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Crustacea Decapoda: Deep-sea shrimps of the genus *Plesionika* Bate, 1888 (Pandalidae) from French Polynesia, with descriptions of five new species

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ABSTRACT

Recent extensive deep-sea trappings in French Polynesian waters produced 21 species of shrimps belonging to the caridean genus *Plesionika* Bate, 1888. Seven of these have been described in detail before (CHAN & CROSNIER, 1991). The present report mainly deals with the remaining 14 species and has many interesting findings. *P. ocellus* (Bate, 1888) is actually a senior synonym of *P. chacei* Hayashi, 1986 and the name *P. sindoi* (Rathbun, 1906) has to be revived. *P. macropoda* Chace, 1939 and *P. williamsi* Forest, 1964 are distinct species and both occur, sometimes even sympatrically, in the Atlantic and Indo-Pacific. Abundant material belonging to the poorly known species *P. nesisi* (Burukovsky, 1986) is found in French Polynesia, and this species is closely related to *P. laevis* (A. Milne Edwards, 1883) and *P. fenneri* Crosnier, 1986. Furthermore, *P. alexandri* (A. Milne Edwards, 1883) and *P. uncarinatus* (Borradaile, 1915) also belong to the "*P. laevis*" group which is intermediate between the typical *Plesionika* and *Heterocarpus*. The exact differences between *P. reflexa* Chace, 1985 and *P. ensis* (A. Milne Edwards, 1881) are not clear, and it appears that the posterior spine on the abdomen somite III can be recurved or straight in the specimens from the Indo-Pacific but is always straight in the Atlantic material. Five new species were found in French Polynesia: *P. erythrocyclus* sp. nov., which is near to *P. rostricrescentis* (Bate, 1888) and also distributed in Taiwan; *P. payeni* sp. nov., which is somewhat affiliated to *P. ocellus*; *P. picta* sp. nov., which is distinct in lacking antennal spine and without epipod on the pereopod IV; *P. poupini* sp. nov., which is very similar to *P. carsini* Crosnier, 1986; and *P. protati* sp. nov., which is closely related to *P. sindoi*. The other species reported from French Polynesia are *P. edwardsii* (Brandt, 1851), *P. martia* (A. Milne Edwards, 1883), *P. semilaevis* Bate, 1888 and *P. spinidorsalis* (Rathbun, 1906). Moreover, two probable postlarvae of *P. fenneri* Crosnier, 1986 were found and additional information is provided for this species.

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RÉSUMÉ

Crustacea Decapoda : Crevettes d'eau profonde du genre *Plesionika* Bate, 1888 (Pandalidae) de la Polynésie française. Description de cinq espèces nouvelles.

De nombreuses pêches au casier en eau profonde, faites en Polynésie française durant ces dernières années, ont permis de capturer 21 espèces de crevettes carides appartenant au genre *Plesionika* Bate, 1888. Sept d'entre elles ont déjà été décrites ou étudiées (CHAN & CROSNIER, 1991). Le présent travail considère les quatorze restantes et a permis plusieurs mises au point. C'est ainsi qu'il a été trouvé que *P. ocellus* (Bate, 1888) et *P. chacei* Hayashi, 1986, sont synonymes et que *P. sindoi* (Rathbun, 1906) doit être ressuscité. *P. macropoda* Chace, 1939, et *P. williamsi* Forest, 1964, sont bien distinctes et se trouvent toutes deux, parfois en sympatrie, dans l'Atlantique et dans l'Indo-Pacifique. De nombreux spécimens de *P. nesisi* (Burukovsky, 1986) ont été récoltés en Polynésie française et cette espèce se révèle très proche de *P. laevis* (A. Milne Edwards, 1883) et *P. fenneri* Crosnier, 1986, de même que *P. alexandri* (A. Milne Edwards, 1883) et *P. unicarinatus* (Borradaile, 1915), ces espèces formant un groupe qui présente des caractères intermédiaires entre la plupart des *Plesionika* et les *Heterocarpus*. Les différences exactes entre *P. reflexa* Chace, 1985, et *P. ensis* (A. Milne Edwards, 1881) n'ont pu être éclaircies de manière satisfaisante; il apparaît que l'épine postérieure du troisième segment abdominal peut être recourbée ou droite dans l'Indo-Pacifique, mais est toujours droite dans l'Atlantique. Cinq nouvelles espèces sont décrites de la Polynésie française : *P. erythrocyclus* sp. nov. qui est proche de *P. rostricrescentis* (Bate, 1888) et qui se trouve également à Taiwan, *P. payeni* sp. nov. qui présente des affinités avec *P. ocellus*, *P. picta* sp. nov. qui se caractérise par l'absence d'une épine antennaire et d'un épipode sur les quatrièmes péréiopodes, *P. poupini* sp. nov. qui est très semblable à *P. carsini* Crosnier, 1986, et *P. protati* sp. nov. qui est très proche de *P. sindoi*. Les autres espèces trouvées en Polynésie française sont *P. edwardsii* (Brandt, 1851), *P. martia* (A. Milne Edwards, 1883), *P. semilaevis* Bate, 1888, et *P. spinidorsalis* (Rathbun, 1906). Enfin, deux postlarves, appartenant vraisemblablement à *P. fenneri* Crosnier, 1986, ont été trouvées et des informations additionnelles sont fournies pour cette espèce.

INTRODUCTION

Species of the genus *Plesionika* Bate, 1888 are common caridean shrimps found in deep waters. Abundant material of this genus was also obtained during the recent extensive deep sea trapping in French Polynesian waters conducted by the Service Mixte de Surveillance Radiologique et Biologique [SMSRB] under the leadership of J. POUPIN (POUPIN, 1988, 1996; POUPIN *et al.*, 1990; POUPIN & RICHER DE FORGES, 1991).

Until now, only 2 main taxonomic works on the French Polynesian *Plesionika* have been published (CROSNIER, 1986a, CHAN & CROSNIER, 1991). They considered 7 species reported in details. The other species of the genus found in this area were not easy to identify and a lot of problems were encountered by several authors (CROSNIER, 1986a, POUPIN, 1988, 1996; POUPIN *et al.*, 1990; POUPIN & RICHER DE FORGES, 1991). The present study attempts to clarify these problems and reports all the *Plesionika* species known to date from French Polynesia. Altogether 21 species are recorded and five are described here as new to Science.

List of the *Plesionika* species found in French Polynesia

Most of the species of *Plesionika* can be fairly readily divided into groups showing strong affinities. The following species groups are used here in order to make comparisons and discussions of the various species clearer. They are listed in the order that, for various reasons, they are studied in the following pages.

"*P. carsini* Crosnier, 1986" group
P. carsini Crosnier, 1986
P. poupini sp. nov.

"*P. edwardsii* (Brandt, 1851)" group
P. edwardsii (Brandt, 1851)

"*P. ensis* (A. Milne Edwards, 1881)" group
P. reflexa Chace, 1985

"*P. laevis* (A. Milne Edwards, 1883)" group
P. fenneri Crosnier, 1986
P. nesisi (Burukovsky, 1986)

"*P. macropoda* Chace, 1939" group
P. macropoda Chace, 1939
P. williamsi Forest, 1964

"*P. martia* (A. Milne Edwards, 1883)" group
P. martia (A. Milne Edwards, 1883)
P. semilaevis Bate, 1888

"*P. narval* (Fabricius, 1787)" group
P. narval (Fabricius, 1787)
P. spinipes Bate, 1888
P. flavicauda Chan & Crosnier, 1991
P. rubrior Chan & Crosnier, 1991
P. curvata Chan & Crosnier, 1991

"*P. rostricrescentis* (Bate, 1888)" group
P. erythrocyclus sp. nov.

"*P. sindoi* (Rathbun, 1906)" group
P. sindoi (Rathbun, 1906)
P. protati sp. nov.

Affinities not clear
P. payeni sp. nov.
P. picta sp. nov.
P. spinidorsalis (Rathbun, 1906)

As shown in previous studies on this genus (e.g. CHAN & YU, 1991; CHAN & CROSNIER, 1991), knowledge of the coloration and morphological variations from many localities, including the types and topotypic material, is often essential in resolving intricate taxonomic problems. Since *P. narval* (Fabricius, 1787), *P. spinipes* Bate, 1888, *P. fenneri* Crosnier, 1986, *P. carsini* Crosnier, 1986, *P. flavicauda* Chan & Crosnier, 1991, *P. rubrior* Chan & Crosnier, 1991 and *P. curvata* Chan & Crosnier, 1991, have previously been described in detail, they are not studied further in the present work, except *P. fenneri* for which two postlarvae are found and look rather different from the adults.

MATERIAL AND METHODS

Unless otherwise stated, specimens from French Polynesia were mainly collected by trapping aboard the R. V. "*Marara*", of the SMSRB (detailed station data of "*Marara*" can be found in POUPIN, 1996) and deposited at the Muséum national d'Histoire naturelle, Paris (MNHN). Specimens from the National Taiwan Ocean University, Keelung (NTOU), the National Museum of Natural History, Washington, D.C. (USNM), The Natural History Museum, London (NHM) and the Zoological Museum of the Moscow State University (MSU) were also examined.

In the lists of material examined, the names of the vessels are in both italics and quotation marks. The names of the cruises are printed in capital letters.

The measurements provided are of carapace length (cl), which is measured dorsally from the orbital margin to the posterior margin of the carapace. The colour photographs provided for the species were taken by J. POUPIN of the SMSRB, except the figure 35 taken by the first author.

The synonymy provided for each species is mainly restricted to previous French Polynesian records and important works (e.g. original description and major taxonomic revisions related to the species).

SYSTEMATIC ACCOUNT

Plesionika poupini sp. nov.

Figs 1-2, 22

Plesionika carsini Crosnier, 1986a: 369 (in part). — POUPIN & RICHER DE FORGES, 1991: 211 (in part) [non Crosnier, 1986].

Plesionika aff. *carsini* - POUPIN *et al.*, 1990, pl. 3h [non Crosnier, 1986].

Plesionika sp. nov. 3 - POUPIN, 1996, pl. 4g.

MATERIAL EXAMINED. — *Specimens photographed.* **French Polynesia.** SMSRB (J. POUPIN coll.): **Tuamotu Islands.** **Fangataufa.** Stn 438, 22°12.3'S, 138°46.6'W, 410 m, 14.11.1994: 4 ♂ 20.3-23.8 mm, 1 ovig. ♀ 22.8 mm (MNHN-Na 13074). — **Maria.** Stn 37, 22°00.0'S, 136°12.0'W, 470 m, 24.11.1987, 2 ♂ 23.5 and 25.8 mm, 2 ♀ 16.2 and 23.9 mm (MNHN-Na 12519, transferred to USNM). — Stn 72, 22°00.0'S, 136°17.0'W, 430 m, 10.06.1988, 1 ♂ 24.5 mm, 1 ♀ 18.3 mm (MNHN-Na 13080). — Stn 241, 22°00.9'S, 136°12.5'W, 380 m, 30.05.1990: 2 ♀ 21.1 and 22.6 mm (MNHN-Na 13079). — **Rimatara.** Stn 151, 22°38.2'S, 152°49.7'W, 260 m, 11.03.1989:

1 ♂ 22.3 mm (MNHN-Na 13078). — **Rurutu**. Stn 149, 22°27.2'S, 151°23.3'W, 520 m, 10.03.1989: 2 ♂ 15.6 and 21.6 mm (MNHN-Na 13077).

Tubuai Islands. Raevavae. Stn 99, 23°55.0'S, 147°40.0'W, 450 m, 23.08.1988: 1 ovig. ♀ 26.6 mm (MNHN-Na 13122).

Specimens not photographed. French Polynesia. SMSRB (J.-L. CARSIN and J. POUPIN coll.): **Tuamotu Islands. Mururoa**. 350-600 m, 1984: 1 ovig. ♀ 22.2 mm (MNHN-Na 7718). — Stn 53, 21°53.7'S, 138°57.3'W, 510 m, 11.12.1987: 1 ♂ 21.1 mm, 1 ♀ 21.1 mm (MNHN-Na 12520). — Stn 164, 21°47.3'S, 138°55.6'W, 360 m, 21.06.1989: 2 ♂ 14.2 & 21.2 mm (MNHN-Na 13072). — **Makemo**. Stn 68, 16°36.0'S, 143°33.0'W, 510 m, 4.06.1988: 1 ♂ 24.0 mm (MNHN-Na 13073). — Stn 317, 21°53.8'S, 139°1.6'W, 500 m, 19.10.1990: 1 ♂ 20.7 mm (MNHN-Na 13075).

Tubuai Islands. Raevavae. Stn 100, 23°55.0'S, 147°40.0'W, 530 m, 24.08.1988: 1 ♂ 19.6 mm, 1 ♀ 18.4 mm (MNHN-Na 13076).

Below we give the list of the specimens belonging in *P. carsini* examined for comparison with *P. poupini*.

Specimens photographed. French Polynesia. SMSRB (J. POUPIN coll.): **Gambier**. Stn 311, 23°04.0'S, 135°01.6'W, 470 m, 11.10.1990: 1 ovig. ♀ 28.2 mm (MNHN).

Tuamotu Islands. Fangataufa. Stn 438, 22°12.3'S, 138°46.6'W, 410 m, 14.11.1994: 5 ovig. ♀ 22.3-27.3 mm, 3 ♀ 17.3-26 mm (MNHN). — **Maria**. Stn 72, 22°00.0'S, 136°17.0'W, 430 m, 10.06.1988: 1 ♂ 25.7 mm (MNHN). — **Mururoa**. Stn 39, 21°49.3'S, 138°46.5'W, 470 m, 2.12.1987: 5 ♂ 18.8-24.1 mm, 1 ♀ 17.8 mm (MNHN-Na 12518, transferred to USNM). — **Tureia**. Stn 36, 20°45.0'S, 138°31.0'W, 490 m, 24.11.1987: 2 ♂ 15.6 and 20.8 mm, 1 ovig. ♀ 22.4 mm, 1 ♀ 13.4 mm (MNHN-Na 12523).

Taiwan. Northeastern coast, Tai-Chi, I-Lan County, commercial trawler, about 300 m, 9.05.1989: 1 ♂ 18.8 mm (NTOU). — 11.07.1989: 1 ♂ 21.5 mm (NTOU, transferred to MNHN); 1 ♂ 21.1 mm, 1 ovig. ♀ 23.1 mm (NTOU). — 1.09.1989: 2 ♂ 20.0 and 21.2 mm (NTOU). — 5.03.1993: 1 ovig. ♀ 25.4 mm (NTOU). — **Su-Aou**, I-Lan County, commercial trawler, about 300 m, 17.06.1993: 1 ♀ 15.7 mm (NTOU).

Specimens not photographed. French Polynesia. SMSRB (J.-L. CARSIN and J. POUPIN coll.): **Tuamotu Islands. Makemo**. Stn 68, 16°36.0'S, 143°33.0'W, 510 m, 4.06.1988: 1 ♂ 24.4 mm (MNHN). — **Mururoa**. 450 m, 1984: 1 ovig. ♀ 24.7 mm, holotype (MNHN-Na 7714); 1 ovig. ♀ 23.5 mm, 1 ♀ 20.2 mm, paratypes (MNHN-Na 7717); 1 ovig. ♀ 23.4 mm paratype (MNHN-Na 7716). — 350-600 m, 1984: 1 ♂ 15.7 mm, allotype (MNHN-Na 7715); 1 ovig. ♀ 22.6 mm (MNHN-Na 7719). — Stn 164, 21°47.3'S, 138°55.6'W, 360 m, 21.06.1989: 1 ♀ 16.2 mm (MNHN).

TYPES. — The type series consists of the specimens photographed. The holotype is the ovigerous female (cl = 26.6 mm) collected in the Tubuai Islands at Raevavae (MNHN-Na 13122). The other specimens photographed are paratypes.

DIAGNOSIS. — Rostrum 1.28-1.61 (avg. 1.4) times length of carapace, only slightly recurved, overreaching the scaphocerite by half or 2/5 of its length, armed with 3-5 dorsal and 11-14 ventral fixed teeth. The dorsal teeth are on the basal 3/5 of the rostrum, the ventral along whole length. Five to 8 small post-rostral teeth, usually all

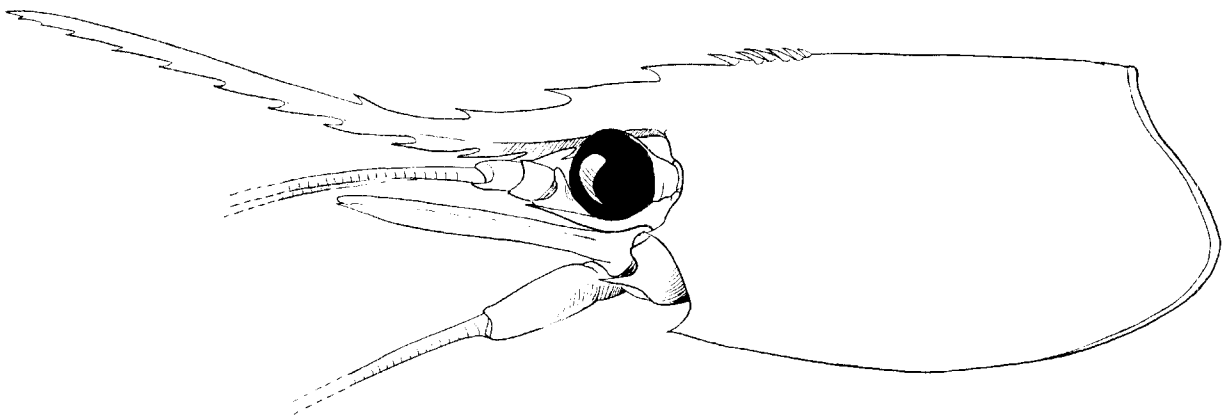


FIG. 1. — *Plesionika poupini* sp. nov., ovig. ♀ 26.6 mm, holotype (MNHN-Na 13122), French Polynesia, Tubuai, Islands, Raevavae, stn 99, 450 m: Lateral view of carapace.

movable. Eye sub-pyriform, maximum diameter about 1/5 carapace length, ocellus very clear. Stylocerite acute, just overreaching distal margin of the basal antennular segment. Scaphocerite nearly 2/3 length of carapace and about 4 times as long as wide, distolateral tooth falling slightly short of distal margin of blade. Maxilliped III and pereopods I-IV with an epipod. Penultimate segment of maxilliped III as long as distal one. Pereopods 2 subequal, with 19-21 carpal articles. Pereopods III overreaching the scaphocerite by lengths of dactyl, propodus, carpus and about 1/7 of merus; dactyl short, about 1/15 as long as propodus. Abdomen without posteromesial tooth or median dorsal carina on 3rd somite, 4th and 5th pleuron with a posteroventral tooth, 6th somite 1.65 to 1.75 times as long as maximum height and 1.55 to 1.65 longer than 5th; telson 1.45 to 1.55 longer than 6th somite, with 5 pairs of dorsolateral spinules, including pair adjacent to lateral pair of posterior spines.

REMARKS. — As in previous papers (CHAN & YU, 1991; CHAN & CROSNIER, 1991), coloration is here employed as an important character for the identifications of the species of *Plesionika*. However, the use of coloration poses a difficult dilemma in the case of *P. carsini* Crosnier, 1986. As pointed out by POUPIN *et al.* (1990), two completely different patterns are present in the material of "*P. carsini*" from French Polynesia and these sometimes even occur in the same catch. One form has the body reddish with red and white stripes, only the antennular flagella are banded with red and white, and a large red spot is present on the dorsum of abdominal somite III (fig. 21, hereafter referred to as the "striped" form). The eggs of this form are bright blue. The other form is orange, with many conspicuous white spots evenly distributed over the entire body while both the antennular and antennal flagella are banded with red and white (fig. 22, hereafter referred to as the "spotted" form). The eggs of this form appear to be mud-green, but this may due to the eggs being near to hatching. Fresh material of these two forms can be readily separated on board ship when they just come out of the water. However, their coloration quickly fades after preservation and they become almost indistinguishable morphologically.

	rostrum/cl	rostral formula	number of postrostral teeth movable	scaphocerite length/width	MxP3 penultimate segment/dis- tal segment	P II number of carpal articles	P III propodus/cl	P III propodus/ dactylus
French Polynesia								
<i>P. poupini</i>	1.28-1.61 (1.40) n=14	5-8+3-5/11-14 (6.3+3.9/12.5) n=14	5-7 (6.3) n=13	3.7-4.4 (4.0) n=14	0.84-1.04 (0.96) n=12	19-21 (20.3) n=13	0.72-0.98 (0.89) n=10	11.8-18.1 (14.6) n=10
<i>P. carsini</i>	1.05-1.39 (1.23) n=14	5-7+2-6/10-15 (6.2+4.5/12.7) n=14	5-7 (6.2) n=14	3.8-4.6 (4.1) n=14	0.91-0.98 (0.94) n=7	18-23 (19.8) n=8	0.83-0.93 (0.87) n=8	11.2-18.4 (14.4) n=8
Taiwan								
<i>P. carsini</i>	1.12-1.38 (1.23) n=4	5-8+2-4/6-19 (6.4+3.2/11.5) n=8	5-7 (6.3) n=8	3.7-4.0 (3.8) n=7	0.87-0.98 (0.95) n=6	17-24 (20.2) n=13	0.73-0.93 (0.82) n=3	8.5-11.7 (9.7) n=3

TABLE 1. — Comparison of the morphological characters between *Plesionika carsini* Crosnier, 1986 (striped form) and *P. poupini* sp. nov. (spotted form).

Only data from specimens photographed in colour were used. Numbers in brackets represent the average values.

Our best efforts to find morphological differences between these two forms were mostly unsuccessful. Of the 54 French Polynesian specimens available for the present study, 37 are accompanied by photographs showing their fresh coloration. Amongst them, 17 specimens belong to the spotted form, while the other 20 are of the striped form. Samples of both forms contain specimens of all sizes and sexes, including ovigerous females. However, only 28 (14 specimens for each form) are almost intact and have a complete rostrum. Their morphological characteristics, including the shape of the dactyli of the posterior pereopods, are essentially identical, except that the rostrum is slightly longer in the spotted form (Table 1). When rostral length is plotted against carapace length, the two forms fall quite well in two separate categories (fig. 2a). Figure 2a shows that, for specimens of similar sizes, the rostrum of the spotted form is always longer than that of the striped form. For example, the rostrum of adults is less than 1.3 times carapace length in the striped form, but usually more than 1.3 times as long as the carapace in the spotted form. Although the rostrum is relatively longer in small specimens (< 18 mm cl), it is 1.45 times the carapace length in the spotted form and less than 1.4 times as long as the carapace in the striped form.

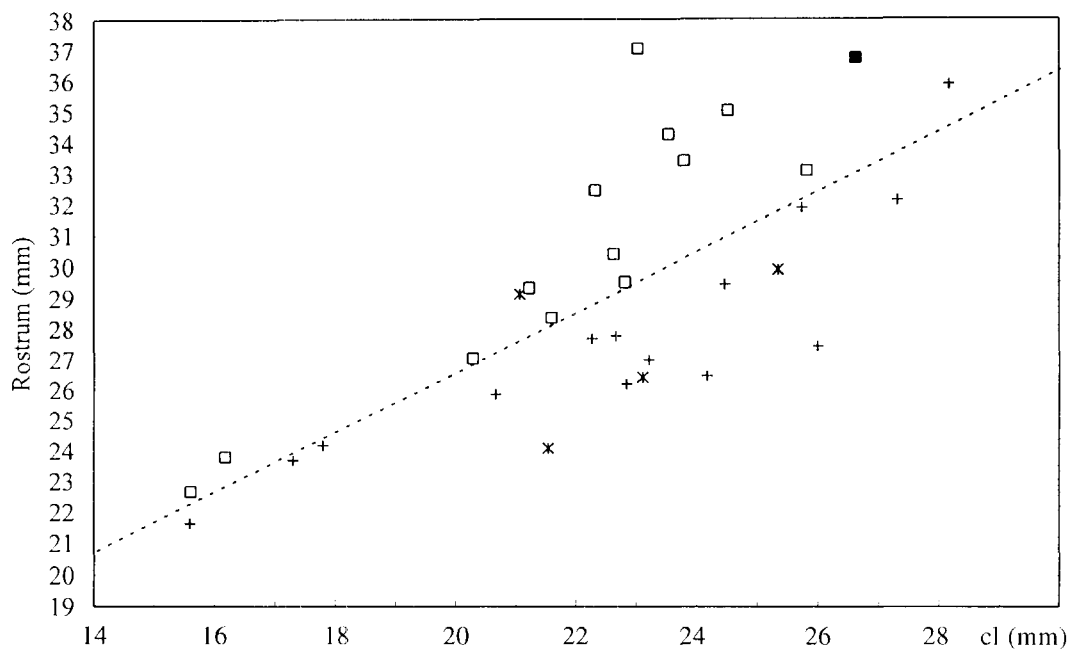


FIG. 2a. — Rostrum length/carapace length of the specimens assigned to *Plesionika carsini* Crosnier, 1986 (striped form) and *P. poupini* sp. nov. (spotted form) from specimens with colour photographs (unless otherwise stated, the specimens are from French Polynesia).

+, *P. carsini* with photo (striped form, n = 14). — □, *P. poupini* with photo (spotted form, n = 13). — *, *P. carsini* from Taiwan (n = 4). — ■, *P. poupini* with photo (holotype).

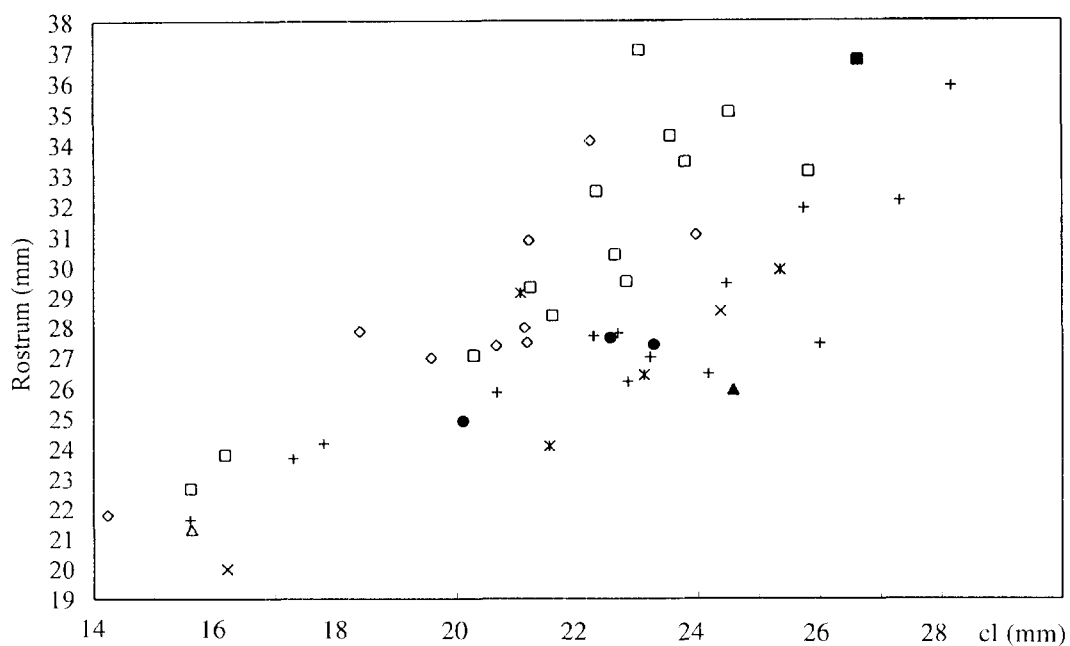


FIG. 2b. — Rostrum length/carapace length of the specimens assigned to *Plesionika carsini* Crosnier, 1986 and *P. poupini* sp. nov. in the present study (unless otherwise stated, the specimens are from French Polynesia).

