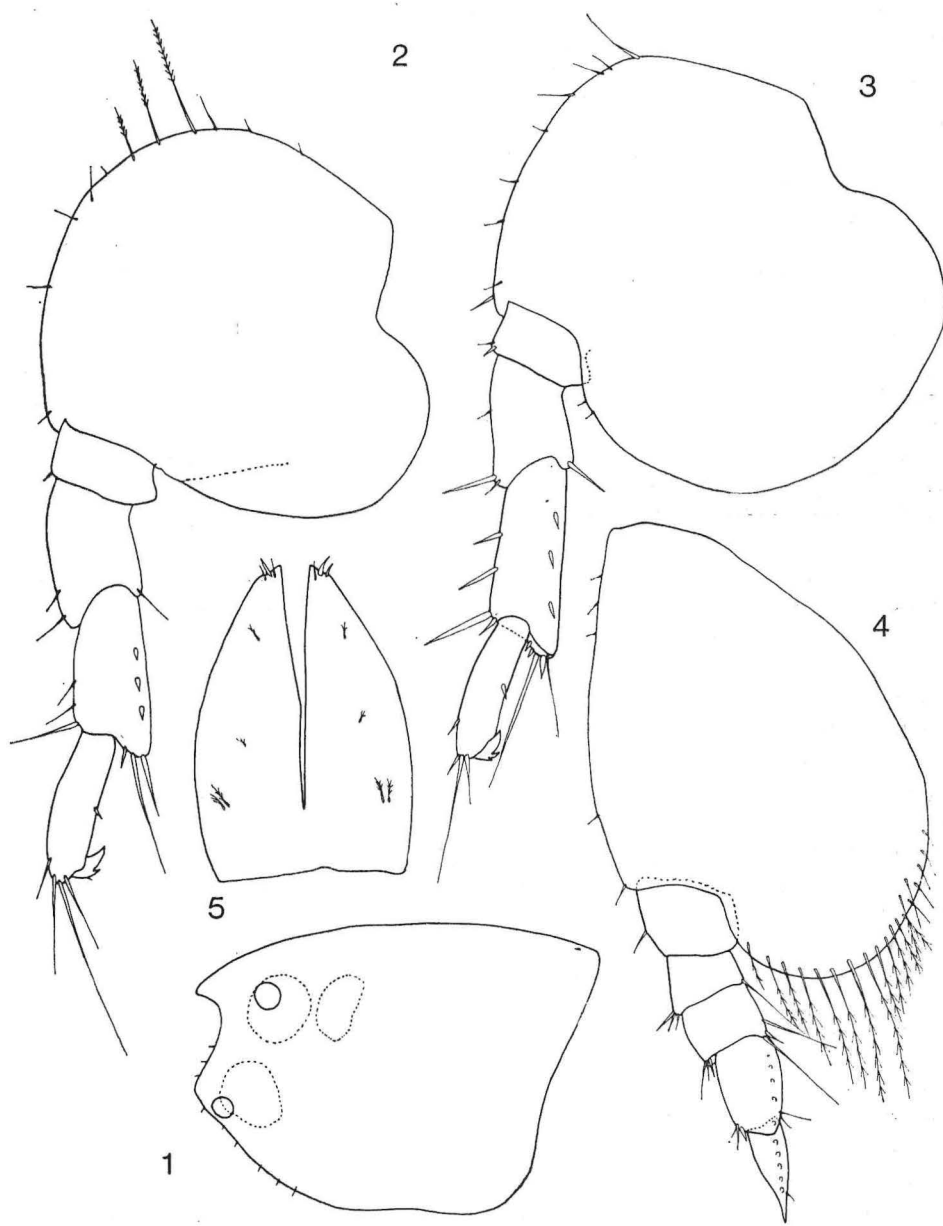


Fig. XIV. *Ampelisca rubella* Costa, Bay of Piran, female 4.7 mm: 1 = head; 2 = pereopod 5; 3 = pereopod 6; 4 = pereopod 7; 5 = telson.

Gnathopod 1: article 2 dilated distally, bearing setae at both margins. Articles 3—4 short, article 5 long, bearing numerous simple or partially pectinate setae at posterior margin. Article 6 shorter than article 5, broader proximally than distally, bearing simple and partially pectinate setae at posterior margin, inner surface and anterior margin (fig. XVI, 2, 3). Dactyl shorter than article 6, bearing 3 pectinate setae at inferior margin.

Gnathopod 2: articles 2—5 slightly longer than these of gnathopod 1. Article 5 slender and long, bearing simple and pectinate setae at posterior margin. Article 6 much shorter than article 5, bearing simple and pectinate setae at both margin and on inner surface. Dactyl like that of gnathopod 1 (fig. XVI, 4, 5).

Pereopod 3: articles 2—3 poorly setose, article 4 moderately dilated, bearing several simple and plumose setae in distal portion. Article 5 short, bearing plumose setae at both margins. Article 6 with simple setae at both margins. Dactyl stout and short, shorter than articles 5—6 together (fig. XV, 4).

Pereopod 4: slightly stouter than pereopod 3. Posterior margin of articles 2—5 bearing plumose setae, as well as anterior margin of same articles. Article 4 dilated medially. Article 6 with simple setae at both margins. Dactyl short, like that of pereopod 3 (fig. XV, 5).

Pereopods 5—7 relatively short and broad. Pereopod 5: article 2 very dilated, with broad posterior lobe. Articles 3—6 poorly setose, article 5 bearing several spines at posterior margin; dactyl short, (fig. XIV, 2).

Pereopod 6: lobe of article 2 very broad, exceeding length of article 3. Articles 3—7 like those of pereopod 5, but bearing spines at anterior margin (fig. XIV, 3).

Pereopod 7: almost as long as pereopod 6, distoposterior lobe of article 2 reaching the distal end of article 4. Article 3 short, quadrate, articles 4—6 slender, without any dilatation or lobes, bearing simple setae at both margins. Articles 4—5 together longer than article 3. Article 6 almost as long as articles 4—5 together. Article 7 short, as long as article 6. Article 6 and dactyl bearing one row of round holes (fig. XIV, 4).

Pleopods with 2 retinacula each. Epimera 1 subrounded, epimera 2—3 with distinct distoposterior tooth (in epimera 3 much stronger than in epimera 2). Distal and posterior margin of epimera 2—3 are convex (fig. XVI, 6).

Uropod 1: peduncle only slightly longer than rami, bearing several spines at outer and superior margin. Rami subequal in length, bearing several spines at superior margin. Superior margin of peduncle and of rami of uropods 1—2 very finely crenellated (fig. XV, 6).

Uropod 2: Peduncle longer than rami, bearing only one spine at superior margin. Outer ramus remarkably shorter than inner, both with several spines at superior margin. Top of outer ramus of uropods 1—2 bearing many very fine spinules (fig. XV, 6).

Uropod 3 short and stout, exceeding a little the top of uropods 1—2. Peduncle only slightly shorter than rami, bearing 2 lateral spines and setae. Rami almost foliaceous, with both margins of both rami smooth. Outer ramus narrower, with numerous very fine teeth at distal part of outer margin. Outer margin of outer lobe and inner margin of inner lobe bearing several short simple setae (fig. XVI, 7).



Fig. XV. *Ampelisca rubella* Costa, Bay of Piran, female 4.7 mm: 1 = antenna 1; 2 = antenna 2; 3 = inner lobe of maxilla 1; 4 = pereopod 3; 5 = pereopod 4; 6 = urosome with uropods 1—2.



Fig. XVI. *Ampelisca rubella* Costa, Bay of Piran, female 4.7 mm: 1 = mandibular palp; 2, 3 = gnathopod 1; 4, 5 = gnathopod 2; 6 = epimere; 7 = uropod 3.

Telson is longer than broad; each lobe bears 1—2 distal spine-like setae and 1—3 short plumose setae on dorsal surface. A pair of short plumose setae occurring in proximal portion of lobes (fig. XIV, 5).

Variability: unknown.

Material examined: Adriatic Sea: Bay of Piran (Istra), 9 Febr., 1973, one spec. (leg. D. Vrščaj).

Localities cited from Adriatic Sea: Rovinj (Ruffo 1946, Krapp-Schickel 1969), Bay of Piran (present work).

Loc. typ.: Napoli.

Distribution: E. Atlantic, Indian Ocean, Mediterranean and Adriatic Seas.

Ecology: living in depths of 1.5—65 m, on rocky bottom and algae. In Adriatic, *A. rubella* was found in depth of 1.—10 m, in biocenosis of *Hali-media tuna*, of *Cystoseira abrotanifolia* and of *Posidonia oceanica* (Krapp-Schickel 1969).

*Ampelisca sarsi* Chevreux 1888

figs. XVII—XIX

Syn.: *Ampelisca sarsi* Chevreux 1888, p. 3; Stebbing 1906, p. 111; Chevreux et Fage 1925, p. 85, fig. 77; Ruffo 1946, p. 50; G. Soika 1950, p. 196; Kaim-Malka 1969/70a, p. 935, pls. 14—16; Kaim-Malka 1969/70b, p. 995.

Description: Female: length of our specimens up to 6.1 mm. Urosomite 1 with low dorsoposterior elevation; dorsal elevation on urosomite 2 lower than that of urosomite 1 (fig. XVII, 5).

Head long, distal portion of lower front edge parallel with dorsal margin of the head, later oblique to half of head-length (fig. XVII, 1). Corneal lenses 4 in number.

Antenna 1: shorter than the peduncle of antenna 2, reaching only up to middle of peduncular article 5 of antenna 2. Flagellum 4—6 articulate (fig. XVIII, 1), first peduncular article ovoid.

Antenna 2: slightly shorter than the body-length, peduncular article 4 remarkably shorter than ped. article 5, flagellum up to 34-articulate (fig. XVIII, 2).

Mouthparts typical. Inner lobe of maxilla 1 with one small simple seta, outer lobe and palp like other *Ampelisca* species (fig. XIX, 1). Mandibular palp: first article with 2 setae, second article moderately dilated, bearing small number of simple setae; third article slightly shorter than second article, bearing 5—6 simple setae (fig. XVIII, 3).

Coxa 1 dilated distally, with plumose setae at distal margin (fig. XIX, 2) Coxae 2—3 with nearly parallel lateral margins, bearing 1—2 plumose setae at distal margin (coxa 2) or only simple setae (coxa 3) (figs. XVIII, 2; XIX, 4). Coxa 4 with lateral margins, not parallel, bearing only several short distal simple setae (fig. XVIII, 5).

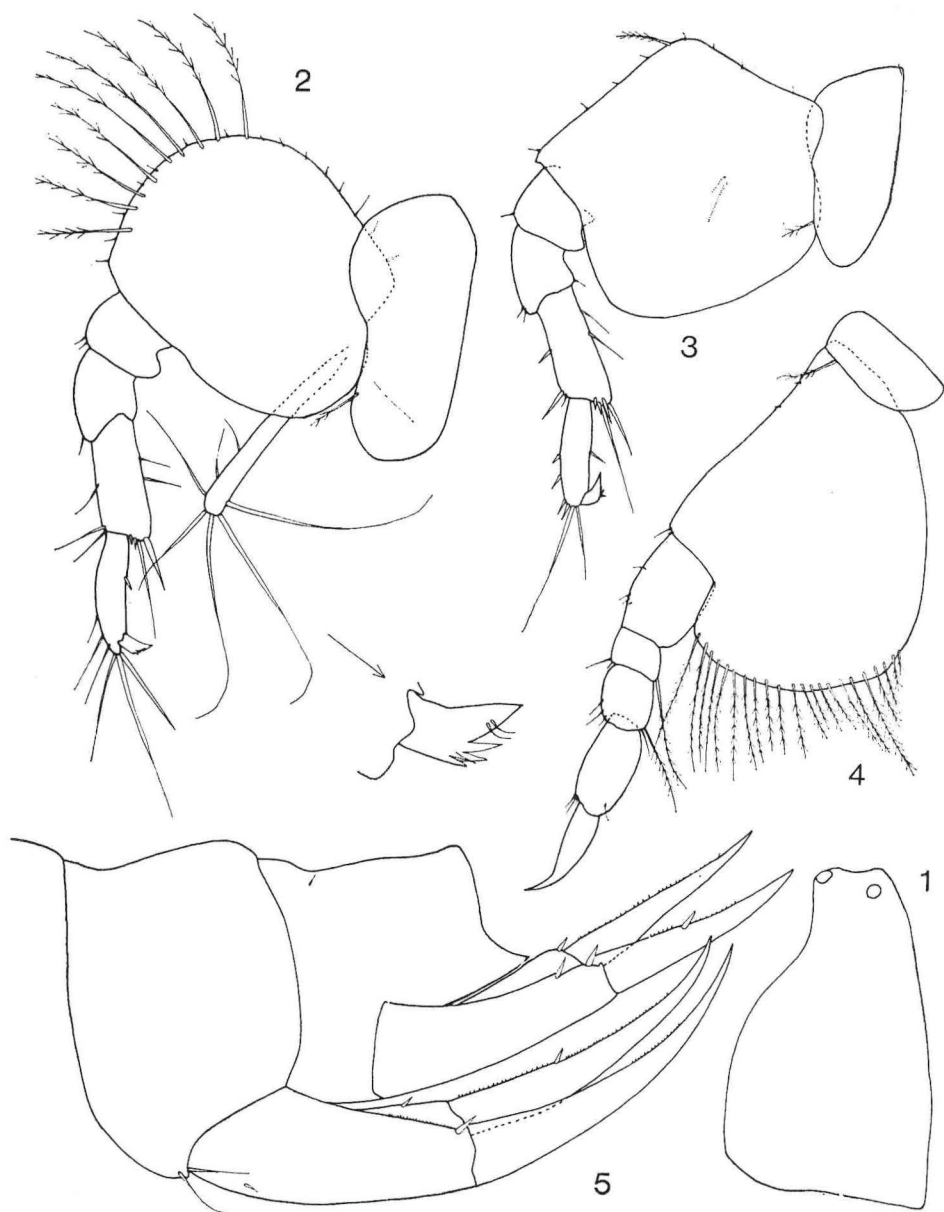


Fig. XVII. *Ampelisca sarsi* Chevr., Rovinj, female 4.3 mm: 1 = head; 2 = pereopod 5; 3 = pereopod 6; 4 = pereopod 7; 5 = urosome with uropods 1—2.



