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REDESCRIPTION OF THREE NEW RECORDS OF ISOPODA (CRUSTACEA) ASSOCIATED WITH FOULING COMMUNITIES IN THE EASTERN HARBOUR OF ALEXANDRIA, EGYPT.

BY

SH. E. RAMADAN*; N. M. DOWIDAR; A. N. KHALIL AND S. M. ELSONBATY

*National Institute of Oceanography and Fisheries, Alexandria, Egypt

key words: Redescription, *Synidotia varigata, Paracerceis sculpta, Ischyromene lacazei,* Isopoda..

ABSTRACT

Through a survey on the isopods associated with the fouling community growing on the hard substrata (metal and concrete) in the Eastern Harbour of Alexandria, Egypt (E.H.) , eleven isopod species were identified. Of these , six species namely ***Synidotea variegata*** Collinge, 1917, ***Paracerceis sculpta*** (Holmes,1904), ***Ischyromene lacazei*** Racovitza, 1908, ***Paradella dianae*** (Menzies, 1962), ***Dynamene edwardsi*** (Lucas, 1849) and ***Sphaeroma serratum*** (Fabricius, 1787) are considered as new records to the E.H. ***S. variegata*** and ***P. sculpta*** are new records to Alexandria region. The occurrence of ***I. lacazei*** in the Eastern Mediterranean was confirmed by procuring both sexes of the species and recording its different growth stages from juvenile to mature stages in the E.H. during the present study. Redescription, habitat and distribution of ***S. variegata*** , ***P. sculpta*** and ***I. lacazei*** are given.

INTRODUCTION

Until now the marine isopods of Egypt are poorly known. The reasons for the paucity of isopod records are that many species of isopods are small and live in cryptic habitats, moreover there was a dearth of aids to the identification of isopods.

In Alexandria region, Larwood (1940) gave an account on the species composition of Isopoda collected by Steuer in 1933. Megally (1970) recorded one species of wood boring isopods ***Limnoria lignorium*** during his study on the ecology of marine fouling in the Eastern Harbour of Alexandria, Egypt (E.H.). Also, El-Nassry (1973) studied the Crustacea associated with fouling in E.H., and recorded 4 species of Isopoda. Atta (1985) reported 12 species of Isopoda from the littoral waters of Alexandria, Egypt. El-Komi (1991) recorded 4 species of Isopoda through his study on the ecology of marine fouling in the E. H. From the foregoing review, it is obvious that there has been no particular work devoted to the study of isopods in the E.H. A study on isopods associated with the fouling community growing on the hard substrata (metal and concrete) in the E.H. during 1983-1984 and in 1995 recorded eleven species. Six of which namely ***Synidotea variegata*** Collinge, 1917, ***Paracerceis sculpta*** (Holmes,1904), ***Ischyromene lacazei*** Racovitza, 1908, ***Paradella dianae*** (Menzies, 1962), ***Dynamene edwardsi*** (Lucas, 1849) and ***Sphaeroma serratum*** (Fabricius, 1787) are new to the E.H. ***S. variegata*** and ***P. sculpta*** are considered as new records to Alexandria region. Both sexes of ***I. lacazei*** and its different growth stages from juvenile to mature stages were procured through the present investigation. This confirms the presence of ***I. lacazei*** in the Eastern Mediterranean.

In view of the need for up to date monographic taxonomical accounts of most invertebrate groups from the Egyptian coasts, as well as, in view of lack of full description of some isopod species, the authors deem it desirable to include in the present article full illustrations of the above mentioned three records, their habitat and their distribution.

MATERIAL AND METHODS

Area investigated:

The Eastern Harbour (E.H.) of Alexandria (Fig.1) is a relatively shallow, protected, semi-enclosed, circular basin covering an area of 2.8 Km^2 (El-Sayed ***et al.***, 1980) and located between longitudes 29° 53′ and 29° 54′ 4″ E and latitudes 31°12′ and 31°13′ N. It is connected to the Mediterranean Sea through two openings namely El-Boughaz and El-Silsila.

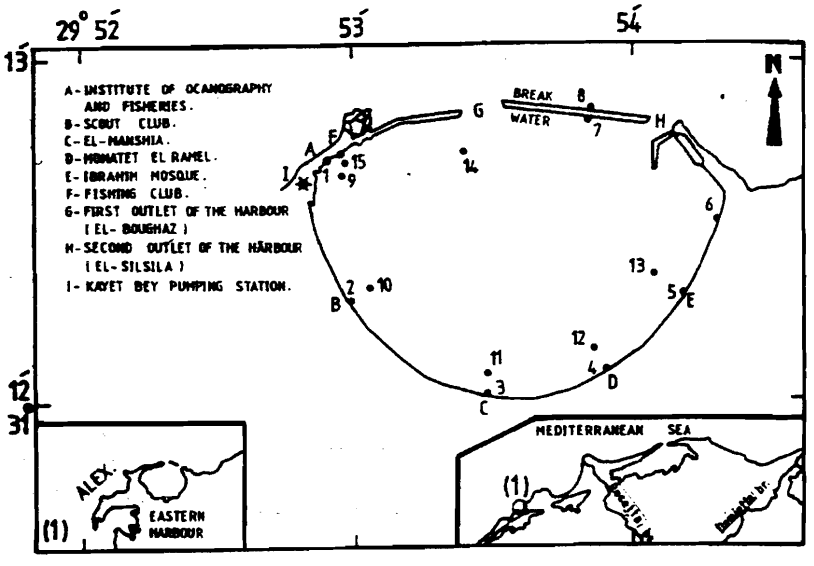

Fig. (1): Sampled stations in the Eastern Harbour.

Collection of samples:

Monthly samples were collected during the period from March 1983 to July 1984 from 15 stations involving concrete substrates (stations 1-8) and metal buoys (stations 9-15). In I995 one sample was collected from each station to the confirmability of the data.

Sorting and preservation:

The collected samples were sorted in the laboratory after washing several times through 0.5 mm mesh sieve. Isopod species were sorted out under binocular stereo microscope and preserved in 10% formaline with drops of glycerin.

Drawing:

Drawing was made by means of Wild zoom stereoscopic microscope provided with a special camera Lucida drawing tube.