+, *P. carsini* with photo (n=14). — *, *P. carsini* from Taiwan (n = 4). — ▲, *P. carsini* without photo (holotype). — △, *P. carsini* without photo (allotype) — ●, *P. carsini* without photo (paratypes). — x, *P. carsini* without photo. — □, *P. poupini* with photo (n=13). — ■, *P. poupini* with photo (holotype). — ◇, *P. poupini* without photo.

The fact that preserved material of the two forms can only be separated by a slight difference in the proportional length of the rostrum is not entirely satisfactory. The greatest difficulty is that the rostrum is often incomplete in the specimens of *Plesionika*, making positive identification impossible. However, the patterns of the two forms are so different that it is hard to believe that all the specimens could belong to the same species. It is significant that only the striped form is found in Taiwan (the Taiwanese material is somewhat redder, but this may be due to the fact that the specimens were already dead when taken from fishing pots). The general characters of the Taiwanese material are very similar to those of the French Polynesian striped form (Table 1); only the dactylus of pereopod III is somewhat longer (but this may be a general phenomena for species of this genus with a wide geographical distribution). Of the four Taiwanese specimens with a complete rostrum, three fall in the group of the French Polynesian striped form in fig. 2a. The fourth Taiwanese specimen (cl = 21.1 mm) with a relatively longer rostrum, also has an unusual high number of ventral rostral teeth (19), and is probably abnormal. Since no specimen with intermediate coloration has been found, and the difference in coloration appears to correlate quite well with the length of the rostrum, the striped and spotted forms are considered to have distinct specific status. Hence the rostral length of the types of *P. carsini*, as well as those specimens not accompanied by colour photographs, was plotted against carapace length to determine which forms they belong to (fig. 2b). All the types of *P. carsini* fall in the category of the striped form (only one non-type specimen [MNHN-Na 7718] listed in CROSNIER, 1986 falls in the range of the spotted form). Therefore, the name *P. carsini* should be used for the striped form and a new name, *P. poupini* sp. nov., is proposed for the spotted form.

SIZE. — Largest male and female 25.8 and 26.6 mm cl, respectively. Smallest ovigerous female 22.2 mm cl.

ETYMOLOGY. — This species is named after Joseph POUPIN of the SMSRB. Without his invaluable efforts in collecting many intact specimens and taking colour photographs of the fresh material, the recognition of this new species would probably have been impossible.

DISTRIBUTION. — At present known only from French Polynesia, at depths of 280-600 m.

Plesionika edwardsii (Brandt, 1851)

Fig. 23

Pandalus (Pontophilus) Edwardsii Brandt, 1851: 122 [type-locality: Mediterranean].

Pandalus (Parapandalus) longirostris Borradaile, 1900: 413, pl. 37, fig. 10 a-h [type-locality: New Britain].

Plesionika edwardsii - POUPIN, 1988: 28; 1996: pl. 3 h. — POUPIN *et al.*, 1990: 68, pl. 1 g. — CHAN & YU, 1991: 550, figs 2, 3 b.

MATERIAL EXAMINED. — **French Polynesia.** SMSRB (B. RICHER DE FORGES, J.-L. CARLIN and J. POUPIN coll.): **Tuamotu Islands. Mururoa.** 250 m, 4.11.1978: 2 ex. (MNHN-Na 7236). — 350-400 m, 4.04.1979: 5 ex. (MNHN-Na 7239). — 1984: 9 ex. — 1984: 11 ex. — Stn 16, 21°50.0'S, 138°57.2'W, 390 m, 11.12.1986: 14 ex.

Tubuai Islands. Raevavae. Stn 100, 23°55.0'S, 147°40.0'W, 450 m, 24.08.1988: 1 ex. — **Rapa.** Stn 101, 27°36.0'S, 144°16.0'W, 280 m, 26.08.1988: 4 ex. — Stn 430, 27°36.2'S, 144°16.3'W, 290 m, 17.08.1991: 5 ex. — **Tubuai:** 400 m, 13.05.1979: 23 ex. (MNHN-Na 7254). — 200 m, 14.05.1979: 20 ex. [MNHN-Na 7243]. — 300 m: 88 ex. [MNHN-Na 7244]. — 300 m: 6 ex. (MNHN-Na 7238, transferred to USNM). — 300 m: 1 ex. (MNHN-Na 7241).

Society Islands. Tahiti (Vairao). October 1978: 5 ex. (MNHN-Na 7237).

DIAGNOSIS. — Detailed description and colour pattern of this species can be found in CHAN and YU (1991; also with full synonymy).

SIZE. — The largest male and female in the present French Polynesian material are 25.7 mm (about 28 mm in POUPIN *et al.*, 1990) and 26.1 mm cl, respectively. The smallest ovigerous female is 20.7 mm cl.

REMARKS. — This species has been recorded in French Polynesia by POUPIN (1988, 1996) and POUPIN *et al.* (1990). All (total number 194), but one of the French Polynesian specimens agree very well with the concept of this species as defined by CHAN & YU (1991). The exceptional specimen (12.0 mm cl) has only one post-rostral

tooth on the carapace, but it corresponds to *P. edwardsi* in all other characters. Therefore, it is still considered that the closely related *P. crosnieri* Chan & Yu, 1991 is not present in French Polynesian waters.

DISTRIBUTION. — Worldwide: Mediterranean, Atlantic and Indo-West Pacific, at depths of 50-680 m, commonly 200-400 m.

Plesionika reflexa Chace, 1985

Figs 3, 24

Plesionika reflexa Chace, 1985: 108, fig. 49 [type-locality: the Philippines]. — CROSNIER, 1986a: 362. — POUPIN, 1996, pl. 5 a.

Plesionika aff. *ensis* - POUPIN, 1988: 28 [non A. Milne Edwards, 1881].

Plesionika ensis - POUPIN *et al.*, 1990: 64, pl. 1 b [non A. Milne Edwards, 1881].

MATERIAL EXAMINED. — **French Polynesia.** SMSRB (J. POUPIN and B. RICHER DE FORGES coll.): *Marquesas Islands. Fatu Hiva.* Stn 61, 10°27.0'S, 138°41.0'W, 430 m, 28.01.1988: 17 ex. 8.3-17.4 mm.

Tuamotu Islands. Maria. Stn 37, 22°00.0'S, 136°12.0'W, 470 m, 24.11.1987: 3 ex. 11.7-13.1 mm (MNHN-Na 12524). — *Mururoa.* Stn 18, 21°49.9'S, 138°57.3'W, 500 m, 11.12.1986: 1 ex. 15.6 mm. — Stn 21, 21°49.9'S, 138°57.3'W, 630 m, 16.06.1987: 10 ex. 14.4-18.4 mm. — Stn 39, 21°49.3'S, 138°46.5'W, 470 m, 2.12.1987: 9 ex. 13.7-17.4mm (MNHN-Na 12522). — Stn 477, 21°51.3'S, 139°01.7'W, 800 m, 11.04.1995: 3 ex. 15.9-16.7 mm. — *Tureia.* Stn 36, 20°45.0'S, 138°31.0'W, 490 m, 22.11.1987: 3 ex. 8.8-16.6 mm (MNHN-Na 12529).

Tubuai Islands. Tubuai. 700 m, 14.05.1979: 45 ex. 10.3-20.5 mm (MNHN-Na 7263); 25 ex. 15.1-20.3 mm (MNHN-Na 7262). — 800 m, 14.5.1979: 6 ex. 15.4-19.2 mm (MNHN-Na 7261). — *Rimatara.* Stn 109, 22°38.0'S, 152°50.0'W, 700 m, 5.09.1988: 18 ex. 14.1-18.0 mm (transferred to USNM).

DIAGNOSIS. — A detailed description of this species can be found in CHACE (1985), though there are still many uncertainties concerning the relationship between *P. reflexa* and *P. ensis* (A. Milne Edwards, 1881).

COLORATION. — The French Polynesian material is somewhat transparent with red tints on the carapace (including appendages), anterior half of rostrum, posterior margins of abdominal somites, pleopods and tail-fan. Eyes black. Eggs bluish.

SIZE. — For the French Polynesian material, the largest male and female are both about 20 mm cl, and smallest ovigerous female measured 12 mm cl (POUPIN *et al.*, 1990, under the name "*P. ensis*").

REMARKS. — As mentioned by CROSNIER (1986), the material from French Polynesia has the dactylus of pereopod III much shorter (0.09-0.14, avg. 0.11 as long as propodus; fig. 3b) than those from the Philippines (0.30-0.46 as long as propodus - CHACE, 1985; two paratypes and two other Philippine specimens were also examined). The short dactylus of the French Polynesian material is therefore more similar to that of *P. ensis* (A. Milne Edwards, 1881), described from the Antilles (with a ratio of 0.11-0.21, avg. 0.14; 20 specimens from the Antilles in MNHN examined; see also CHACE, 1985). The coloration (including eggs) appears to be rather similar for the French Polynesian material (fig. 24) and *P. ensis* (fig. 25, also see PAULMIER, 1993, pl. 15 figs 1-4, pl. 16 figs 1-3). However, the posterior spine of the abdominal somite III is very often curved upwards in the French Polynesian material (87.1%, n = 140), but not such condition occurs in the Antilles specimens.

The problem is complicated by the fact that specimens deposited at the MNHN, belonging to the "*P. ensis*" group from various localities, all show different proportional length of the dactylus of pereopod III. The dactylus is longer in the west African specimens [0.26-0.41, avg. 0.31, as long as propodus, 10 specimens (MNHN-Na7865) from Gulf of Guinea examined; see also CHACE, 1985] but shorter in the few specimens from Kiribati and Seychelles examined [the ratios are 0.10 (n = 2) and 0.12 (n = 3), respectively]. CHACE (1985) also mentioned such variation on the relative length of the dactylus for specimens from western Africa, Indonesia and Hawaii. Furthermore, the dactylus of pereopod III appears to be one third the length of the propodus in specimens from eastern Australia (KENSLEY *et al.*, 1987), but only about one fifth to one fourth of the propodus in material from the Arabian Sea (SUSEELAN & MOHAMED, 1969) and Japan (HAYASHI, 1986).

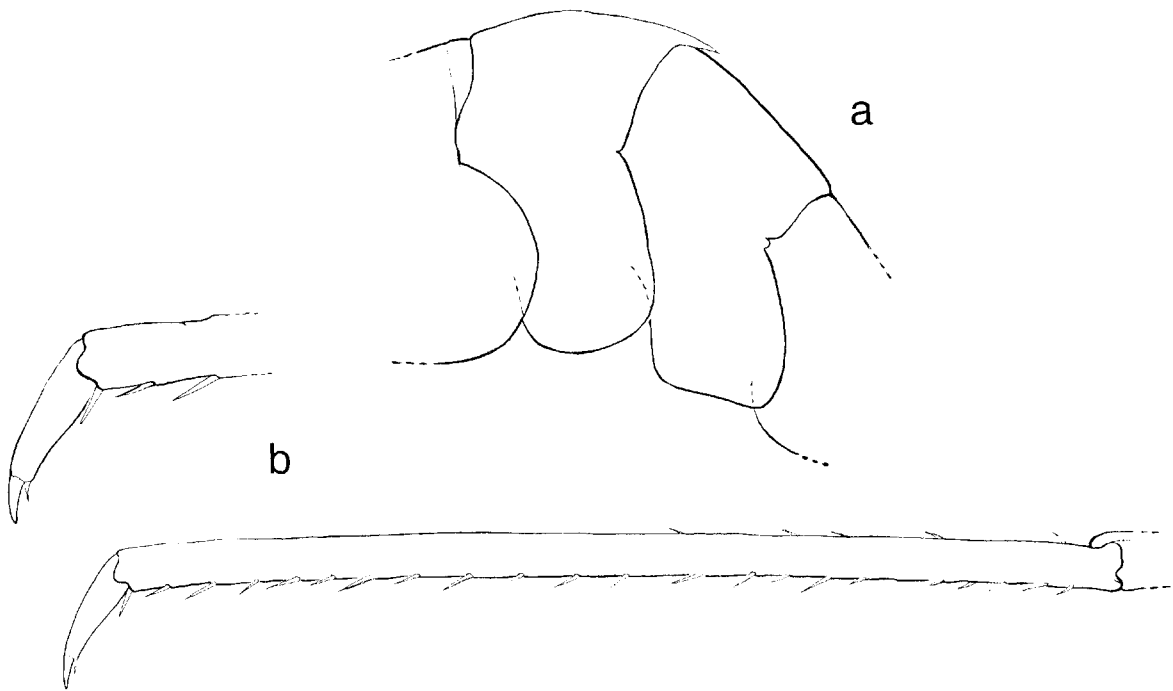


FIG. 3. — *Plesionika reflexa* Chace, 1985: **a**, ovig. ♀ 17.1 mm (MNHN-Na 7262), French Polynesia, Tubuai Islands, Tubuai, 700 m: lateral view of abdominal somites II to V. — **b**, ovig. ♀ 18.7 mm (MNHN-Na 7262), French Polynesia, Tubuai Islands, Tubuai, 700 m: propodus and dactylus of pereopod III.

On the other hand, the posterior spine on the abdominal somite III of the material available from Seychelles, Kiribati and New Caledonia is frequently curved upwards, but not in eastern Atlantic specimens. The tendency of having a recurved posterior spine on abdominal somite III seems to be universal throughout the Indo-Pacific [e.g. Arabian Sea (SUSEELAN & MOHAMED, 1969); Japan (HAYASHI, 1986); northwestern Australia (HANAMURA & TAKEDA, 1987); eastern Australia (KENSLEY *et al.*, 1987)]. In the present study, it was also found that the rostrum of the French Polynesian material is generally shorter and has fewer ventral teeth (rostrum 1.6-2.5, avg. 2.1 times as long as carapace and bearing 28-42, avg. 35.7 ventral teeth, $n = 27$) than in *P. ensis* from the Atlantic (western Atlantic: rostrum 2.2-2.8, avg. 2.5 times carapace length and bearing 35-48, avg. 42 ventral teeth, $n = 16$; eastern Atlantic: rostrum 2.2-2.8, avg. 2.5 carapace length and having 39-50, avg. 44.4 ventral teeth, $n = 7$). However, the few specimens from the Kiribati and Seychelles have a slightly shorter rostrum (both avg. 2.2 cl, $n = 2$ and 3 respectively) and fewer ventral rostral teeth (avg. 37 and 38.7 teeth, $n = 2$ and 3 respectively), while those from New Caledonia have a longer rostrum (2.3-2.7cl, $n = 3$) but fewer ventral rostral teeth (35-38, $n = 3$)! Since the rostrum of *P. ensis/reflexa* is often broken when caught, additional intact specimens from various localities will be needed to determine whether the differences in the proportional length and armature of the rostrum are of any taxonomic value. Nevertheless, the absence of any specimen with a recurved posterior spine on the abdominal somite III in the Atlantic is sufficient reason not to synonymize *P. reflexa* with *P. ensis* (altogether, 91 Atlantic specimens were examined in the present study and in CHACE, 1985). For the time being, it may be more convenient to use the name *P. reflexa* for the French Polynesian or perhaps all the Indo-Pacific material, though the presence of some specimens from various Indo-Pacific localities with very straight posterior spine on the abdominal somite III is rather problematic (fig. 3a). Recent discoveries that a great diversity of species is actually contained in the "*P. martia* (A. Milne-Edwards, 1883)" (CHACE, 1985) and "*P. narval* (Fabricius, 1787)" (CHAN & CROSNIER, 1991) groups suggest that many more species may be also present in the material now identified as *P. ensis* and *P. reflexa*. On the other hand, it is also possible that the *P. ensis*-*P. reflexa* problem may be similar to the case of *P. edwardsii*-*P. crosnieri*, in which both species are distributed in the Indo-Pacific but only one of them occurs in the Atlantic (CHAN & YU, 1991).

DISTRIBUTION. — Probably widely distributed in the Indo-Pacific (see "Remarks"). The French Polynesian material occurs at depths of 360-910 m, but mostly between 550-700 m (POUPIN *et al.*, 1990, under the name *P. ensis*).

Plesionika fenneri Crosnier, 1986

Figs 4, 26-27

Plesionika chacei Crosnier, 1986a: 363, figs 1 a-b, 2 a-h [type-locality: French Polynesia].

Plesionika fenneri Crosnier, 1986b: 691 [nomen nov. for *Plesionika chacei* Crosnier, 1986]. — POUPIN, 1988: 28; 1996, pl. 4 b. — POUPIN *et al.*, 1990: 29, pl. 1 a. — POUPIN & RICHER DE FORGES, 1991: 211.

Plesionika aff. *trispinus* - POUPIN *et al.*, 1990: 16 [non Squires & Barraguan, 1976].

MATERIAL EXAMINED. — **French Polynesia.** SMSRB (J. POUPIN coll.): Specimens listed in CROSNIER (1986). Additional specimens:

Tuamotu Islands. Maria. Stn 37, 22°00.0'S, 136°12.0'W, 470 m, 24.11.1987: 7 ex. (MNHN-Na 12517). — **Gambier.** Stn 74, 23°08.0'S, 134°53.0'W, 660 m, 10.06.1988: 1 postlarva 12.4 mm (transferred to USNM).

Tubuai Islands. Rurutu. Stn 146, 22°27.8'S, 151°22.8'W, 580 m, 9.03.1989: 1 postlarva 12.9 mm (MNHN-Na 13125).

DIAGNOSIS. — This species was described in detail by CROSNIER (1986a, under the name "*Plesionika chacei*").

COLORATION. — Body generally orange. Tip of rostrum, distal part of scaphocerite, distal segment of maxilliped III and antennular flagella reddish. Eyes dark brown. Internal organs scarlet, visible inside carapace. Eggs metallic blue (CROSNIER, 1986a), becoming mud green near hatching.

SIZE. — Largest male and female 30 mm and 32 mm cl, respectively. Smallest ovigerous female 20 mm cl (POUPIN *et al.*, 1990).

REMARKS. — *P. fenneri* is one of the most abundant species of the genus in French Polynesia. Its characteristics are rather constant, except that the rostrum is often rather straight in males (also see CROSNIER, 1986a, fig. 1b). The main problem is posed by the two small specimens collected from Gambier and Rurutu, and preliminary identified by POUPIN *et al.* (1990) as *Plesionika* aff. *trispinus*. These two specimens are white in colour and look quite different from the other species of the genus (fig. 26). At first glance they show some resemblances to *P. picta* sp. nov. but closer examination shows that they actually belong to a species of the "*P. laevis*" group. However, they differ considerably from the typical *P. fenneri* (fig. 27) and *P. nesis*i (Burukovsky, 1986) by the carapace being more flattened and rectangular. Their rostra are rather straight and bear a laminate basal crest (fig. 4a). However, as discussed in the "Remarks" under *P. nesis*i, the shape of the rostrum is very variable for the species of the "*P. laevis*" group. On the other hand, the presence of rudimentary exopods on the anterior four pereopods and the exopod of the maxilliped III being rather small and thin suggest that these two specimens are still in an early developmental stage. Therefore, they are possibly the postlarvae of either *P. fenneri* or *P. nesis*i. Since both specimens have one or two movable post-rostral teeth, the latter possibility is ruled out, though their carapaces also bear a weak upper lateral carina posteriorly. Moreover, the other characters of these two postlarvae agree quite well with those of *P. fenneri* (see CROSNIER, 1986a): rostrum 0.9-1.0 as long as carapace, bearing 6 dorsal and 9-10 ventral teeth; 5 post-rostral teeth present on carapace, with posteriormost one or two movable; eyes (sunken in the present specimens) appear to be subspherical and lacking ocellus; orbital margin regularly concave, upper part not continuous with lateral rostral carina; antennal spine rather small, while branchiostegal spine is well developed; scaphocerite 3.3-4.0 times as long as broad; maxilliped III with distal segment 1.6-1.8 times as long as penultimate segment; carpus of pereopod II with 7 articles on the right side and 17-19 on the left; pereopod III with propodus 6.5-7.3 times as long as dactylus; dorsal surface of abdominal somite III smooth; both abdominal pleura IV and V bearing distinct posteroventral denticles; and telson 1.6 times as long as abdominal somite VI. These two postlarvae are therefore tentatively identified as *P. fenneri*. More information on the larval development of *P. fenneri* will be needed to confirm the present identification. Nevertheless, if our identification is correct, these two specimens should be in the final postlarval stage, since

juvenile specimens of *P. fenneri* larger than 13.2 mm cl all lack exopods on the pereopods and already look very similar to the adults.

DISTRIBUTION. — Endemic to French Polynesia, at depths of 260-820 m and mostly 500-700 m (POUPIN *et al.*, 1990).

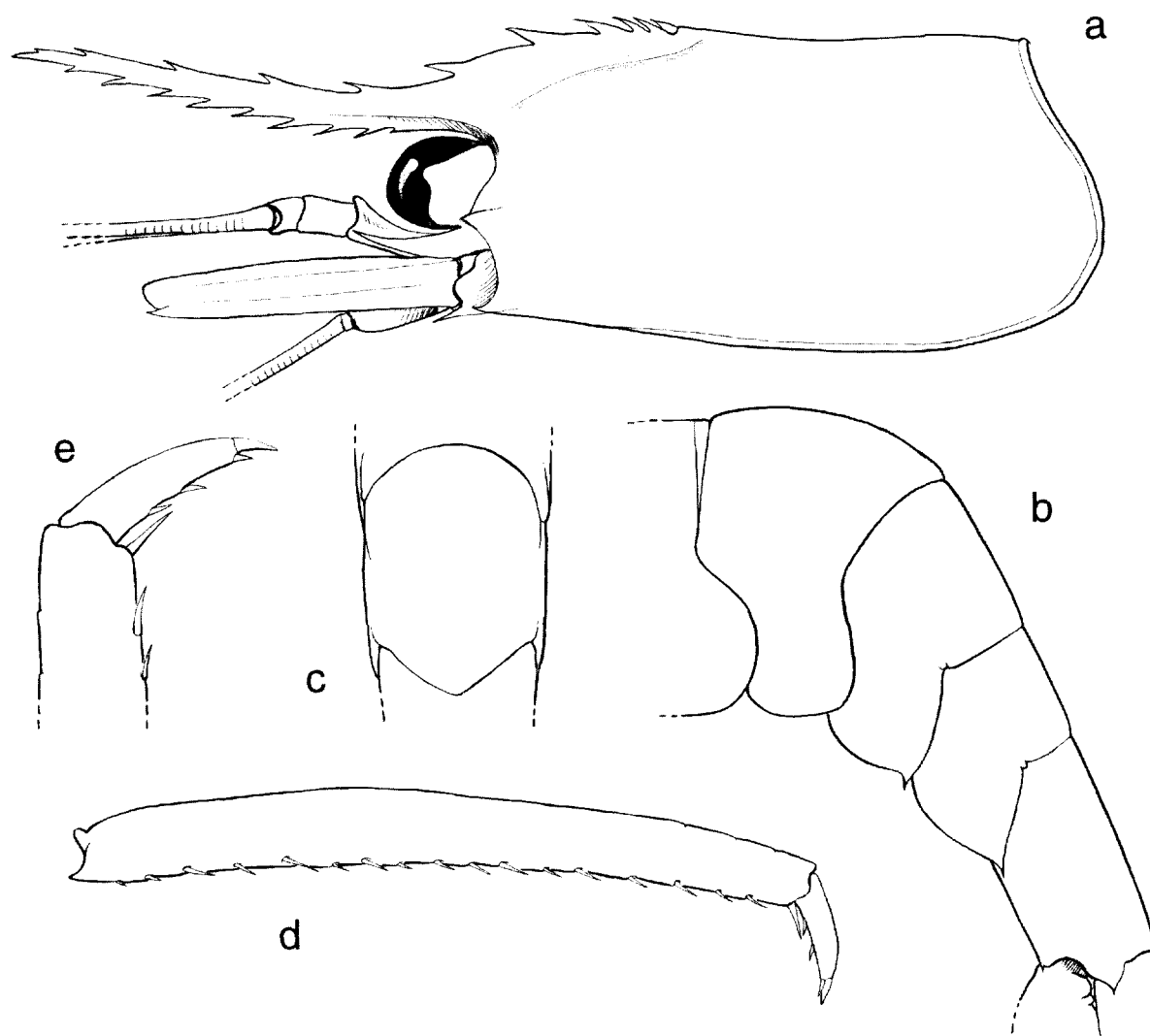


FIG. 4. — *Plesionika fenneri* Crosnier, 1986, postlarva 12.9 mm (MNHN-Na 13125), French Polynesia, Tubuai Islands, Rurutu, stn 146, 580 m: **a**, lateral view of carapace; **b**, lateral view of posterior abdomen; **c**, dorsal view of abdominal somite III; **d-e**, propodus and dactylus of pereopod III.

***Plesionika nesisi* (Burukovsky, 1986)**

Figs 5-10, 28

Heterocarpus nesisi Burukovsky, 1986: 62, fig. 1 [type-locality: East Pacific sea-mount]. — CHACE, 1989: 87.

Plesionika aff. *laevis* - POUPIN *et al.*, 1990: 72, pl. 2 a. [non A. Milne Edwards, 1883].

Plesionika nesisi - POUPIN, 1996, pl. 4e.

