

## Occurrence of *Prionospio saccifera* (Spionidae: Polychaeta) in the Mediterranean Sea

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**Abstract:** A population of *Prionospio saccifera*, a new record for the Mediterranean Sea, was investigated in the Manavgat River Delta (Antalya Bay), situated off the Turkish Mediterranean coast, in July 1995. Specimens were collected at five stations with sandy-mud bottoms, from 65 to 85 m depths. The morphological, ecological and zoogeographical characteristics of the species are given and discussed. Some notes on other representatives of *Prionospio* such as *P. fallax*, *P. ehlersi* and *P. dubia* which co-occurred with *P. saccifera* are also considered.

**Résumé :** Une population de *Prionospio saccifera*, nouveau signalement pour la Méditerranée, a été étudiée dans le delta de la rivière Manavgat (Golfe d'Antalya), au large des côtes de Turquie, en juillet 1995. L'espèce a été récoltée en cinq stations, sur un fond sablo-vaseux, à 65-85 m de profondeur. Les particularités morphologiques et biogéographiques de l'espèce sont décrites et discutées. Quelques observations sur d'autres espèces du genre *Prionospio*, telles que *P. fallax*, *P. ehlersi* et *P. dubia* récoltées avec *P. saccifera*, sont également données.

**Keywords :** *Prionospio saccifera*, Polychaeta, ecology, Lessepsian, Mediterranean, Turkey

### Introduction

The genus *Prionospio* Malmgren, 1867 is characterized by the presence of various combinations of branchiae which are apinnate (smooth), wrinkled, or pinnate (with digitiform pinnules), extending from chaetiger 2 to a variable number

of chaetigers (Maciolek, 1985). Till now the genus comprised ten species in the Mediterranean Sea, among which *Prionospio steenstrupi* Malmgren, 1867, *P. fallax* Söderström, 1920 (as *P. malmgreni* Claparède, 1870) and *P. cirrifera* Wirén, 1883 occur off the Turkish coasts (Table 1).

*Prionospio saccifera* Mackie & Hartley, 1990 has been initially described from Hong Kong and the Red Sea, and is easily recognized from other representatives of *Prionospio* by possessing interparapodial pouches which introduce

**Table 1.** Records of *Prionospio* species in the Mediterranean Sea with their depth ranges and corresponding authors - denotes no record.  
**Tableau 1.** Signalement des espèces du genre *Prionospio* en Méditerranée et auteurs correspondants - pas de signalement.

SPECIES	Western Mediterranean				Eastern Mediterranean			
	Spanish coast	French coast	Italian coast	Depth (m)	Ionian Sea	Aegean Sea	Levantine Sea	Depth (m)
<i>P. cirrifera</i> Wiren, 1883	1,2,3,4,5,6	-	7, 8	4-16	9	10,11	12	2-40
<i>P. steenstrupi</i> Malmgren, 1867	1, 2	13	-	10-100	14	11	12, 15	26-309
<i>P. sexoculata</i> Augener, 1918	-	-	-	-	-	-	16	?
<i>P. fallax</i> Söderström, 1920	-	17	17	40-140	-	18	19	10-65
<i>P. multibranchiata</i> Berkeley, 1927	20, 21	-	22, 23	3-9	-	-	-	-
<i>P. ehlersi</i> Fauvel, 1928	1	24	7, 25, 26	4-1000	9	27	12, 15, 19	2-309
<i>P. dubia</i> Day, 1961	-	17	-	35	28	-	19	65-509
<i>P. caspersi</i> Laubier, 1962	1	-	22, 27, 29	4-15	-	-	-	-
<i>P. banyulensis</i> Laubier, 1968	-	30,31	30	24-140	-	-	-	-
<i>P. tripinnata</i> Maciolek, 1985	-	-	-	-	28	-	-	500-509
<i>P. saccifera</i> Mackie&Hartley, 1990	-	-	-	-	-	-	19	65-85