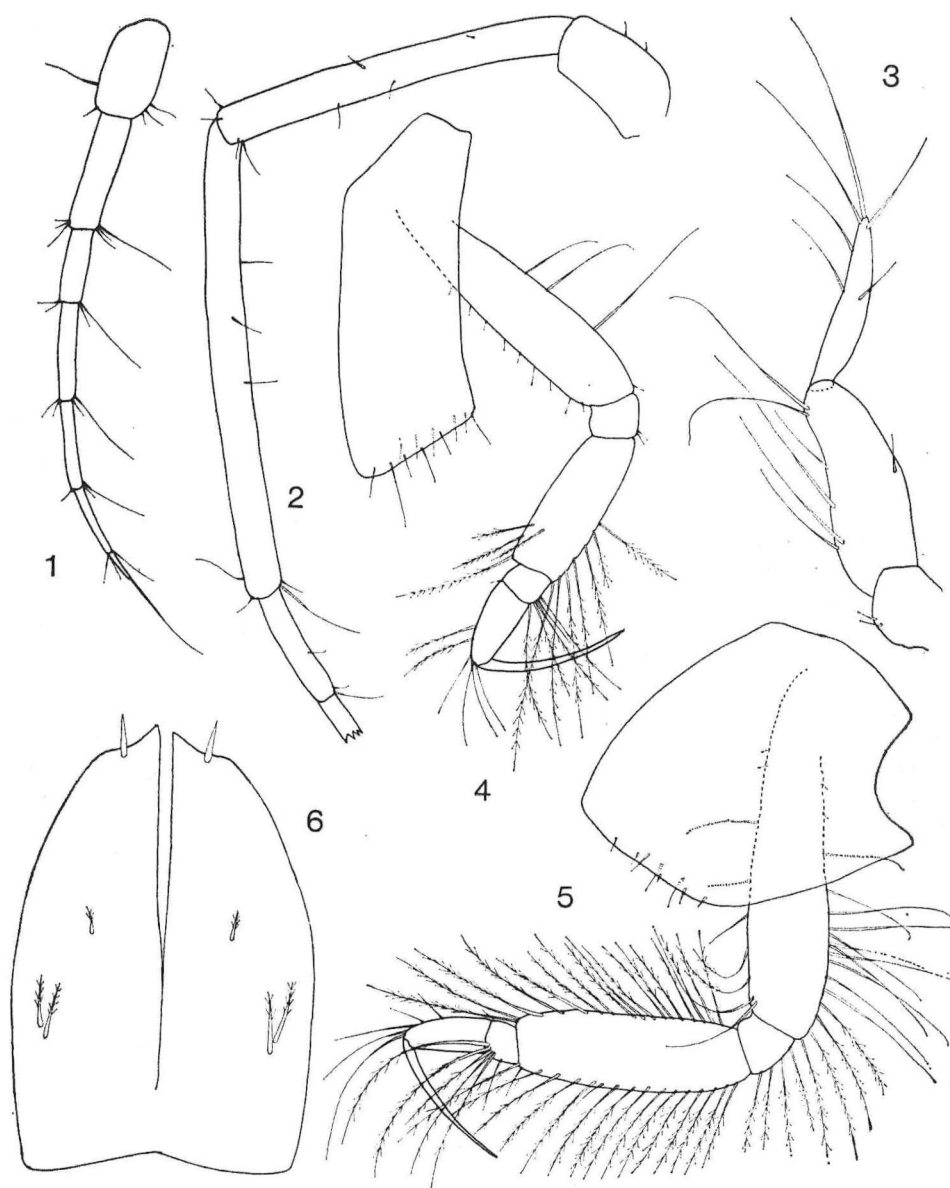


Fig. XVIII. *Ampelisca sarsi* Chevr., Rovinj, female 4.3 mm: 1 = antenna 1; 2 = antenna 2; 3 = mandibular palp; 4 = pereopod 3; 5 = pereopod 4; 6 = telson.

Gnathopod 1: article 2 with long simple setae at both margins. Articles 3—4 short; article 5 longer than article 6, both with numerous simple and slightly pectinate setae at posterior margin. Article 6 bears several tufts of long simple setae at anterior margin. Dactyl shorter than article 6, bearing 2—3 plumose setae at inferior margin (fig. XIX, 2, 3).

Gnathopod 2: article 2 slender, with setae at both margins. Article 5 long, with simple and plumose setae at posterior margin. Article 6 shorter than article 5, with plumose and simple setae at posterior margin and with simple setae on inner surface and anterior margin (fig. XIX, 4, 5).

Pereopod 3: articles 2—4 weakly setose. Article 4 non dilated, bearing plumose setae at both margins. Article 5 short, bearing plumose setae at anterior margin. Article 6 bearing simple and plumose setae at anterior margin (fig. XVIII, 4). Dactyl longer than articles 5—6 together.

Pereopod 4: slightly stronger than pereopod 3, its article 2 more setose. Article 4 as broad as article 2, bearing plumose setae at both margins. Article 5 short, with plumose setae at posterior margin. Article 6 bearing only several simple setae at anterior margin, dactyl like that of pereopod 3 (fig. XVIII, 5).

Pereopods 5—7 relatively short. Pereopod 5: article 2 bearing a row of long plumose setae at anterior margin. Articles 3—6 bearing at anterior margin several short setae only. Dactyl short, bearing 4 distal spines and 2 setae (fig. XVII, 2).

Pereopod 6: article 2 bearing only 1—2 plumose setae at anterior margin, posterior lobe well developed. Articles 3—6 bearing several spine-like setae at anterior and posterior margins, dactyl like that of pereopod 5 (fig. XVII, 3).

Pereopod 7 as long as pereopod 5, its distoposterior lobe of article 2 not reaching distal end of article 3. Article 3 longer than broad. Articles 3—6 slender, without any dilation or lobes, bearing plumose setae at posterior margin. Articles 4—5 together as long as article 3. Article 6 as long as articles 4—5 together, dactyl as long as article 6 (fig. XVII, 4).

Pleopods with 2 retinacula each. Epimera 1—3 with subrounded distoposterior corner, with convex distal and posterior margins (fig. XIX, 6).

Uropod 1: not reaching the top of uropod 2 rami. Peduncle shorter than rami. Rami slender and recurved, subequal in length. Peduncle and inner ramus bearing several short spines (fig. XVII, 5), outer ramus smooth.

Uropod 2: peduncle longer than rami, rami subequal in length, bearing single short spines only. Superior margin of peduncle and rami of uropods 1—2 very fine crenellated (fig. XVII, 5).

Uropod 3: peduncle shorter than rami, bearing 2 lateral spines. Rami lanceolate, outer ramus slightly narrower than inner, and bearing several spines at inferior margin and several short setae at outer margin. Inner ramus bearing several simple setae at inferior margin, its outer margin without setae or spines (fig. XIX, 7).

Telson longer than broad, with one distal spine and 3 plumose setae on each lobe (fig. XVIII, 6).

Gills ovoid, simple. Oostegys narrow (fig. XVII, 2).

Variability: Larger or older specimens bear a larger number of setae at the inner margin of both rami of uropod 3; these setae can be simple or plumose. The length of uropod 1 is rather variable, but uropod 1 never reaches the top of uropod 2.

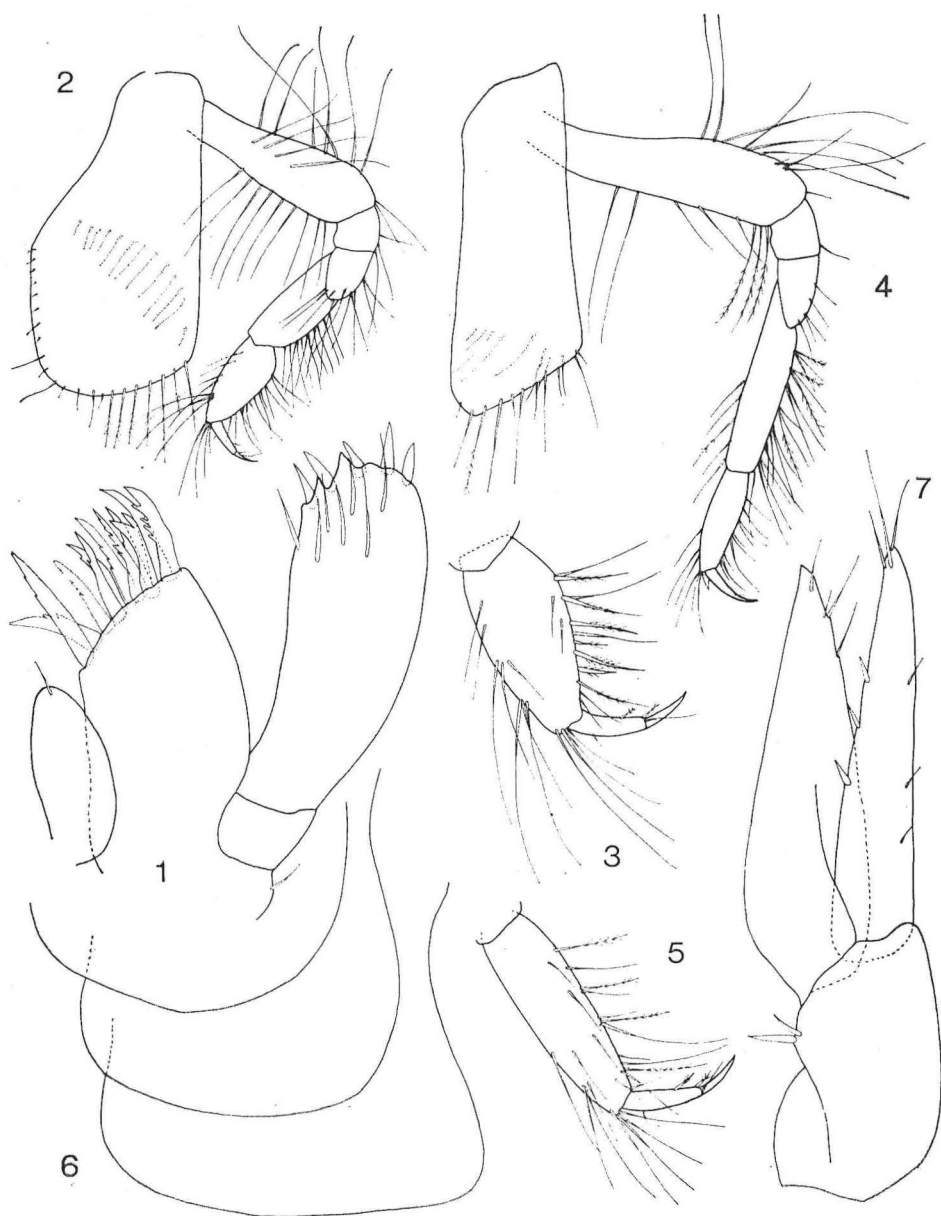


Fig. XIX. *Ampelisca sarsi* Chevr., Rovinj, female 4.3 mm: 1 = maxilla 1; 2, 3 = gnathopod 1; 4, 5 = gnathopod 2; 6 = epimere; 7 = uropod 3.

Material examined: Adriatic: Northern Adriatic: Rovinj, 19 July, 1965, depth 15—20 m, 6 spec. accompanied by *A. typica* and *A. spinimana*.

Southern Adriatic: Boka Kotorska Bay: P. 4 (6 June, 1963), depth 15 m, one spec.; *ibid.*, 28 Jan., 1964, 2 spec. with *A. typica*; P. 7 (6 June, 1963), depth 15 m, 4 spec. with *A. spinimana*; P. 8 (June, 1963), depth 20 m, 2 spec.; *ibid.*, 28 Sept., 1963, 25 spec.; *ibid.*, 28 Jan., 1964, 24 spec.; *ibid.*, 31 March, 1964, 10 spec.; P. 34 (28 May), depth 14 m, 5 spec.; *ibid.*, 29 Sept., 1963, 8 spec. with *A. spinimana* and *A. typica*; *ibid.*, 27 Jan., 1964, 2 spec. with *A. spinimana* and *A. typica*; *ibid.*, 28 March, 1964, 10 spec. with *A. spinimana* and *A. typica*; P. 35 (28 May, 1963), depth 16 m, one spec.; P. 40 (28 Sept., 1963), depth 12 m, 8 spec.; *ibid.*, 28 March, 1964, 2 spec. with *A. typica*; P. 47 (9 Oct., 1963), depth 22 m, 2 spec. with *A. typica*; P. 61 (9 Oct., 1963), depth 38 m, 2 spec. with *A. spinimana*; *ibid.*, 3 April, 1964, 2 spec. with *A. typica*; P. 86 (9 April, 1964), depth 39 m, 3 spec. accompanied by *A. typica*.

Coast of Crna Gora: Ulcinj, 30 Aug., 1973, depth 25 m, 3 spec. accompanied by *A. typica* and *A. diadema*.