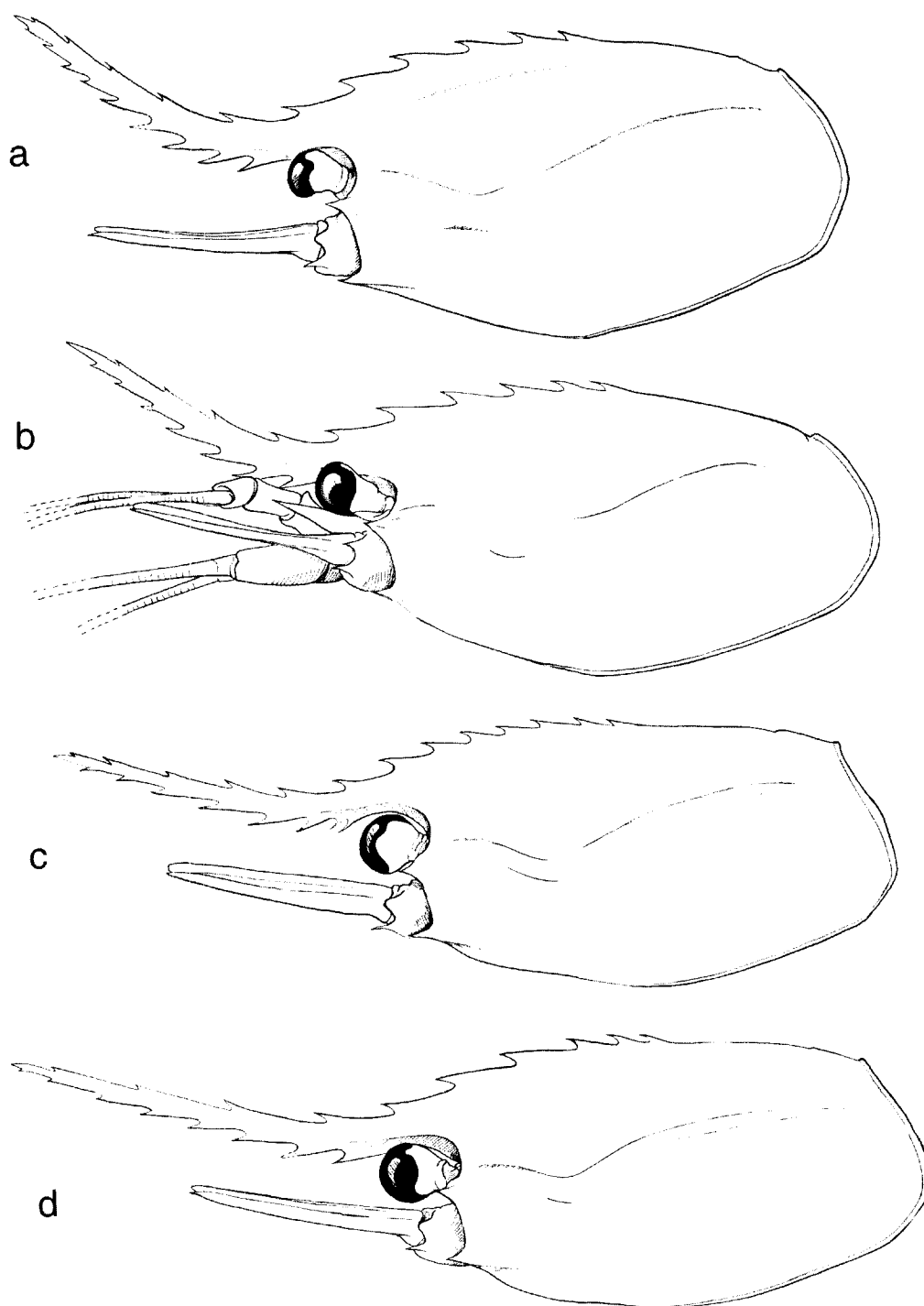


FIG. 5. — *Plesionika nesi* (Burukovsky, 1986). Lateral view of carapace.

a. ovig. ♀ 26.7 mm (MNHN-Na 13118) with abdominal pleuron IV rounded, French Polynesia, Tuamotu Islands, Fangataufa, stn 85, 780 m. — **b.** ovig. ♀ 27.6 mm (MNHN-Na 13115) with abdominal pleuron IV pointed, Tuamotu Islands, Mururoa, stn 477, 800 m. — **c.** ♂ 25.6 mm (MNHN-Na 13120) with abdominal pleuron IV rounded, Tuamotu Islands, Makemo, stn 112, 670 m. — **d.** ♂ 25.9 mm (MNHN-Na 13117) with abdominal pleuron IV pointed, Tuamotu Islands, Fangataufa, stn 139, 720 m.

MATERIAL EXAMINED. — **East Pacific seamount**, 13°34'N, 120°33'W, 800 m: ♂ 26.0 mm, holotype (MSU).

French Polynesia. SMSRB (J. POUPIN coll.): **Marquesas Islands. Hiva Oa.** Stn 293, 9°47.3'S, 139°11.8'W, 800 m, 30.08.1990: 1 ♂ 21.4 mm (MNHN-Na 13116, drawn).

Tuamotu Islands. Fangataufa. Stn 85, 22°13.0'S, 138°42.2'W, 780 m, 22.06.1988: 4 ♂ 23.5-25.1 mm, 6 ovig. ♀ 23.2-29.3 mm (MNHN-Na 13043, 13046); 1 ovig. ♀ 26.7 mm (MNHN-Na 13118, drawn). — Stn 118, 22°16.8'S, 138°41.8'W, 1050 m, 23.11.1988: 5 ♂ 16.4-24.7 mm, 2 ovig. ♀ 21.7 and 24.1 mm, 3 ♀ 19.0 & 20.3 mm (MNHN-Na 13045). — Stn 139, 22°18.0'S, 138°46.0'W, 720 m, 24.02.1989: 32 ♂ 18.5-26.8 mm, 2 ovig. ♀ 19.5 and 23.4 mm, 13 ♀ 18.1-28.6 mm (MNHN-Na 13048); 1 ♂ 25.9 mm (MNHN-Na 13117, drawn). — **Makemo.** Stn 112, 16°37.0'S, 143°32.0'W, 670 m, 12.11.1988: 10 ♂ 23.2-27.0 mm, 1 ♀ 24.2 mm; 1 ♂ 25.6 mm (MNHN-Na 13120, drawn). — **Mururoa.** Stn 127, 21°51.2'S, 138°47.3'W, 600 m, 29.11.1988: 3 ♂ 22.1-28.1 mm, 4 ♀ 24.7-27.7 mm (transferred to USNM). — Stn 474, 21°47'S, 138°55.5'W, 800 m, 10.04.1995: 2 ♂ 22.0 and 22.4 mm, 2 ♀ 16.9 and 26.1 mm. — Stn 477, 21°51.3'S, 139°1.7'W, 800 m, 11.04.1995: 1 ♂ 23.9 mm, 4 ovig. ♀ 24.1-27.7 mm, 1 ♀ 23.6 mm; 1 ovig. ♀ 27.6 mm (MNHN-Na 13115, drawn).

Kiribati. Commission du Pacifique Sud. 600 m, April 1987: 6 ex. 15.8-24.9 mm; 1 ♀ 28.3 mm (MNHN-Na 13119, drawn). — 750 m, April 1987, 12 ex. 18.0-28.0 mm (MNHN-Na 12487, 12501); 1 ♀ 18.0 mm (MNHN-Na 13121, drawn).

Samoa Islands. "Coriolis". stn 92, Lallarokkhe, 800 m, 26.11.1977: 6 ex. 27.0-29.8 mm (MNHN-Na 13050).

Philippines. MUSORSTOM 2: stn 56, 13°57.7'N, 119°56.3'E, 970 m, 28.11.1980: 1 ♂ 18.6 mm, 2 ♀ 25.7 and 31.1 mm.

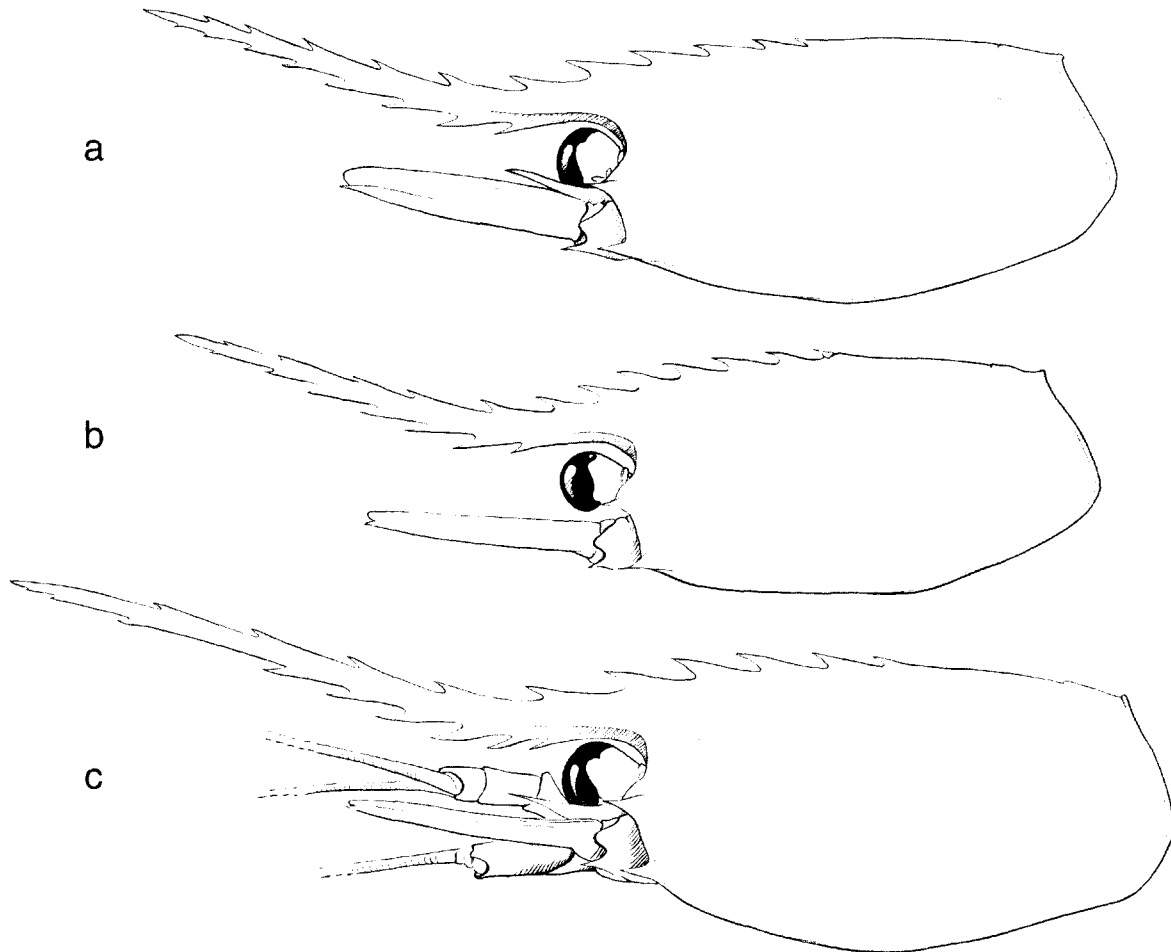


FIG. 6. — *Plesionika nesi* (Burukovsky, 1986). Lateral view of carapace: **a**, ♂ 21.4 mm (MNHN-Na 13116), French Polynesia, Marquesas Islands, Hiva Oa, stn 293, 900 m. — **b**, ♀ 18.0 mm (MNHN-Na 13121), Kiribati, 750 m; **c**, ♂ 20.4 mm (MNHN-Na 12487), Seychelles, CEPROS, stn 3-14, 850-800 m.

Seychelles Islands. CEPROS: stn 3-14, 4°33'S, 56°27'E, 850-800 m, 22.10.1987: 1 ♂ 20.4 mm (MNHN-Na 12487). — Stn 5-25, 5°48.5'S, 56°43.2'E, 700-750 m, 24.10.1987: 1 ♂ 19.0 mm (MNHN-Na 12486).

Madagascar. "Vauban": trawling 35, 12°49.5'S, 48°5.9'E, 760-810 m, 14.09.1972: 1 ♂ 22.8 mm, 1 ♀ 20.7 mm.

DIAGNOSIS. — Body rather robust. Rostrum about as long as carapace and armed along whole length with 5-8 (very rarely 3, 4 or 9) dorsal and 6-11 ventral teeth, generally curved upwards in females but nearly horizontal in males. Carapace with a low post-rostral crest, which bears 4-6 fixed post-rostral teeth and extends for about 4/5 of carapace length; antennal and branchiostegal spines very strong (branchiostegal spine relatively larger), both with weak lateral carina behind; upper lateral carina starting at orbital margin, slightly above antennal spine, and extending almost to posterior margin of carapace, weak, more or less interrupted at mid-length, and strongly curved in the posterior part; lower lateral carina continuous with branchiostegal spine, low and soon vanishing posteriorly; very weak hepatic groove present. Eyes quite large, slightly kidney-shaped and without distinct ocellus. Orbital margin regularly concave. Stylocerite tapered anteriorly and reaching between middle and distal end of second segment of antennular peduncle. Scaphocerite 3.4-4.4 times as long as broad, with distolateral tooth more or less extending to distal margin of lamella, basicerite spine elongate and exceeding proximal end of lateral margin of scaphocerite. Well developed epipods present on maxilliped III and anterior 4 pereopods. Maxilliped III bearing a long and thread-like exopod, with distal segment 1.3-1.5 times as long as penultimate segment. Pereiopods II with 6-11 carpal articles on one side (usually right) and 18-21 carpal articles on the other side. Pereiopod III extending beyond scaphocerite more or less by propodus and dactylus, with propodus 5.2-7.8 times as long as dactylus; dactylus claw-like and bearing 2-4 spinules on posterior margin, accessory spine about half to nearly as long as terminal spine and well separated from it. Abdominal somite III bearing a dorsal boss and, generally, a pair of distinct submedian furrows, posterior margin bluntly angular. Abdominal pleuron V, and sometimes also pleuron IV, with sharp elongated posteroventral denticles. Telson much longer than abdominal somite VI; with four pairs of dorsolateral spines and three pairs of terminal spines. Eggs subspherical, about 0.5 mm in diameter.

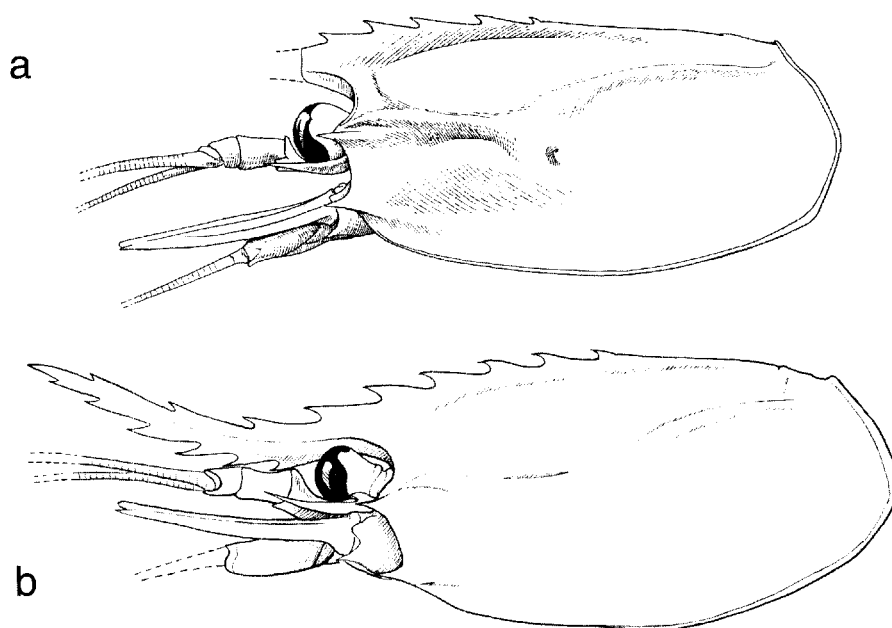


FIG. 7. — *Plesionika nesisi* (Burukovsky, 1986). Lateral view of carapace: a, ♂ 26.0 mm, holotype (MSU), East Pacific sea-mount, 13°34'N, 120°33'W, 800 m; b, ♀ 28.3 mm (MNHN-Na 13119), Kiribati, 600 m.

COLORATION. — Body, including appendages, generally reddish, colour slightly lighter at base of rostrum, as well as area between posterior carapace and anterior abdomen. Eyes brownish-black. Eggs brown.

SIZE. — Largest male and female about 32.5 mm and 31.5 mm cl, respectively (POUPIN *et al.* 1990). Smallest ovigerous female 19.5 mm cl.

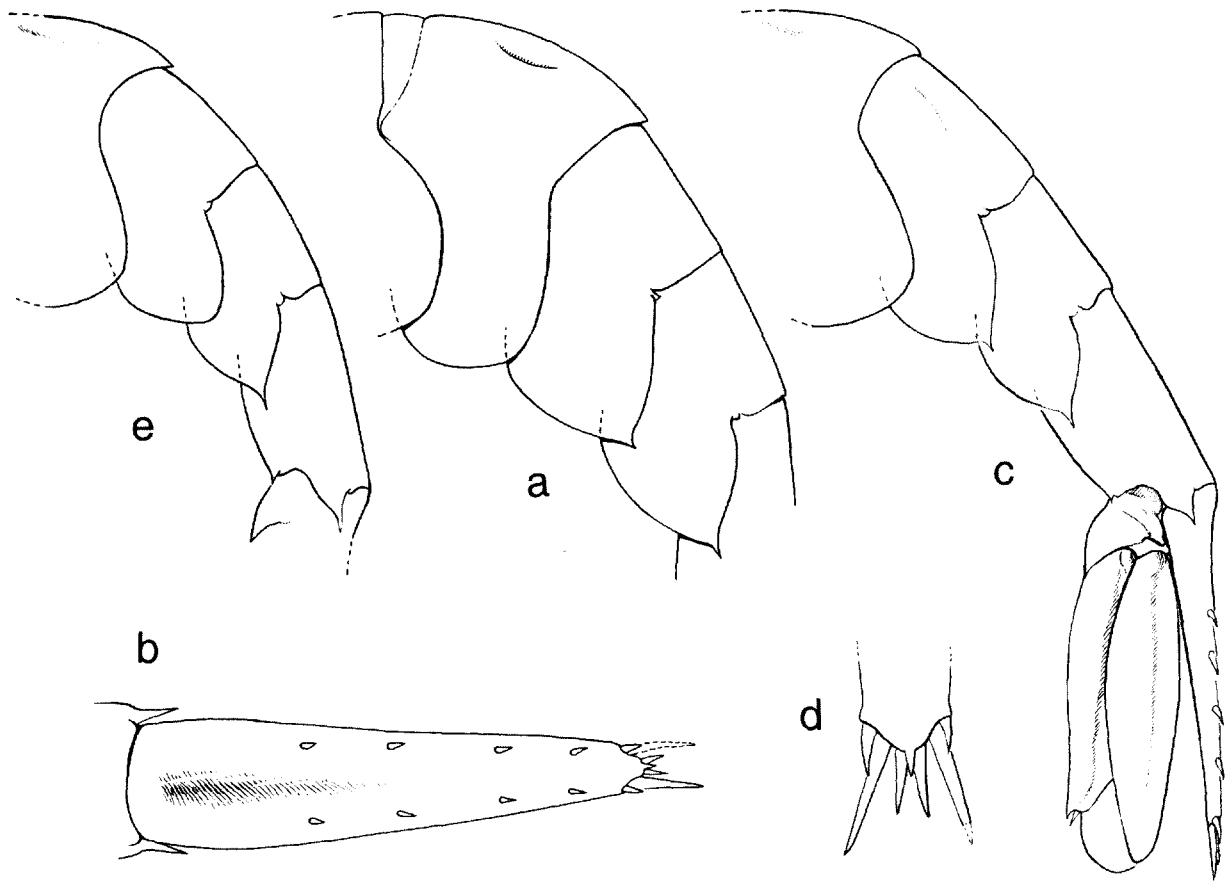


FIG. 8. — *Plesionika nesi* (Burukovsky, 1986): **a-b**, ♂ 26.0 mm holotype (MSU), East Pacific seamount, 800 m: **a**, lateral view of posterior part of abdomen; **b**, dorsal view of telson. — **c-d**, ovig. ♀ 27.6 mm (MNHN-Na 13115), French Polynesia, Tuamotu Islands, Mururoa, stn 477, 800 m: **c**, lateral view of posterior part of abdomen; **d**, dorsal view of distal part of telson. — **e**, ovig. ♀ 26.7 mm (MNHN-Na 13118), French Polynesia, Tuamotu Islands, Fangataufa, stn 85, 780 m: lateral view of posterior part of abdomen.

REMARKS. — Recent experimental trappings in deep waters in French Polynesia produced an abundant material of the present form, which is very similar to *P. laevis* (A. Milne Edwards, 1883) (POUPIN *et al.*, 1990; POUPIN, 1996). This form has a clear vertical zonation and is mainly found in waters deeper than 800 m (instead of 260-820, mostly 500-700 m, for *P. fenneri*). A careful comparison of this deep water French Polynesian form with *P. laevis* from the Caribbean (22 specimens with 11.1-39.4 mm cl in the MNHN, including the badly damaged juvenile holotype) shows that the former is quite different in having a redder body (see figs 28-29) and always bearing a weak but distinct upper lateral carina on the carapace. The French Polynesian form, however, exhibits large variations in the shape of the rostrum and abdominal pleuron IV. The rostrum is generally strongly curved upwards and exceeds the scaphocerite by almost a quarter of its length (fig. 5a-b), but in some specimens (mostly small males) the rostrum is relatively longer and almost horizontal (fig. 5c-d). Of the 100 specimens examined, the posteroventral angle of the abdominal pleuron IV bears a sharp denticle in 66 specimens (fig. 8c), but is rounded in 20 others (fig. 8e), while in 14 specimens one side of the pleuron is rounded, while the other side bears a denticle. The degree of development of the lateral carapace carinae and the abdominal boss is also very variable in these specimens (e.g. tends to be weaker in small individuals, but this is not always size related; the same is also true

for the abdominal boss of *P. laevis*, that of the holotype being almost absent). The above characters, however, appear to vary independently, and specimens of all sizes with intermediate characters can often be found in both sexes (figs 5, 8-10). Moreover, no difference in coloration has been observed for these deep-water French Polynesian specimens. It is, therefore, reasonable to consider that they all belong to the same species.

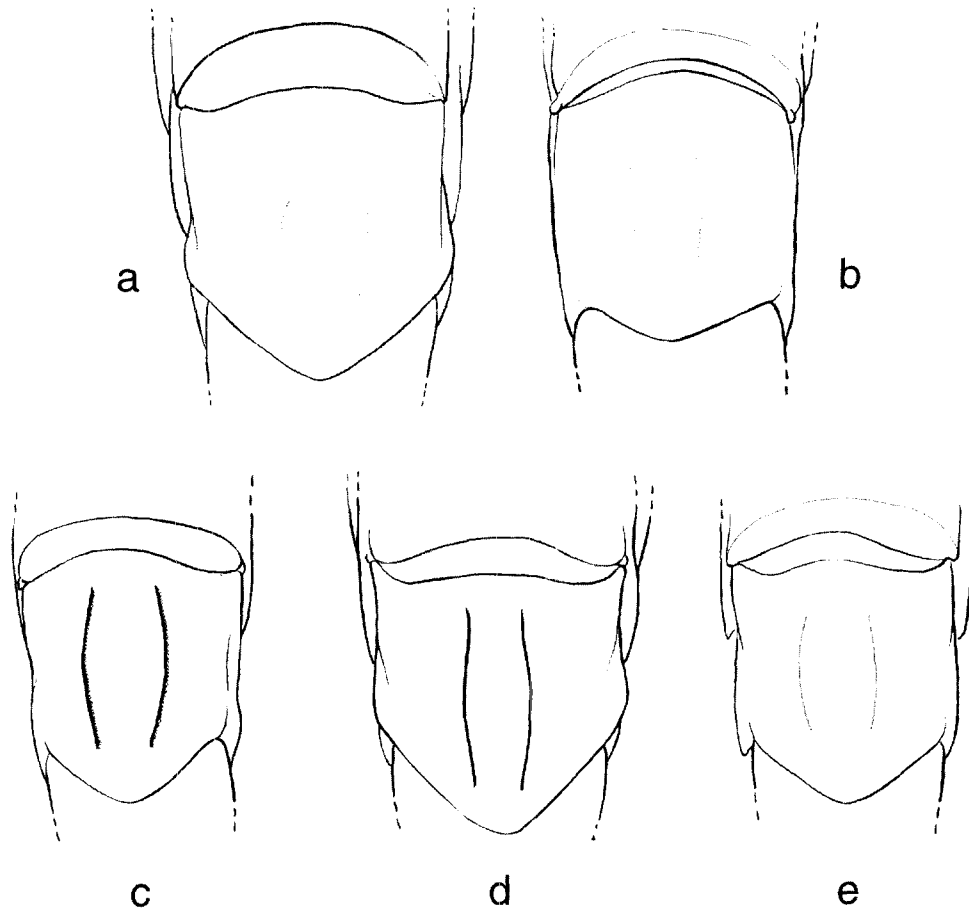


FIG. 9. — *Plesionika nesisi* (Burukovsky, 1986). Dorsal view of abdominal somite III.

a, ovig. ♀ 27.6 mm (MNHN-Na 13118), French Polynesia, Tuamotu Islands, Mururoa, stn 477, 800 m. — b, ♂ 21.4 mm (MNHN-Na 13116), French Polynesia, Marquesas Islands, Hiva Oa, stn 293, 800 m. — c, ♀ 18.0 mm (MNHN-Na 13121), Kiribati, 750 m. — d, ♀ 28.3 mm (MNHN-Na 13119), Kiribati, 600 m. — e, ♂ 20.4 mm (MNHN-Na 12487), Seychelles, CEPROS, stn 3-14, 850-800 m.

The discovery of *P. fenneri* brought up the problem of the generic affinity of the "*P. laevis*" group, which has characteristics intermediate between *Plesionika* and *Heterocarpus* A. Milne Edwards, 1881 (see BURUKOVSKY, 1986; CROSNIER, 1986a, 1988; CHACE, 1989). The present form no doubt belongs to this intermediate group. Actually there are three more species which probably could also be assigned to the "*P. laevis*" group. These are *Heterocarpus alexandri* A. Milne Edwards, 1883 from the western Atlantic, *H. uncarinatus* Borradaile, 1915 from Seychelles and *H. nesisi* Burukovsky, 1986 from the eastern Pacific. These three species are all described from a single specimen and very poorly known. The type-locality of *H. nesisi* is nearest to French Polynesia (i.e. from an underwater seamount, north-east of French Polynesia). A comparison of accurate drawings of the damaged holotype of *H. nesisi* (figs 7a, 8a-b; prepared at MNHN some years ago) shows that it is almost identical with the French Polynesian form. The rostrum of the holotype is missing in the MNHN drawings, but the original figure of

H. nesisi provided by BURUKOVSKY (1986) shows that it is also very similar to that of the French Polynesian material, except for a slightly longer length and a greater number of dorsal rostral teeth.

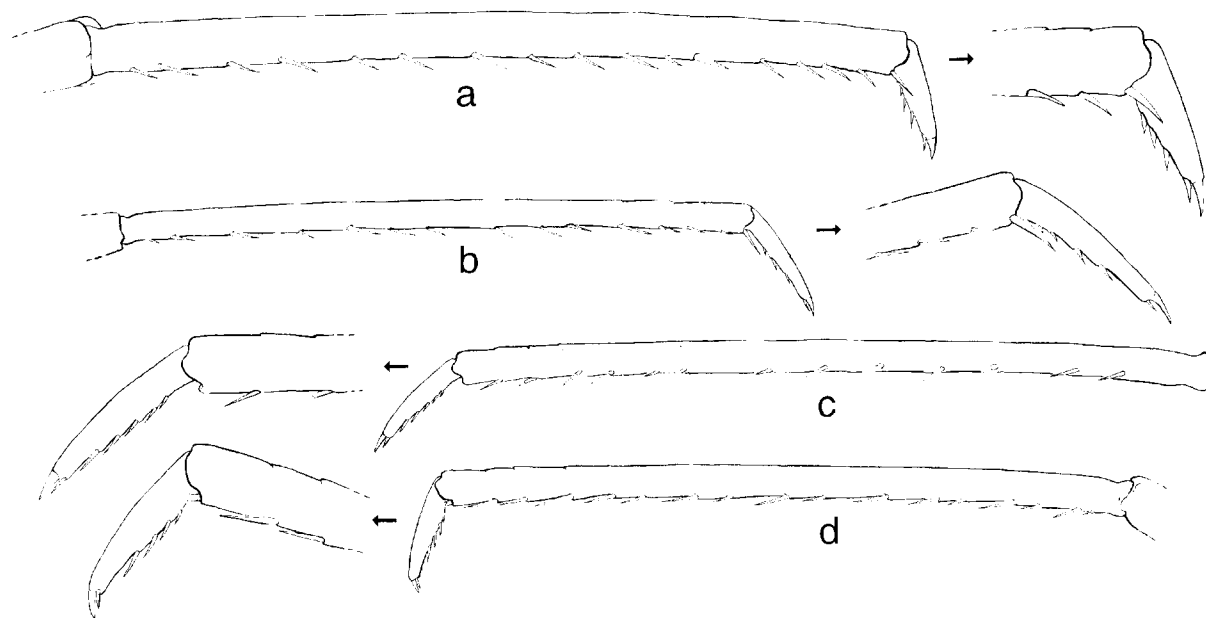


FIG. 10. — *Plesionika nesisi* (Burukovsky, 1986). Propodus and dactylus of pereopod III.

a, ovig. ♀ 27.6 mm (MNHN-Na 13118), French Polynesia, Tuamotu Islands, Mururoa, stn 477, 800 m: right side. — **b**, ♂ 21.4 mm (MNHN-Na 13116), French Polynesia, Marquesas Islands, Hiva Oa, stn 293, 900 m: right side. — **c**, ♀ 28.3 mm (MNHN-Na 13119), Kiribati, 600 m: left side. — **d**, ♂ 20.4 mm (MNHN-Na 12487), Seychelles, CEPROS, stn 3-14, 850-800 m: left side.