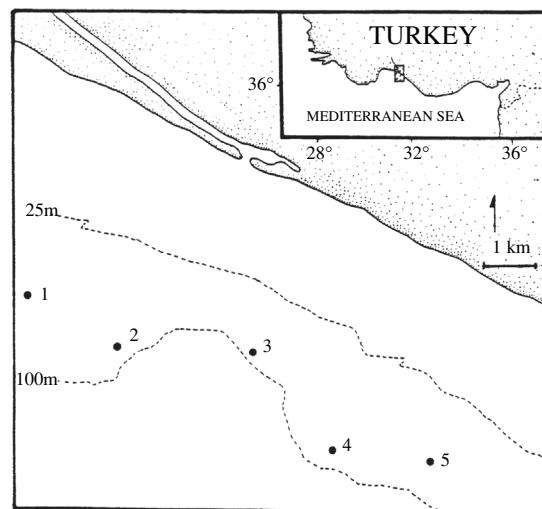
1. Desbruyères et al., 1972-73; 2. Campoy, 1982; 3. Alós, 1984; 4. Alós et al., 1982; 5. San Martín & Viéitez, 1984; 6. Sardá, 1991; 7. Lardicci et al., 1991; 8. Lanera & Gambi, 1993; 9. Nicolaidou & Papadopoulou, 1989; 10. Zenetos et al., 1994; 11. Ergen, 1992; 12. Tebble, 1959; 13. Gilat, 1969; 14. Bogdanos & Satsmadjis, 1987; 15. Ben-Eliahu & Fiege, 1995; 16. Ben-Eliahu, 1995; 17. Sigvaldadóttir & Mackie, 1993; 18. Ergen, 1979; 19. Present study; 20. San Martín & Aguirre, 1991; 21. Capaccioni-Azzati, 1988; 22. Laubier, 1962; 23. Gravina et al., 1988; 24. Laubier, 1965; 25. Rullier & Amoureux, 1968; 26. Amoureux, 1970; 27. Diapoulis & Bogdanus, 1983; 28. Maciolek, 1985; 29. Gambi et al., 1983-84; 30. Sigvaldadóttir, 1992; 31. Laubier, 1968.

from chaetiger 2, a pair of pinnate branchiae on chaetiger 2, pairs of apinnate branchiae on chaetiger 3-5, and a low membrane between the bases of branchiae 1 (Mackie & Hartley, 1990). The occurrence of this species in the Mediterranean Sea has not been mentioned before, so the present finding added a contribution to its distribution and ecology.

## Material and Methods

Specimens of *Prionospio* were collected in five stations (St. 1 to St. 5) in the Manavgat River Delta (Antalya Bay) in July 1995 (Fig 1). Samples were taken by a Van Veen Grab collecting ca. 10 dm<sup>3</sup> of sediment. Sea water salinity of the sediment was ca. 39 PSU. Material was washed through a sieve with 0.5 mm mesh size and fixed in 5% formalin. In the laboratory, the samples were sorted under a stereomicroscope and preserved in 70% ethanol. Since the majority of specimens were incomplete, we have only considered the anterior parts. Length of worms, H+10 = length of head + first 10 chaetigerous segments and their width, W10 = width of chaetiger 10 (excluding parapodia), were measured using an ocular micrometer. Measurements were done on 50 randomly selected *P. saccifera* individuals, including largest and smallest representatives of the

population in each station. Means of these parameters (H + 10 and W10) were given with  $\pm$  standard deviations as well as minimum and maximum values in parentheses. Drawing of the anterior part of the worm was made with the aid of a camera lucida. Worms were deposited in the Department of Hydrobiology, Ege University (Izmir).



**Figure 1.** Location of the five sampling sites.  
**Figure 1.** Emplacement des cinq lieux de récolte.

## Results

Four species of *Prionospio*, namely *P. dubia*, *P. ehlersi*, *P. fallax* and *P. saccifera*, were found at five stations (depths from 65 to 85 m) in the Manavgat River Delta of Antalya Bay. *P. saccifera* dominated in all stations with 2635 - 8400 individuals  $m^{-2}$ , followed by *P. dubia* with 50 - 125 individuals  $m^{-2}$ , *P. ehlersi* with 25 - 100 individuals  $m^{-2}$ , and *P. fallax* with 100 individuals  $m^{-2}$ . Their biometrical and morphological characteristics, and world-wide distributions are described.