Localities cited from Adriatic Sea: Laguna di Venezia (Giordani Soika 1950), Rovinj (Ruffo 1946), southern Adriatic (present work).

Loc. typ.: Croisic (NE. Atlantic).

Distribution: E. Atlantic, Mediterranean and Adriatic Seas.

Ecology: *A. sarsi* was found in Atlantic on 15—20 m depth, in Mediterranean Sea on 5—108 m depth on very fine sandy bottoms or on muddy bottoms, in »fonds detritique cotiere« and »fonds detritique envasé«.

In Adriatic Sea, *A. sarsi* was found on 5—39 m depth on muddy and sandy bottoms, often in *Zostera*, *Posidonia* or *Cystoseira* populations, sometimes together with *A. typica*, *A. diadema* or *A. spinimana*.

Remarks. *A. sarsi* is very similar to *A. spinimana* (shape of head and pereopod 7), but when *A. sarsi* was found together with *A. spinimana* in one locality, *A. sarsi* was found to differ from *spinimana* by: shorter antenna 2, by less produced head, by shorter pereopods 5—7, by narrowed pereopod 4; uropod 1 in *sarsi* not reaching the top of uropod 2 (so reaching in *spinimana*), telson bearing fewer elements (setae and spines), dactyl of pereopods 3—4 shorter in *sarsi*, only slightly longer than articles 5—6 together (in *spinimana* much longer), peduncular article 4 of antenna 2 remarkably shorter than ped. article 5 (in *spinimana* articles 4 and 5 are subequal in length), inner lobe of maxilla 1 with one seta (in *spinimana* without seta).

*Ampelisca spinimana* Chevreux 1887  
figs. XX—XXII

Syn.: *Amplisca* (laps.) *spinimana* Chevreux 1887, p. 574; Chevreux 1900, p. 39, pl. 6, fig. 2; Chevreux et Fage 1925, p. 81, pl. 73; Kaim-Malka 1969, p. 131, pls. 8—13; Kaim-Malka 1969/70 b, p. 994. *Ampelisca diadema* (part.) Della Valle 1893, p. 479.

Description: Female: Length of our specimens up to 8.2 mm. Urosomite 1 with dorsal median settling and with dorsoposterior low elevation; urosomite 2 with dorsoanterior elevation lower than that of urosomite 1 (fig. XXII, 6).



Fig. XX. *Ampelisca spinimana* Chevr., Boka Kotorska, female 8 mm: 1 = head; 2 = pereopod 3; 3 = pereopod 4; 4 = uropod 3; 5 = telson.

Head long, anterodorsal margin (distal top) longer than anteroventral margin; lower front edge of the head in distal portion parallel with dorsal head-margin, later oblique to half of head-length or slightly more (fig. XX, 1). Corneal lenses 4 in number.

Antenna 1 relatively short, slightly longer or shorter than the peduncle of antenna 2 (fig. XXI, 2). Peduncular article 1 ovoid, peduncular article 2 much shorter than peduncular article 4 of antenna 2. Flagellum up to 15-articulate, first two flagellar articles bear 1—2 aesthetascs nearly as long as the articles themselves.

Antenna 2 nearly as long as the body, or slightly shorter; peduncular article 5 slightly longer than article 4, flagellum up to 45-articulate (fig. XXI, 3).

Mouthparts typical. Inner lobe of maxilla 1 without setae. Mandibular palp: first article bearing several short setae; second article inflated, third article slender and shorter than second article, both with numerous simple or weakly plumose setae (fig. XXI, 1).

Coxa 1 with dilated distal portion, bearing numerous plumose setae at distal margin (fig. XXII, 1). Coxae 2—4 with parallel lateral margins; coxae 2—3 with only several plumose setae at distal margin, coxa 4 without plumose setae at distal margin (figs. XX, 2, 3; XXII, 3). Coxae 5—7 short (fig. XXI, 4—6).

Gnathopod 1: article 2 dilated distally, bearing numerous marginal setae. Article 4 with numerous simple or pectinate setae at posterior margin. Article 5 shorter than article 4, narrowed distally, bearing numerous simple and pectinate setae on inner surface and posterior margin; setae at anterior margin simple (fig. XXII, 1, 2), dactyl shorter than article 6, bearing several plumose setae at inferior margin.

Gnathopod 2: article 2 moderately setose, article 5 very slender, bearing simple and pectinate setae at posterior margin and inner surface. Article 6 slender, shorter than article 5, bearing numerous simple and pectinate setae on inner surface and posterior margin, dactyl like that of gnathopod 1 (fig. XXII, 3, 4).

Pereopod 3: articles 2 and 4 of the same width, not dilated. Article 4 bearing long plumose setae in distal portion at both margins. Article 5 short, bearing plumose setae at both margins. Article 6 with several simple short setae at anterior margin. Dactyl remarkably longer than articles 5—6 together (fig. XX, 2).

Pereopod 4: article 2 slender, article 4 slightly broader than article 2, bearing numerous plumose setae at both margins. Articles 3 and 5 also bearing plumose setae at posterior margin. Articles 6—7 like those of pereopod 3 (fig. XX, 3).

Pereopods 5—7 moderately long. Pereopod 5: article 2 with proximo-posterior lobe. Articles 3—6 slender, with numerous spine-like setae at anterior margin, dactyl short, with usually 2 spines and 2 short setae (fig. XXI, 4).

Pereopod 6: article 2 with shallow posterior lobe. Articles 3—6 slender, bearing numerous spines at anterior margin and at distoposterior margin of article 5. Dactyl like that of pereopod 5 (fig. XXI, 5).

Pereopod 7: slightly shorter than pereopod 6, its distoposterior lobe reaching the top of article 3. Article 3—6 slender, without any dilation or lobes, bearing several simple marginal setae. Article 3 longer than broad,

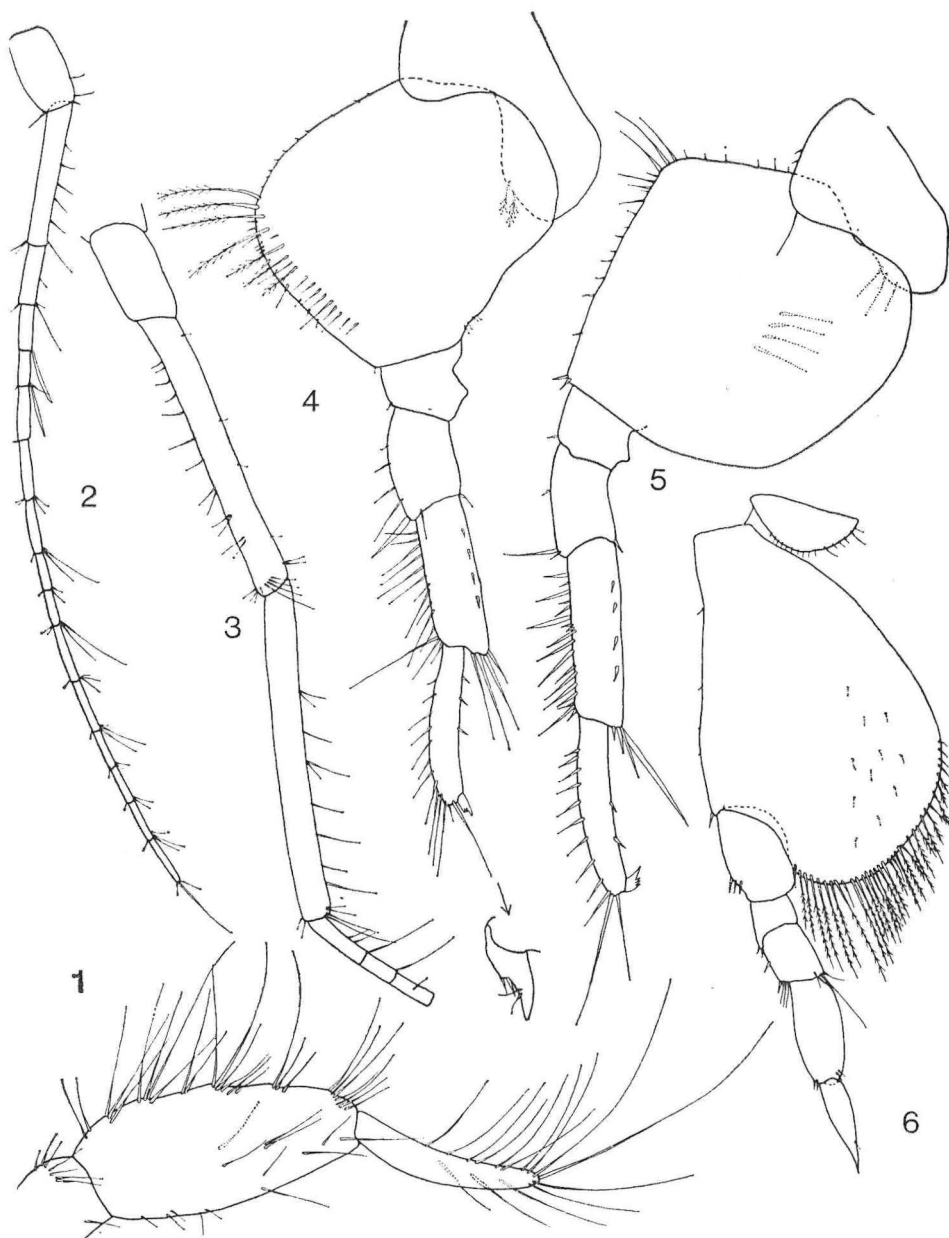


Fig. XXI. *Ampelisca spinimana* Chevr., Boka Kotorska, female 8 mm: 1 = mandibular palp; 2 = antenna 1; 3 = antenna 2; 4 = pereopod 5; 5 = pereopod 6; 6 = pereopod 7.

articles 4—5 short, together as long as article 3; article 6 as long as articles 4—5 together; dactyl nearly as long as article 6 (fig. XXI, 6).

Pleopods with 2 retinacula each. Epimera 1—3 with subrounded disto-posterior corner, their distal and posterior margins convex, distal margin of epimera 1—2 bear several short simple setae (fig. XXII, 5).

Uropod 1 reaching or exceeding the top of uropod 2. Peduncle shorter than rami, rami of subequal length, slender; peduncle and inner ramus bearing numerous spines, outer ramus smooth (without spines) (fig. XXII, 6).

Uropod 2: peduncle longer than rami, bearing short spines. Rami of subequal length, bearing short spines (fig. XXII, 6).

Uropod 3: peduncle shorter than rami, with 2 lateral spines. Rami lanceolate, bearing longer plumose setae at inner margins. Outer margin of outer ramus bearing short spines, outer margin of inner ramus smooth (without spines or setae).

Oostegites narrow, gills simple, ovoid.

Telson slender, much longer than broad, bearing several distal slender spines (fig. XX, 5).

The non-ovigerous females are without sternal processes.

Variability: the shape of head is variable as there are specimens with less oblique lower part of the head. The length of antenna 1 is also variable. The non adult specimens show the absence of long plumose setae at the inner margin of the rami of uropod 3.

Material examined: Adriatic Sea: Northern Adriatic: Rovinj, 19 July, 1965, depth 15—20 m, 8 spec. with *A. typica* and *A. sarsi*; *ibid.*, 17. April, 1967, 2 spec. (leg. D. Zavodnik); Bay of Poreč, Oct. 1971, depth 2—20 m, many spec.

Southern Adriatic: Boka Kotorska Bay: P. 2 (28 Sept., 1963), depth 10 m, 2 spec.; *ibid.*, 28 Jan., 1964, 3 spec.; P. 4 (28 Sept., 1963), depth 15 m, 10 spec.; *ibid.*, 31 March, 1964, 3 spec.; P. 7 (6 May, 1963), depth 15 m, 2 spec., with *A. sarsi*; P. 10 (6 May, 1963), depth 15 m, 2 spec.; P. 11 (28 Sept., 1963), depth 21 m, 3 spec.; *ibid.*, 28 Jan., 1964, 10 spec.; *ibid.*, 31 March, 1964, 8 spec. with *A. typica*; P. 13 (16 May, 1963), depth 16 m, 2 spec.; P. 14 (16 May, 1963), depth 15 m, one spec.; P. 17 (16 May, 1963), depth 33 m, one spec.; *ibid.*, 23 Sept., 1963, 12 spec. with *A. typica*; *ibid.*, 28 Jan., 1964, 4 spec., with *A. typica* and *A. diadema*; *ibid.*, 3 April, 1964, 6 spec. with *A. typica*; P. 18 (16 May, 1963), depth 20 m, one spec.; P. 20 (28 Jan., 1964), depth 19.5 m, one spec.; *ibid.*, 13 April, 1964, one spec. with *A. typica*; P. 21 (28 May, 1963), depth 19 m, one spec. with *A. typica*; P. 23 (28 May, 1963), depth 20 m, one spec. with *A. typica*; P. 24 (28 May, 1963), depth 20 m, 6 spec.; P. 25 (28 May, 1963), depth 32 m, 10 spec.; *ibid.*, 28 Sept., 1963, 26 juv., with *A. typica*; *ibid.*, 28 Jan., 1964, 5 spec. with *A. typica*; *ibid.*, 13 April, 1964, 6 spec. with *A. typica*; P. 26 (28 Sept., 1963), depth 35 m, 4 spec. with *A. typica*; *ibid.*, 28 March, 1964, one spec.; P. 30 (28 Sept., 1963), depth 34 m, one spec. with *A. typica*; *ibid.*, 28 March, 1964, 3 spec.; P. 34 (29 Sept., 1963), depth 14 m, 2 spec. with *A. typica* and *A. sarsi*; *ibid.*, 27 Jan., 1964, 2 spec.; P. 36 (28 May, 1963), depth 27 m, 3 spec.; *ibid.*, 28 Sept., 1963, 2 spec. with *A. diadema*; *ibid.*, 28 March, 1964, one spec. with *A. typica*; P. 38 (28 May, 1963), depth 13 m, 2 spec.; P. 39 (28 May, 1963), depth 16 m, one spec.; P. 40 (27 Jan., 1964), depth 12 m, one spec.; P. 42 (3 April, 1964), depth 38.5 m, 3 spec. with *A. typica* and *A. diadema*; P. 45 (9 Oct., 1963), depth 37.5 m, 3 spec. with *A. typica* and *A. dia-*





Fig. XXII. *Ampelisca spinimana* Chevr., Boka Kotorska, female 8 mm: 1, 2 = gnathopod 1; 3, 4 = gnathopod 2; 5 = epimere; 6 = urosome with uropods 1—2.