For BORRADAILE's (1915) *H. unicarinatus*, photographs of the type were examined (also see CROSNIER, 1988, fig. 7). The dried holotype has the rostrum broken and all the pereopods missing. It is generally similar to the French Polynesian form and has the upper lateral carina of the carapace medially interrupted. However, the abdominal boss is more pronounced in *H. unicarinatus* and there are only three post-rostral teeth present on the carapace.

The type of *H. alexandri* was described in detail by CHACE (1989). Although the rostrum of the type is broken (apparently very straight) and most of the thoracic appendages are missing, the remaining parts are very similar to those of the French Polynesian form. Nevertheless, the much smaller size of *H. alexandri* (holotype ovigerous female only 12.8 mm cl) suggests that it should be a distinct species. Photographs of the additional specimens mentioned by CHACE (1989) from Bahama Islands, Baja California and Hawaii were examined in the present study. The male from Bahama Islands is in a similar condition as the holotype of *H. alexandri* (i.e. rostrum broken and most of the pereopods missing) and with almost the same characteristics (their sizes are also similar). As mentioned by CHACE (1989), the female from Baja California is much larger (about 31.5 mm cl) and with the abdominal boss rather weak. The general appearance of this specimen is more similar to the French Polynesian form (some of the French Polynesian specimens also have the transverse grooves on the anterior two abdominal somites somewhat indistinct) except for having pereopods II with fewer carpal articles. However, the Hawaiian specimen reported by RATHBUN (1906) as *H. alexandri*, of which we were able to get good photos, looks very different and is generally more similar to the "typical" forms of *Plesionika* or *Pandalus*. No trace of a dorsal boss is present on the abdominal somite III and some of the post-rostral teeth appear to be movable. With the absence of all thoracic appendages in this Hawaiian specimen, there are even difficulties deciding which pandalid genus it belongs to! Therefore, the exact identity of RATHBUN's (1906) specimen may never be known. On the other hand,

it may be relevant to point out that the collection of MNHN includes a damaged eastern Atlantic specimen (Ibero-Maroccan Gulf, BALGIM, stn DW 96, 1250 m, adult female 11.8 mm cl, MNHN-Na 11919) very similar to *H. alexandri*, but with abdominal somite III smooth. This specimen probably represents an undescribed species of the "*P. laevis*" group (RASO, 1996: 741).

	rostrum/cl	rostral teeth dorsal	rostral teeth ventral	postrostral teeth	P III propodus/dactylus	dactyli of posterior pereiopods	abdominal boss	abdominal pleuron IV (both side)
Eastern Pacific *	0.71-1.10 (0.91) n=2	7-9 (8) n=2	7 n=2	4 n=2	7.8 n=1	appear to be moderately robust	weak	50% rounded n=2
French Polynesia (except Marquesas)	0.78-0.94 (0.87) n=9	3-7 (5.5) n=10	6-11 (7.9) n=10	4-6 (4.7) n=10	5.3-7.1 (6.3) n=9	moderately robust, accessory spine long	generally moderately developed	20% rounded n=100
Marquesas Is	1.10	7	8	4	5.2	slender, accessory spine short	weak	100% rounded n=1
Samoa	0.85-0.93 (0.89) n=2	6-8 (7.0) n=2	8 n=2	4-5 (4.5) n=6	7.1-7.3 (7.2) n=2	slender to moderately robust, accessory spine long	generally moderately developed	83% rounded n=6
Kiribati	0.82-1.07 (0.96) n=6	5-8 (7.0) n=6	6-8 (7.5) n=6	4-5 (4.5) n=6	6.5-7.4 (6.8) n=8	slender, accessory spine long to short	generally strong	79% rounded n=19
Philippines	0.93-1.10 (1.02) n=2	6-8 (7.0) n=2	7-9 (8.0) n=2	4-5 (4.5) n=2	6.15 n=1	slender, accessory spine short	strong	67% rounded n=3
Seychelles	1.35 n=2	6-7 (6.5) n=2	9 n=2	4-5 (4.5) n=2	6.2-6.9 (6.5) n=2	slender, accessory spine long	moderately developed	100% rounded n=2
Madagascar	0.98	7	8	5	-	slender, accessory spine long	weak	100% rounded n=2

* from figures and photographs of the holotype and the Baja California specimen.
Numbers in brackets represent the average values.

TABLE 2. — Characteristics of *Plesionika nesisi* (Burukovsky, 1996) from different localities.

In conclusion, the present French Polynesian form can probably be identified as *H. nesisi*. However, the problem becomes more complicated when more, similar specimens from various Indo-Pacific localities with slight differences are found in the MNHN collection (Table 2). The material from Kiribati has a slightly longer rostrum (fig. 7b) and a stronger abdominal boss (fig. 9c-d), while the abdominal pleuron IV is more often rounded, and the dactyli of posterior pereiopods are more slender, sometimes with a short accessory spine (fig. 10c). The few specimens from Samoa, the Philippines and Madagascar also usually have the abdominal pleuron IV rounded, but the degree of development of the abdominal boss and the dactyli of posterior pereiopods is intermediate between those of the French Polynesian and Kiribati material (figs 9-10). On the other hand, the two young males from the Seychelles look somewhat different to the French Polynesian material, because they have a much longer, straight rostrum (figs 6c, 9e). Nevertheless, this seems to be unimportant when considering the variations already exhibited in the different Indo-Pacific populations, as mentioned above. Moreover, two similar-sized specimens from Marquesas Islands (fig. 6a) and Kiribati (fig. 6b) have the rostrum quite similar to that of the Seychelles material. The two Seychelles specimens are very similar to the type of *H. unicarinatus*, which was collected from the same locality and is of similar size and the same sex. The holotype of *H. unicarinatus*, however, bears only three post-rostral teeth on the carapace, a condition that never occurs in all the specimens of this study (except for one French Polynesian specimen with an abnormal rostrum). For the time being, it seems appropriate to identify all the material from French Polynesia, Kiribati, Samoa, the Philippines, Madagascar and the two Seychelles specimens (MNHN) as *H. nesisi*. More material from the Seychelles will be needed to clarify the relationships between *H. nesisi* and *H. unicarinatus*.

The increasing number of species belonging to the "*P. laevis*" group may prompt some workers to follow CHACE's (1989) suggestion and propose a separate genus for them. There is no doubt that these species form a natural group. The complete absence of lateral carapace carina and abdominal boss in *P. fenneri* prevents the inclusion of the "*P. laevis*" group in *Heterocarpus*. However, no satisfactory character can be found to separate *P. fenneri* from *Plesionika* as currently defined, which can easily accommodate *H. nesisi*, *H. unicarinatus* and *H. alexandri* since some "typical" *Plesionika* species also bear similar lateral carinae on the carapace (e.g. *P. carinata* Holthuis, 1951 and *P. polyacanthomerus* Pequegnat, 1970, see also "Remarks" under *P. williamsi*).

We therefore prefer to follow CROSNIER (1986a, 1988) in putting all the members of the "*P. laevis*" group in *Plesionika* until this genus can be satisfactory subdivided.

DISTRIBUTION. — Indo-Pacific from Madagascar to Seychelles, Philippines, Samoa, Kiribati, French Polynesia and surrounding areas, perhaps also Baja California, at depths of 550-1080 m (POUPIN *et al.*, 1990).

***Plesionika macropoda* Chace, 1939**

Figs 11-13, 30-31

Plesionika macropoda Chace, 1939: 37 [type-locality: Cuba]. — MONTERROSA, 1988: 637, figs 4-5. — POUPIN, 1994: 25 (in part); 1996, pl. 4d.

Plesionika polyacanthomerus Pequegnat, 1970: 97 (in part). — PAULMIER, 1993: 19, pls 19-20 [non Pequegnat, 1970].

[?] *Plesionika macropoda* - SPRINGER & BULLIS, 1956: 12.

[?] *Plesionika williamsi* - LEMAITRE, 1984: 435 [non Forest, 1964].

Plesionika aff. *williamsi* - POUPIN *et al.*, 1990: 16 (in part) [non Forest, 1964].

Not *Plesionika macropoda* - POUPIN, 1994: 25 (in part), pl. 1e [= *P. williamsi* Forest, 1964].

MATERIAL EXAMINED. — **Antilles. Guadeloupe, Côte sous le Vent.** 400-450 m, 1985: 10 ex. 13.7-22.5 mm; 1 ♂ 18.1 mm (MNHN-Na 12847, drawn); 1 ♂ 21.9 mm (MNHN-Na 13099, drawn).

"Polka": stn 4-3, 260 m, 3.10.1990: 1 spec 24.6 mm. — Stn C211, 16°11.81'N, 61°49.1'W, 450 m, April 1993: 1 spec 17.1 mm. — Stn D38, 16°22.51'N, 61°49.13'W, 500 m, April 1993: 3 ex. 23.8-25.0 mm. — Stn CP1, 15°50.57'N, 61°40.56'W, 310 m, May 1993: 3 ex. 16.1-23.0 mm. — Stn CP3, 16°0.11'N, 61°21.16'W, 400 m, May 1993: 4 ex. 19.6-23.1 mm (♂ 23.1 mm, MNHN-Na 13113, drawn).

Loyalty Islands. "Vauban": stn 43: 1 ex. 24.7 mm. — Stn 90, 200-600 m, 1.03.1978: 1 ex. 26.4 mm.

French Polynesia. SMSRB (J. POUPIN and J.-L. CARLIN coll.): **Marquesas Islands. Ua Pou.** Stn 59, 9°23.0'S, 140°09.0'W, 450 m, 26.01.1988: 1 ♂ 19.1 mm [transferred to USNM].

Tuamotu Islands. Maria. Stn 37, 22°00.0'S, 136°12.0'W, 470 m, 23.11.1987: 1 ♀ 19.1 mm (MNHN-Na 12526, drawn). — **Gambier.** Stn 238, 23°01.1'S, 134°59.0'W, 500 m, 27.05.1990: 1 ♂ 14.6 mm, 1 ♀ 19.3 mm. — Stn 311, 23°04.5'S, 135°01.6'W, 470 m, 11.10.1990: 2 ♂ 23.1 mm (MNHN-Na 13112, drawn) and 25.7 mm. — **Mururoa.** 1984: 1 ♀ 18.6 mm. — Stn 382, 21°46.4'S, 138°53.5'W, 400 m, 9.03.1991: 1 ovig. ♀ 26.9 mm. — Stn 476, 21°51.3'S, 139°01.2'W, 470 m, 11.04.1995: 1 ♂ 30.1 mm.

Tubuai Islands. Maria. Stn 421, 21°47.7'S, 154°43.4'W, 500 m, 7.08.1991: 1 ♂ 28.9 mm [transferred to USNM].

Society Islands. Huanine. Stn 405, 16°45.8'S, 151°03.8'W, 310 m, 6.05.1991: 1 ♀ 27.7 mm (MNHN-Na 13114, drawn); 1 ovig. ♀ 31.9 mm (MNHN-Na 13165, drawn).

DIAGNOSIS. — Detailed descriptions of this species can be found in CHACE (1939), MONTERROSA (1988) and PAULMIER (1993, under the name *P. polyacanthomerus*).

COLORATION. — Body light pink, with a mosaic patterns of light red markings on carapace and abdomen. Eyes dark brown. Pereiopods lighter in colour. Pleopods reddish. Eggs blue.

SIZE. — Largest male and largest female 30.2 mm and 31.9 mm cl, respectively. Smallest ovigerous female 22.5 mm cl.

REMARKS. — This species has been largely neglected since its original description in 1939. Only recently has it been redescribed and illustrated in detail by MONTERROSA (1988), PAULMIER [1993, under the name *P. polyacanthomerus* (non Pequegnat, 1970)] and POUPIN (1994). It is extremely similar to *P. williamsi* Forest, 1964, but almost none of the previous authors discussed their relationships. The present study shows that they do represent distinct species and even occur sympatrically in the Antilles and French Polynesia (see "Remarks" under *P. williamsi*). The colour photograph of *P. macropoda* (non Chace, 1939) provided by POUPIN (1994, pl. 1e) actually refers to *P. williamsi*, while those of *P. polyacanthomerus* (non Pequegnat, 1970) given by PAULMIER (1993, pls 19-20) represent true *P. macropoda*. It is not known whether the report of *P. williamsi* by LEMAITRE (1984) from the Bahamas and Gulf of Mexico truly refers to that species, since no details about the material was provided.

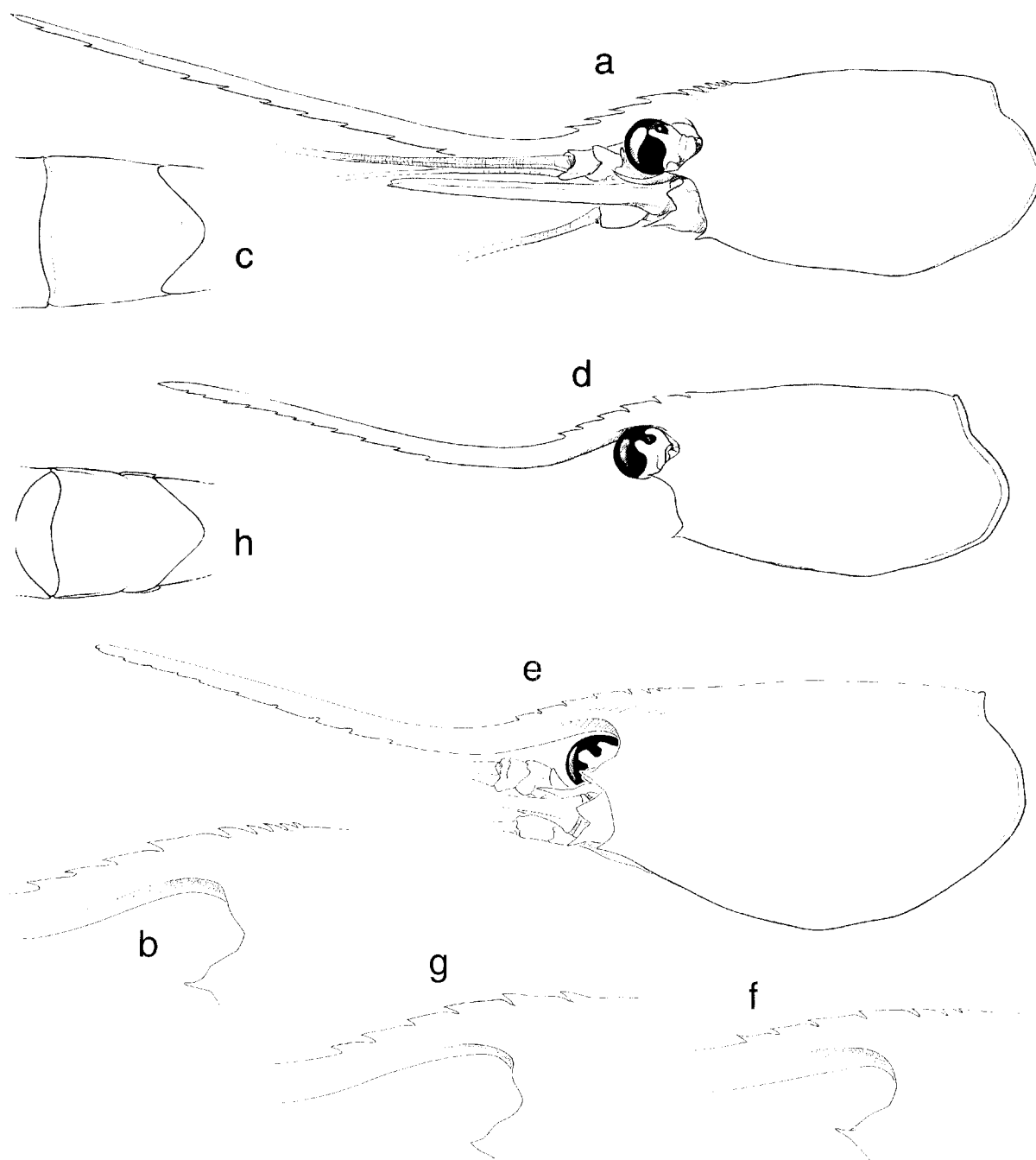


FIG. 11. — *Plesionika macropoda* Chace, 1939. **a-c**, ♂ 23.1 mm (MNHN-Na 13113), Antilles, "Polka", stn CP3, 400 m: **a**, lateral view of carapace; **b**, dorsal rostral and post-rostral teeth enlarged; **c**, dorsal view of abdominal somite III. — **d**, ♂ 23.1 mm (MNHN-Na 13112), French Polynesia, Tuamotu Islands, Gambier, stn 311, 470 m: lateral view of carapace. — **e-f**, ovig. ♀ 31.9 mm (MNHN-Na 13165), French Polynesia, "Marara", stn 405, 310 m: **e**, lateral view of carapace; **f**, dorsal rostral and post-rostral teeth enlarged. — **g**, ♀ 19.1 mm (MNHN-Na 12526), French Polynesia, "Marara", stn 37, 22°00.0'S, 136°12.0'W, 470 m, dorsal rostral and post-rostral teeth enlarged. — **h**, ♀ 27.7 mm (MNHN-Na 13114), French Polynesia, Society Islands, Huanine, stn 405, 310 m: dorsal view of abdominal somite III.

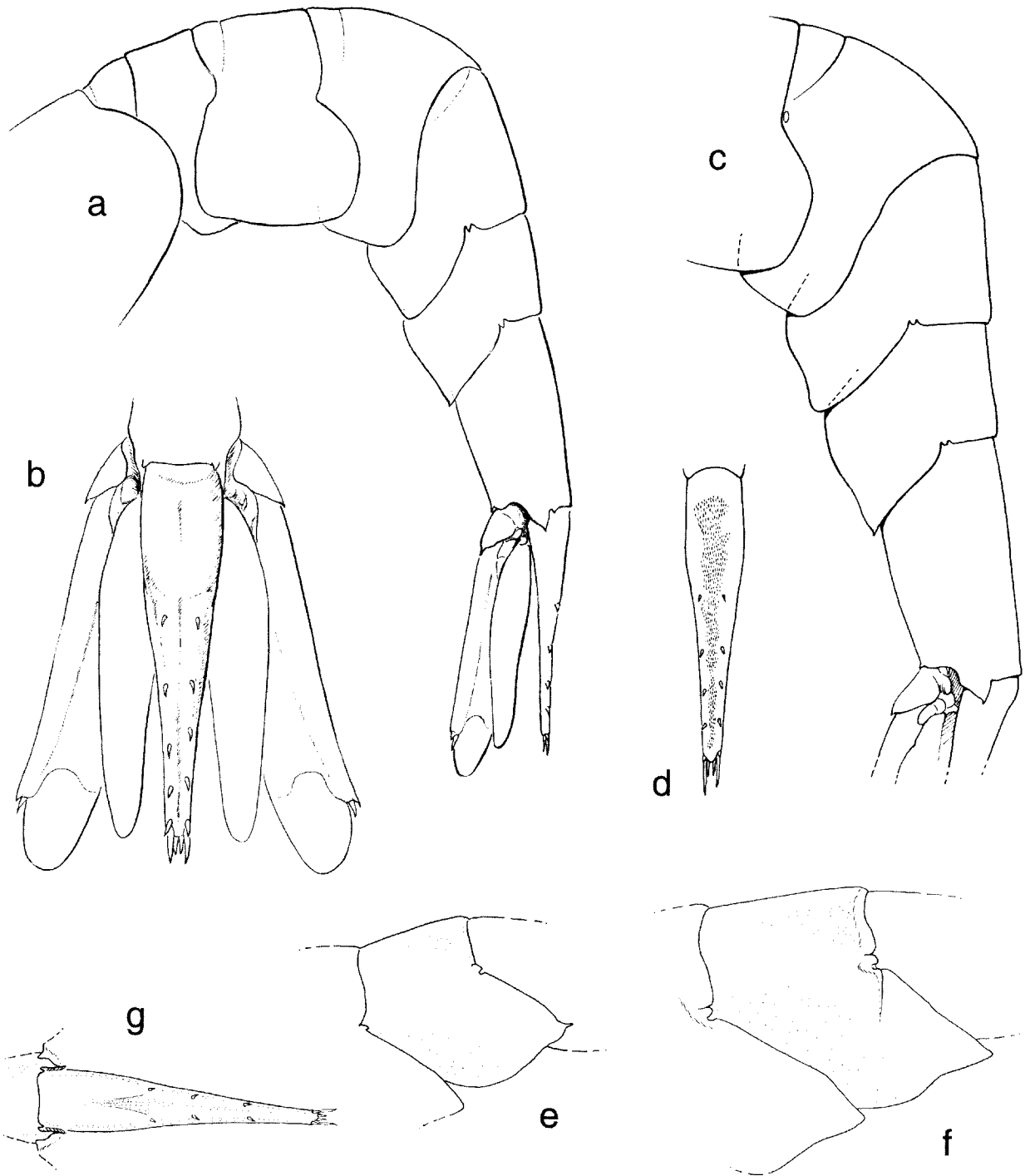


FIG. 12 a-d. — *Plesionika macropoda* Chace, 1939. **a-b**, ♂ 23.1 mm (MNHN-Na 13113), Antilles, "Polka", stn CP3, 400 m: **a**, lateral view of abdomen and tailfan; **b**, dorsal view of tailfan. — **c**, ♂ 21.9 mm (MNHN-Na 13099), Antilles, La Guadeloupe, côte sous le Vent, 400-450 m: lateral view of posterior part of abdomen. — **d**, ♂ 18.1 mm (MNHN-Na 12847), *ibidem*: dorsal view of telson. — **e**, ovig. ♀ 31.9 mm (MNHN-Na 13165), French Polynesia, "Marara", stn 405, 310 m: lateral view of fifth abdominal segment. — **f-g**, ♂ 23.1 mm (MNHN-Na 13112), French Polynesia, "Marara", stn 311, 470 m: **f**, lateral view of fifth abdominal segment; **g**, dorsal view of telson.

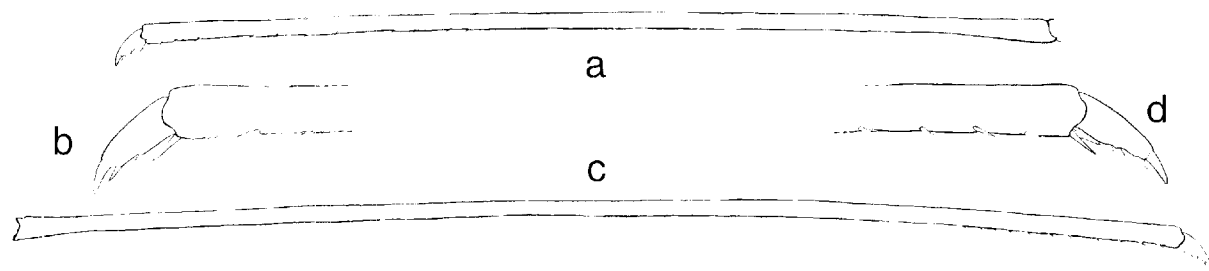


FIG. 13. — *Plesionika macropoda* Chace, 1939. Dactylus and propodus of pereopod III, ♀ 27.7 mm (MNHN-Na 13114). French Polynesia, Society Islands, Huanine, stn 405, 310 m: **a-b**, left side; **c-d**, right side. Figures a, c at the same scales, the same for figures b, d.

PAULMIER (1993) confused *P. macropoda* with *P. polyacanthomerus* Pequegnat, 1970, but an examination of 16 topotypic specimens (including 8 paratypes: 68-A-13-4, 67-A-5-6B, 67-A-5-9A, 68-A-7-17B; all transferred to MNHN from Texas A&M Oceanography Collection) of *P. polyacanthomerus* shows that they all bear distinct lateral carinae on the carapace and are, in fact, most similar to *P. carinata* Holthuis, 1951 from the western Atlantic (the exact relationship between these two species is not very clear), rather than to *P. macropoda*.

The general appearance of *P. polyacanthomerus* is generally similar to the "*P. martia* (A. Milne Edwards, 1883)" group in having the body more fragile and the rostral crest less pronounced, while *P. macropoda*, as well as *P. williamsi*, are closer to the "*P. edwardsii* (Brandt, 1851)" group in having a robust body and a distinct rostral crest. PEQUEGNAT (1970) mentioned that one of her specimens was quite different from the others in having only 9 widely spaced ventral rostral teeth. This specimen was not at our disposal, but it probably belongs to *P. macropoda*, rather than *P. polyacanthomerus*. Similarly, it is not known whether the material reported by SPRINGER and BULLIS (1956) from the Gulf of Mexico represents *P. macropoda* or *P. polyacanthomerus*.

The present specimens from French Polynesia and Loyalty Islands are very similar to the topotypic material from the Antilles (table 3) but they show several slight differences concerning:

- 1) the number and the shape of the dorsal rostral and post-rostral teeth. In specimens from the Antilles, if only the teeth entirely behind the orbit are counted, there are 4 (sometimes 3) post-rostral teeth, 2 or 3 (seldom 1, exceptionally 4) of them being movable and 1 or 2 partly divided only at their base; in specimens from South Pacific there are 2 or 3 (sometimes 1, once 4) post-rostral teeth, none or 1 (once 2 and once 3) being movable and 1 or 2 being partly divided at their base. On an other hand the unmovable teeth are less spiny and more squarish in the specimens from South Pacific (fig. 11 b and f-g).

- 2) the posteroventral angle of abdominal pleuron V is usually produced in a sharp denticle in the Antillean specimens; in the South Pacific specimens the angle is acute but seldom with a denticle (fig. 12 a, c and e-f).

- 3) the telson generally bears four pairs of dorsolateral spines in the Antillean material, compared to three pairs in the South Pacific specimens (fig. 12 b, d, g).

- 4) the number of posterior spinules (including the accessory spine) on the dactyli of the posterior pereopods is usually 2-3 in the South Pacific material but 3-4 (with basal spinules often small and very slender) in the Antillean specimens.

- 5) the colour pattern of the abdomen. The mosaic stripes on the abdomen are somewhat broader in the Antillean material (fig. 31) than in the South Pacific specimens (fig. 30).