*Prionospio saccifera* Mackie & Hartley, 1990

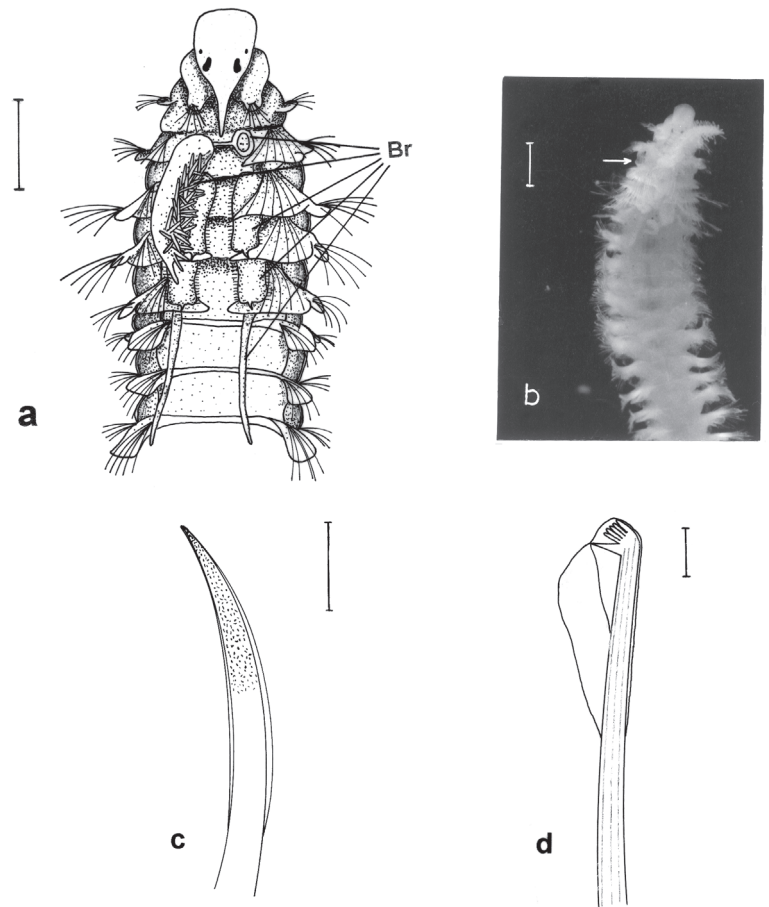
*Prionospio saccifera* Mackie & Hartley, 1990: 366-371, figs 3-4.

### 1. Material examined

St. 1, 65 m, sandy-mud, 258 incomplete specimens (anterior fragments), largest specimen: 25 mm in length for 83 chaetigers, H+10: 2.84 mm  $\pm$  0.29 (2.2-3.57), W10: 0.67 mm  $\pm$  0.09 (0.48-0.85); St. 2, 85 m, sandy-mud, 207 incomplete specimens (anterior fragments), largest specimen: 15.3 mm in length for 49 chaetigers, H+10: 2.76 mm  $\pm$  0.43 (1.60-3.88), W10: 0.62 mm  $\pm$  0.10 (0.36-0.84); St. 3, 85 m, sandy-mud, 105 incomplete specimens (anterior fragments), largest specimen: 15.8 mm in length for 45 chaetigers, H+10: 2.64 mm  $\pm$  0.32 (1.8-3.33); W10: 0.61 mm  $\pm$  0.97 (0.4-0.85); St. 4, 65 m, sandy-mud, 336 incomplete specimens (anterior fragments), largest specimen: 12 mm in length for 39 chaetigers, H+10: 2.74 mm  $\pm$  0.28 (2-3.37), W10: 0.62 mm  $\pm$  0.09 (0.4-0.87); St. 5, 85 m, sandy-mud, 235 incomplete specimens (anterior fragments), largest specimen: 13 mm in length for 42 chaetigers, H+10: 2.91 mm  $\pm$  0.32 (2-3.8), W10: 0.65 mm  $\pm$  0.09 (0.36-0.85).