RESULTS AND DISCUSSION

Order Isopoda
Suborder Valvifera
Family Idoteidae Mier, 1881
Subfamily Idoteinae Dana, 1852
Genus *Synidotea* Harger, 1878
***Synidotea variegata* Collinge, 1917**
(Figs. 2, 3)

Synidotea variegata Collinge, 1917, pp. 1-3, pl. II; Chilton 1924, p. 891, fig. 10, pl. IX, fig. 6; Barnard, 1935, p. 313; Barnard, 1936, p. 185, fig. 16; Barnard, 1940, p. 428.
Synidotea hirtipes Omer-Cooper, 1927, p. 205.

Description:

Body length range: from 6.5 to 11.8 mm.

Body oblong-ovate, female rather wider than the male, dorsal surface convex, almost smooth, cephalon wider than long, narrowing posteriorly, frontal margin straight, posteriorly there is a deep transverse furrow (Fig. 2).Eyes large and oval. Pleural plates of first segment with anterior and posterior angles rounded, in 2-4 anterior angle produced forward a little and posterior angle rounded, 5-7 truncate. The 3rd and 4th segments of the pereon are subequal and longer than the remaining. This feature is more apparent in the wider female than in male. Coxal plates not obvious from the dorsal side. Median dorsal pattern on pereonites 2-4 triangulate and on 5-7 more or less rounded. Pleon (Fig. 2) composed of a single segment with narrow lateral sutures indicating coalesced segment. Pleotelson (Fig. 2) with straight lateral margins, gradually narrowing posteriorly, posterior margin bluntly rounded with clear median notch.

Antennule (Fig. 2, A1) with the first joint slightly expanded second and third short and subequal; flagellum nearly two and half times the length of the last peduncular joint, setae in bunches. Antenna 2 (Fig. 2, A2) first and second joints subequal, together equal to the third, fourth rather longer and narrower, fifth longer than fourth; flagellum composed of 12-16 joints (according to stage of maturity) and small apical style. First maxilla (Fig. 2, Mx1) with outer lobe

terminating with 9 denticulate spines, inner lobe ending with 2 long setae spines. Maxillipede (Fig. 2, MxP) short and wide, palp 3-jointed, basal plate short but prolonged on the inner margin anteriorly, epipodite broad and excavate on the posterior margin, distal inner lobe rounded terminally.

The pereopods (Fig. 3, Pr1- Pr7); pereopod 1 with dactyl elongated, propodus tapering and curving distally, inner margin of carpus with simple denticles, carpus triangular. Pereopods 2-7 ambulatory, slender, inner margin of ischium- propodus thickly setose .

Uropod (Fig. 2) with lateral inner margin straight and setose, outer margin not straight with a denticulate spine.

The present record differs from the description and figures of Collinge, 1917 as shown in table(1).

Table (1): The differences between the present record of ***S. variegata*** and ***S. variegata*** as described by Collinge, 1917.

Character	Record of Collinge, 1917	Present record
☆The number of joints in the flagellum of A2 in mature specimens.	21	14-16
☆The number of denticulate spines in the outer lobe of 1st maxillae.	8	9
☆Spine on the outer posterior margin of uropod.	Short.	Long.

Synidotea seems to exhibit some difference in number of articles in flagellum; number of spines in the outer lobe of 1st maxillae and the colour of specimens, from place to place and according to maturation (Harger, 1880; Stebbing, 1902; Chilton, 1924 and Omer-Cooper, 1927). Accordingly, the above mentioned differences (Table 1) do not affect the taxonomical position of the species.

Habitat:

It was recorded from coral reefs (Collinge, 1917), amongst seaweed (Barnard, 1940). It seems that this species prefers the metal substratum (buoys) since all its previous records from Egypt were from the fouling assemblages on the metallic buoys in Port Said (Ramadan, 1986) and Lake Timsah (Shalla, 1991). In the present work it was found associated with the fouling assemblages on both concrete substratum (Stations 1 and 5) and metallic buoys (Stations 9 and 13) but the latter seems more favorable. It seems that the species flourishes in sewage polluted water (Stations 5 and 13).

Geographical distribution:

Local distribution:

Locally it was recorded from Port Said (Ramadan, 1986 and Rizk, 1988) and from Lake Timsah (Shalla, 1991).The present record of the species from the Eastern Harbour is the first record from Alexandria region. This record may indicate that the species has invaded the Eastern Mediterranean and has successfully migrated through the Suez Canal and established itself in the area as a new immigrant.

World distribution:

This is an **Indian Ocean** species from which it was recorded by various authors (Walker and Scott, 1903; Barnard, 1940; Larwood, 1954; Menzies and Miller, 1972). It was also recorded from the Red Sea and Suez Canal (Omer-Cooper, 1927).

Suborder Flabellifera
Family Sphaeromatidae
Group Eubranchiatae

Genus *Paracerceis* Hansen,1905
***Paracerceis sculpta* (Holmes,1904)**
(Figs. 4,5,6)

Dynamene sculpta Holmes, 1904.
Sergiella angra Pires, 1980, pp. 213-218, Figs. 1-24.

Description:

Body length range: Male from 4 to 6.5 mm, Female ranges from 2.5 to 5 mm.

Body of adult males (Fig. 4) cylindrical, hirsute. Color whitish-yellow with sparse brown chromatophores.

Head twice and half broader than long. Inter antennal process triangular; epistome subtriangular with the angles enlarged. Eyes large, roundish and lateral, dark brown in color.

Pereon (Fig. 4) nearly equal width from first pereonite posteriorly to pleotelson. Pereonite I, the widest one. Last pereonite and anterior pleonal segment subequal in size. Pleon with two incomplete sutures and with three tubercles.

Pleotelson (Fig. 4). deeply notched from the distal end, this notch with 3 large teeth, two laterals and one dorsal. In the front of notch the pleotelson arises as a dome. The dorsal surface of pleotelson with 3 prominent tubercles, 2 lateral and 1 median above the notch. Ventral margin of pleotelson with two ridges not closed in midline.

The body has many setae on each side. Body surface granulose especially 3 to 7 pereonite.

Antenna 1 (Fig. 4, A1) reaching to the end of the first pereonite and the flagellum with 8-10 articles with few setae on each side. Antenna 2 (Fig. 4, A2) longer than the first antenna basal articles slender, flagellum of 16-18 articles with tufts of setae.