So it would appear that the French Polynesian and Loyalty Islands specimens are different from the Antillean ones but in the present state of our knowledge on the variations in the *Plesionika* species with a wide geographical range, and taking into account the variations occasionally exhibited in a same individual (c.g. fig. 13) and those occurring in the different populations of *P. williamsi*, it seems reasonable not to separate the South Pacific material from the Antillean one, at least for the time being.

DISTRIBUTION. — Western Atlantic and southern Pacific: Caribbean and in the south Pacific, only known with certainty from the Loyalty Islands and French Polynesia, at depths of 260-600 m.

Plesionika williamsi Forest, 1964

Figs 14-15, 32-33

Plesionika williamsi Forest, 1964: 620, figs 1-4 [type-locality: Gulf of Guinea]. — CROSNIER & FOREST, 1973: 211, fig. 65c. — POUPIN, 1996, pl. 5f.

[?] *Plesionika williamsi* - LEMAITRE, 1984: 435. — BURUKOVSKY, 1995: 124.

Plesionika aff. *williamsi* - CROSNIER, 1986a: 373, fig. 4a-g. — POUPIN *et al.*, 1990: 16 (in part).

Plesionika crosnieri Burukovsky, 1992: 145, figs 1-4 [type-locality: Southeast Pacific seamount].

Plesionika alaini Burukovsky, 1993: 18 [nom. nov. for *P. crosnieri* Burukovsky, 1992].

Plesionika macropoda - POUPIN, 1994: 25 (in part), pl. 1c [non Chace, 1939].

MATERIAL EXAMINED. — **West Africa. Gulf of Guinea.** GUINEAN TRAWLING SURVEY: stn 28-8, 4°16'N, 2°09.5'W, 380-400 m, mud, trawling, 4.10.1963: 3 ex. [MNHN-Na 14376]. — Stn 27-8, 4°39'N, 2°46'W, 300-400 m, mud, 6.10.1963: 1 ♀ 25.3 mm, holotype (MNHN-Na 2129) and 28 ex. (MNHN-Na 8052, 8039, 8054).

Senegal. "Pr. Bogucki": stn 11, 14°24'N, 17°34'W, trawling, 416 m, 26.05.1979: 2 ovig. ♀ 30.7 and 31.3 mm (MNHN Na 3845). — "Laurent Amaro": stn 2, 14°21.7'N, 17°35.2'W, 400-420 m, trawling, 12.6.1981: 3 ex. 30.7-31.1 mm [MNHN-Na 4088].

Canary Islands. Tenerife. 1 ex. (MNHN-Na 2126).

Madeira. BALGIM: stn CP 156, 36°20'N, 7°53'W, 1130-1140 m, 18.06.1984: 1 ex. 30.0 mm (MNHN-Na14374).

Antilles. "Polka": stn Y11, 16°00.01'N, 61°45.82'W, 500 m, March 1993: 1 ovig. ♀ 29.5 mm (MNHN-Na 13106, drawn). — Stn EPI, 15°50.93'N, 61°41.39'W, 560 m, May 1993: 2 ♂ 20.0 and 24.3 mm.

Madagascar. "Vauban": trawling 38, 12°50.0'S, 48°09.1'E, 580-585 m, 14.09.1972: 7 ex. (MNHN-Na 14375).

La Reunion. 350-500 m, 2.02.1974: 1 ♂ 26.6 mm.

Seychelles. CEPROS: stn 1.3, 4°08'S, 56°11.3'E, 580-500 m, 20.10.1987: 2 ex. 24.0 and 24.9 mm (MNHN-Na 14373). — Stn 3.16, 4°34.7'S, 56°25.6'E, 410-390 m, 22.10.1987: 2 ex. 25.6 and 25.7 mm (MNHN-Na 14377).

Kiribati. *South Pacific Commission*: 400 m, April 1987: 2 ex. 18.0 and 30.5 mm (MNHN-Na 14378).

French Polynesia. SMSRB (J. POUPIN and B. RICHER DE FORGES coll.): **Marquesas Islands. Eiao.** Stn 279, 8°10.0'S, 139°42.0'W, 400 m, 18.08.1990: 3 ♀ 16.1-27.4 mm, 1 ovig. ♀ 26.7 mm. — Stn 280, 8°10.3'S, 139°42.6'W, 600 m, 18.08.1990: 2 ♂ 23.8 and 26.4 mm. — **Tahuata.** 430 m, 13.09.1987: 1 ♀ 22.8 mm. — Stn 299, 9°54.5'S, 139°08.2'W, 350 m, 1.09.1990: 1 ovig. ♀ 30.4 mm (MNHN-Na 13019, drawn). — **Ua Pou.** Stn 57, 9°23.0'S, 140°09.0'W, 590 m, 10.09.1987: 1 ♂ 14.3 mm. — Stns 59-60, 9°23.0'S, 140°09.0'W, 450-520 m, 26.01.1988: 11 ♂ 14.3-23.3 mm.

Society Islands. Îles sous le Vent. Bellingshausen. Stn 96, 15°48.0'S, 154°32.0'W, 580 m, 21.07.1988: 3 ♂ 16.7-17.2 mm, 2 ♀ 13.6 and 21.2 mm [transferred to USNM]. — **Tahiti (Port Phaeton).** October 1978: 2 ♂ 23.5 and 25.6 mm (MNHN-Na 7720, Na 7721).

Tuamotu Islands. Makemo. Stn 111, 16°40.0'S, 143°39.0'W, 500 m, 12.11.1988: 1 ♂ 18.9 mm, 1 ♀ 16.7 mm. — **Fangataufa.** Stn 235, 22°14.6'S, 138°46.4'W, 480 m, 22.05.1990: 1 ♀ 17.7 mm. — **Marutea Sud.** Stn 402, 21°30.8'S, 135°38.4'W, trapping, 380 m, 25.03.1991: 1 ♂ 30.7 mm. — Stn 473, 21°47.0'S, 138°55.5'W, 465 m, 10.04.1995: 1 ♂ 25.4 mm. — **Mururoa.** 21°52.7'S, 138°53.1'W, 450 m, 2.10.1996: 1 ♂ 25.4 mm, 5 ♀ 23.9-31.8 mm, 1 ovig. ♀ 31.3 mm (transferred to NTOU).

Tubuai Islands. Stn 338, 22°28.6'S, 151°22.4'W, 500 m, 27.11.1990: 1 ♂ 25.8 mm [transferred to USNM].

DIAGNOSIS. — Detailed descriptions of this species can be found in FOREST (1964), CROSNIER and FOREST (1973) and CROSNIER (1986a).

COLORATION. — Body light pink. Carapace and tip of rostrum reddish. Abdomen covered with broad red bands. Eyes dark brown. Distal segments of pereopods somewhat whitish. Eggs bluish.

SIZE. — Largest male and largest female 30.7 and 33.4 mm cl, respectively. Smallest ovigerous female 26.7 mm cl.

REMARKS. — The present form has been reported by CROSNIER (1986a) from French Polynesia under the name *P. aff. williamsi*. However, the differences mentioned by CROSNIER (1986a) between the French Polynesian and the topotypic material are found to be rather variable in the specimens available for the present study. Nevertheless, there appears to be a link between the shape of the posterior margin of the abdominal somite III and the length of rostrum, as well as the number of rostral teeth. For those 39 specimens with the posterior margin of the abdominal tergite III produced into a sharp angle (in 13 specimens) or even a small spine (in 26 specimens, fig.

14b), the rostrum is relatively shorter (1.4-2, avg. 1.7 carapace length; with small individuals generally having a relatively longer rostrum) and has more dorsal teeth (9-11, 8 in only one specimen) but fewer ventral teeth (7-12, fig. 14a). On the other hand, those specimens with the posterior margin of abdominal tergite III bluntly angular or rounded (fig. 11h) generally have a longer rostrum (1.8-2.1, avg. 1.9 carapace length) with fewer dorsal teeth (6-9, 11 in only one specimen) but more ventral teeth (9-14, fig. 11d-e). Furthermore, colour photographs of fresh specimens from French Polynesia showed that the above morphological differences are always accompanied by the presence or absence of red bands on the abdomen. Colour photographs of 10 red banded specimens are available (fig. 32). The specimens used for six of them (i.e. stn 235, 299, 473 and Belingshausen, Ua Pou, Mururoa) are deposited at the Paris Museum; they all have pointed abdominal tergite III, as well as a shorter rostrum. On the other hand, the 4 colour photographs of unbanded specimens (fig. 30), from stn 311, 383, 405 and 476, all correspond to individuals with rounded abdominal tergite III and a longer rostrum. It is, therefore, highly probable that two distinct species are present in the French Polynesian material.

<i>Plesionika macropoda</i>	Antilles						Loyalty Islands	French Polynesia
Total length/cl	1.7-2.3 (2.0) n=15						1.8-2.0 n=2	1.8-2.1 (1.9) n=8
Dorsal teeth	7-10 (8.7) n=19						6-7 n=2	6-11 (7.5) n=10
Ventral teeth	9-13 (11.1) n=16						12 n=2	9-14 (11.1) n=8
<i>Plesionika williamsi</i>	Antilles	Gulf of Guinea	Senegal	Madeira	La Reunion	Seychelles	Kiribati	French Polynesia
Total length/cl	1.5-1.7 (1.6) n=3	1.1-1.5 (1.3) n=20	1.2-1.3 n=2	1.7 n=1	1.5 n=1	1.6-1.8 (1.7) n=4	1.5 n=1	1.4-2.0 (1.7) n=23
Dorsal teeth	8-10 (9.9) n=3	9-12 (10.4) n=24	10 n=3	10 n=1	11 n=1	9-12 (10.8) n=4	9-10 (9.5) n=2	8-11 (9.7) n=31
Ventral teeth	9-11 (9.7) n=3	6-12 (9.9) n=20	8-13 n=2	11 n=1	7 n=1	8-10 (9.3) n=4	12 n=1	7-12 (9.8) n=23

Numbers in brackets represent the average values.

TABLE 3. — Comparisons of the rostrum between *Plesionika macropoda* Chace, 1939 (i.e. specimens with abdominal somite III rounded) and *P. williamsi* Forest, 1964 (i.e. specimens with abdominal somite III pointed) from different localities.

An examination of 32 specimens from the type series (including the holotype) of *P. williamsi* from the Gulf of Guinea shows that they all have pointed abdominal somites III (also varying from a sharp angle to bearing a distinct denticle, figs 14e-f). However, the rostrum of the types are considerably shorter (1.1-1.5, avg. 1.3 carapace length) than those of the French Polynesian material with a pointed abdominal tergite III, though the number of rostral teeth are very similar. When a range of material from western Africa to the Indian Ocean and southern Pacific is compared, the differences in the proportional length of the rostrum exhibited in the various populations seem to represent natural variations of a single species with a very wide geographical distribution (Table 3). Although the specimens of the Indo-Pacific material with a longer rostrum show some resemblances with *P. carinata* Holthuis, 1951 (with a type locality close to that of *P. williamsi*), the size of *P. carinata* is much smaller (usually less than 20 mm cl) and it always bears a distinct lateral carina on the carapace [specimens from West Africa reported in CROSNIER and FOREST (1973) deposited at MNHN were examined]. In *P. williamsi*, only rudimentary lateral carina is sometimes present on the carapace and mainly in very large specimens.

Slight differences in the number of spines on the telson, the shape of the dactyli of the posterior pereopods and abdominal pleuron V are also observed in the various populations. Although the telson has generally been described as having four pairs of dorsolateral spines in *P. williamsi* (FOREST, 1964; CROSNIER & FOREST, 1973), sometimes three or five pairs of dorsolateral spines are present and the number of spines on the left and right sides

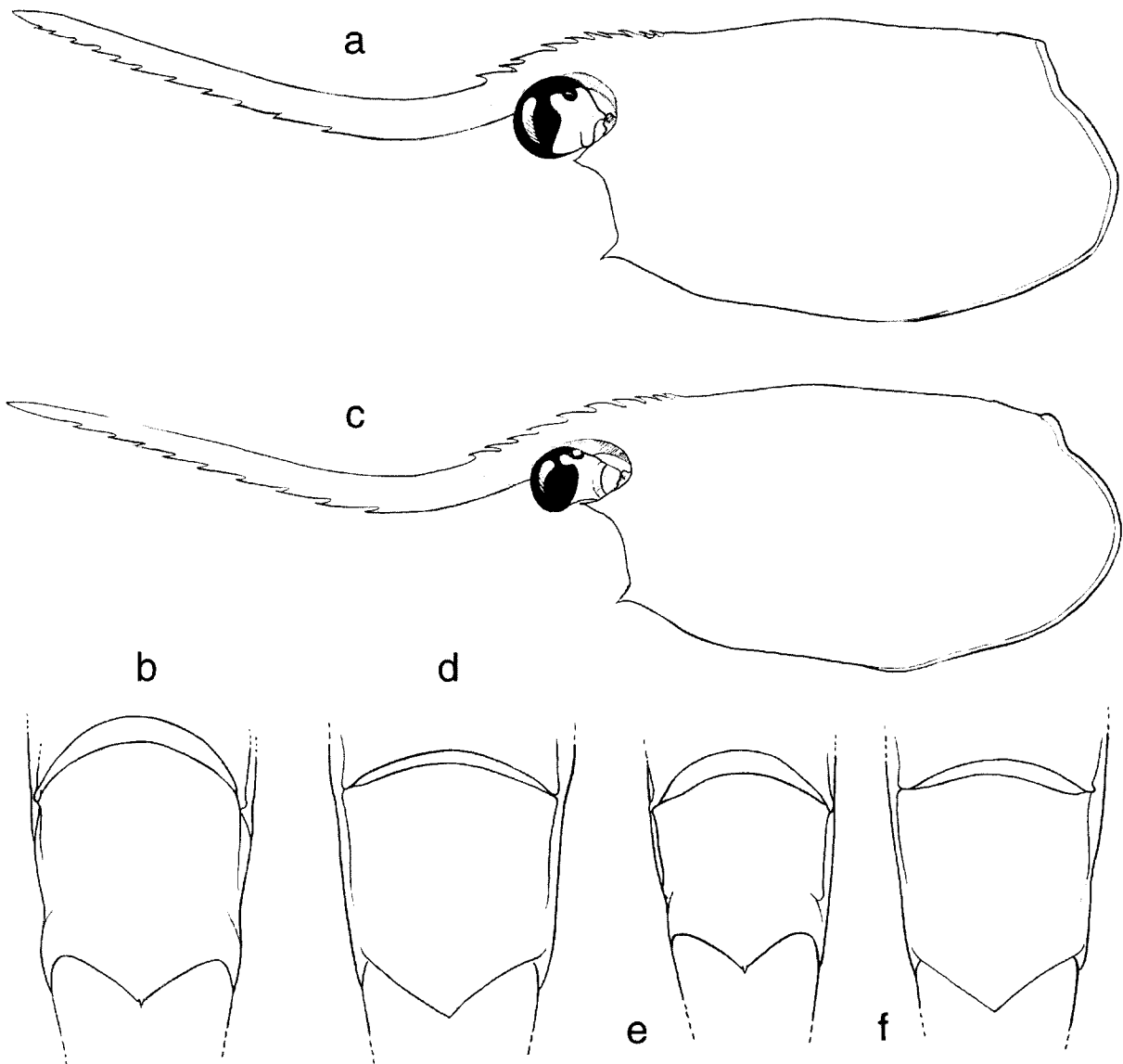


FIG. 14. — *Plesionika williamsi* Forest, 1964. **a-b**, ovig. ♀ 30.4 mm (MNHN-Na 13109), French Polynesia, Marquesas Islands, Tahuato, stn 299, 350 m: **a**, lateral view of carapace; **b**, dorsal view of abdominal somite III. — **c-d**, ovig. ♀ 29.5 mm (MNHN-Na 13106), Antilles, "Polka", stn Y11, 560 m: **c**, lateral view of carapace; **d**, dorsal view of abdominal somite III. — **e**, ♀ 25.3 mm, holotype (MNHN-Na 2129), Gulf of Guinea, Guinean Trawling Survey, stn 27-8, 300-400 m: dorsal view of abdominal somite III. — **f**, ♀ 29.0 mm (MNHN-Na 14376 part), Gulf of Guinea, Guinean Trawling Survey, stn 28-8, 380-400 m: dorsal view of abdominal somite III.

are often unequal (see CROSNIER, 1986a, figs 4d, g). Nevertheless, the South Pacific material usually has only three pairs of dorsolateral spines on the telson. The number of spinules on the posterior border (including the accessory spine) of the dactyli of posterior pereopods varies from 1-4 (but mostly 2-3) and such variation can sometimes occur in the same specimen (fig. 15). Similarly, the posterolateral angle of abdominal pleuron V may be round to sharp, or produced into a distinct denticle, and the shape of the pleuron is sometimes different between the left and right sides in the same individual. Therefore, the differences suggested by CROSNIER (1986a) for the French Polynesian material appear to be unimportant.

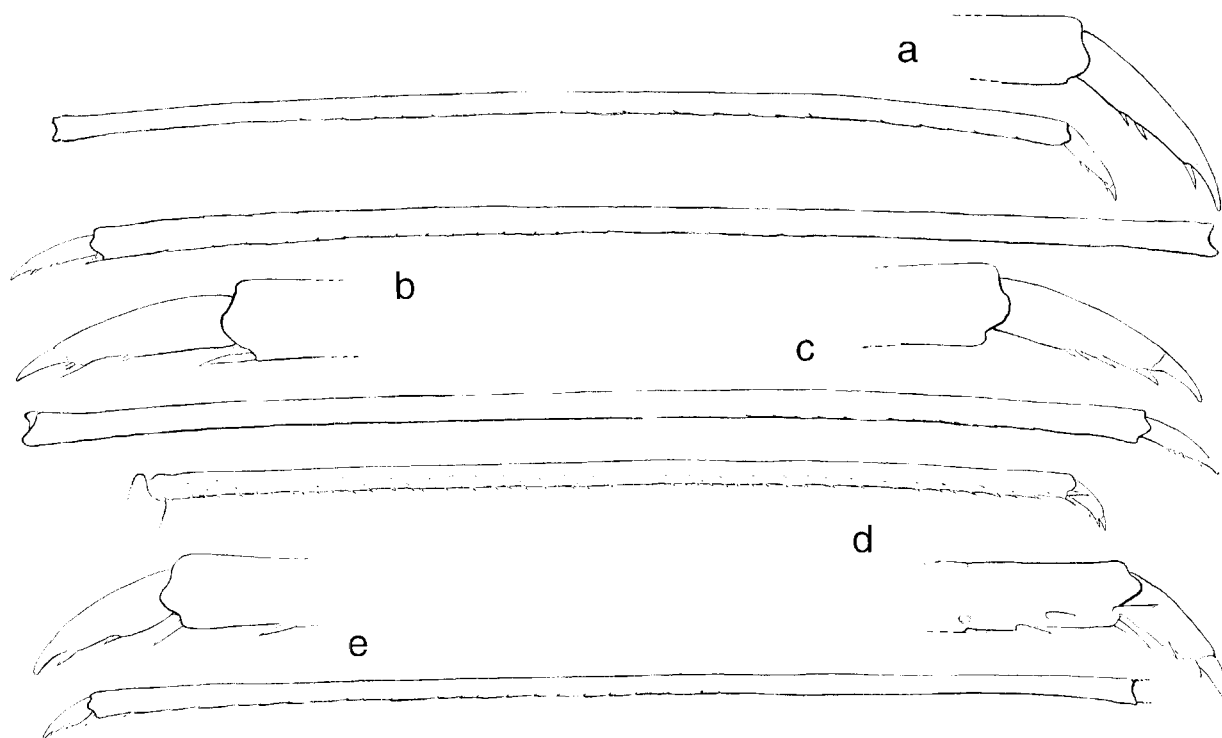


FIG. 15. — *Plesionika williamsi* Forest, 1964. Dactylus and propodus of pereopod III.

a, ♀ 25.3 mm, holotype (MNHN-Na 2129), Gulf of Guinea, Guinean Trawling Survey, stn 27-8, 300-400 m: right side. — b-c, ovig. ♀ 31.1 mm (MNHN-Na 4088 part), Senegal, "Laurent Amaro", stn 2, 400-420 m: b, left side; c, right side. — d, ovig. ♀ 30.4 mm (MNHN-Na 13109), French Polynesia, Marquesas Islands, Tahuato, stn 299, 350 m: right side. — e, ovig. ♀ 29.5 mm (MNHN-Na 13106), Antilles, "Polka", stn Y 11, 560 m: left side.

On the other hand, *P. macropoda* Chace, 1939, described from the western Atlantic, is actually similar to *P. williamsi*, as said above. The types of *P. macropoda* are described by CHACE (1939) as having a round abdominal tergite III and a very long rostrum (nearly twice as long as carapace). The number of rostral teeth of the types (7-8 dorsal teeth and 11 ventral teeth) also agrees well with those of the French Polynesian material with a rounded abdominal somite III. The colour photographs of fresh material from the Antilles provided by PAULMIER (1993, pls 19-20, under the name *P. polyacanthomerus*) and POUPIN (1994, pl. 1e) show a very similar pattern of banded and unbanded forms to that found in specimens from French Polynesia. A re-examination of POUPIN's (1994) material revealed that the banded specimen (fig. 33) used for his illustration (POUPIN, 1994, pl. 1e; specimen from Stn EP1, not CP1 as indicated in the caption) also has a pointed abdominal tergite III and a shorter rostrum (fig. 14c-d), while another specimen (from Stn 211, fig. 31) with colour photograph showing an unbanded abdomen has the typical characteristics of *P. macropoda* (fig. 11a-c). Therefore, it appears that two distinct forms are also present in the Antilles.

After comparing many specimens and colour photographs of fresh material from various localities in both the Indo-Pacific and Atlantic, we conclude that the name *P. williamsi* can probably be applied to the banded form with a pointed abdominal tergite III and shorter rostrum. For the unbanded form with a rounded abdominal tergite III and longer rostrum, the name *P. macropoda* seems to be appropriate for the time being, even if the differences observed between the Atlantic and the South Pacific specimens leave open the question of distinguishing the specimens of these two areas by two different specific names (see p. 208). Both species have a very wide geographical distribution and sometimes occur sympatrically (a situation which seems to be rather common in *Plesionika* for very similar species). If the above conclusion is correct, *P. crosnieri* Burukovsky, 1992 (junior homonym of *P. crosnieri* Chan & Yu, 1991) recently described from the southeastern Pacific, should be treated as a junior

synonym of *P. williamsi*, since they both have a shorter rostrum (about 1.5 times as long as carapace) and the posterior margin of the abdominal tergite III in the form of a right angle instead of rounded. *P. williamsi* appears to occur mainly in the eastern Atlantic and the Indo-Pacific, while *P. macropoda* is dominant in the western Atlantic. This, together with the fact that only *P. williamsi* is found in the eastern Atlantic and the Indian Ocean, may suggest that *P. macropoda* has only recently invaded the South Pacific from the Caribbean, through the Panama Canal, and vice versa for *P. williamsi*, from the Pacific to the Antilles, though more extensive data are needed for a more careful interpretation on the zoogeographical relationships of these two, closely related species.

DISTRIBUTION. — World-wide tropical and subtropical seas, but only known with certainty in the Atlantic from the French Antilles to western Africa (Gulf of Guinea, Senegal, Canary and Madeira Islands); and in the Indo-Pacific from Madagascar, La Reunion, Seychelles, Kiribati and French Polynesia to southeastern Pacific, near Chile. At depths of 300-1140 m, mostly less than 700 m.

Plesionika martia (A. Milne Edwards, 1883)

Pandalus martius A. Milne-Edwards, 1883, pl. 21 [type-locality: Mediterranean].

Plesionika martia - CROSNIER & FOREST, 1973: 212, figs 63d, 64c, 66.

MATERIAL EXAMINED. — **French Polynesia.** SMSRB (J. POUPIN coll.): *Marquesas Islands. Nuku Hiva.* Stn 284, 9°06.0'S, 140°07.6'W, 650 m, 27.08.1990: 4 ♂ 16.8-27.3 mm, 1 ♀ 16.7 mm. — *Ua Pou.* Stn 57, 9°23.0'S, 140°09.0'W, 590 m, 10.09.1987: 1 ♀ 22.2 mm [transferred to USNM].

DIAGNOSIS. — The general appearance, as well as possible distribution and size of this species, can be found in CROSNIER and FOREST (1973), though much confusions probably exists concerning the species of the "*P. martia*" group.

REMARKS. — The "*P. martia*" group is generally considered to be a difficult species complex (e.g. CROSNIER & FOREST, 1973; CHACE, 1985; HANAMURA & TAKEDA, 1987; KENSLEY *et al.*, 1987). Since only 6 French Polynesian specimens are available in this study, unaccompanied by any colour note, they are tentatively assigned to this species according to the preliminary results obtained from a more detailed study of this group based mainly on Taiwanese material (CHAN & YU, in prep.). The limited French Polynesian material has the post-rostral carina sharp but not distinctly laminate, upper lobe of orbital margin nearly vertical, dorsal border of rostrum without any tooth anterior to scaphocerite, basicerite spine long and distinctly overreaching proximal end of lateral margin of scaphocerite. Only one specimen (19.7 mm cl) still possesses a complete pereopod IV and its propodus is longer than the carapace length.

Plesionika semilaevis Bate, 1888

Plesionika semilaevis Bate, 1888: 644, pl. 113 fig.3 (in part) [type-locality: the Philippines]. — CHACE, 1985: 113, figs 51-54.

MATERIAL EXAMINED. — **French Polynesia.** SMSRB (B. RICHER DE FORGES coll.): *Tubuai Islands. Tubuai.* 800 m, 14.05.1979: 2 ♂ 16.1 and 17.8 mm.

DIAGNOSIS. — The general characters and other information such as possible distribution and size of this species can be referred to CHACE (1985), though it should be borne in mind that the taxonomy of the "*P. martia*" group is probably confused.

REMARKS. — Only two French Polynesian specimens are available in this study and they lack a colour record. Similar to the situation of the material identified as *P. martia* (A. Milne Edwards, 1883), these two specimens are here tentatively assigned to *P. semilaevis* according to the preliminary results of a more detailed study of the

"*P. martia*" group (CHAN & YU, in prep.). The French Polynesian material has the eye kidney shaped, post-rostral carina high and laminate; upper lobe of orbital margin strongly recurved backwards; basicerite spine very long and far exceeding proximal end of lateral margin of scaphocerite. The rostrum is broken and all the posterior pereopods are incomplete in these two specimens.

Plesionika erythrocyclus sp. nov.

Figs 16, 34-35

Plesionika rostricrescentis - KING, 1984: 178, fig. Pr. [non Bate, 1888].

Plesionika sp. nov. 1 - POUPIN, 1996, pl. 4a.

MATERIAL EXAMINED. — **French Polynesia.** SMSRB (J.-L. CARLIN and J. POUPIN coll.): **Tuamotu Islands.** **Mururoa.** 350-600 m, 1984: 1 ovig. ♀ 10.7 mm (MNHN-Na 13123). — Stn 499, 21°47.6'S, 138°55.7'W, 200 m, 5.05.1996: 1 ovig. ♀ 11.6 mm (transferred to NTOU).

Tubuai Islands. **Rurutu.** Stn 356, 22°30.3'S, 151°21.7'W, 260 m, 10.12.1990: 1 ovig. ♀ 10.6 mm (transferred to USNM).

Taiwan. **North-eastern coast,** Su-Aou, I-Lan County, commercial trawler, about 300 m, 22.05.1990: 1 ♀ 10.3 mm (NTOU-P 1990-5-22).