*dema*; *ibid.*, 9 April, 1964, one spec. with *A. typica*; P. 47 (3 April, 1964), depth 22 m, one spec.; P. 49 (27 Jan., 1964), depth 35 m, 4 spec.; *ibid.*, 3 April, 1964, 7 spec. with *A. typica*; P. 56 (9 Oct., 1963), depth 10 m, 3 spec.; *ibid.*, 27 Jan., 1964, depth 10 m, 2 spec.; *ibid.*, 3 April, one spec.; P. 58 (3 April, 1964), depth 18 m, 2 spec. with *A. typica*; P. 61 (9 Oct., 1963), depth 38 m, 11 spec. with *A. diadema*; *ibid.*, 24 Jan., 1964, 4 spec. with *A. diadema*; P. 62 (6 June, 1963), depth 25 m, one spec.; P. 63 (6 June, 1963), depth 16 m, one spec.; P. 65 (9 Oct., 1963), depth 37 m, 2 spec.; *ibid.*, 24 Jan., 1964, 2 spec. with *A. diadema*; *ibid.*, 3 April, 1964, 3 spec. with *A. typica*; P. 69 (6 June, 1963), depth 14 m, 3 spec. with *A. typica*; *ibid.*, 7 Jan., 1964, one spec.; P. 71 (6 June, 1963), depth 7 m, 6 spec.; *ibid.*, 7 Oct., 1963, 2 spec.; *ibid.*, 24 Jan., 1964, one spec. with *A. diadema*; P. 72 (14 June, 1963), depth 10 m, 18 spec.; P. 74 (14 May, 1963), depth 30 m, one spec.; P. 81 (14 June, 1963), depth 30 m, one spec. with *A. diadema*; P. 82 (14 June, 1963), depth 42 m, 5 spec. with *A. diadema*; *ibid.*, 7 Oct., 1963, 6 spec. with *A. diadema*; P. 84 (7 Oct., 1963), depth 44 m, one spec.; *ibid.*, 9 April, 1964, 2 spec.

Coast of Crna Gora: Budva near Miločer, 31 Aug., 1973, depth 28 m, sandy bottom, one spec. with *A. typica* and *A. diadema*; vicinity of Bojana mouth (P. 32a), 14 Nov., 1970, depth 25 m, 4 spec.; Ulcinj, Jan., 1974, depth 12 m, muddy bottom, 2 spec. with *A. typica* and *A. diadema*; *ibid.*, 14 Jan., 1974, depth 10 m, muddy bottom, 14 spec. with *A. diadema*; *ibid.*, 14 Jan., 1974, depth 9 m, muddy bottom, 8 spec. with *A. brevicornis*.

Localities cited from Adriatic Sea: new for this region (present work).

Loc. typ.: Cap Finistere (NE. Atlantic).

Distribution: E. Atlantic, Mediterranean and Adriatic Seas.

Ecology: *A. spinimana* was found in the Mediterranean Sea on 10—100 m depth in biocenosis »detritique cotiere«, biocenosis »detritique envasé« and biocenosis »detritique du large«.

In Adriatic Sea *A. spinimana* was found on 10—44 m depth, on muddy bottom, sometimes accompanied by *A. diadema*, *A. brevicornis*, *A. sarsi* or *A. typica*.

Remarks: see sub *A. sarsi*.

*Ampelisca tenuicornis* Liljeborg 1855  
figs. XXIII—XXV

Syn.: *Ampelisca tenuicornis* Liljeborg 1855, p. 123; Sars 1891, p. 167, pl. 58, fig. 1; Stebbing 1906, p. 110; Chevreux et Fage 1925, p. 83, fig. 75; Kaim-Malka 1969, p. 147, pls. 25—27; Kalm-Malka 1969/70b, p. 998.

*Ampelisca diadema* (part.), Della Valle 1893, p. 479.

*Ampelisca laevigata* Bate 1862, p. 96.

Description: Female: Body-length up to 10 mm. Urosomite 1 with dorsomedian recess and with dorsoposterior strong obtuse tooth (this tooth slightly smaller than that of *A. typica*). Urosomites 2—3 with dorsomedian recess and with dorsoanterior elevation lower than tooth of urosomite 1 (fig. XXV, 3).

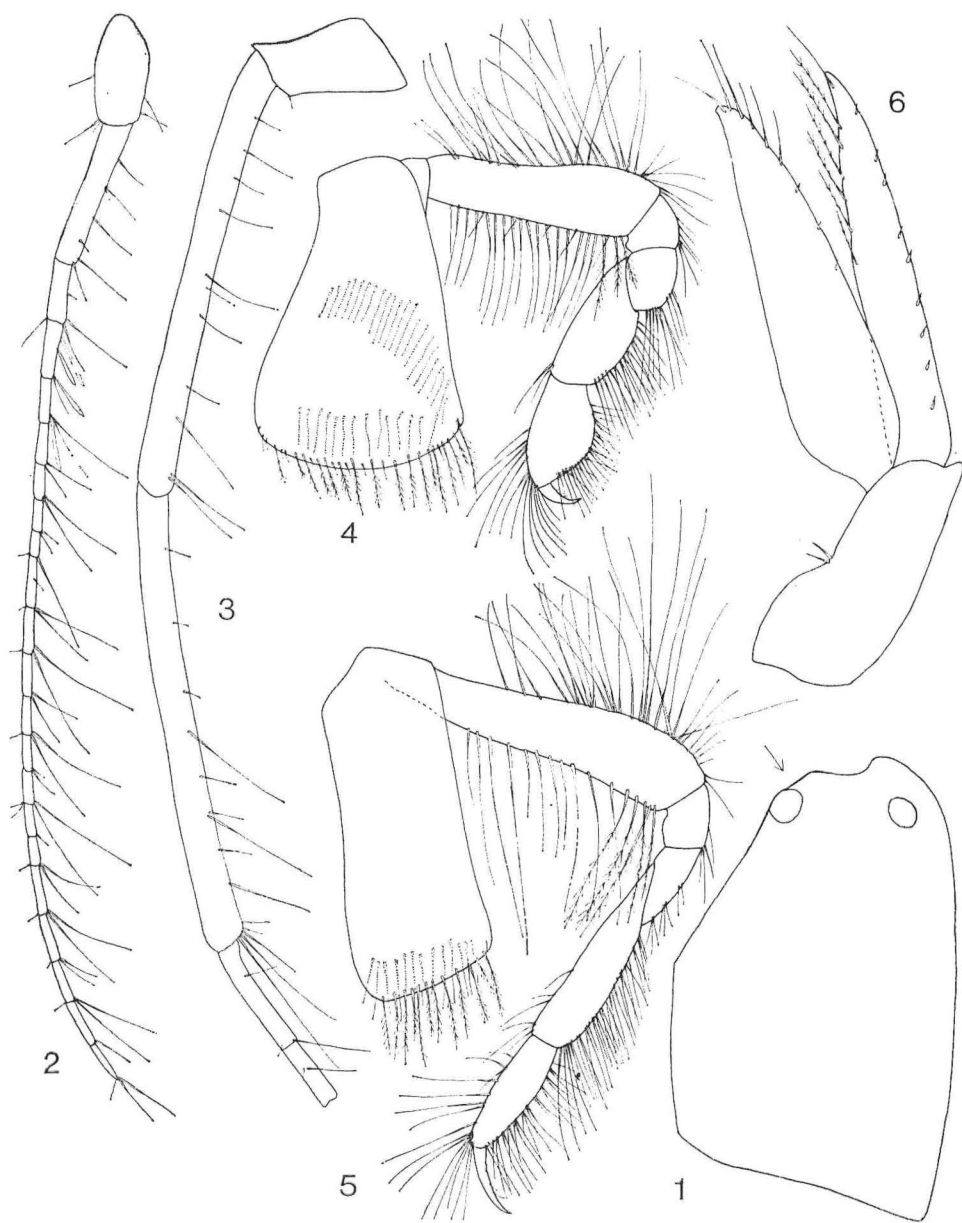


Fig. XXIII. *Ampelisca tenuicornis* Lilj., coast of Crna Gora (P. 14), female 10 mm:  
 1 = head; 2 = antenna 1; 3 = antenna 2; 4 = gnathopod 1; 5 = gnathopod 2;  
 6 = uropod 3.



Fig. XXIV. *Ampelisca tenuicornis* Lilj., coast of Crna Gora (P. 14), female 10 mm: 1 = mandibular palp; 2 = pereopod 5; 3 = pereopod 6; 4 = pereopod 7; 5 = epimere.

Head moderately long, ist anterodorsal end not longer than anteroventral one; lower front edge of the head vertical and later oblique to half of head-length (fig. XXIII, 1). Corneal lenses 4 in number.

Antenna 1 short, reaching the distal end of peduncle of antenna 2; first peduncular article ovoid, second peduncular article much shorter than peduncular article 4 of antenna 2; flagellum up to 19-articulate, first 2 articles bearing 1—2 aesthetascs each (aesthetascs are as long as articles) (fig. XXIII, 2).

Antenna 2 nearly as long as body, its peduncular articles 4 and 5 of subequal length, flagellum multiarticulate (fig. XXIII, 3).

Mouthparts typical. Inner lobe of maxilla 1 without setae. Mandibular palp: first article bearing several short setae, second article dilated, third article slightly shorter than second article, both articles bearing numerous long simple setae (fig. XXIV, 1).

Coxa 1 with dilated distal portion, coxae 2—3 with parallel lateral margins, coxa 4 with lateral margins not parallel; coxae 1—2 with plumose setae at distal margin, coxae 3—4 without plumose setae at distal margin (figs. XXIII, 4, 5; XXV, 1, 2).

Gnathopod 1: article 2 bearing numerous marginal setae, articles 3—4 short; articles 5—6 bearing numerous simple or partially pectinate setae at posterior margin. Article 6 shorter than article 5, bearing pectinate setae on inner surface also (fig. XXIII, 4). Dactyl with several plumose setae at inferior margin.

Gnathopod 2: article 2 slender, bearing long setae at both margins. Article 4 longer than broad, article 5 long, article 6 shorter than article 5; posterior margin of articles 5—6 bearing numerous simple and partially pectinate setae, dactyl like that of gnathopod 1 (fig. XXIII, 5).

Pereopod 3: article 2 long; article 4 not larger than article 2, bearing plumose setae in distal portion. Article 5 short, provided with plumose setae at both margins. Article 6 bearing simple setae at anterior margin, almost smooth at posterior margin. Dactyl longer than the articles 5—6 together (fig. XXV, 1).

Pereopod 4: article 2 bears long setae at posterior margin. Article 4 larger than article 2. Posterior margin of articles 3—5 and of distal part of article 2 bearing long plumose setae. Anterior margin of articles 4—5 and distal part of article 2 bearing plumose setae, anterior margin of article 6 bearing simple setae; dactyl like that of pereopod 3 (fig. XXV, 2).

Pereopod 5: article 2 with proximoposterior lobe, articles 3—6 slender, bearing numerous setae at anterior margin and several short spines at posterior margin. Dactyl short (fig. XXIV, 2).

Pereopod 6: article 2 with large lobe, bearing several setae on inferior surface. Articles 3—6 slender, bearing numerous spines at anterior, and partially posterior margin, dactyl like that of pereopod 5 (fig. XXIV, 3).

Pereopod 7 slightly shorter than pereopod 6, ist article 2 with lobe reaching distal end of article 3 and bearing plumose setae at distal margin. Article 3 longer than broad, articles 4—5 together as long as article 3, article 6 slightly longer than articles 4—5 together; dactyl slender, as long as article 6 (fig. XXIV, 4).