Mouth parts. Mandible. incisor with 7 sclerotized teeth. Palp articles 2 and 3 with numerous plumose setae. First maxilla (Fig. 4, Mx1) exite with 9 teeth, endite with 4 combed setae. Second maxilla (Fig. 4, Mx2) endite with 5 combed setae, exite with two lobes, the outer lobe with 3 long setae, the inner lobe with 6 long setae. Maxilliped (Fig. 4, MxP) 5 articles, 2,3 and 4 with expanded lobes bearing numerous setae on its apex lateral, border of propodite with shorter spines.

Pereopods (Fig. 5, Pr1- Pr7) are nearly similar in structure, subchelate with a subsidiary tooth, each pereopod increases in length posteriorly from Pr1 to Pr7 with stout spines on articles 4,5 and 6. The numbers of spines differ from one to another.

Pleopods (Fig. 3, Pl1- Pl5) Pl 1 through 3 with numerous plumose marginal setae and typically 3 coupling hooks. The exopod of pleopod 2, in male with apical short appendix masculina. The exopod of pleopod 3, with two complete articles. Pleopods 4 and 5 with 8-10 branchial folds on both exopod and endopod.

The exopod of pleopod 5 with apical squamiferous protuberances high, medial squamiferous area low, lateral border setose with slight indentation distally, endopod densely setose along apical margin.

Uropod (Fig. 4) endopod shorter and broader than the exopod, with apical setae. Exopod very long (rod-like structure) curved with few scattered setae. Uropod rami in female subequal in size.

P. sculpta examined in the present study correlated closely to Rezig (1978) in Mediterranean. However some minor morphological differences were observed in the description and illustrations given by Rodriguez ***et al.*** (1992) (Atlantic). These differences were: 1) pattern of tubercles on the pleon, pleotelson and the exopod; 2) the size of tubercles in our specimens is smaller than that found on the Atlantic specimens.

Habitat:

It was found among the fouling organisms in the intertidal zone, shallow infralittoral rocky bottoms and on metallic buoys (Miller, 1968; Pires, 1980; Ramadan, 1986; Rizk, 1988, Shalla, 1991 and the present work) as well as on soft muddy bottom (Rodriguez ***et al.***, 1992) but the metallic substratum seems to be more favorable (present work).

Geographical distribution:

Local distribution:

Locally it was recorded from Port Said (Ramadan, 1986; Rizk, 1988) and Lake Timsah in the Suez Canal (Shalla, 1991). The present record is the first from the E. H. and Alexandria region.

World distribution:

This species was recorded from different localities in the **Atlantic Ocean**,

Mediterranean Sea, and **Eastern Pacific Ocean** (Richardson, 1905; Menzies, 1962; Miller, 1968; Schultz, 1969; Rezig, 1978; Pires, 1980; 1981; Forniz and Maggiore, 1985; Froniz and Sconfietti, 1985; Rodriguez ***et al.***, 1992).

Genus *Ischyromene* Racovitza, 1908
Ischyromene lacazei Racovitza, 1908
(Figs. 7,8,9)

Ischyromene lacazei Racovitza, 1908, p. 70; Holdich, 1968, p. 419 and fig. 12; Harrison and Holdich, 1982, fig. 1(o-s).

Description:

Body length range: from 2.2 to 4.9 mm.

Body more or less flattened with laterally extended coxal plate (Fig. 7). Pereonite 7 often longer than that of females with posterior margin markedly bilobed. The pleotelson (Fig. 7) with small round tubercles. The pleotelson apex with a simple groove. In Antennule (Fig. 7, A1) pedunclar articles, article 1equals both lengths of articles 2 and 3, flagellum of 10 articles, the articles 3 - 10 bearing tufts of setae. Antenna 2 (Fig. 7, A2) peduncle of 4 articles, the fourth is largest with 3 spines, the flagellum of 14-16 articles, mostly bearing tufts of setae.

Mandible (Fig. 7, Md) of usual sphaeromid form, the cutting edge with 2 spines and 4 teeth, the molar border with small spines.

Maxilliped (Fig. 7, MxP) palp articles 2 and 3 with pronounced setose lobes and article 4 with low setose lobe.

The first maxillae (Fig. 7, Mx1) the outer branch with 6 spines and the inner branch with 4 pennate spines.

The exopodite of second maxillae (Fig. 7, Mx2) is longer than the endopodite, carrying 4 spines on the terminal edge of both the outer and inner part, the endopodite is larger, carrying one spine in addition to setae on the terminal edge.

Pereopods (Fig. 8, Pr1-Pr7) robust, increasing in length posteriorly; merus, carpus and propodus with superior and inferior fringes of setae. All pereopods with bifid accessory unguis.

Pleopods (Fig. 9, Pl1- Pl5) basis of pleopod 1 bearing 3 internal hooks; exopod subovate, slightly longer than triangular endopod, inner half of endopod (that region not over lapped by exopod) indurate; both rami with long terminal plumose setae. Basis of pleopod 2, bearing 3 internal coupling hooks, endopod with appendix masculina, both rami with terminal and external plumose setae; which is narrow arising from interno-proximal of endopod, extending to apex of endopod, the apex of masculina is rounded, curved and bear two external subtropical teeth. Basis of pleopod 3 with 3 internal coupling hooks, the exopod is rectangular and smaller than the triangular endopod; both rami with terminal and external plumose setae. Pleopods 4 and 5 are typical form of the eubranchiatae.

Exopod of uropod (Fig. 7) with rounded apex extending just beyond apex of endopod, lateral margins of endopod sub parallel; broadly rounded apex extending just beyond pleotelsonic apex.

Description of female agrees with that of male except the presence of penis on the second pleopod in male.

Habitat:

The species occurs in the intertidal area with fouling organisms on the rocky substratum. It prefers the upper level of the shore between different species of macro algae (Arrontes and Anadon, 1990).IN the present work, the species was associated to fouling assemblages on both concrete substratum (Stations 1, 2, 3, 7) and metal substratum (stations 10 and 11). It seems that the species prefers concrete substratum in sheltered clear water (Station 7).

Geographical distribution:

Local distribution:

Atta (1985) recorded one juvenile specimen at Miami off Alexandria, otherwise the species was not recorded from other localities in the Eastern Mediterranean.