### 2. Morphology of *Prionospio saccifera*

Largest specimen (0.87 mm wide), posteriorly incomplete, length 12 mm for 39 chaetigers. The width of chaetiger 10 ranged from 0.36 to 0.87 mm and was well related to the H+10 length ( $r=0.67$ ,  $p<0.05$ ,  $N=250$ ). Animal size did not show any significant changes between the stations ( $p>0.05$ ). Color in alcohol is generally pale brown but some dark brownish specimens were also observed.



**Figure 2.** Drawing (a) and photograph (b) of the anterior region of *Prionospio saccifera*; scale bar for a and b is 0.5 mm; c: sabre chaeta from chaetiger 20 (scale bar: 25  $\mu$ m); d: neuropodial hooded hooks from chaetiger 20 (scale bar: 10  $\mu$ m); Br: branchiae on chaetiger 2 to 5. Arrow indicate the first interparapodial pouch between chaetigers 2 and 3.

**Figure 2.** Dessin (a) et photographie (b) de la région antérieure de *Prionospio saccifera*; l'échelle pour (a) et (b) est de 0.5 mm; c : soie en sabre du 20<sup>e</sup> sétigère (échelle : 25  $\mu$ m); d : soie en crochet encapuchonnée du 20<sup>e</sup> sétigère (échelle : 10  $\mu$ m); Br : branchie des sétigères. La flèche montre le premier sac interparapodial entre le deuxième et le troisième sétigères.

Body slender, flattened dorsoventrally, tapering anteriorly and more cylindrical posteriorly.

Prostomium: Bottle-shaped; anterior part rounded, lateral margins somewhat convex; posterior part forming long narrow caruncle, extending to chaetiger 2 (Fig 2); caruncle surrounded by nuchal organs on either side. Two pairs of eyes; anterior pair represented by single eye-spots, spherical; posterior pair multiculate, kidney-shaped (reniform), much larger than anterior ones.

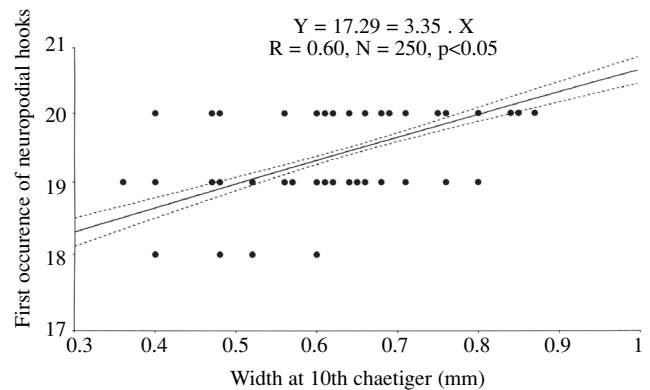
Peristomium: distinct ventrally; subrectangular in shape and notched anteriorly (mouth opening); fused dorsally with the large subtriangular notopodial lamellae of chaetiger 1; smaller than prostomium but wider. Palps missing in most

species, if existing, unfortunately incomplete; grooved with scale-like basal sheath; inserted opposite posterior eyes.

**Gills:** four pairs of branchiae, attached on chaetigers 2-5. First pair long extending to chaetigers 5-7 with numerous long digitiform pinnules on lateral side; tips without pinnules and tapered; basally united by a short, low membrane. Pairs 2-3 equal in length, apinnate, slightly longer than postchaetal notopodial lamellae, with dense lateral ciliation and sharply pointed tips (Fig 2a). Pair 4 cirriform, apinnate, long, extending to chaetigers 8-9; basally united by a short, low membrane.

**Parapodia:** parapodia of chaetiger 1 smaller than subsequent parapodia, with subtriangular notopodial postchaetal lamellae, rounded neuropodial postchaetal lamellae and broad chaetal fascicles. Notopodial postchaetal lamellae larger in chaetiger 2 than in chaetiger 1 and subsequently increased in length up to chaetiger 4 and again gradually reduced in length towards posterior chaetigers with maximum lengths on chaetigers 3-4. Larger notopodial postchaetal lamellae foliaceous, smaller ones subtriangular or rounded. Notopodial lamellae united across dorsum from chaetiger 6, forming low dorsal crest. Neuropodial postchaetal lamellae shorter than notopodial ones, somewhat rounded. Small ventral lobes existing on some chaetigers after chaetiger 17-18. Interparapodial pouches from chaetiger 2, transparent (Fig 2 a, b). First pair of pouches largest and unusual; extending dorsally to form almost complete sacs. Other pouches from chaetiger 3 smaller and not extending dorsally.