Pleopods with 2 retinacula each. Epimera 1 subrounded, bearing several short marginal setae; epimera 2 subquadrate, with almost subrounded distoposterior corner. Epimera 3 with angular distoposterior corner and with

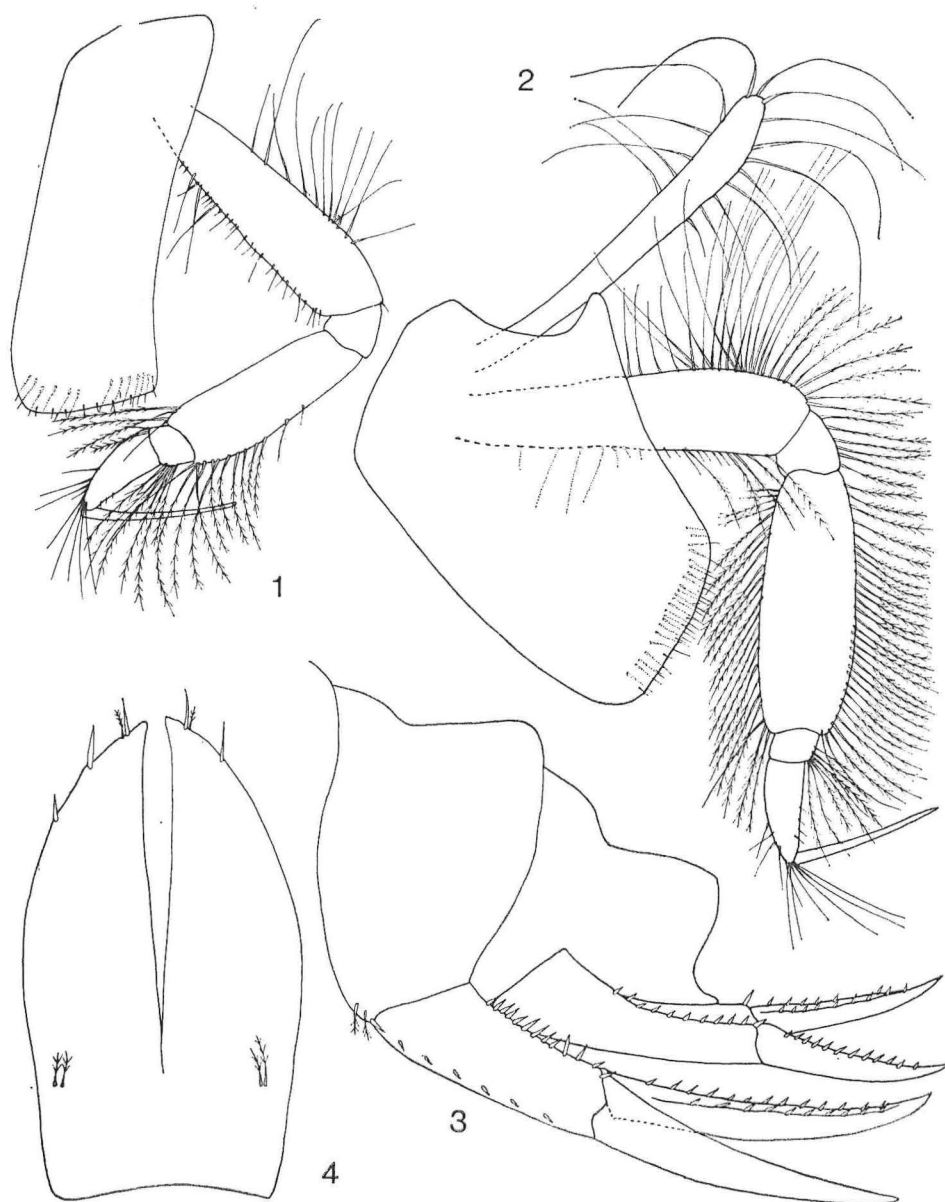


Fig. XXV. *Ampelisca tenuicornis* Lilj., coast of Crna Gora (P. 14), female 10 mm:  
 1 = pereopod 3; 2 = pereopod 4; 3 = urosome with uropods 1-2; 4 = telson.

straight posterior margin. Distal margin of epimera 2—3 and posterior margin of epimera 2 convex (fig. XXIV, 5).

Uropod 1: peduncle shorter than rami, bearing numerous short spines; inner ramus slightly longer than outer one, bearing numerous short spines at superior margin, outer ramus without spines (fig. XXV, 3).

Uropod 2: Peduncle longer than rami, rami subequal in length; peduncle and both rami bearing numerous short spines (fig. XXV, 3).

Uropod 3 much exceeding top of uropod 2. Peduncle shorter than rami, bearing 2 lateral spines. Rami lanceolate, bearing simple or plumose setae at their inner margins. Outer margin of outer ramus bearing short spines, outer margin of inner ramus smooth (fig. XXIII, 6).

Telson slender, much longer than broad, each lobe bearing 2—3 distolateral spines and one short plumose seta; one pair of plumose setae occurring in proximal portion of each lobe (fig. XXV, 4).

Gills ovoid, oostegites narrow (fig. XXV, 2).

Variability: unknown.

Material examined: Adriatic Sea: coast of Crna Gora: P. 14 (25 June, 1968), depth 90—100 m, 2 spec.

Localities cited from Adriatic Sea: Coast of Crna Gora (present work).

Loc. typ.: NE. Atlantic.

Distribution: E. Atlantic, Indian Ocean, Mediterranean and Adriatic Seas.

Ecology: *A. tenuicornis* was found in the Atlantic on 8—510 m depth. In the Mediterranean Sea, *A. tenuicornis* was found on sandy and muddy bottoms, on »vase terrigene cotiere«, in the Adriatic on depth of 90—100 m on muddy sand bottom.

Remarks. This species is characterized by the shape of the head and of coxa 4. The species *A. pussila* and *A. sarsi* also have a similar shape of coxa 4.

*Ampelisca typica* (Bate 1856)  
figs. XXVI—XXVIII

Syn.: *Tetromatus typicus* Bate 1856, p. 58, pl. 17, fig. 8, D4.

*Ampelisca typica* Boeck 1870/71, p. 222; Sars 1891, p. 165, pl. 57; Stebbing 1906, p. 109; Chevreux et Fage 1925, p. 84, fig. 76; Ruffo 1946, p. 50; Kaim-Malka 1969, p. 127, pls. 1—7; Kaim-Malka 1969/70b, p. 993.

*Ampelisca diadema* Bruzelius 1859, p. 87, pl. 4, fig. 16.

*Ampelisca diadema* (part.), Della Valle 1893, p. 479.

Description: Female: Body-length up to 9 mm, last metasomsegment weakly keeled, urosome stronger keeled. Urosomite 1 with very strong dorso-posterior tooth, urosomite 2 with lower dorsoanterior elevation (fig. XXVIII, 5).

Head moderately long, anterodorsal and anteroventral top of head of equal length; lower front edge straight and oblique up to half of head-length (fig. XXVI, 1). Corneal lenses 4 in number.

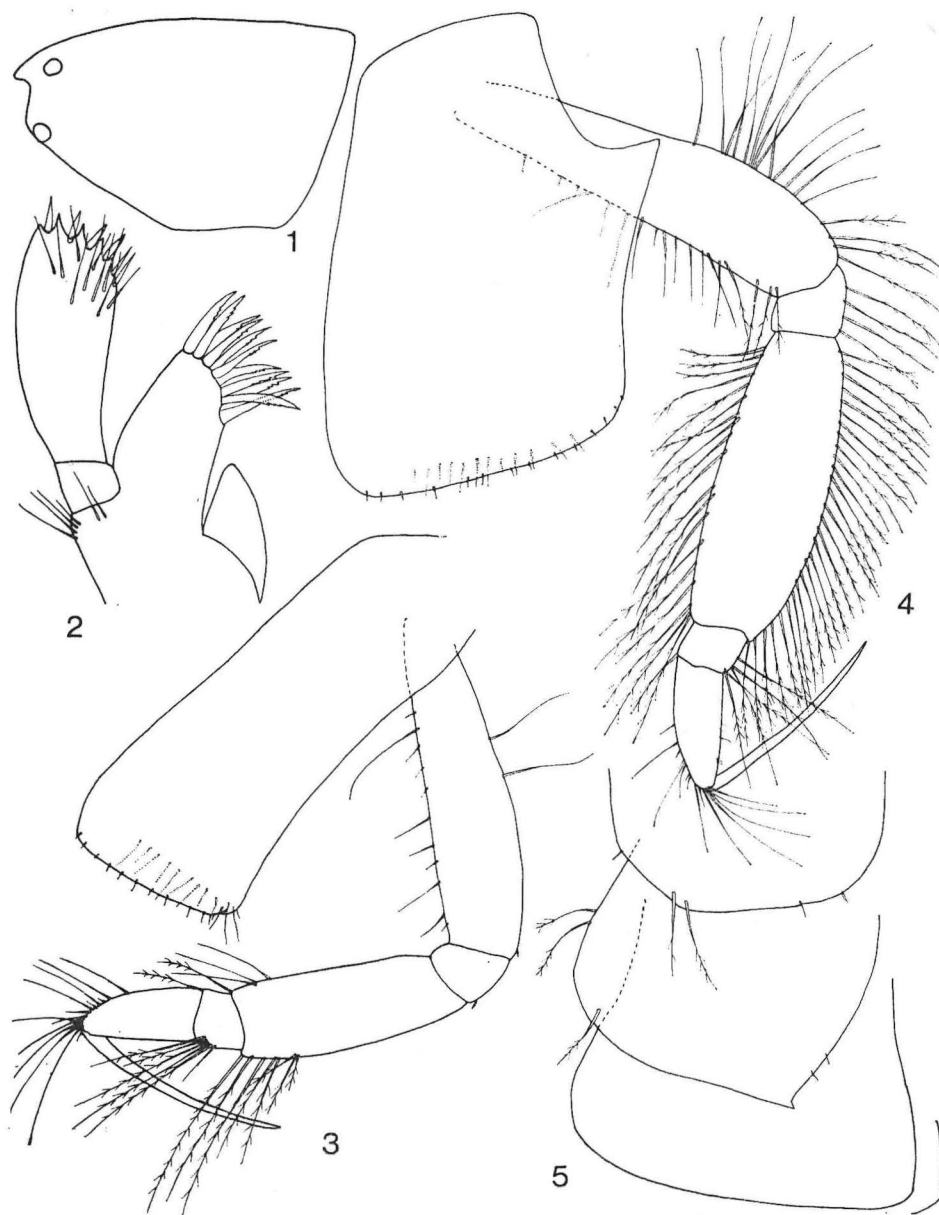


Fig. XXVI. *Ampelisca typica* (Bate), Portorož, female 8 mm: 1 = head; 2 = maxilla 1; 3 = pereopod 3; 4 = pereopod 4; 5 = epimere.



Antenna 1 short, as long as or shorter than peduncle of antenna 2. Peduncular article 1 ovoid, ped. article 2 much shorter than peduncular article 4 of antenna 2, flagellum up to 14-articulate (fig. XXVII, 1).

Antenna 2 slightly shorter than body, its peduncular articles 4—5 of subequal length, flagellum up to 34 articulate (fig. XXVII, 2).

Mouthparts typical. Inner lobe of maxilla 1 without setae (fig. XXVI, 2). Mandibular palp: second article dilated, slightly longer than third article; both articles bearing simple setae (fig. XXVII, 3).

Coxa 1 dilated, coxae 2—4 with nearly parallel lateral margins. Coxae 1—2 with plumose setae, coxae 3—4 without plumose setae at distal margin (figs. XXVI, 3, 4; XXVII, 4, 6). Coxae 5—7 short (fig. XXVIII, 1, 3, 4).

Gnathopod 1: article 2 bearing long setae at both margins, articles 4—6 bearing simple or pectinate setae at posterior margin. Article 6 shorter than article 5, bearing also setae on inner surface. Dactyl with several plumose setae at inner margin (fig. XXVII, 4, 5).

Gnathopod 2: article 5 narrower than article 2. Articles 5—6 with numerous simple and pectinate setae at posterior margin. Article 6 slender, narrower than article 5, bearing also simple setae at anterior margin, dactyl like that of gnathopod 1 (fig. XXVII, 6, 7).

Pereopod 3: article 2 weakly setose at both margins. Article 4 as broad as article 2, bearing several plumose setae in distal portion. Article 5 bearing several plumose setae at both margins. Article 6 bearing several simple setae at anterior margin, posterior margin smooth. Dactyl longer than articles 5—6 together (fig. XXVI, 3).

Pereopod 4: article 4 slightly broader than article 2. Posterior margin of articles 3—5 and distoposterior margin of article 2 bearing numerous plumose setae. Anterior margin of articles 4—5 and distoanterior margin of article 2 also bearing plumose setae; article 6 bearing only simple setae. Dactyl like that of pereopod 3 (fig. XXVI, 4).

Pereopod 5: article 2 with proximoposterior lobe, articles 3—6 slender, bearing small number of setae at anterior margin, dactyl short (fig. XXVIII, 1, 2).

Pereopod 6: article 2 with moderately dilated posterior lobe, articles 3—6 bearing long spines at anterior margin; dactyl like that of pereopod 5. Several setae occurring on inner surface of article 2 (fig. XXVIII, 3).

Pereopod 7 remarkably shorter than pereopod 6, its distoposterior lobe of article 2 reaching top of article 4. Article 3 longer than broad, articles 4—5 together as long as article 3. Articles 6 as long as articles 4—5 together, dactyl nearly as long as article 6, slender and recurved. Articles 3—6 slender, without any dilation or lobes. Posterior margin of articles 4—5 bear 1—2 plumose setae (fig. XXVIII, 4).

Pleopods with 2 retinacula each. Epimera 1 subrounded, epimera 2 with distoposterior tooth or corner; epimera 3 with subangular or angular distoposterior corner, occasionally pointed. Posterior margin of epimera 2—3 convex (fig. XXVI, 5).

Uropod 1: peduncle nearly as long as rami, bearing numerous marginal spines. Rami of subequal length, slender: inner ramus provided with short spines, outer one smooth (fig. XXVIII, 5).