TYPES. — The ovigerous female (10.7 mm cl) (MNHN-Na 13123) from Mururoa is the holotype. All the other specimens from Polynesia are paratypes.

DESCRIPTION. — Body somewhat robust in appearance. Rostrum with lateral carina distinct on basal half and not continuous with orbital margin, curving downward at base, but abruptly upturned after passing the eye, more or less (0.9-1.1) as long as carapace and just overreaching scaphocerite; dorsal border bearing only 2 small apical teeth and 1-2 fixed basal teeth above eye; ventral border with 7-9 evenly distributed teeth between level of eye and tip; post-rostral crest low and armed with 5-6 movable teeth (anteriormost one occasionally situated just above orbital margin). Orbital margin regularly concave, with lower lobe somewhat truncate. Eye subspherical and bearing distinct ocellus. Antennal spine large and elongate. Pterygostomial spine sharply pointed but small. Stylocerite tapered anteriorly and extending to around basal or middle part of distal segment of antennular peduncle. Scaphocerite 3.9-4.6 times as long as broad, with distolateral tooth more or less reaching distal margin of lamella. Basicerite spine moderately long and extending to proximal end of outer margin of scaphocerite.

Maxilliped III bearing well developed epipod and a long exopod, with penultimate segment 0.6-0.7 times as long as distal segment; overreaching scaphocerite by 1/3-1/2 of distal segment. Anterior four pereopods all bearing well developed epipods. Pereiopod I overreaching scaphocerite by 1/2-4/5 propodus and entire dactylus. Pereiopod II bearing 20-22 carpal articles on the right side and 76-83 carpal articles on the left side, longer one exceeding scaphocerite by slightly more than lengths of dactylus, propodus and carpus. Pereiopod III exceeding scaphocerite by 2/3-3/4 of propodus and entire dactylus; dactylus conical, short, 0.14-0.15 times as long as propodus, posterior margin bearing 2-5 spinules, accessory spine about half to almost as long as, and abutting with, terminal spine. Pereiopods IV and V similar to pereiopod III, with pereiopod IV overreaching scaphocerite by 1/3-1/2 of propodus and entire dactylus, and pereiopod V by slightly more than length of dactylus.

Abdominal somite III slightly arched dorsally, with posterior margin convex. Both abdominal pleura IV and V each bearing a distinct posteroventral denticle. Telson 1.3-1.5 times longer than abdominal somite VI, with three pairs of dorsolateral and three pairs of terminal spines. Eggs suboval, about 0.4 mm in diameter.

COLORATION. — Body covered with orange-red tints and a few irregular yellowish stripes, each abdominal somite having a transverse white band near posterior border, somite I also bearing a broad transverse red band (the yellow stripes and white bands quickly fade when the specimens are less fresh). Eyes black. Dorsal surface of abdominal tergite III bearing a pair of large, white-margined, red circular spots, while that of tergite VI has a pair of smaller red spots. Tip of rostrum reddish. Thoracic appendages, antennal and antennular flagella with red bands. Exopods of uropods with two pairs of red dots along outer margin. Eggs a rather light orange.

SIZE. — Largest female 11.6 mm cl. Smallest ovigerous female 10.6 mm cl. Males unknown.

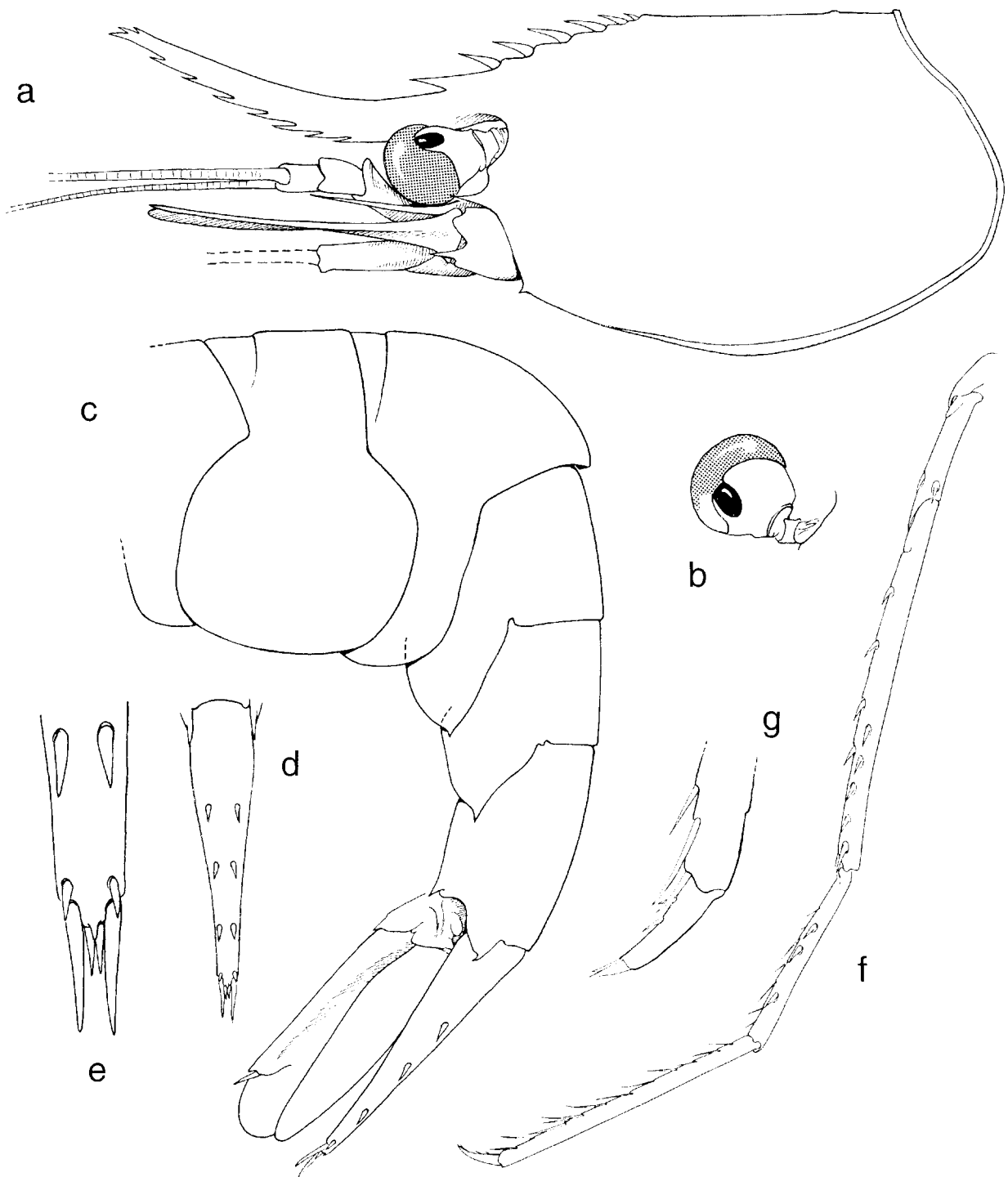


FIG. 16. — *Plesionika erythrocyclus* sp. nov. Ovig. ♀ 10.7 mm, holotype (MNI N-Na 13123), French Polynesia, Tuamotu Islands, Mururoa, 350-600 m: **a**, lateral view of carapace; **b**, eye; **c**, lateral view of abdomen and tailfan; **d**, dorsal view of telson; **e**, dorsal view of tip of telson; **f**, left pereopod III; **g**, left dactyl of pereopod III. Figures a-d and f at the same scale.

REMARKS. — The present species is very close to *P. rostricrescentis* (Bate, 1888), described from New Guinea. It differs from BATE's (1888) original description and figures in some important aspects. Apart from having a much larger size (i.e. 18 mm cl), the type of *P. rostricrescentis* has the rostrum much longer (1.5 times as long as the carapace and far exceeding scaphocerite) and with a very high basal crest (BATE, 1888: 654, table; pl. 114, fig. 1, but in the text BATE mentioned that the rostrum is as long as the carapace). Furthermore, the stylocerite is distinctly longer and reaches the distal end of the antennular peduncle in BATE's (1888) New Guinean specimen. The number of ventral rostral teeth in the type of *P. rostricrescentis* is 15, which is much higher than in the present form (i.e. 7-9 teeth). However, the "Albatross" material from the Philippines and Indonesia identified as *P. rostricrescentis* by CHACE (1985) has only 9 or 10 ventral rostral teeth. But we should mention here that at least two more forms belonging to the "*P. rostricrescentis*" group are present in the collections of MNHN and NTOU from New Caledonia and Taiwan; CHACE's (1985) description of the "Albatross" material is actually very similar to one of the forms of the "*P. rostricrescentis*" group found in both New Caledonia and Taiwan, which probably represents the true *P. rostricrescentis*. These probably true *P. rostricrescentis* from New Caledonia and Taiwan have a very different coloration, bearing a large red circle on the lateral surface of the abdominal somite I, but without any red spots on abdominal somite III. On the other hand, the material from Fiji and Tonga reported by KING (1984, fig. Pr) as "*P. rostricrescentis*" has the abdominal somite III bearing a large circular spot. Since these specimens from Fiji and Tonga also have a short rostrum and a low post-rostral crest, they probably belong to the same species as the present species, instead of *P. rostricrescentis*. Moreover, photographs of freshly collected specimens belonging to the "*P. rostricrescentis*" group from New Caledonia also show the characteristic red spot on the abdominal somite III. This indicates that the present form is probably also distributed in New Caledonia. For the specimen identified as "*P. rostricrescentis*" by YOKOYA (1933) from southern Japan, no size or description were given. In view of the confused taxonomy of the species of the genus *Plesionika*, particularly in previous works, only a re-examination of YOKOYA's (1933) specimen can clarify the identity of the Japanese material.

Although the true identity of *P. rostricrescentis* is still uncertain, several characters of the present form (e.g. smaller size, low rostral crest, shorter rostrum, stylocerite, etc.) are significantly different from typical *P. rostricrescentis* (as well as related species, such as *P. grahami* Kensley, Tranter & Griffin, 1987), indicating that it deserves specific status. The specimens from French Polynesia and Taiwan are generally very similar (including coloration), except that the single female from Taiwan has the dactylus of pereopod III bearing slightly more posterior spinules and with the accessory spine shorter. Nevertheless, more specimens from various localities may show that such differences in the dactylus are geographical variations, as in some of the other species of the genus.

ETYMOLOGY. — The Latin *erythrocyclus* refers to the conspicuous red spots on abdominal somite III in this species.

DISTRIBUTION. — Known from French Polynesia and Taiwan, probably also distributed in New Caledonia, Fiji and Tonga, at depths of 200-600 m.

Plesionika sindoi (Rathbun, 1906)

Figs 17, 36-37

Pardalus sindoi Rathbun, 1906: 915, pl. 21, fig. 4 [type-locality: Hawaii].

Plesionika Sindoi - DE MAN, 1920: 126, pl. 11, fig. 27-27d, pl. 12, fig. 27e.

Plesionika ocellus - CHACE, 1985: 90, fig. 40. — TORIYAMA *et al.*, 1990: 18, pl. 3a [non Bate, 1888].

Plesionika aff. *ocellus* - POUPIN *et al.*, 1990: 16 [non Bate, 1888].

Plesionika sindoi - POUPIN, 1996, pl. 5c.

Not *Plesionika sindoi* - BALSS, 1925: 279, figs 49-52, pl. 26 [= *P. indica* De Man, 1917].

MATERIAL EXAMINED. — **Hawaii**. "Albatross": stn 3998, vicinity of Kauai Island, 430-417 m, 14.06.1902: 2 ♂ 10.3 and 13.1 mm, syntypes (USNM).

French Polynesia. SMSRB (J. POUPIN coll.): *Marquesas Islands. Fatu Hiva.* Stn 306, 10°31.1'S, 138°39.4'W, 250 m, 4.09.1990: 5 ovig. ♀ 7.1-7.9 mm (2 ex. transferred to NTOU); 1 ovig. ♀ 7.3 mm (MNHN-Na 13111, drawn).

Society Islands. Îles sous le Vent (Bora Bora). Stn 97, 16°28.0'S, 151°47.0'W, 480 m, 23.07.1988: 2 ♂ 9.5-10.4 mm, 2 ovig. ♀ 11.7 mm (MNHN-Na 13110, drawn) and 14.2 mm, 3 ♀ 9.5-12.0 mm.

Tuamotu Islands. Fangataufa. Stn 85, 22°13.0'S, 138°42.2'W, 780 m, 22.06.1988: 1 ♂ 11.2 mm. — Stn 438, 22°12.28'S, 138°46.64'W, 410 m, 14.11.1994: 1 ovig. ♀ 13.0 mm. — Stn 488, 22°14.4'S, 138°46.7'W, 510 m, 25.04.1995: 1 ♀ 15.5 mm. — **Gambier.** Stn 238, 23°01.1'S, 134°59.0'W, 500 m, 27.5.1990: 2 ♂ 8.6-8.7 mm, 4 ovig. ♀ 10.2-11.5 mm. — **Makemo.** Stn 68, 16°36.0'S, 143°33.0'W, 510 m, 4.06.1988: 1 ovig. ♀ 13.5 mm. — **Maria.** Stn 72, 22°00.0'S, 136°17.0'W, 430 m, 10.06.1988: 2 ovig. ♀ 9.2-9.8 mm. — Stn 241, 22°00.9'S, 136°12.5'W, 380 m, 30.05.1990: 1 ♂ 11.3 mm, 5 ♀ 10.2-12.6 mm. — **Mururoa.** Stn 39, 21°49.3'S, 138°46.5'W, 470 m, 2.12.1987: 2 ovig. ♀ 15.1-16.0 mm (MNHN-Na12525). — Stn 457, 21°53.9'S, 139°01.3'W, 450 m, 25.11.1994: 1 ♀ 10.7 mm. — **Tuanake.** Stn 253, 16°37.3'S, 144°13.3'W, 450 m, 5.06.1990: 1 ♂ 14.1 mm, 7 ovig. ♀ 11.4-14.3 mm, 2 ♀ 10.2-12.1 mm (transferred to USNM).

Tubuai Islands. Maria. Stn 422, 21°47.9'S, 156°43.8'W, 680 m, 7.08.1991: 1 ♂ 10.1 mm. — **Raevavae.** Stn 100, 23°55.0'S, 147°40.0'W, 530 m, 24.08.1988: 2 ♂ 11.5-12.9 mm, 1 ♀ 11.8 mm. — Stns 105-106, 23°19.0'S, 142°22.0'W, 460-550 m, 31.08.1988: 3 ♂ 13.9-14.7 mm. — **Rurutu.** Stns 107-108, 22°27.0'S, 151°23.0'W, 570 m, 3.09.1988: 6 ♂ 10.8-12.6 mm, 1 ovig. ♀ 14.5 mm, 1 ♀ 12.2 mm (2 ex. transferred to NTOU). — Stn 146, 22°27.8'S, 151°22.8'W, 580 m, 9.03.1989: 1 ♀ 12.3 mm.

DIAGNOSIS. — Detailed descriptions of this species can be found in DE MAN (1920) and CHACE (1985, under the name *Plesionika ocellus*).

COLORATION. — Body somewhat translucent, with some longitudinal red stripes (sometimes accompanied by narrow white lines) running along entire body. Eyes dark brown. Anterior part of rostrum and antennular flagella with alternating red and white bands. Antennal flagella orange-pink. Pereiopods pink to red. Posterior part of abdominal somite VI reddish. Telson also with posterior half reddish, but basal part whitish. Eggs bluish.

SIZES. — The largest male and female in the present French Polynesian material are 14.7 and 16.0 mm cl respectively. The smallest ovigerous female is 7.1 mm cl.

REMARKS. — The material of the "*P. ocellus* (sensu CHACE, 1985)" group in French Polynesia appears to have at least two forms. One form has red longitudinal stripes on the body and banded antennular flagella (fig. 36) while the other form lacks bands or stripes on the antennules and body (fig. 38). Furthermore, the non-striped form is rather small and always has long rostrum (average 1.9 times carapace length) and short abdominal somite VI (average 2 times as long as height and 0.83 times as long as telson). The rostrum of the striped form is shorter (1.1-1.7, avg. 1.4 times as long as carapace), but its abdominal somite VI is longer (2.1-2.6, avg. 2.3 times as long as height and 0.9-1.1, avg. 1.0 times as long as telson). All the French Polynesian specimens have the dactylus of the posterior pereopods very short, that of pereopod III being 0.1-0.16 and 0.08-0.13 times as long as the propodus in the striped and non-striped forms, respectively. Thus, they both differ from *P. fimbriata* Chace, 1985, which has long dactyli [one paratype of *P. fimbriata* from "Albatross" Stn 5391 (NTOU, USNM 205221 in exchange) as well as many Taiwanese specimens (NTOU) of this species were examined].

The rostrum of the red-striped form is rather similar to that in the figure of *P. ocellus* provided by BATE (1888). However, BATE's (1888) figure also shows a short abdominal somite VI. The types of *P. ocellus* (one male 15.3 mm cl and one ovigerous female 18.5 mm cl, NHM 1888: 22) were re-examined. Both syntypes have the right part of the carapace dissected and the thoracic appendages, as well as the rostrum, broken. Nevertheless, the anterior part of the rostrum of the male and two pereopods III with complete propodus and dactylus are present in the jar. No pereopod II was found, though CHACE (1985) mentioned that B. KENSLEY had examined two of them from the syntypes. The figure of *P. ocellus* provided by BATE (1888) is generally quite accurate: both syntypes bear two small movable post-rostral teeth on the carapace, the dactylus of the pereopod III is about 1/5 the length of the propodus, and the telson is almost 1.5 times longer than abdominal somite VI. Surprisingly, a distinct posteroventral denticle is present on the abdominal pleuron IV in both syntypes. Therefore, the characteristics of the types of *P. ocellus* conform well to *P. chacei* described by HAYASHI (1986) from Japan [two

specimens of this species from Taiwan (NTOU) were compared]. Thus, *P. ocellus* (Bate, 1888) must be considered as a senior synonym of *P. chacei* Hayashi, 1986 (new synonymy).

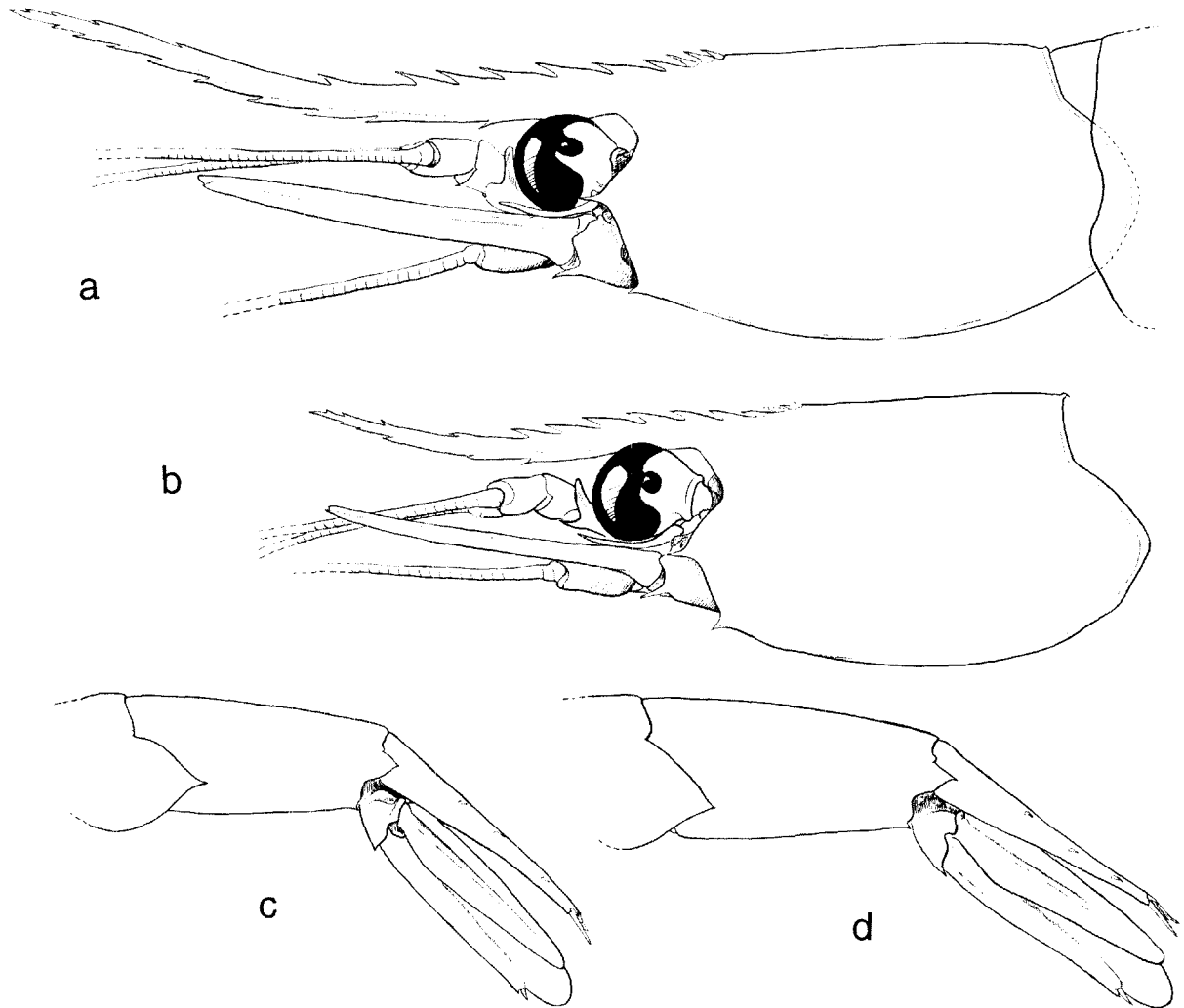


FIG. 17. — *Plesionika sindoi* (Rathbun, 1906). **a, c**, ovig. ♀ 11.7 mm (MNHN-Na 13110), French Polynesia, Society Islands, Bora Bora, st. 97, 480 m; **a**, lateral view of carapace; **c**, lateral view of posterior abdomen and tailfan. — **b, d**, ovig. ♀ 7.3 mm (MNIIN-Na 13111), French Polynesia, Marquesas Islands, Fatu Hiva, stn 306, 250 m; **b**, lateral view of carapace; **d**, lateral view of posterior part of abdomen and tailfan.

With respect to RATHBUN's (1906) *P. sindoi*, an examination of two male syntypes from Hawaii (USNM) shows that they both lack posteroventral denticle on the abdominal pleuron IV and generally are similar to CHACE's (1985) *P. ocellus* from the Philippines [9 ex., 8.3-12.9 mm cl, "Albatross" Stn 5519, 8°47'N, 123°31'15"E, 333 m, 9.8.1909, were examined (NTOU, USNM 221351 in exchange)] as well as to the Indonesian material reported by DE MAN (1920). Thus, the name *P. sindoi* should be revived and CHACE's (1985) Philippines material actually belongs in this species. For RATHBUN's (1906) "? *P. ocellus*", an examination of specimens from the lot used for her illustration [RATHBUN, 1906, pl. 21, fig. 1; "Albatross" Stn 3858, Hawaii, Pailolo Channel, Mokuhooniki Islet, 35°N, 8°01'E, 234-252 m, 9.04.1902, 2 males 14.0-14.7 mm cl, 1 ovig. female 11.3 mm cl (NTOU, USNM 30495 in exchange)] shows that they all have a posteroventral denticle on abdominal

pleuron IV and belong to the true *P. ocellus*, instead of *P. fimbriata* as considered by CHACE (1985). Generally, the body of *P. ocellus* is more robust than in *P. sindoi*, while that of *P. fimbriata* is somewhat intermediate. The rostrum of the smaller male syntype of *P. sindoi* (i.e. the specimen of pl. 21, fig. 4 in RATHBUN, 1906) is 1.48 times carapace length and has four movable post-rostral teeth. The rostrum of the larger male is broken, but three movable post-rostral teeth are present on the carapace. As for the posterior three pereopods, only the right pereopod IV is still attached to the body in the larger male and its dactylus is 0.09 times as long as the propodus. Only a loose pereopod V was found in the jar and the dactylus is 0.06 times as long as the propodus. The abdominal somites VI of the two syntypes are 2.2 and 2.4 times as long as high and 0.96 times as long as the telson. Therefore, the striped form of the French Polynesian material with relatively shorter rostrum, but longer abdominal somite VI, fits well with the characteristics of *P. sindoi*, while the non-striped form proves to be new and is described below as *P. protati* sp. nov.

The intensity of the red longitudinal stripes on the body appears to be rather variable in the present species (the coloration of the Japanese material was figured by TORIYAMA *et al.* (1990, pl. 3a, under the name *P. ocellus*). In large individuals, the stripes are broad and deep in colour but in small specimens they are somewhat pale. Furthermore, the rostrums of small ovigerous females (particularly those from Stn 306, figs 17b, 37) are rather short, and their eggs are somewhat greenish. The shape of the accessory spines on the dactyli of the posterior pereopods also appears to be variable in the present species. In the types (only dactylus of pereopod IV still present) and small individuals of the French Polynesian material, the accessory spine is about half as long as, and abuts with, the terminal spine. However, in large individuals of the French Polynesian material the accessory spine is shorter and well separated from the terminal spine, as in CHACE's (1985, fig. 40g) Philippines specimens. Since specimens with intermediate characteristics can be found, they are all identified as the same species for the time being. On the other hand, the report of the present species from the Nicobar Islands by BALSS (1925) clearly represents *P. indica* De Man, 1917, whereas that by CALMAN (1939) from the Gulf of Aden is probably correct. The exact identities of the specimens reported as *P. ocellus* by ALCOCK (1901) from the Andaman Sea, by PARISI (1919) from Japan, and by HANAMURA and TAKEDA (1987) from northwest Australia are unclear.

DISTRIBUTION. — West and South Pacific: known with certainty from Japan, South China Sea, the Philippines, Indonesia, Hawaii and French Polynesia. Probably also present in the Indian Ocean (see "Remarks" above). At depths of 150-800 m, mostly between 300-600 m.

Plesionika protati sp. nov.

Figs 18, 38

Plesionika sp. nov. 4 - POUPIN, 1996, pl. 4h.

MATERIAL EXAMINED. — **French Polynesia.** SMSRB (J. POUPIN coll.): **Marquesas Islands. Fatu Hiva.** Stn 303, 10°31.4'S, 138°39.2'W, 210 m, 3.09.1990: 12 ovig. ♀ 7.8-12.5 mm, 4 ♀ 7.9-10.3 mm (MNHN-Na 13182). — **Nuku Hiva (baie Anaho).** Stn 495, 8°45.4'S, 140°03.7'W, 230 m, 11.02.1996: 5 ovig. ♀ 8.8-12.2 mm (MNHN-Na 13274). — **Tahuata.** Stn 300, 9°54.5'S, 139°07.9'W, 190 m, 1.09.1990: 1 ovig. ♀ 9.5 mm (MNHN-Na 13271, drawn), 14 ovig. ♀ 7.2-9.9 mm, 1 ♀ 8.3 mm (2 ex. transferred to NTOU, others to USNM).

TYPES. — The ovigerous female (9.5 mm cl) from the Marquesas Islands (Tahuata) is the holotype (MNHN-Na 13271). The other specimens are paratypes.