World distribution:
Atlantic Ocean: Bay of Biscay (Arrontes and Anadon, 1990).
Mediterranean Sea: Western Basin of Mediterranean (France: Racovitza, 1908 and Morroc: Monod, 1932). **Pacific Ocean:** Queensland (Harrison and Holdich, 1982).

Both the collections of 1983-84 and 1995 proved that ***S. variegata, P. sculpta*** and ***I. Lacazei*** were not able to build up large populations in the Eastern Harbour of Alexandria.

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Abbreviations used in the drawings of the species:

A_1 : First antenna.
A_2 : Second antenna.
Ax_1 : First maxilla.
Mx_2 : Maxilliped.
Mxp : Maxilliped.
Md : Mandible.
Pr_1 : First preopod.
Pr_2 : Second percopod.
Pr_3 : Third pereopod.
Pr_4 : Fourth pereopod.
Pr_5 : Fifth pereopod.
Pr_6 : Sixth pereopod.
Pr_7 : Seventh pereopod.
Pl_1 : First Pleopod.
Pl_2 : Second Pleopod.
Pl_3 : Third Pleopod.
Pl_4 : Fourth Pleopod.
Pl_5 : Fifth Pleopod.
V.v : Ventral view.
L.v : Lateral view.

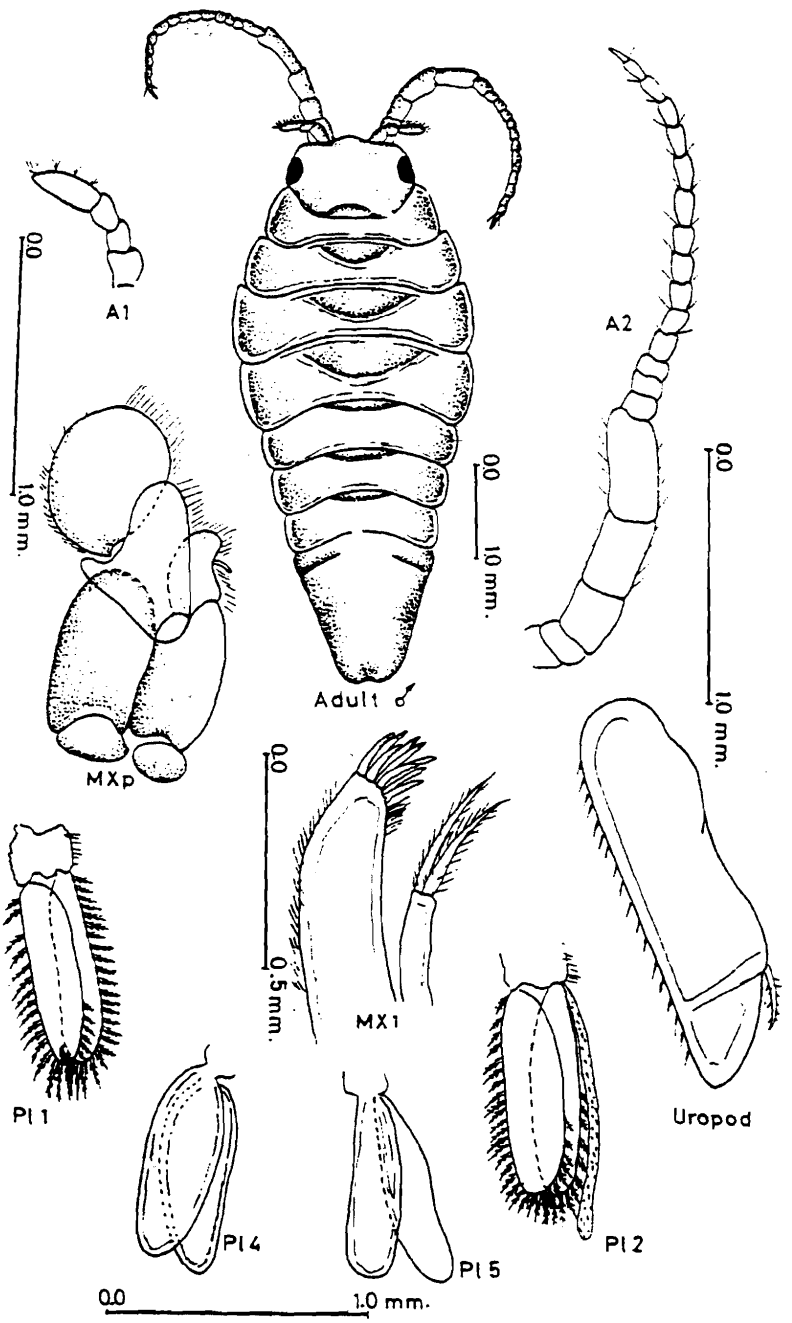

Fig. (2) Synidotea variegata

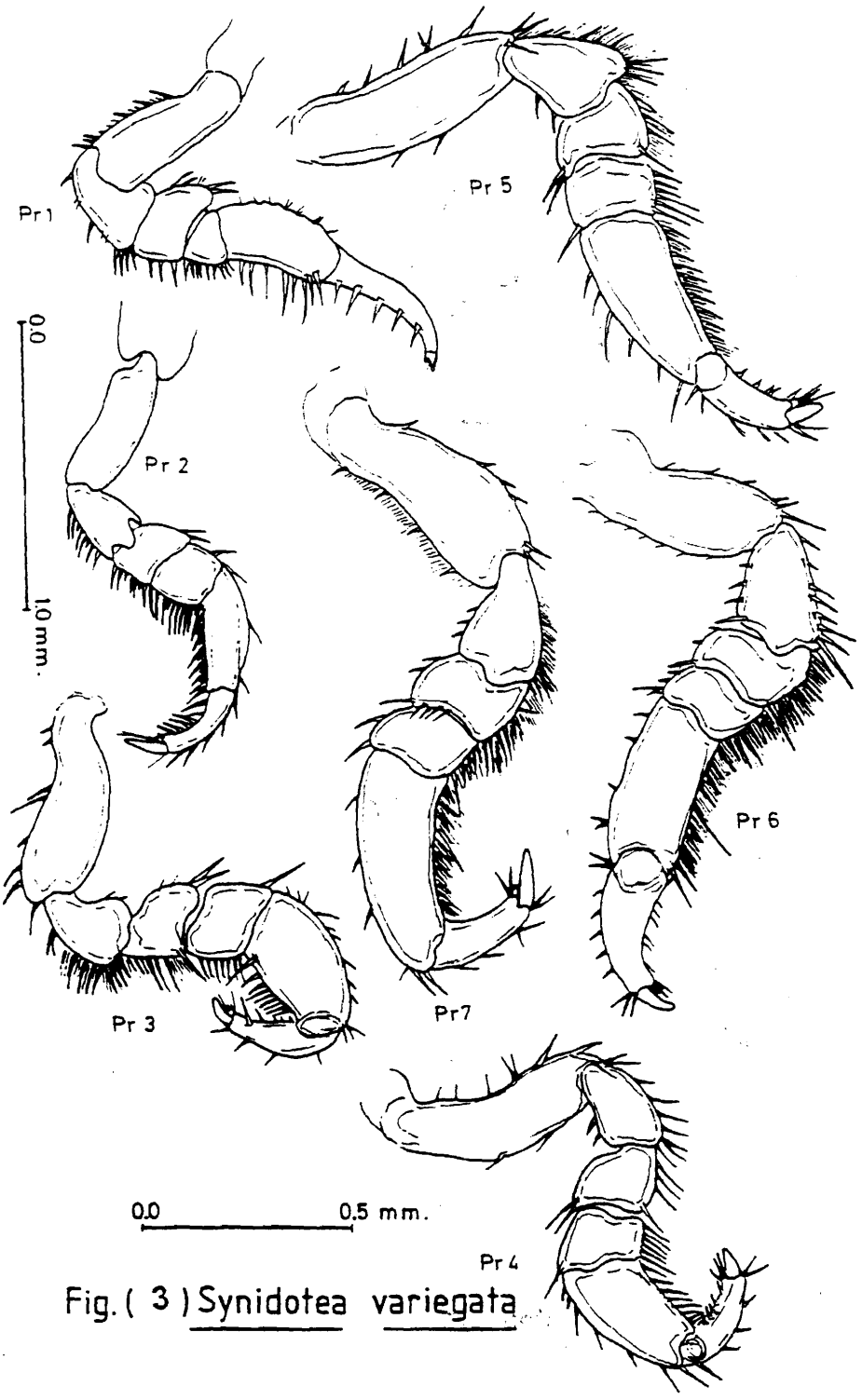

Fig. (3) Synidotea variegata

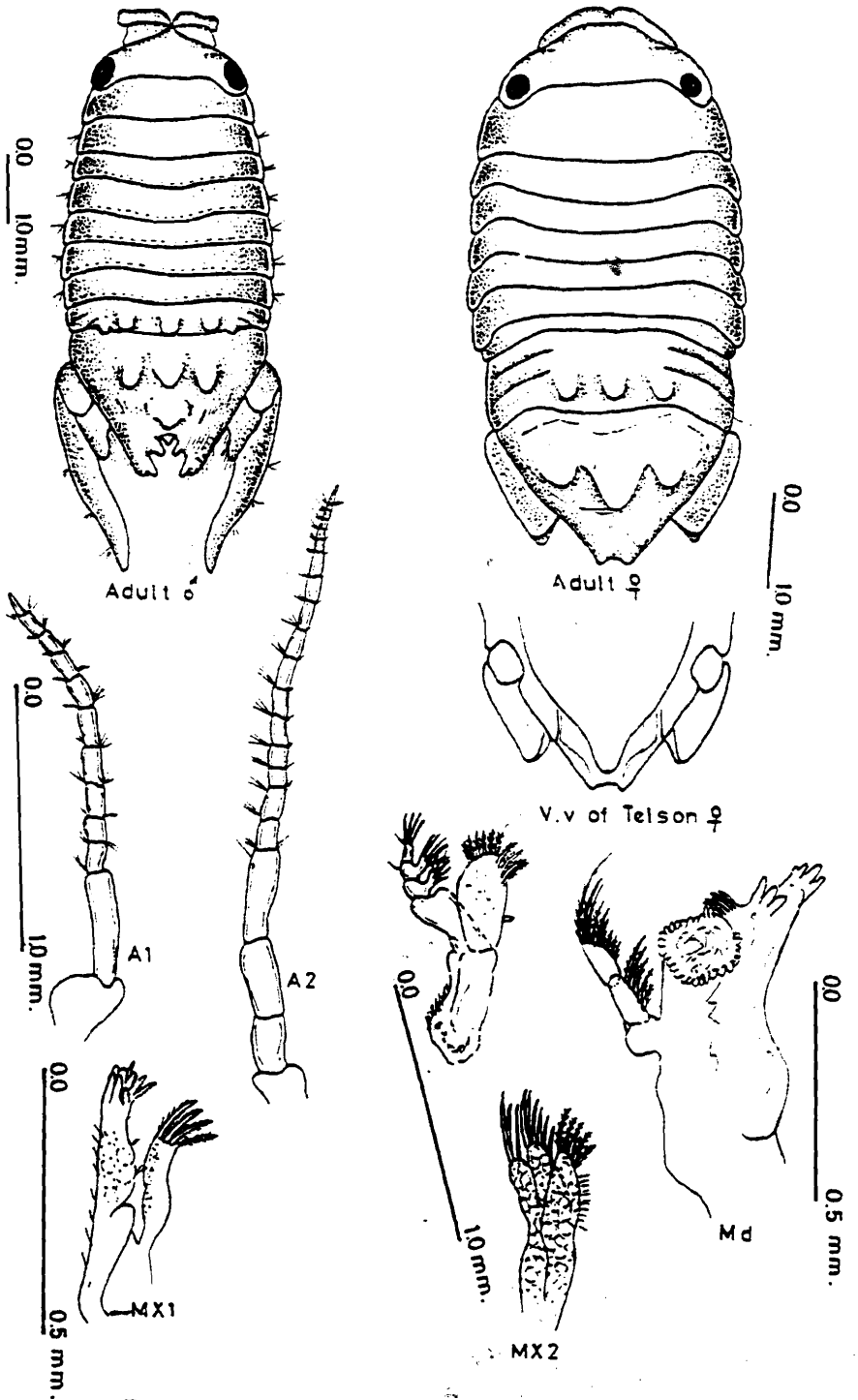

Fig. (4) Paracerceis sculpta

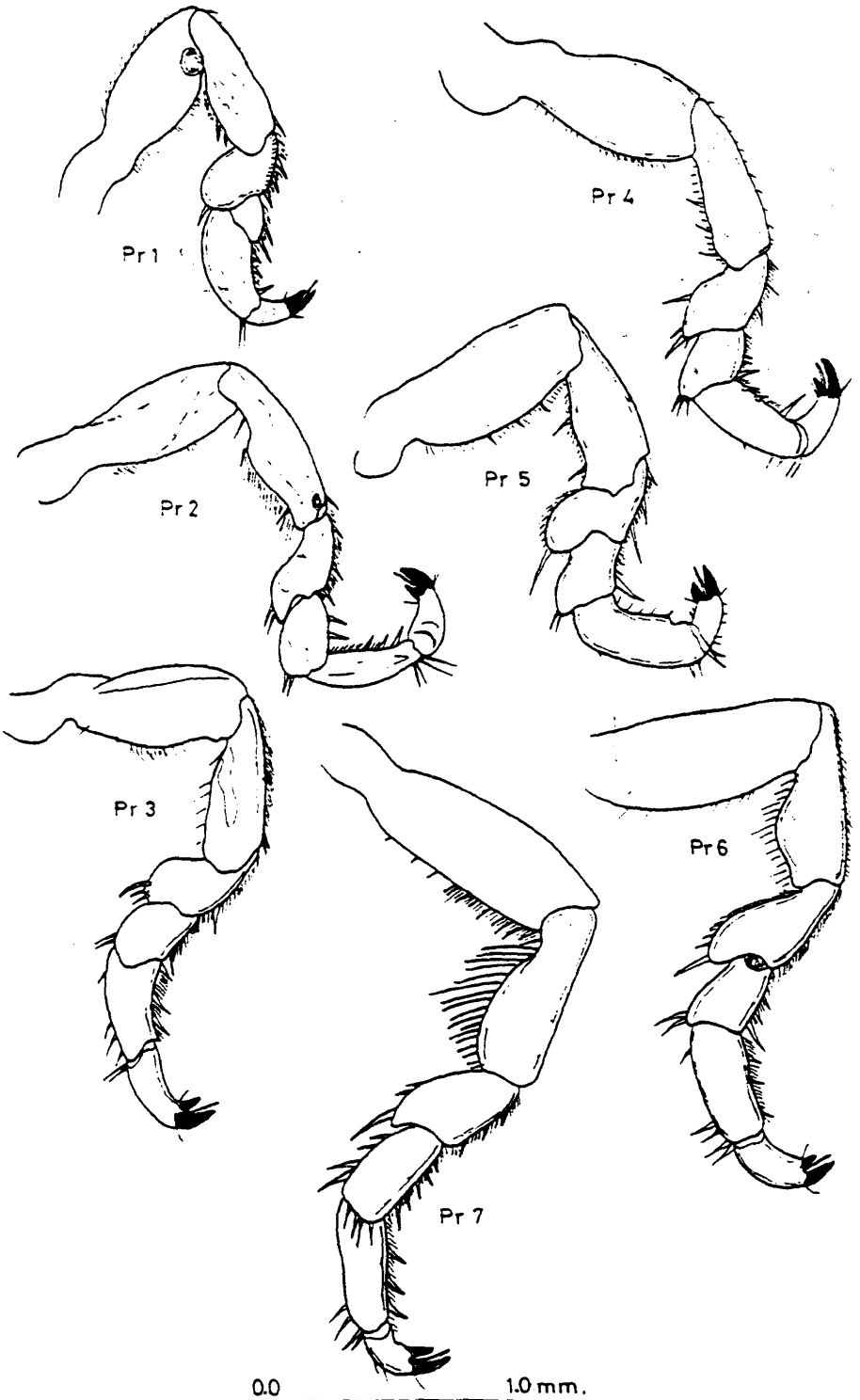