**Chaetae:** anterior noto- and neurochaetae capillaries, granulated, with narrow sheaths; notochaetae arranged in 3 rows, neurochaetae in 2 rows. Noto- and neuropodial capillary chaetae in chaetigers 3-4 longest. Median parapodia, particularly from chaetiger 16, with long neuropodial capillary chaetae. Neuropodial inferior sabre chaetae, accompanied by neuropodial hooded hooks, from chaetiger 18 to 20, generally 1 (rarely 2) per fascicle; short, stout, curved, pointed distally, with narrow sheath, lightly granulated (Fig 2c). Neuropodial hooded hooks emerged from chaetiger 18 to 20 and significantly correlated with width of chaetiger 10 (Fig. 3), 11-14 per fascicle, accompanied by capillary chaetae throughout. Hooks with one large tooth and 5 small apical teeth, with inflated external and wrinkled internal hoods (Fig 2d). Notopodial hooded hooks long, slender, numbering 7 per fascicle. Mackie & Hartley (1990) stated that introduction of notopodial hooks occurred more posteriorly with increasing animal size, but we could not examine this relationship since our specimens were incomplete. On the other hand, it can be noted that the distribution of neuropodial hooks changes with the size of specimens (and probably with age): as the animal grows the first neuropodial hooks are located



**Figure 3.** Relationship between position of chaetigers with the first occurrence of neuropodial hooded hooks and the width of chaetiger 10 for *Prionospio saccifera*.

**Figure 3.** Relation entre la largeur du 10<sup>e</sup> sétigère et la position des premiers crochets à capuchon dans la rame ventrale des parapodes chez *Prionospio saccifera*.

one or two chaetigers behind (19-20 instead of 18 in our specimens) (Fig 3). Pygidium not observed.

### 3. Remarks

Although morphological features and morphology of chaetae of the Mediterranean *P. saccifera* specimens were similar to those of the original description by Mackie & Hartley (1990), biometrical differences were observed. The width of our specimens (W10: 0.36 - 0.87 mm) was smaller than that of the Hong Kong specimens (0.35 - 1.15 mm) but higher than that of the Red Sea specimens (0.4 - 0.65 mm). The H+10 value is a useful parameter for comparing incomplete specimens, but till now no comparison could be made with other *P. saccifera* populations.

The peculiar differences between our specimens and the Mackie & Hartley's specimens were: 1. neuropodial hooded hooks numbered 10-14 in the Mediterranean specimens vs. 19 in the Hong Kong and Red Sea specimens; 2. lengths of branchiae 1 and 4 were shorter in our specimens (first pair extending to chaetiger 5-7, fourth pair to 8-9) than in those of Mackie and Hartley's specimens (first pair reaching chaetiger 8 or 9, fourth pair chaetiger 10 or 12). This feature appears to be related to the size of the specimens and such minor differences should be expected in widely distributed populations.

*P. saccifera* is closely related to *P. ehlersi* Fauvel, 1928 in morphological and chaetal appearance but differs from it in the following points (Mackie & Hartley, 1990 and present data): the first pair of branchiae is basally united (Fig 2a); interparapodial pouches are present from chaetiger 2 to mid-region of body; first interparapodial pouches large and unusual; notopodial lamellae around chaetiger 20 are evenly

rounded and do not become angular inferiorly; median parapodia with long neuropodial capillary chaetae; posterior pair of eyes are bar-shaped or reniform. The other important difference observed between the Mediterranean *P. ehlersi* and *P. saccifera* specimens was that the first neuropodial inferior sabre chaetae in *P. saccifera* were accompanied by neuropodial hooded hooks whereas in *P. ehlersi* this did not occur. Sabre chaetae numbered generally 1 (rarely 2) in *P. saccifera* vs. generally 2 in *P. ehlersi*. Dorsal crests in *P. ehlersi* were more obvious than in *P. saccifera*.