DESCRIPTION. — Body of slender appearance. Rostrum long and far overreaching scaphocerite, about 1.9 (1.8-2.2) times as long as carapace length, slightly S-shaped and armed throughout length with 8-12 dorsal and 6-10 ventral teeth. Three-4 post-rostral teeth present on carapace, 2-4 of them with basal sutures and slightly movable. Orbital margin regularly concave, with lower lobe very slightly convex. Eye subspherical, bearing a distinct ocellus. Both antennal and pterygostomial spines well developed, former elongated and much longer than latter. Stylocerite tapered anteriorly and just exceeding basal segment of antennular peduncle. Scaphocerite 5.3-6.6 times

as long as broad, with distolateral tooth overreaching distal margin of lamella. Basicerite spine moderately long, more or less reaching proximal end of outer margin of scaphocerite.

Maxilliped III bearing well developed epipod and long exopod, with penultimate segment 1.3-1.4 times as long as distal segment, overreaching scaphocerite by $1/2$ - $1/3$ of penultimate segment and entire length of distal segment. Well developed epipods present on anterior four pereopods. Pereiopod I overreaching scaphocerite by about $1/2$ carpus and other distal segments. Pereiopods II subequal and bearing 20-23 carpal articles, exceeding scaphocerite by $1/2$ - $3/5$ carpus and other distal segments. Pereiopod III exceeding scaphocerite by slightly more than lengths of dactylus, propodus and carpus, with dactylus short and 0.10-0.16 times as long as propodus; dactylus elongate, conical and lacking spinules on posterior border, with accessory spine half to almost as long as, and abutting, terminal spine. Posterior two pereopods similar to pereiopod III, with pereiopod IV exceeding scaphocerite by about carpus and pereiopod V by $2/3$ - $3/4$ carpus as well as other distal segments.

Abdominal somite III slightly arched dorsally and with posterior margin convex. Posteroventral denticle present on abdominal pleuron V, but absent on pleuron IV. Abdominal somite VI about twice (1.8-2.4) as long as high. Telson 1.0-1.3 (avg. 1.2) times longer than abdominal somite VI, with three pairs of dorsolateral and three pairs of terminal spines. Eggs suboval, about 0.5 mm in diameter.

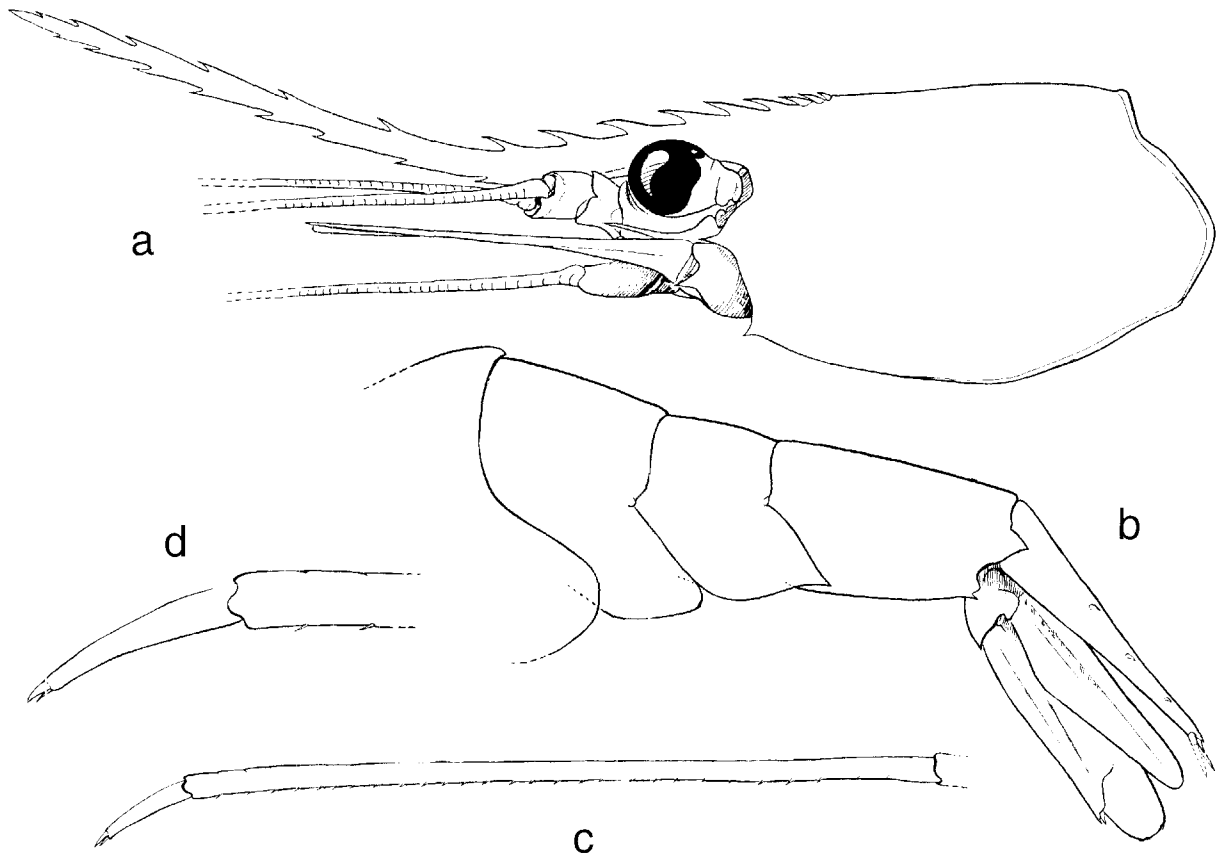


FIG. 18. — *Plesionika protati* sp. nov. Ovig. ♀ 9.5 mm, holotype (MNHN-Na 13271), French Polynesia, Marquesas Islands, Tahuata, stn 300, 190 m: **a**, lateral view of carapace; **b**, lateral view of posterior part of abdomen and tailfan; **c-d**, dactylus and propodus of left pereopod III.

Figures a-b at the same scale.

COLORATION. — Body translucent and slightly red. Eyes dark brown. Antennular flagella white, antennal flagella reddish. Tip of rostrum reddish. Pereiopods mainly white. Pleopods slightly reddish, with lateral margins

somewhat whitish. Distal margins of uropods yellow. Organs inside the carapace visible as reddish. Eggs bluish to turquoise.

SIZE. — Largest female 12.5 mm cl. Smallest ovigerous female 7.2 mm cl. Males unknown.

REMARKS. — Other than having a smaller size and different coloration, the present form has a longer rostrum and shorter abdominal somite VI than *P. sindoi* (Rathbun, 1906). The shortest rostrum recorded for the present form is 1.8 times carapace length, which is just longer than the longest rostrum found in *P. sindoi* (1.7 times carapace length). The abdominal somite VI of *P. sindoi* is always more than 2.1 times as long as high and often as long as or longer than the telson. However, in the present form the abdominal somite VI is always shorter than the telson and with only four specimens having the abdominal somite VI more than 2.1 times as long as high. The shape of the rostral teeth situated above the orbit is also somewhat different between the two forms: those of *P. sindoi* have very wide bases (much wider than high) and the dorsal margin somewhat concave, whereas those of *P. protati* are more slender (base narrower than high) and with the dorsal margin somewhat convex. Thus, it seems justified to separate the present form from *P. sindoi*.

The specimens from northwestern Australia reported by HANAMURA and TAKEDA (1987) as *P. ocellus* are all in very poor conditions (rostrum, all pereopods, and telson incomplete). It is not known whether they belong to *P. fimbriata* Chace, 1985, *P. sindoi* or the present new species. HANAMURA and TAKEDA (1986) mentioned that the specimens have the abdominal somite VI about 1.8 times as long as high, but in their figure it is more than twice as long as high!

ETYMOLOGY. — This new species is named after Charles PROTAT, Captain of the fishing vessel "*Marara*", for his excellent help in collecting most of the specimens for this study.

DISTRIBUTION. — Only known with certainty from French Polynesia, at depths of 190-210 m.

Plesionika payeni sp. nov.

Figs 19, 39

Plesionika sp. nov. 5 - POUPIN, 1996, pl. 5g.

MATERIAL EXAMINED. — **French Polynesia.** SMSRB (J. POUPIN coll.): **Tuamotu Islands.** **Mururoa.** Stn 475, 21°51.2'S, 139°00.6'W, 250 m, 11.04.1995: 1 ovig. ♀ 8.2 mm (MNHN-Na 13272). — Stn 499, 21°47.6'S, 138°55.7'W, 200 m, 5.05.1996: 1 ovig. ♀ 8.4 mm (MNHN-Na 13273).

TYPES. — The ovigerous female (8.4 mm cl) (MNHN-Na 13273) collected at station 499 of the "*Marara*", off Mururoa (Tuamotu Islands), is the holotype. The other specimen (station 475) is a paratype.

DESCRIPTION. — Rather small, with body slender. Rostrum with lateral carina in basal half, continuous with orbital margin, slightly curving downwards in basal part, but distinctly curved upwards after passing antennular peduncle, far exceeding scaphocerite and 1.6 times as long as carapace length; holotype with dorsal border, (fig. 19e), bearing 7 teeth (including one subapical tooth), with distal teeth smaller and further apart; ventral border armed with 6 teeth, posteriormost tooth large, situated just above second segment of antennular peduncle and far away from other ventral teeth, which are restricted to distal 2/5 of rostrum and separated by slightly decreasing space from base to tip; in the paratype (fig. 19a), the tip of the rostrum is broken and only 5 dorsal and 4 ventral teeth can be seen. Post-rostral carina not particularly elevated, bearing 5 movable post-rostral teeth. Orbital margin with feeble upper and lower lobes, middle part regularly concave. Eye subspherical and bearing a distinct ocellus. Antennal and pterygostomial spines both well developed. Stylocerite sharply pointed and strongly curving upwards, more or less extending to distal end of basal segment of antennular peduncle. Scaphocerite 4.4-5.3 times as long as broad, with distolateral tooth distinctly exceeding distal margin of lamella. Basicerite spine sharp but short, just failing to reach proximal end of outer margin of scaphocerite.

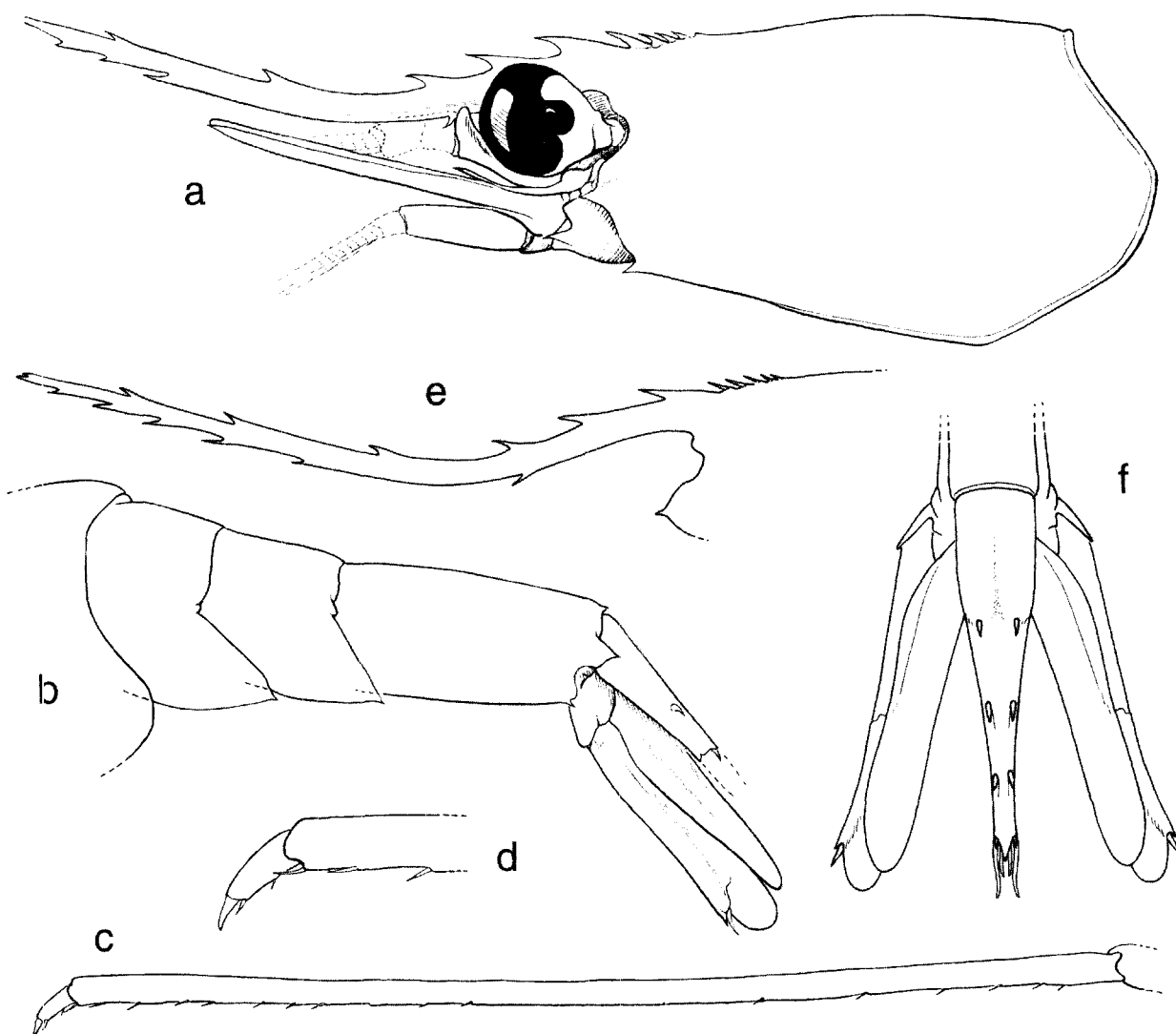


FIG. 19. — *Plesionika payeni* sp. nov. **a-d**: ovig. ♀ 8.2 mm, paratype (MNHN-Na 13272), French Polynesia, Tuamotu Islands, Mururoa, stn 475, 250 m: **a**, lateral view of carapace; **b**, lateral view of posterior part of abdomen and tailfan; **c-d**, propodus and dactylus of pereopod III. — **e-f**: ovig. ♀ 8.4 mm, holotype (MNHN-Na 13273), *ibidem*, st. 499, 200 m: **e**, rostrum; **f**, telson and uropods. Figures a-b at the same scale.

Maxilliped III bearing a small but distinct epipod and a long ramous exopod, with penultimate segment 1.0-1.1 times as long as distal segment; overreaching scaphocerite by about 1/4 of penultimate segment and entire distal segment. Anterior four pereopods bearing small to rudimentary epipods; that on pereopod I small but distinct, while those of other pereopods are progressively more reduced posteriorly, those of pereopods III and IV nearly absent. Pereopod I overreaching scaphocerite by 1/3-1/2 carpus as well as other distal segments. Pereopods II subequal, with 20-22 carpal articles, exceeding scaphocerite by lengths of dactylus, propodus and 1/2-2/3 of carpus. Pereopod III exceeding scaphocerite by lengths of dactylus, propodus, carpus and about 1/5 of merus; dactylus conical and short, 0.05-0.06 as long as propodus, posterior margin bearing only one spinule near middle, accessory spine about half as long as terminal spine and well separated from latter. Posterior two pereopods similar to pereopod III, with pereopod IV overreaching scaphocerite by entire carpus and pereopod V by 4/5 carpus as well as other distal segments.

Abdominal somite III very slightly arched dorsally, with posterior margin convex. Abdominal pleura IV and V both bearing a distinct posteroventral denticle. Abdominal somite VI 2.4-2.5 times as long as high. Telson very slightly longer (1.04 times) than abdominal somite VI, with three pairs of dorsolateral and three pairs of terminal spines. Eggs suboval, about 0.4 mm in diameter.

COLORATION. — Body yellowish, bearing a lateral white line and a longitudinal red stripe along dorsal midline. A discontinuous, longitudinal red line also present laterally on carapace. Rostrum with anterior two thirds reddish, posterior third transparent. Eyes dark brown. Outer margin of scaphocerite reddish. Antennular flagella whitish; antennal flagella reddish. Pereiopods reddish, with dactyli whitish, basal segments somewhat yellowish. Abdomen yellowish, but abdominal somite VI and tailfan entirely covered with broad, longitudinal red and white stripes. Eggs light blue.

SIZE. — Only two specimens are known, both ovigerous females, of 8.2 and 8.4 mm cl.

REMARKS. — This small and colourful species can be readily separated from most of the other species of the genus by having reduced epipods on the maxilliped III and four anterior pereiopods. The other characters, such as rostrum moderately long and bearing only a few teeth on both the dorsal and ventral borders, post-rostral teeth not crest-like, pereiopods II subequal, both abdominal pleura IV and V bearing a distinct posteroventral denticle and telson having three dorsolateral spines, align it somewhat with the true *P. ocellus* (Bate, 1888). Apart from the fact that the epipods on the anterior four pereiopods are all well developed in *P. ocellus*, this French Polynesian form is much smaller in size and has a very different coloration (e.g. fig. 39 and HAYASHI, 1986, fig. 82). Moreover, the arrangement of rostral teeth (particularly the posteriormost ventral tooth being separated very far from the other teeth in the French Polynesian material), the length of abdominal somite VI, and the shape of the orbital margin and dactyli of the posterior pereiopods, are very different between the two species.

The epipods of maxilliped III and the anterior four pereiopods in this French Polynesian form are all small and progressively reduced posteriorly, with that of pereiopod II already very minute and those of pereiopods III and IV almost absent. Therefore, the epipods of the pereiopods may easily be overlooked, as in the species of the "*P. edwardsii* (Brandt, 1851)" group. Nevertheless, it can still be readily separated from those poorly known species described as lacking epipods on the pereiopods [e.g. *P. minor* Calman, 1939 and *P. costelloi* (Yaldwyn, 1971)] by the shape of the rostrum (e.g. length and arrangement of rostral teeth) and pereiopods (e.g. relative length of left and right pereiopod II, shape of dactyli of posterior pereiopods). Hence there is little doubt that this French Polynesian species is new to science.

Only two specimens of this new species were available in the present study. The holotype is intact (though with some pereiopods detached) but the paratype has the tip of the rostrum broken (still carrying five dorsal and four ventral teeth) and the telson broken in half. However the specimens are essentially identical in all other respects.

ETYMOLOGY. — This new species is named after Dr C. PAYEN, head of SMSRB, for his constant help and interest in the deep water fauna studies of French Polynesia.

DISTRIBUTION. — At present only known from Tuamotu Islands (Mururoa) in French Polynesia, at depths of 200-250 m.

Plesionika picta sp. nov.

Figs 20, 40

Plesionika sp. nov. 2 - POUPIN, 1996, pl. 4f.

MATERIAL EXAMINED. — **French Polynesia.** SMSRB (J. POUPIN coll.). **Marquesas Islands.** *Ua Pou* (*Vaiehu Bay*). Stn 60, 9°23.0'S, 140°09.0'W, 520 m, 26.01.1988: 1 ♀ 14.4 mm (MNHN-Na 13067).

Tuamotu Islands. Fangataufa. Stn 440, 22°14.06'S, 138°47.74'W, 650 m, 15.11.1994: 1 ♂ 12.5 mm, 1 ♀ 13.4 mm [transferred to NTOU]. — **Gambier.** Stn 74, 23°08.0'S, 134°53.0'W, 660 m, 10.06.1988: 1 ♂ 12.3 mm (MNHN-Na 13069).

Tubuai Islands. Maria. Stn 422, 21°47.9'S, 154°43.8'W, 680 m, 7.08.1991: 2 ♂ 11.2 and 15.2 mm, 1 ovig. ♀ 14.8 mm; 1 ♀ 11.1 mm [transferred to USNM]. — **Rurutu.** Stn 107-108, 22°27.0'S, 151°23.0'W, 570 m, 3.09.1988: 1 ♂ 15.2 mm, 1 ♀ 10.2 mm (MNHN-Na 13070). — Stn 146, 22°27.8'S, 151°22.8'W, 580 m, 9.03.1989: 1 ♂ 14.8 mm (MNHN-Na 13124, drawn); 1 ♂ 13.4 mm (MNHN-Na 13289, drawn); 2 ♂ 13.4 and 15.5 mm, 1 ♀ 12.8 mm (MNHN-Na 13066). — Stn 399, 22°28.4'S, 151°23'W, 710 m, 27.11.1990: 2 ♂ 12.3 and 15.8 mm (MNHN-Na 13068).

TYPES. — The male (14.8 mm cl) collected at station 146 of the "*Marara*", off Rurutu (Tubuai Islands), is the holotype (MNHN-Na 13124). The other specimens are paratypes.

DESCRIPTION. — Body somewhat robust in appearance. Rostrum with lateral carina very strong in basal half and more or less continuous with orbital margin, basal half rather broad and nearly horizontal, while distal half is narrow and gently to distinctly curved upwards, overreaching scaphocerite, and about 0.9 times (0.8-1.1) as long as carapace; dorsal border bearing 2-5 (mostly 3-4) teeth, dorsal teeth generally restricted to basal 3/5 of rostrum; ventral border with 5-10 (mostly 8-9) evenly distributed teeth. Post-rostral carina elevated and somewhat lamellate but not crest-like; 7-10 post-rostral teeth present, with anteriormost tooth (very rarely anterior two teeth) fixed, while posterior 6-9 teeth are movable and bear a distinct basal suture. Orbital margin with upper lobe nearly straight and dorsally slightly inclined forwards, middle part regularly concave, while lower lobe is slightly convex. Eye roughly kidney-shaped, bearing a distinct ocellus. Antennal spine absent (replaced by a broad angle) or minute. Pterygostomian spine small but sharply pointed. Stylocerite narrow and tapered distally, strongly curving upwards and extending to distal end of basal segment or middle of second segment of antennular peduncle. Scaphocerite 3.1-3.9 (avg. 3.6) times as long as broad, with distolateral tooth more or less reaching distal margin of lamella. Basicerite spine moderately long and just overreaching proximal end of outer margin of scaphocerite.

Maxilliped III bearing well developed epipod and long strip-like exopod, with penultimate segment 0.9-1.0 times as long as distal segment; overreaching scaphocerite by more or less entire distal segment. Anterior two pereopods bearing well developed epipods, epipod on pereopod III smaller and sometimes even rudimentary, pereopods IV almost always lacking epipod (see Remarks below) and pereopods V always without. Pereopod I overreaching scaphocerite by lengths of dactylus, propodus and 1/3-1 of carpus. Pereopods II subequal, bearing 15-21 (av. 17) carpal articles, exceeding scaphocerite by lengths of dactylus, propodus and 2/5-1/2 of carpus. Pereopod III exceeding scaphocerite by entire carpus and a small part of merus (up to 1/5) as well as other distal segments; dactylus conical, short, 0.08-0.13 (av. 0.10) times as long as propodus, posterior margin usually bearing one spinule, accessory spine abutting, and slightly shorter than, terminal spine. Posterior two pereopods similar to pereopod III, with pereopod IV overreaching scaphocerite from 2/3 carpus to a small part of merus and pereopod V by 1/2-4/5 carpus as well as other distal segments.

Abdominal somite III slightly arched dorsally, with posterior margin convex. Both abdominal pleura IV and V bearing a distinct posteroventral denticle. Telson 1.3-1.5 times longer than abdominal somite VI, with four pairs of dorsolateral and three pairs of terminal spines. Eggs suboval, about 0.4 mm in diameter.

COLORATION. — Carapace reddish, with posterior margin white. Rostrum transparent, but with tip reddish. Eyes dark brown. Thoracic appendages and antennal flagella reddish. Antennular flagella reddish, but with a white band at middle. Abdomen and tailfan almost transparent, with alternated broad red and white bands on somites I to V. Pleopods mostly transparent.

SIZE. — Largest female (ovigerous) 14.8 mm cl. and largest male 15.8 mm cl. Only the largest female is ovigerous.

REMARKS. — The present form differs from most other species of the genus in bearing epipods on the anterior three pereopods, but lacking them on the last two. At present, only *P. intermedia* Chace, 1985 from the Philippines has such an arrangement of epipods on the pereopods in the genus. However, almost all the major characters are different between the present species and *P. intermedia*, which belongs to the "*P. martia* (A. Milne Edwards, 1883)" group. The general appearance (ignoring the gill formula) of the present form (e.g. many movable

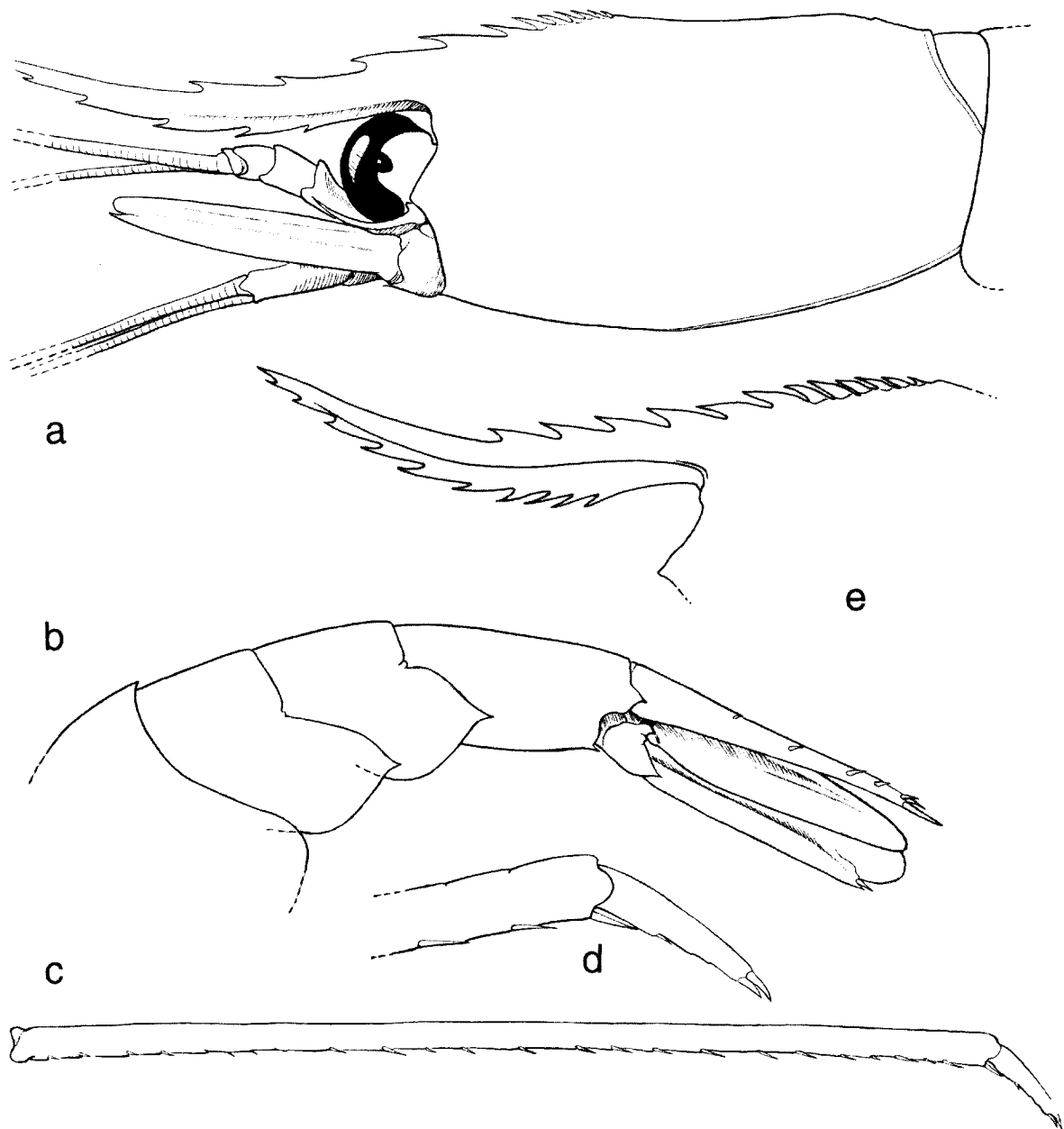


FIG. 20. — *Plesionika picta* sp. nov. ♂ 14.8 mm, holotype (MNHN-Na 13124), French Polynesia, Tubuai Islands, Rurutu, stn 146, 580 m: **a**, lateral view of carapace; **b**, lateral view of posterior part of abdomen and tailfan; **c-d**, propodus and dactylus of pereopod III. — **e**, ♂ 13.4 mm, paratype (MNHN-Na 13289), *ibidem*, rostrum.