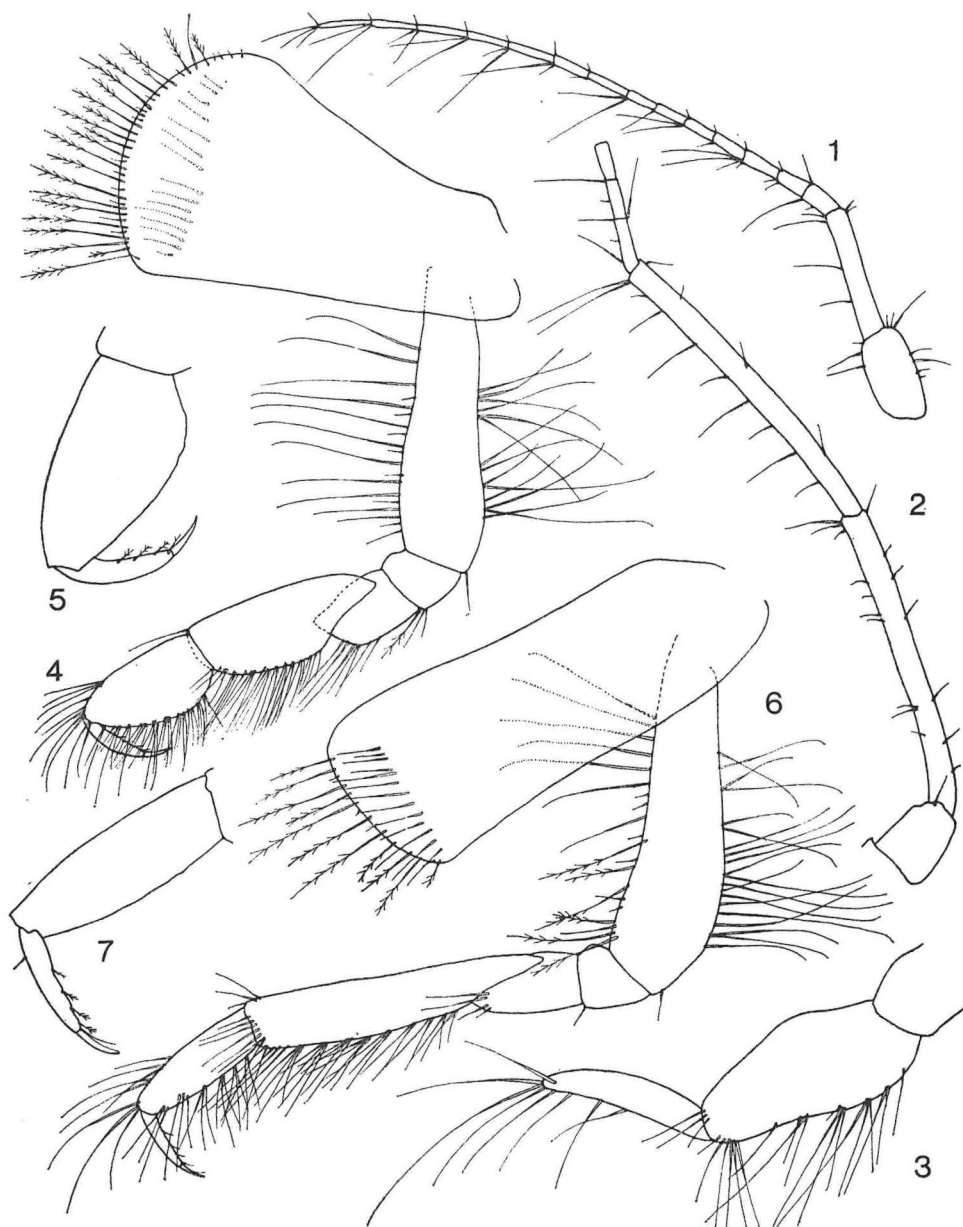


Fig. XXVII. *Ampelisca typica* (Bate), Portorož, female 8 mm: 1 = antenna 1; 2 = antenna 2; 3 = mandibular palp; 4, 5 = gnathopod 1; 6, 7 = gnathopod 2.

Uropod 2: peduncle longer than rami, bearing marginal spines. Rami of subequal length, bearing spines. Superior margin of rami of uropods 1—2 very fine crenellated (fig. XXVIII, 5).

Uropod 3: peduncle shorter than rami, bearing 2 lateral spines. Rami lanceolate: inner ramus broader, bearing plumose setae at inner margin and smooth at outer margin. Outer ramus narrow, bearing numerous spines at both margins (fig. XXVIII, 6).

Telson slender, remarkably longer than broad, bearing several spines on dorsal surface and at distolateral margin of each lobe; a pair of short plumose setae occurring in proximal portion of lobes (fig. XXVIII, 7).

Variability: The dorsoposterior tooth on urosomite 1 can be obtuse or pointed. The number of the setae at inner margin of inner lobe of uropod 3 is variable, as well as the length of antenna 1.

The stable characters are the presence of spines on outer ramus of uropod 3 and on telson, the shape of head and of pereopods 3—7.

Material examined: Adriatic Sea: Northern Adriatic: Rovinj, 19 July, 1965, depth 15—20 m, 3 spec. with *A. spinimana* and *A. sarsi*; *ibid.*, 27 Jan., 1969, one spec. (leg. D. Zavodnik); Bay of Piran, 9 Febr., 1973, one spec. (leg. D. Vrščaj); many localities near Portorož, Oct., 1971, depth 5—50 m, many spec. accompanied by *A. spinimana* and *A. diadema*.

Southern Adriatic: Boka Kotorska Bay: P. 2 (6 May, 1963), depth 10 m, one spec.; P. 4 (28 Jan., 1964), depth 15 m, 2 spec. with *A. sarsi*; *ibid.*, 31 March, 1964, 5 spec. with *A. spinimana*; P. 11 (31 March, 1964), depth 21 m, 5 spec. with *A. spinimana*; P. 17 (23 Sept., 1963), depth 33 m, 2 spec. accompanied by *A. spinimana*; *ibid.*, 28 Jan., 1964, one spec. with *A. diadema* and *A. spinimana*; *ibid.*, 3 April, 1964, 6 spec. with *A. spinimana*; P. 20 (13 April, 1964), depth 19.5 m, one spec. with *A. spinimana*; P. 21 (28 May, 1963), depth 19 m, one spec. with *A. spinimana*; P. 23 (28 May, 1963), depth 20 m, one spec. with *A. spinimana*; P. 25 (28 Sept., 1963), depth 32 m, 10 spec. with *A. spinimana*; *ibid.*, 28 Jan., 1964, one spec. with *A. spinimana*; *ibid.*, 13 April, 1964, 6 spec. with *A. spinimana*; P. 26 (28 Sept., 1963), depth 35 m, 2 spec. with *A. spinimana*; *ibid.*, 20 Jan., 1964, one spec.; P. 30 (28 Sept., 1963), depth 34 m, one spec. with *A. spinimana*; P. 32 (28 May, 1963), depth 12 m, 2 spec.; P. 34 (29 Sept., 1963), depth 14 m, 2 spec. with *A. spinimana* and *A. sarsi*; P. 36 (28 March, 1964), depth 27 m, one spec. with *A. spinimana*; P. 37 (28 June, 1963), depth 26 m, one spec.; P. 40 (28 March, 1964), depth 12 m, one spec. with *A. sarsi*; P. 42 (9 Oct., 1963), depth 38.5 m, 4 spec. with *A. diadema* and *A. spinimana*; P. 45 (29 May, 1963), depth 37.5 m, 2 spec. with *A. diadema* and *A. spinimana*; P. 47 (9 Oct., 1963), depth 22 m, 2 spec. with *A. sarsi*; P. 49 (3 April, 1964), depth 35 m, one spec. with *A. spinimana*; P. 58 (3 April, 1964), depth 18 m, one spec. with *A. spinimana*; P. 61 (3 April, 1964), depth 38 m, one spec. with *A. sarsi*; P. 63 (3 April, 1964), depth 16 m, one spec.; P. 65 (3 April, 1964), depth 37 m, 2 spec. with *A. spinimana*; P. 69 (6 June, 1963), depth 14 m, 2 spec. with *A. spinimana*; P. 75 (7 Oct., 1963), depth 36 m, one spec.; P. 78 (6 April, 1963), depth 30 m, one spec. with *A. diadema*; P. 84 (14 June, 1963), depth 44 m, one spec.; P. 86 (22 Jan., 1964), depth 39 m, one spec. with *A. sarsi*.

Coast of Crna Gora: P. 13 (25 June, 1968), near Petrovac, depth 80—88 m, sandy bottom, one spec.; P. 14 (25 June, 1968), depth 90—100 m, one spec. with *A. diadema*; P. 22 (25 Nov., 1968), depth 120 m, one spec.; P. 24 (19 June,

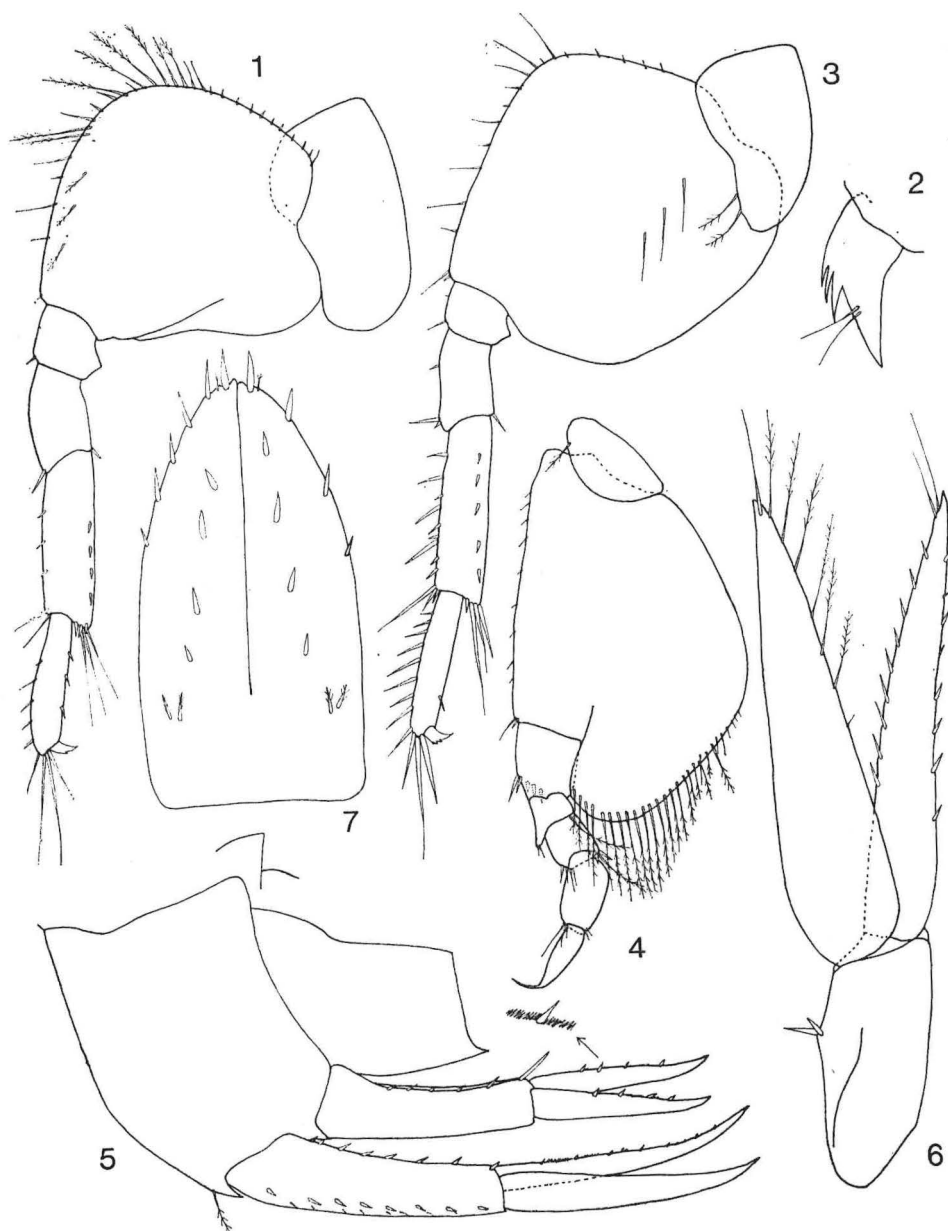


Fig. XXVIII. *Ampelisca typica* (Bate), Portorož, female 8 mm: 1, 2 = pereopod 5; 3 = pereopod 6; 4 = pereopod 7; 5 = urosome with uropods 1-2; 6 = uropod 3; 7 = telson.

1968), depth 100 m, sandy bottom, 5 spec. with *A. sp.*; near Mamula island by Hercegnovi, 27 Nov., depth 60 m, 3 spec. with *Haploops tubicola*; Budva near Miločer, 31 Aug., 1973, sandy bottom, depth 28 m, 10 spec. with *A. spinimana* and *A. diadema*; Ulcinj, Jan., 1974, muddy bottom, depth 12 m, one spec. with *A. spinimana* and *A. diadema*; vicinity of Ulcinj, depth 25 m, 30 Aug., 1973, 3 spec. with *A. sarsi* and *A. diadema*.

Localities cited from Adriatic Sea: Rovinj (Ruffo 1946).

Loc. typ.: NE. Atlantic.

Distribution: Atlantic, Mediterranean and Adriatic Seas.

Ecology: *A. typica* was found in the Mediterranean Sea on 8—150 m depth, in the biocenosis of »detritique cotiere«, of »detritique du large« and of »detritique envase«, usually on sandy and muddy bottoms.

This species was found in the Adriatic Sea on muddy and sandy bottom, on 5—120 m depth, sometimes accompanied by *A. sarsi*, *A. spinimana*, *A. diadema* or *Haploops tubicola*.

Remarks. No any ventral sternal hooks were observed in non adult or non ovigerous females.

#### Genus HAPLOOPS Liljeborg 1856

Diagnosis: Mouthparts: labrum, labium maxilla 1, maxilla 2 similar to those of *Ampelisca*. Maxilliped: inner and outer lobes well developed, palp 4-articulate: palpar article 4 small and attached in the middle of the article 3. Mandible: molar and pars incisiva well developed, palp 3 articulate, with all slender articles, articles 2—3 of subequal length or article 3 slightly longer than article 2.