Fig. (5) Paracerceis sculpta

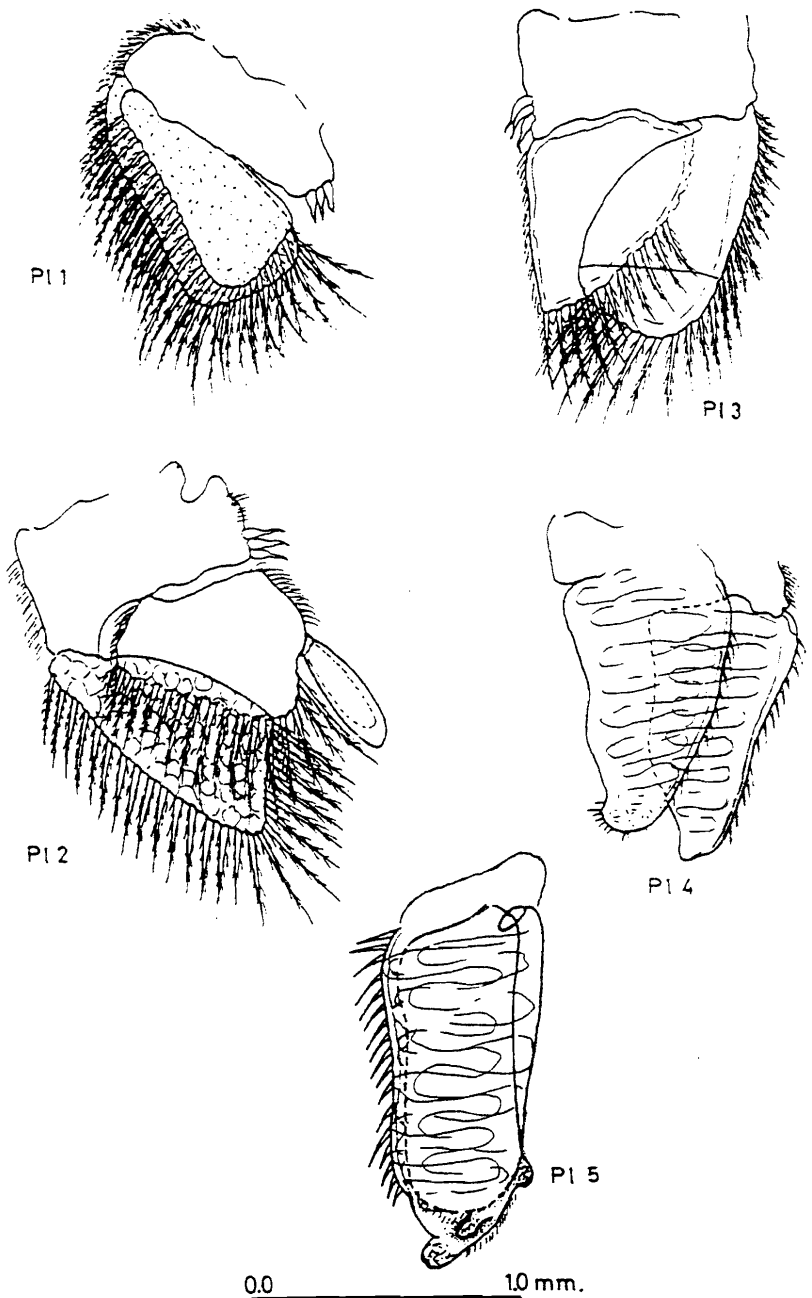

Fig. (6) Paracerceis sculpta

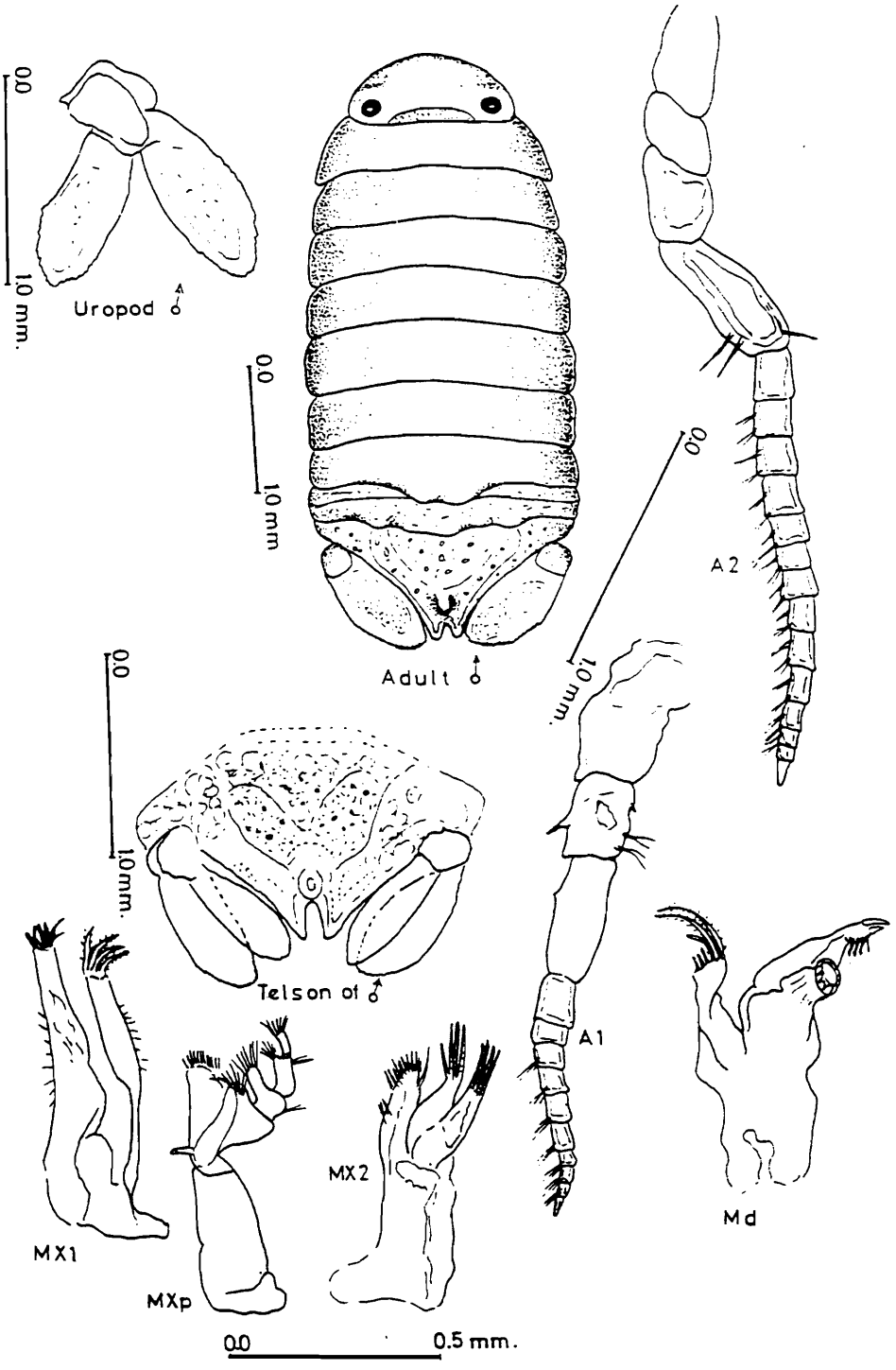

Fig. (7) Ischyromene lacazei

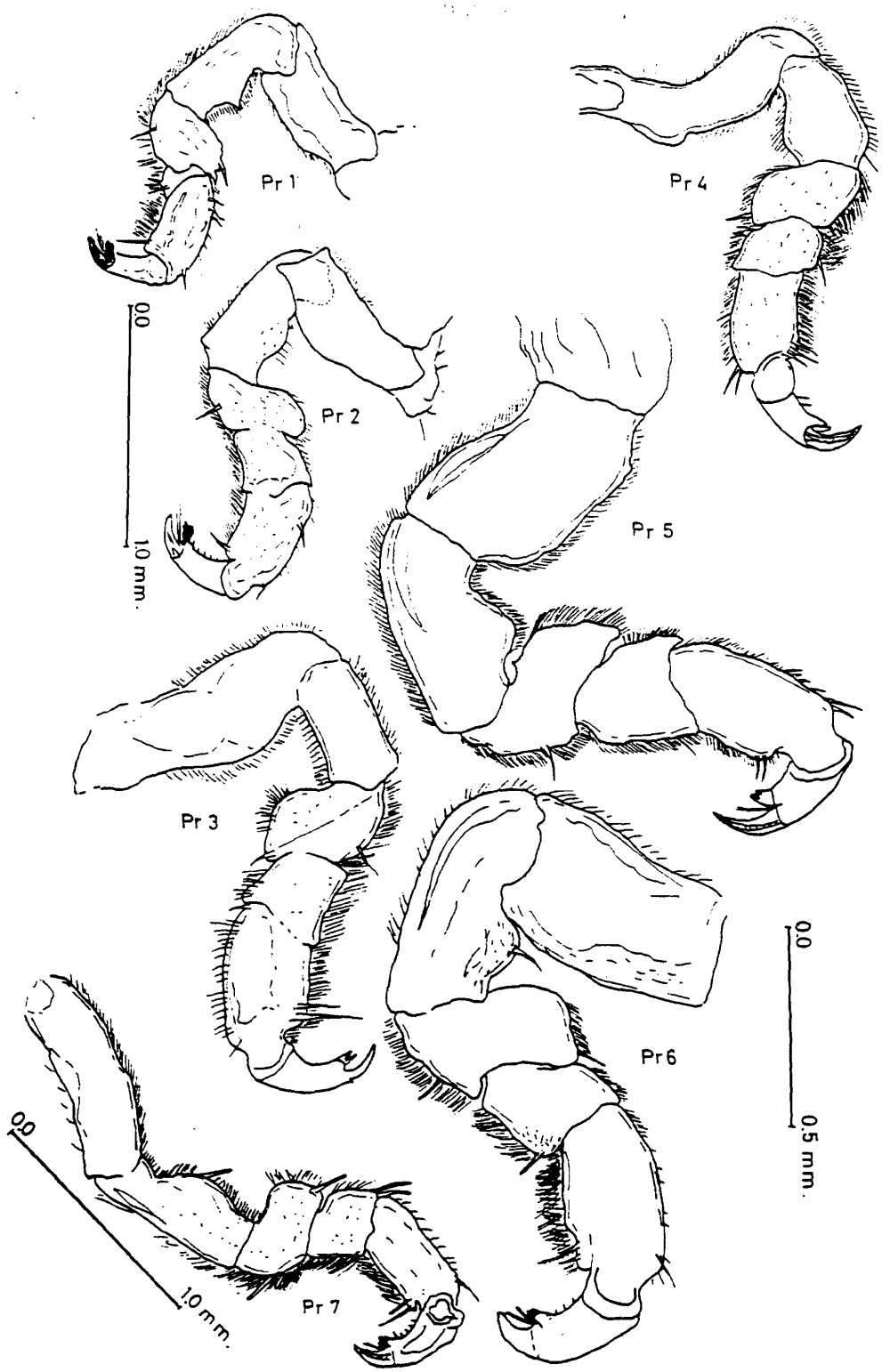

Fig.(8) Ischyromene lacazei

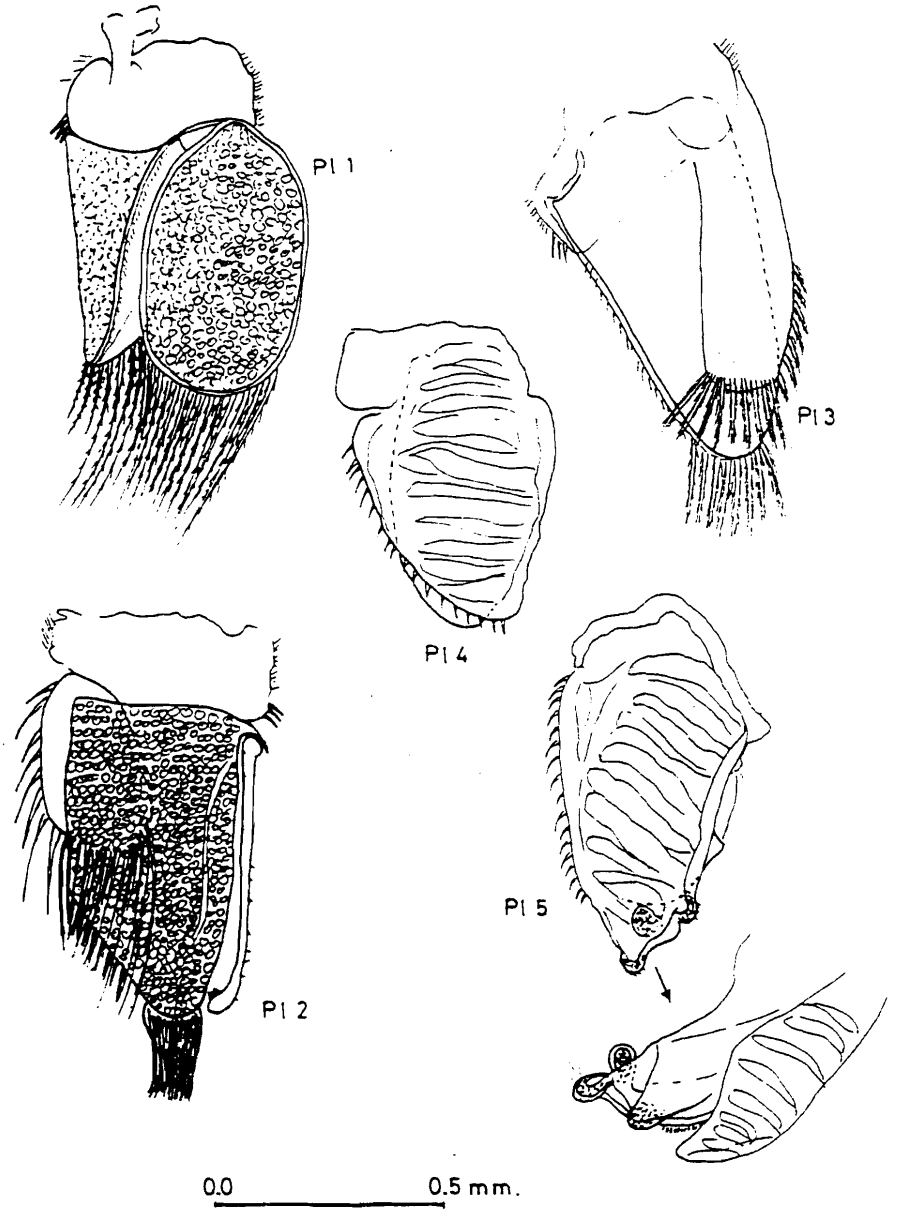

Fig. (9) Ischyromene lacazei