Figures a-b at the same scale.

post-rostral teeth, pereopod II subequal, four distolateral spines on telson, etc.), indicates that it is more closely related to the "*P. carsini* Crosnier, 1986" group. Nevertheless, the present species is probably unique in the genus in having the antennal spine absent or very minute, and the scaphocerite somewhat oblique and not horizontal (i.e. with inner side remarkably higher than the outer side). Further differences of the present form from *P. carsini*, as well as from *P. poupini* sp. nov., are its much smaller size (ovigerous female only 14.8 mm cl), the rostrum and pereopods relatively shorter, the dactyli of the posterior pereopods relatively longer while the scaphocerite is

relatively broader, and the slightly fewer ventral rostral, but more post-rostral, teeth. As this French Polynesian form is very distinct (including coloration), and can readily be separated from all the other species known to date in the genus, it is here described as new.

Although the present new species generally lacks an epipod on pereopod IV and sometimes has that of pereopod III rudimentary, two specimens (the female from Ua-Pou and a male from Stn 422) have a small but distinct epipod on the left pereopod IV (right pereopod IV completely lacks an epipod in both specimens). Since all the other 14 specimens examined do not bear any epipod-like process on the pereopod IV, the presence of a small epipod on the pereopod IV is likely to be an abnormality in this species. Furthermore, the rostrum of this species is generally slightly shorter than the carapace, only one specimen having the rostrum just longer than the carapace length. The distribution of the dorsal rostral teeth also appears to be highly variable in this species. The dorsal rostral teeth are often restricted to about the basal 2/3 to 1/2 of the rostrum, but sometimes almost the entire rostrum has dorsal rostral teeth (i.e. similar to the situation of the ventral rostral teeth). Nevertheless, the distribution pattern of dorsal rostral teeth does not seem to be related to the length of the rostrum, or to the size and sex of the specimens.

ETYMOLOGY. — The name *picta* refers to the rather artistic colour pattern on the body of this species.

DISTRIBUTION. — So far known only from French Polynesia, at depths of 520-710 m.

Plesionika spinidorsalis (Rathbun, 1906)

Fig. 41

Pandalus spinidorsalis Rathbun, 1906: 917, pl. 21, fig. 5 [type-locality: Hawaii].

Plesionika spinidorsalis - CHACE, 1985: 132, figs 60-61. — POUPIN *et al.*, 1990: 16. — POUPIN, 1996: pl. 5e.

MATERIAL EXAMINED. — **French Polynesia.** SMSRB (J. POUPIN coll.): *Society Islands. Îles sous le Vent (Bora Bora)*. Stn D32, 16°28.4'S, 151°47.5'W, 562 m, 23.06.1990: 2 ovig. ♀ 14.2 and 14.5 mm (transferred to USNM). — *Huahine*. Stn 184, 16°44.5'S, 151°04.0'W, 540 m, 16.08.1989: 1 ♀ 13.6 mm.

Tuamotu Islands. Gambier. Stn 74, 23°08.0'S, 134°53.0'W, 660 m, 10.06.1988: 1 ovig. ♀ 15.0 mm. — *Mururoa*. Stn 127, 21°51.2'S, 138°47.3'W, 600 m, 29.11.1988: 1 ovig. ♀ 10.8 mm, 1 ♀ 13.4 mm.

Tubuai Islands. Tubuai. Stn 145, 23°18.2'S, 149°27.1'W, 720 m, 8.03.1989: 1 ♂ 15.3 mm.

DIAGNOSIS. — A detailed description of this species can be found in CHACE (1985).

COLORATION. — Body nearly transparent with red internal organs visible inside carapace. Eyes dark brown. Dactyli of posterior pereopods somewhat reddish. Eggs blue.

SIZE. — Largest size nearly 20 mm cl. The French Polynesian material ranges from 10.8 mm to 15.3 mm cl, the smallest specimen being an ovigerous female.

REMARKS. — The 7 specimens from French Polynesia agree very well with the description of this species provided by CHACE (1985), with the abdominal somite VI being 1.51-1.86 times as long as high. Only one specimen (15.3 mm cl) has the rostrum intact, being 0.6 times as long as carapace length. The eggs of this species are about 0.4 mm in diameter.

DISTRIBUTION. — Western Pacific, recorded from Hawaii, French Polynesia, Indonesia, the Philippines and probably also present in the South China Sea. At depths of 100-1250 m, mostly more than 400 m deep.

CONCLUSION

As a result of the scarcity of deep-water collections, no specimen of *Plesionika* had been collected from French Polynesia until 1978. The SMSRB deep-trap fishing operations, conducted by B. RICHER DE FORGES and, on a

larger scale, J. POUPIN, have permitted the capture of twenty-one species of *Plesionika*, ten of them new to science. This is a remarkable result that shows how poor our knowledge of the bathyal fauna is, not only in French Polynesia but in the Indo-West Pacific region as a whole. Moreover, this impression is highly confirmed by the general results obtained during the MUSORSTOM campaigns.

As already noticed for most of the other deep-water groups, it appears that color photographs of live material greatly help the study of the material.

Plesionika is a puzzling genus. It involves more than eighty species that can be grouped into several homogeneous groups. It could be then more sensible to split it into several more homogeneous genera. This, however, is practically impossible since certain species always present characters that are intermediate between the intended new genera. No doubt, for example, that the "*laevis* group", related to the genus *Heterocarpus*, but with some of the species lacking lateral carina on the carapace, will be greatly discussed in the future.

Another difficulty is that many species of *Plesionika* are common and have a wide geographical distribution. Morphological variations are observed among specimens collected from far different locations. It is therefore difficult to decide if such variations are specific or the result of geographical differences. In this work, the reader will find some examples of these problems, particularly under *Plesionika nesis*, *P. macropoda* and *P. williamsi*.

With his remarkable monograph on the Pandalidae of the "*Albatross*" expedition, F.A. CHACE (1985) has undoubtedly renewed the interest for the Indo-West Pacific *Plesionika* studies. The present study should also have further development, especially if we consider the very abundant collections made in Taiwan and during the recent MUSORSTOM campaigns around New Caledonia, Indonesia, Chesterfield islands, Vanuatu, and Wallis and Futuna islands. The interest for these new collections is increased by numerous color photographs taken just after trawl operations.

Preliminary examinations of this material show that, although more new species are found, others belong to the new Polynesian species herein described. Thus, it would be speculative to conclude too quickly to a Polynesian endemism, may be more apparent than real. More reliable conclusions on that point will have to wait until the complete study of the recent MUSORSTOM collections, unfortunately not before some years.

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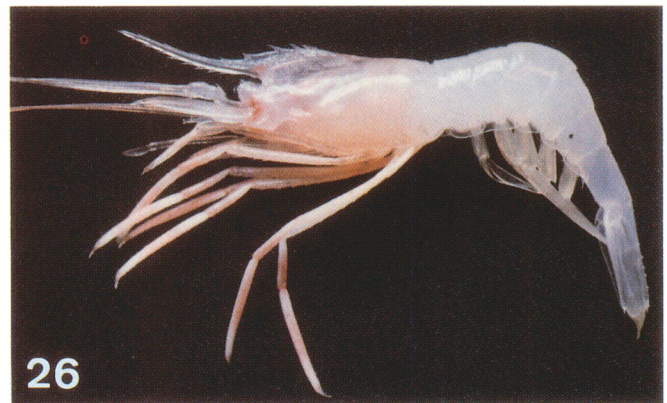
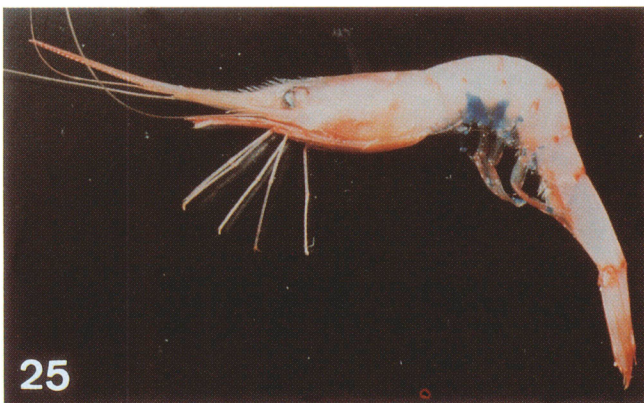
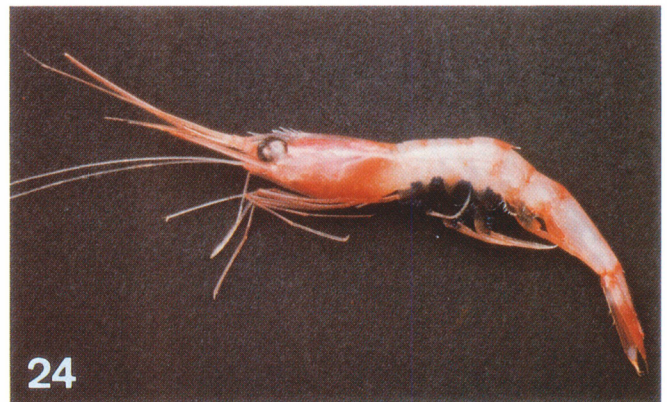
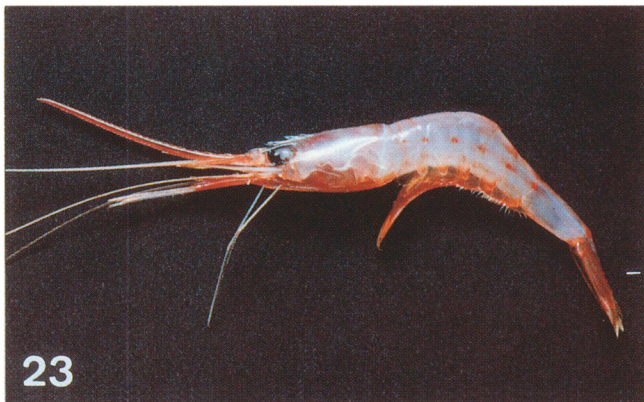
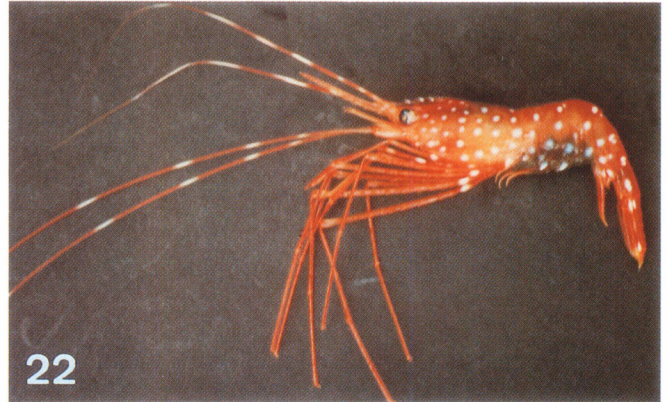
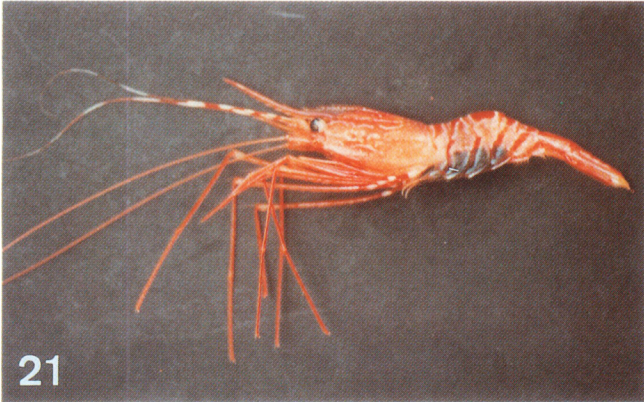
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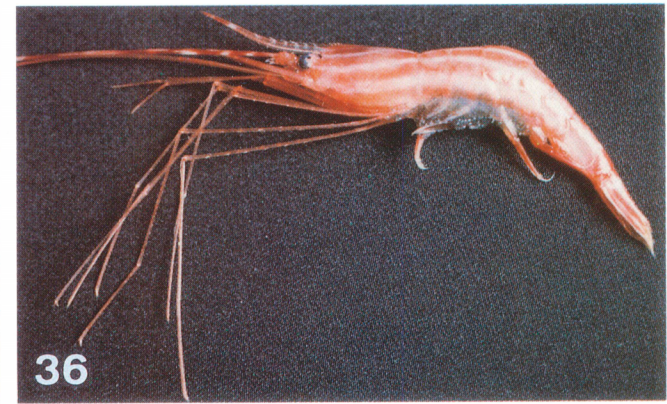
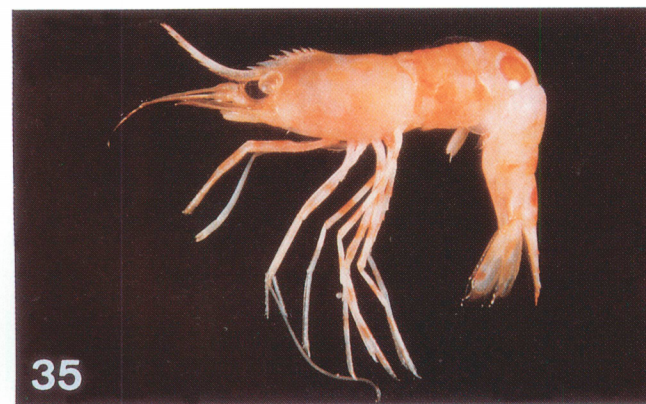
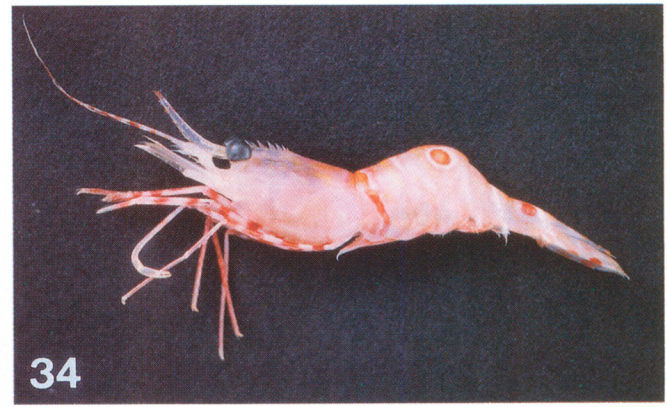
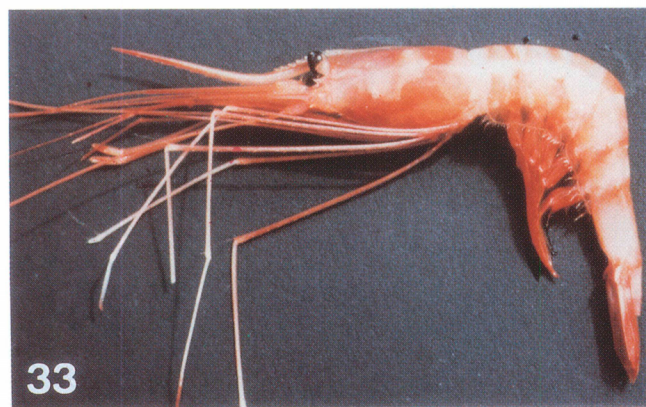
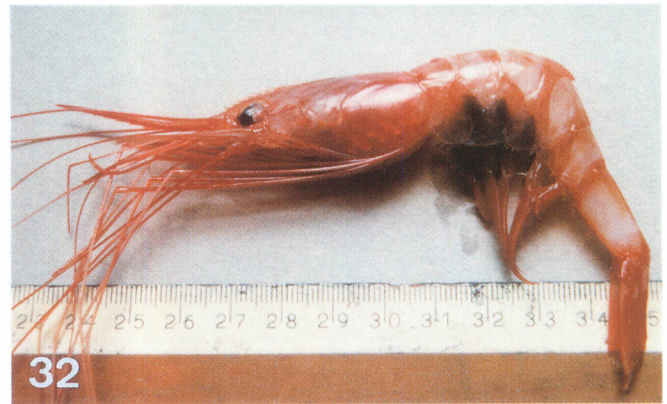
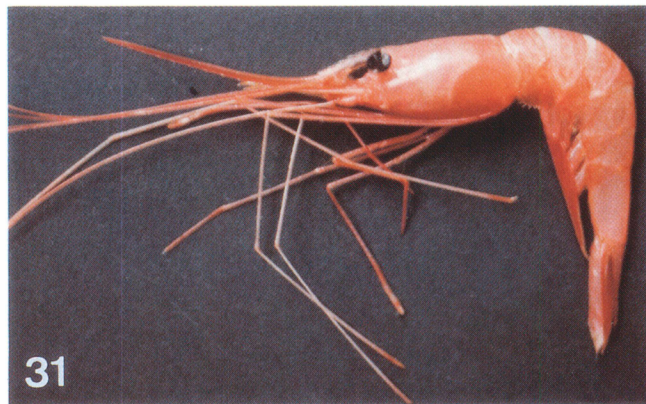
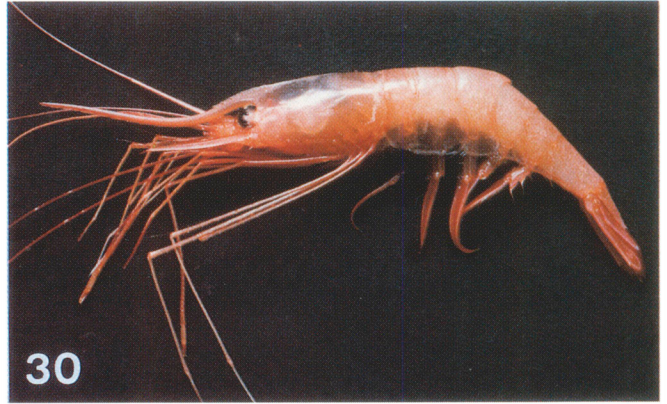
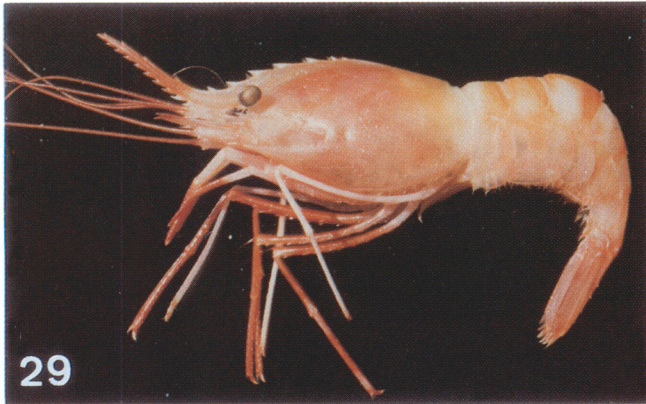
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COLORED PHOTOGRAPHS

- FIG. 21. — *Plesionika carsini* Crosnier, 1986. French Polynesia, Tuamotu Islands, Fangataufa, stn 438, 22°12.3'S, 138°46.6'W, 410 m.
- FIG. 22. — *Plesionika poupini* sp. nov., paratype, French Polynesia, Tuamotu Islands, Fangataufa, stn 438, 22°12.3'S, 138°46.6'W, 410 m.
- FIG. 23. — *Plesionika edwardsii* (Brandt, 1851). French Polynesia, Tuamotu Islands, Mururoa, stn 452, 21°53.0'S, 139°02.9'W, 330 m.
- FIG. 24. — *Plesionika reflexa* Chace, 1985. French Polynesia, Tubuai Islands, Rapa, stn 465, 27°35.9'S, 144°27.6'W, 765 m.
- FIG. 25. — *Plesionika ensis* (A. Milne Edwards, 1881). Antilles, "Polka", stn DPI, 15°50.82'N, 61°40.75' W, 460 m.
- FIG. 26. — *Plesionika fenneri* Crosnier, 1986, juvenile. French Polynesia, Tubuai Islands, Rurutu, stn 146, 22°27.8'S, 151°22.8'W, 580 m.
- FIG. 27. — *Plesionika fenneri* Crosnier, 1986. French Polynesia, Tuamotu Islands, Mururoa, stn 229, 21°51.9'S, 139°2.2'W, 490 m.
- FIG. 28. — *Plesionika nesisi* (Burukovsky, 1986). French Polynesia, Tuamotu Islands, Fangataufa, stn 85, 22°13.0'S, 138°42.2'W, 780 m.



- FIG. 29. — *Plesionika laevis* (A. Milne Edwards, 1883). Antilles, "Polka", stn DP1, 15°50.82'N, 61°40.75' W, 460 m.
- FIG. 30. — *Plesionika macropoda* Chace, 1939. French Polynesia, Society Islands, Huahine, stn 405, 16°45.8'S, 151°3.8'W, 310 m.
- FIG. 31. — *Plesionika macropoda* Chace, 1939. Antilles, "Polka", stn C211, 6°11.81'N, 61°49.1'W, 450 m.
- FIG. 32. — *Plesionika williamsi* Forest, 1964. French Polynesia, Marquesas Islands, Ua Pou, stn 59-60, 9°23.0'S, 140°09.0'W, 450-520 m.
- FIG. 33. — *Plesionika williamsi* Forest, 1964. Antilles, "Polka", stn EP1, 15°50.93'N, 61°41.39'W, 560 m.
- FIG. 34. — *Plesionika erythrocyclus* sp. nov., paratype. French Polynesia, Tubuai Islands, Rurutu, stn 356, 22°30.3'S, 151°21.7'W, 260 m.
- FIG. 35. — *Plesionika erythrocyclus* sp. nov., Taiwan, northeastern coast, about 300 m.
- FIG. 36. — *Plesionika sindoi* (Rathbun, 1906). French Polynesia, Tuamotu Islands, Makemo, stn 250, 16°34.9'S, 143°27.2'W, 435 m.



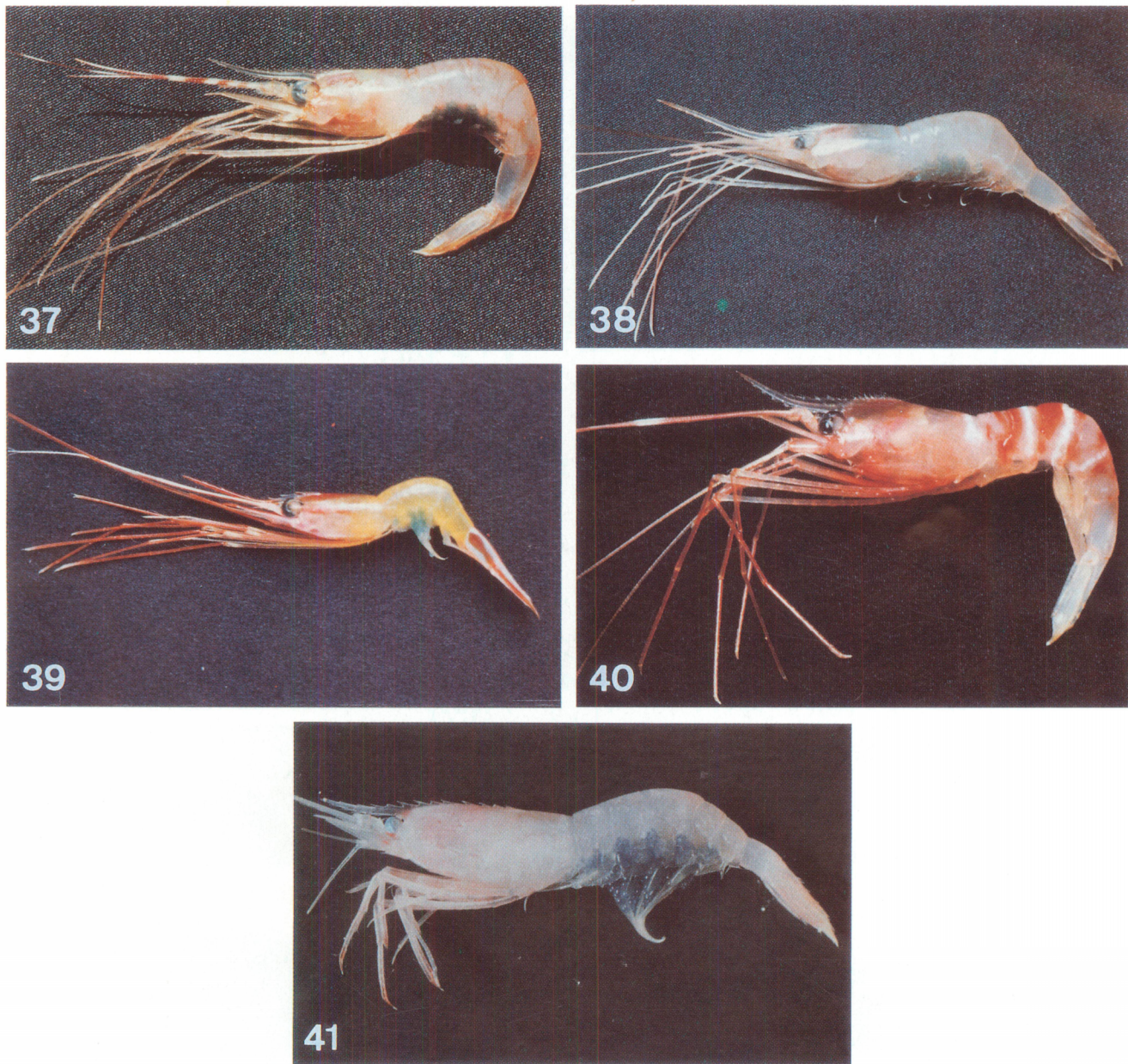


FIG. 37. — *Plesionika sindoi* (Rathbun, 1906). French Polynesia, Marquesas Islands, Fatu Hiva, stn 306, 10°31.1'S, 138°39.4'W, 250 m.

FIG. 38. — *Plesionika protati* sp. nov., from the type series. French Polynesia, Marquesas Islands, Tahuata, stn 300, 9°54.5'S, 139°7.9'W, 190 m.

FIG. 39. — *Plesionika payeni* sp. nov., holotype. French Polynesia, Tuamotu Islands, Mururoa, stn 475, 21°51.2'S, 139°00.6'W, 250 m, 11.04.1995.

FIG. 40. — *Plesionika picta* sp. nov., paratype. French Polynesia, Tubuai Islands, Rurutu, stn 339, 22°28.4'S, 151°23.0'W, 710 m.

FIG. 41. — *Plesionika spindorsalis* (Rathbun, 1906). French Polynesia, Society Islands, Bora Bora, stn D32, 16°28.37'S, 151°47.52'W, 562 m.