Head short, obtuse anterally, coxae short, shorter towards coxa 4. Antennae 1—2 long and slender, with multiarticulate flagellum. Gnathopod 2 slightly longer than gnathopod 1, both gnathopods with all articles well developed: articles 6—7 of both gnathopods similar to each other in size. Pereopods 3—4 like those of *Ampelisca*. Pereopods 5—6 like those of *Ampelisca* but stouter. Pereopod 7 with short and broad articles 3—5, article 2 with parallel lateral margins, dilated, lobed; article 6 small and slender, dactyl not nail-shaped. Pleopods well developed. Uropods 1—3 with well developed both rami. Telson as long as broad or broader than long, deeply cleft. Gills simple, appear on thoracal segments 2—6. Sexual dimorphisme present.

Type species: *Haploops tubicola* Liljeborg 1856 (original designation).

Other species: There are 18 species known over the world; in the Mediterranean Sea only *H. tubicola* and *A. dellavallei* are known.

#### KEY TO THE SPECIES OF HAPLOOPS FROM MEDITERRANEAN AND ADRIATIC SEA

1. Head with 4 corneal lenses (eyes), antenna 1 remarkably shorter than body  
H. DELLAVALLEI
- Head with 2 corneal lenses (eyes), antenna 1 as long as or longer than body  
H. TUBICOLA

Haploops tubicola Liljeberg 1856  
figs XXIX—XXXII

Syn.: *Haploops tubicola* Liljeberg 1856, p. 135; Boeck 1876, p. 537, pl. 30, fig. 5; Pesta 1918, p. 34, fig. 8; Chevreux et Fage 1925, p. 87, figs. 78, 79; Bellan-Santini 1965, p. 3.

Description: Female: Body length of our specimens up to 9 mm. Urosome keeled, with dorsal shallow obtuse elevation on urosomite 1, bearing 4 dorsal long setae (fig. XXXII, 5).

Head as long as broad, short, its anterodorsal and anteroventral tops of head are of similar length, lower anterior margin of head oblique (fig. XXIX, 1); corneal lenses 2 in number (only upper pair of lenses present).

Antenna 1 almost as long as body. Peduncular article 1 is 2 times as long as broad, ped. article 2 slender, nearly 1.5 times as long as peduncular article 1, but longer than peduncular article 4 of antenna 2 (fig. XXXII, 1). Two proximal flagellar articles bearing aesthetascs as long as articles themselves; flagellum multiarticulate, bearing long setae.

Antenna 2 nearly as long as antenna 1, but slightly shorter than body; peduncular article 4 only slightly shorter than peduncular article 5, flagellum multiarticulate (fig. XXXII, 2).

Mouthparts typical. Labrum with distal concave margin, labium with well developed inner and outer lobes (fig. XXXII, 3). Maxilla 1: inner lobe with one distal plumose seta, outer with 11 spines bearing several lateral teeth each; palp 2-articulate, bearing several distal spines and plumose setae (fig. XXXII, 4). Maxilla 2: both lobes narrow, bearing numerous distal and subdistal setae. Maxilliped: inner and outer lobe well developed, palp 4-articulate, its distal article short and attached in middle of third palpal article (fig. XXX, 1). Mandible: molar and pars incisiva well developed, palp 3-articulate, its first article short, bearing one tuft of simple setae; articles 2—3 slender, bearing numerous long simple setae, article 3 slightly longer than article 2 (fig. XXXI, 1).

Coxa 1 longer, dilated distally, coxae 2—3 broader proximally than distally, coxa 4 with oblique distal margin. Coxa 1 remarkably broader than coxae 2—4, all coxae bearing several plumose setae at distal margin (figs. XXX, 2, 4; XXXI, 2, 3). Coxae 5—7 short (fig. XXIX, 2—4).

Gnathopod 1: article 2 broader distally than proximally, bearing numerous setae at posterior margin, and only several short setae at anterior margin. Articles 3—4 short, article 5 twice as long as broad, article 6 as broad as article 5, slightly shorter than article 5; articles 4—6 bearing numerous simple and pectinate setae at posterior margin. Article 6 bearing numerous long simple setae at distoanterior margin also (fig. XXX, 2, 3). Dactyl shorter than article 6, bearing several plumose setae at inner margin.

Gnathopod 2 slightly longer than gnathopod 1. Article 2 longer, bearing long setae at both margins. Articles 3—4 short, article 5 more than 2.5 times as long as broad; article 6 shorter than article 5, but as long as article 6 of gnathopod 1. Posterior margin of articles 4—6 bearing numerous plumose (pectinate) or simple setae. Pilosity of article 6 and shape of dactyl like that of gnathopod 1 (fig. XXX, 4, 5).

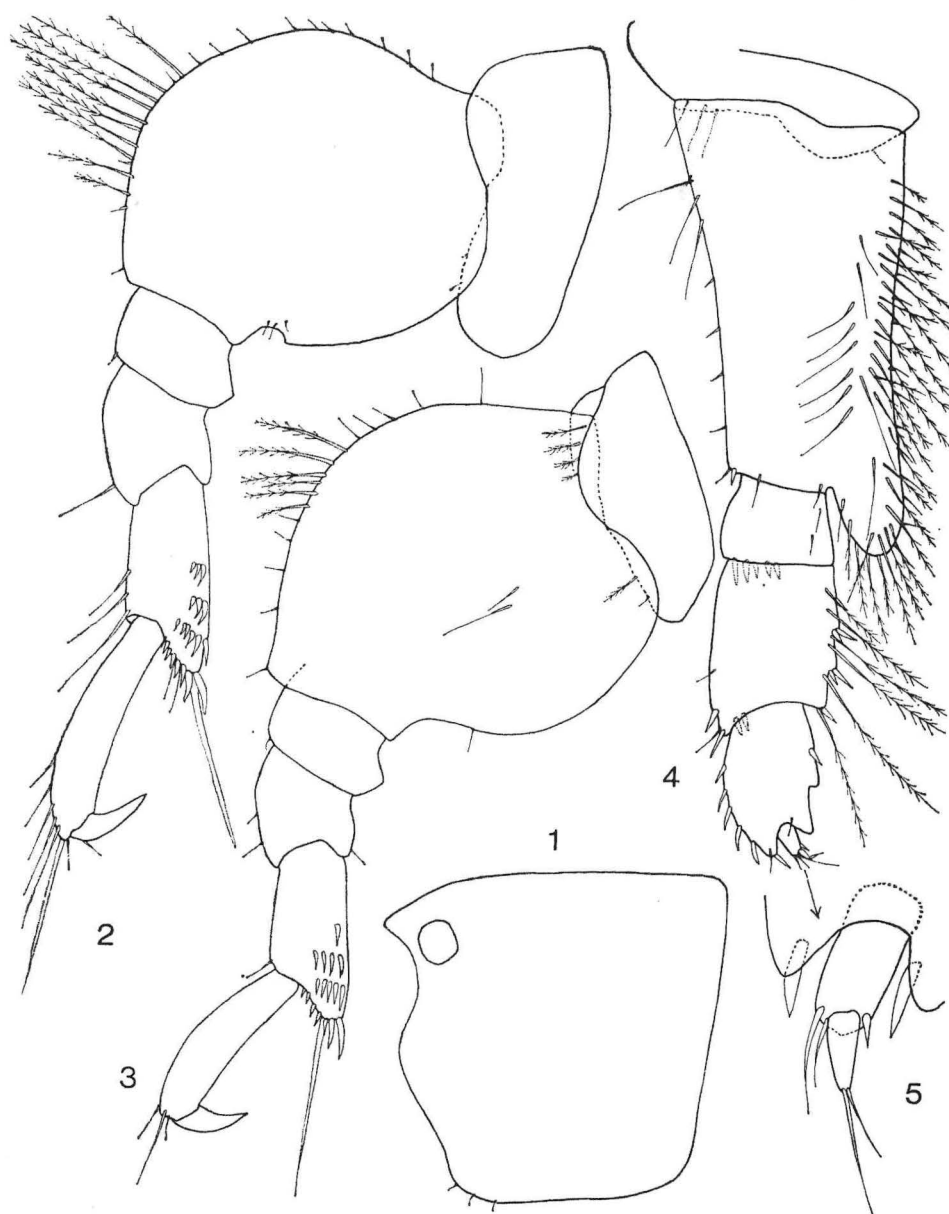


Fig. XXIX. *Haploops tubicola* Lilj., coast of Crna Gora (P. 7), female 9 mm: 1 = head; 2 = pereopod 5; 3 = pereopod 6; 4, 5 = pereopod 7.

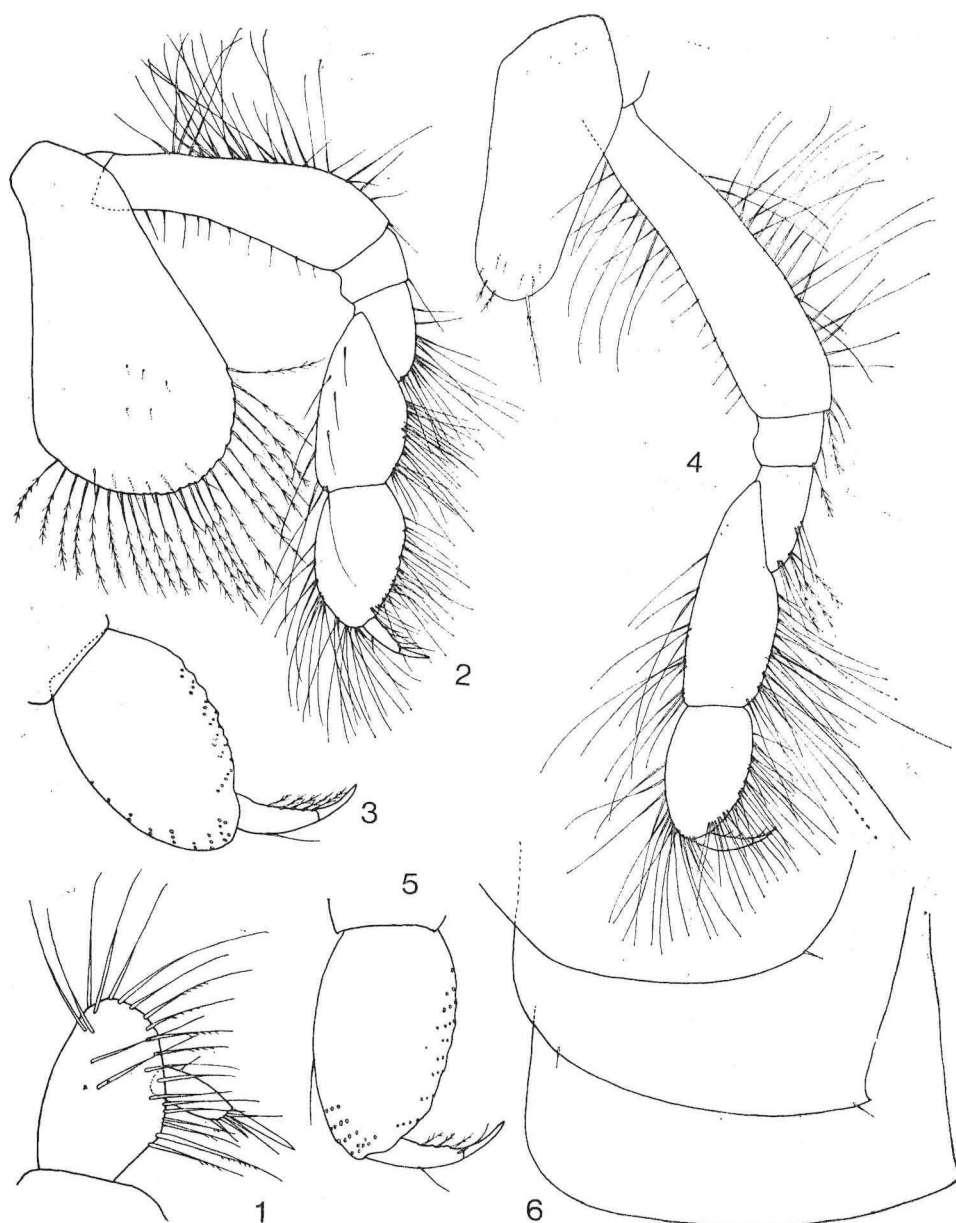


Fig. XXX. *Haploops tubicola* Lilj., coast of Crna Gora (P.7), female 9 mm: 1 = distal part of maxillipedal palp; 2, 3 = gnathopod 1; 4, 5 = gnathopod 2; 6 = epimere.



Pereopod 3: article 2 slender, bearing simple setae at both margins. Article 4 as broad as article 2, bearing plumose setae at posterior and distoanterior margin. Article 5 short, bearing plumose setae at both margins. Article 6 twice as long as broad, bearing single plumose setae at posterior and numerous simple setae at distoanterior margin, dactyl stout, rather shorter than articles 5—6 together (fig. XXXI, 2).

Pereopod 4: very similar to pereopod 3, but slightly longer, especially its article 4. Posterior margin of articles 4—5 bearing plumose setae. Several plumose setae occurring at distoanterior margin of article 4 and of distoposterior margin of article 2. Article 6 and dactyl like that of pereopod 3 (fig. XXXI, 3).

Pereopod 5: article 2 with dilated posterior lobe, with one distoposterior incision. Articles 3—5 stout, bearing single setae at anterior margin. Article 5 with distoposterior lobe and provided with numerous short spines at posterior surface. Article 6 longer than article 5, with several long spine-like setae on distoanterior top. Dactyl very short, nail-shaped (fig. XXIX, 2).