Blake (1996) considered one of the taxonomical character (membrane between pinnate branchiae 1) of *P. saccifera* as misconstrued, and found this structure in *P. ehlersi* from California and other representatives of *Prionospio*. We examined this membrane in our specimens in this respect and found that this membrane was conspicuous in *P. saccifera* and absent in *P. ehlersi*.

The above-mentioned characters separate the two species, *P. ehlersi* and *P. saccifera*. As indicated by Mackie & Hartley (1990) *P. saccifera* can be easily confused with *P. ehlersi*, thus previous records of *P. ehlersi* should be re-examined. The specimens of *P. ehlersi* described from Japan by Imajima (1990) seems to be identical to *P. saccifera* since they were reported to have features typical of *P. saccifera* i.e.: interparapodial pouches from chaetigers 2-3, a low membrane between the bases of the branchiae 1 and reniform posterior eyes. Number of neuropodial hooded hooks of the Japanese specimens is 19-20 per fascicle which is close to that (17-21) of the original description of *P. saccifera*.

#### 4. Distribution

*P. saccifera* was first recorded from Hong Kong at 11-21 m depth and Red Sea at 43-49 m depth by Mackie & Hartley (1990). Imajima (1990) recorded *P. ehlersi* (may be confused with *P. saccifera*) in the Japanese coasts at 2-22 m depth. Blake (1996) considered *P. saccifera* as very common in the western Pacific and Indian Ocean.

#### *Prionospio dubia* Day, 1961

*Prionospio malmgreni* var. *dubia* Day, 1961: 489-490, fig. 3j-n.

*Prionospio dubia* Maciolek, 1985: 336-339, figs 2-3. - Imajima, 1990: 118-121, figs 118-121. - Sigvaldadóttir & Mackie, 1993: 211-215, fig. 6. - Blake, 1996: 130-133, fig 4.12 a-h.

#### 1. Material examined

St. 1, 65 m, sandy-mud, two incomplete specimens (anterior fragments), largest specimen: 11.7 mm in length for 39 chaetigers, H+10: 2.5 mm  $\pm$  0.14 (2.4-2.6), W10: 0.44 mm; St. 2, 85 m, sandy-mud, four incomplete specimens

(anterior fragments), largest specimen: 10.7 mm in length for 37 chaetiger, H+10: 2.52 mm  $\pm$  0.27 (1.88-2.52), W10: 0.56 mm  $\pm$  0.1 (0.32-0.56); St. 3, 85 m, sandy-mud, four incomplete specimens (anterior fragments), largest specimen: 10.5 mm in length for 42 chaetigers, H+10: 2.15 mm  $\pm$  0.13 (2-2.28), W10: 0.38 mm  $\pm$  0.04 (0.36-0.44); St. 5, 85 m, sandy-mud, five incomplete specimens (anterior fragments), largest specimen: 12 mm in length for 44 chaetigers, H+10: 2.23 mm  $\pm$  0.24 (1.88-2.48), W10: 0.44 mm  $\pm$  0.05 (0.4-0.52).

#### 2. Remarks

Largest specimen (0.56 mm wide) 10.7 mm in length for 37 chaetigers. Color in alcohol pale brownish. Prostomium anteriorly narrow, rounded, widening in mid-region, then tapering posteriorly with narrow caruncle reaching to posterior part of chaetiger 1. Palps missing. Eyes absent in all specimens. Four pairs of branchiae, on chaetigers 2-5. First and fourth pairs with digitiform long pinnules: first pinnate branchiae extending to chaetiger 7-8; fourth pinnate branchiae small, reaching chaetiger 6 (rarely 7). Branchiae 2 and 3 apinnate with dense lateral ciliation, slightly longer than notopodial postchaetal lamellae. Neuro- and notopodial postchaetal lamellae smallest in chaetiger 1, largest in chaetigers 3-4. Sabre chaetae from chaetigers 18-20; numbering 1 per fascicle; accompanied by neuropodial hooded hooks. Neuropodial hooded hooks from chaetigers 18-20; numbering 8-9 per fascicle. Notopodial hooded hooks could not be examined, as the specimens were posteriorly incomplete.