Pereopod 6: article 2 like that of pereopod 5 but without distoposterior incision, bearing several setae on inner surface. Articles 3—5 like that of pereopod 5, article 6 slender and longer than that of pereopod 5, dactyl short (fig. XXIX, 3).

Pereopod 7: article 2 dilated, with parallel lateral margins and with distoposterior lobe reaching distal end of article 3. Posterior surface and margin of article 2 covered by simple and plumose setae. Articles 3—5 stout: article 3 broader than long, article 4 longer than broad, bearing several plumose setae at spines at posterior margin. Article 5 longer than broad, as long as article 4, bearing several marginal short spines. Article 6 very small, longer than broad, bearing ovoid dactyl, shorter than article 1 itself (fig. XXIX, 4, 5).

Pleopods with 2 retinacula each. Epimera 1 with subrounded distoposterior portion. Epimera 2—3 with slightly convex ventral margin, with straight posterior margin and with angular or weakly pointed distoposterior corner (fig. XXX, 6).

Uropod 1: peduncle longer than rami, bearing several spines. Outer ramus smooth, twice as long as inner ramus. Inner ramus bearing 1—2 spines (fig. XXXII, 5).

Uropod 2: peduncle much longer than rami; rami subequal in length, bearing spines at superior margin (fig. XXXII, 5).

Uropod 3 strong and short, hardly reaching the top of uropod 2. Peduncle a little shorter than rami. Rami almost foliaceous, short; inner ramus bearing at both margins plumose setae, outer ramus bearing 2 spines at outer margin, and simple setae at inner margin, as well as plumose setae on distal top of the ramus itself (fig. XXXII, 6).

Telson broader than long, deeply cleft; each lobe bearing one distal spine and 3 plumose setae (fig. XXXI, 4).

Gills ovoid (fig. XXXI, 2).

Variability: the shape of epimera 2—3 rather variable.

Material examined: Adriatic: Coast of Crna Gora: P. 1 (27 Nov., 1970), depth 60 m, one spec. accompanied by *Ampelisca typica* (this locality is near Mamula island by Hercegnovi); P. 7 (26 Nov., 1970), 2 spec., depth 9 m; P. 15 (25 June, 1968), depth 200—220 m, one spec.

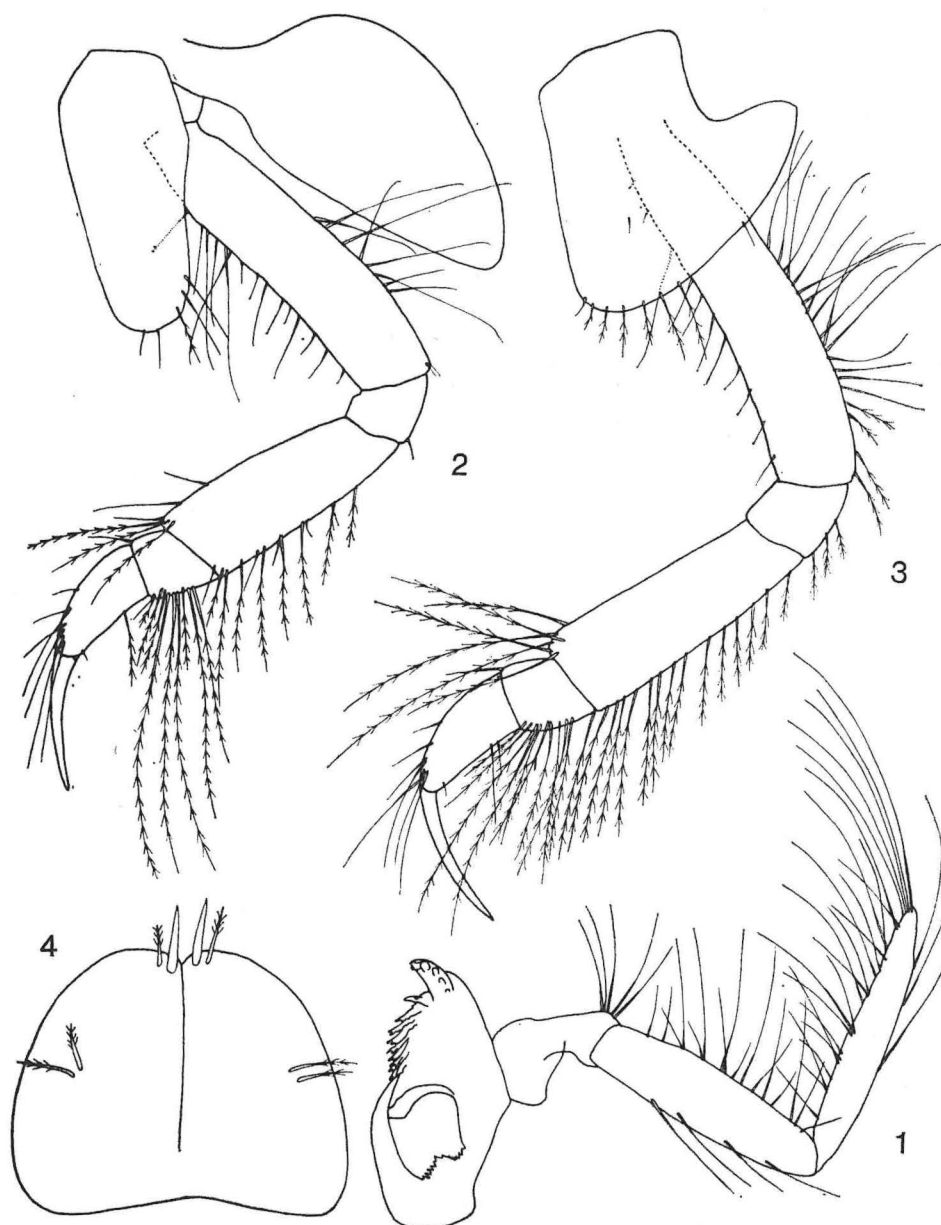


Fig. XXXI. *Haploops tubicola* Lilj., coast of Crna Gora (P. 7), female 9 mm: 1 = mandible; 2 = pereopod 3; 3 = pereopod 4; 4 = telson.

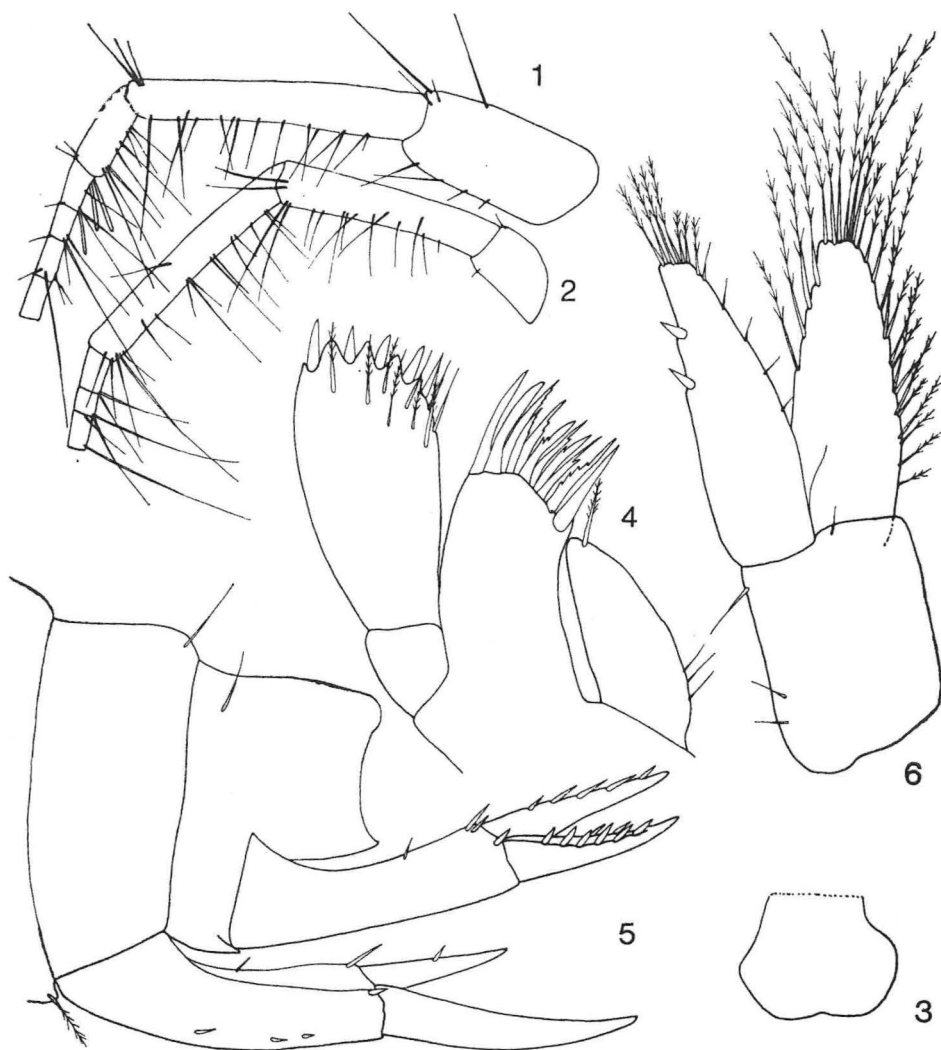


Fig. XXXII. *Haploops tubicola* Lilj., coast of Crna Gora (P. 7), female 9 mm: 1 = antenna 1; 2 = antenna 2; 3 = labrum; 4 = maxilla 1; 5 = urosome with uropods 1-2; 6 = uropod 3.

Localities cited from Adriatic Sea: 10°15' a.m. near Tremiti islands, on depth of 98 m (Pesta 1918), coast of Crna Gora (present work).

Loc. typ.: coast of Norway (NE. Atlantic).

Distribution: Atlantic, Pacific, Adriatic Sea.

Ecology: In Atlantic, *A. tubicola* was found on 10—1187 m depth. In the Mediterranean Sea this species was found on 190 m depth, on sandy-muddy bottom.

We found *H. tubicola* in the Adriatic Sea on muddy bottom, on 9—220 m depth, sometimes with *A. typica*.

Remarks: The length of antennae 1—2 is rather shorter than the length of antennae mentioned by other authors.

### CONCLUSION

The Ampeliscidae is represented in the Adriatic Sea with 2 genera and 10 species (in Mediterranean Sea 3 genera with 14 species).

The species *A. gibba*, *A. spinimana*, and *A. tenuicornis* are newly reported from the Adriatic Sea.

The species *Ampelisca diadema*, *A. sarsi*, *A. spinimana* and *A. typica* are very common in the Adriatic Sea, but the species *A. brevicornis*, *A. gibba*, *A. dalmatina*, *A. rubella*, *A. tenuicornis* and *Haploops tubicola* are not very common on the bottom in the Adriatic Sea.

The most variable species is *A. diadema* with numerous, local, very distinctive populations.

We have found only one endemic species of Ampeliscids in the Adriatic Adriatic Sea, *A. dalmatina*. We anticipate the finding of *A. serraticaudata* and perhaps *A. spinipes* also in Adriatic Sea, but at present they have not been reported from the Adriatic Sea.

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## OBITELJ AMPELISCIDAE JADRANSKOG MORA

(64. Prilog poznavanju Amphipoda)

Gordan S. Karaman

## KRATAK SADRŽAJ

Predstavnici obitelji *Ampeliscidae* su isključivo stanovnici mora. Iz cijelog svijeta je poznato 5 rodova sa ukupno preko 100 vrsta; u Sredozemnom moru su poznata 3 roda sa ukupno 14 vrsta, dok je u Jadranu sada utvrđeno 10 vrsta iz ove obitelji koji pripadaju dvijema rodovima.

Prvi podatak o predstavnicima ove obitelji u Jadranu daje Heller 1866 godine koji navodi vrstu *Ampelisca diadema* za otok Hvar. Kasnije Stalio (1877) i Carus (1885) ponavljaju Hellerov nalaz.

Graeffe 1880 godine navodi istu vrstu za Tršćanski zaljev, a Pesta 1918 godine navodi *A. diadema* i *A. sarsi* za Lagunu Venecije. Najzad Krapp-Schickel navodi vrste *A. diadema*, *A. rubella*, *A. sarsi* i *A. typica* za Rovinj, a Giordani-Soika (1950) navodi *A. diadema* i *A. sarsi* za Lagunu Venecije. Najzad Krapp-Schickel navodi (1969) *A. brevicornis*, *A. diadema* i *A. rubella* za okolinu Rovinja, a G. Karaman (1974) opisuje *A. dalmatina* sp. iz Boke Kotorske.

Na osnovu naših istraživanja ove obitelji u Jadranu, utvrdili smo 9 vrsta roda *Ampelisca* (*A. brevicornis*, *A. diadema*, *A. gibba*, *A. dalmatina*, *A. rubella*, *A. sarsi*, *A. spinimana*, *A. tenuicornis* i *A. typica*) kao i jednu vrstu roda *Haploops* (*H. tubicola*) na različitim područjima sjevernog i južnog Jadrana. Vrsta *A. dalmatina* je poznata za sada samo iz Jadrana, dok su vrste *A. spinimana*, *A. tenuicornis* i *A. gibba* sada prvi put nađene u Jadranu. Pored opisa i slika svake vrste, u radu je dat i ključ za određivanje rodova obitelji *Ampeliscidae* cijelog svijeta, kao i ključ za određivanje vrsta rodova *Ampelisca* i *Haploops* poznatih iz Sredozemnog mora i Jadrana.