#### 3. Distribution

(Sigvaldadóttir & Mackie, 1993): Northwest Atlantic (from off Long Island, USA, to Surinam), Northeast Atlantic (from northern North Sea to Mediterranean), southeast Atlantic (South Africa), off south coast of South Africa, Northeast Pacific, Australia and Japan.

#### *Prionospio ehlersi* Fauvel, 1928

*Prionospio ehlersi* Fauvel, 1928: 10. - Maciolek, 1985: 345-347, fig. 7. - Mackie & Hartley, 1990: 364-366, fig. 1. - Blake, 1996: 133-136, fig 4. 13 a-l.

#### 1. Material examined

St. 1, one incomplete specimen (anterior fragment), 8 mm in length for 28 chaetigers, H+10: 3.08 mm, W10: 0.68 mm; St. 4, one incomplete specimen (anterior fragment), 3.7 mm in length for 22 chaetigers, H+10: 1.68 mm, W10: 0.36 mm; St. 5, four incomplete specimens (anterior fragments), largest specimen: 8.75 mm in length for 30 chaetigers, H+10: 2.48 mm  $\pm$  0.83 (1.68-3.04), W10: 0.53 mm  $\pm$  0.17 (0.36-0.72).

## 2. Remarks

Largest specimen (W10: 0.68 mm) 8 mm in length for 28 chaetigers. H+10 ranging between 1.68-3.08 mm. Color in alcohol opaque white. Prostomium bottle-shaped, anteriorly rounded, laterally somewhat convex, tapering posteriorly to form narrow caruncle reaching chaetiger 2. Palps missing. Eyes present; anterior pair slightly bigger than posterior pair; both spherical; brownish speckles between eye pairs. Four pairs of branchiae, on chaetigers 2-5. First pair longest with long digitiform pinnules; reaching chaetiger 5; no membrane between bases of branchiae. Branchiae 2-3 slightly longer than notopodial postchaetal lamellae with dense lateral ciliation and naked tips. Branchiae 4 apinnate, slender, reaching chaetiger 8; basally united by low membrane. Interparapodial pouches from chaetiger 4. Dorsal crest conspicuous; introducing from chaetiger 6. Noto- and neuropodial postchaetal lamellae, rounded to subtriangular, smallest in chaetiger 1, largest in chaetigers 4-5. Sabre chaetae from chaetigers 18-19; first sabre chaetae not accompanied by neuropodial hooded hooks; numbering 2 per parapodium. Neuropodial hooded hooks from chaetigers 19-20, numbering 12 per fascicle. Notopodial hooded hooks could not be examined, since our specimens were posteriorly incomplete.

## 3. Distribution

According to Mackie & Hartley, (1990): Atlantic, Mediterranean, Red Sea, Indian Ocean, Pacific, Southern Ocean.

*Prionospio fallax* Söderström, 1920

*Prionospio malmgreni* Fauvel, 1927: 61-62, fig. 21a-e

*Prionospio fallax* Sigvaldadóttir & Mackie, 1993: 207-211, fig. 3-4.

## 1. Material examined

St. 4, one incomplete specimen (anterior fragment), 3 mm in length for 24 chaetigers, H+10: 1.08 mm; W10: 0.36 mm.

## 2. Remarks

Color in alcohol, opaque white. Prostomium bottle-shaped, anteriorly truncate, laterally convex, posteriorly tapering to form narrow caruncle reaching posterior border of chaetiger 1. Eyes present; anterior pair small, spherical; posterior pair large, reniform. Four pairs of branchiae. First pair longest, slender with small sparse pinnules and long naked distal tips, reaching chaetiger 5. Branchiae 2-3 slightly longer than notopodial postchaetal lamellae, with lateral ciliation and sharply pointed tips. Branchiae 4 missing. Dorsal crest present on dorsum of chaetiger 7 only. Noto- and

neuropodial postchaetal lamellae smallest in chaetiger 1, largest in chaetigers 2-3, rounded to foliaceous in shape. Sabre chaetae from chaetiger 10; first sabre chaetae not accompanied by neuropodial hooded hooks; numbering 1 per fascicle. Neuropodial hooded hooks from chaetiger 11; numbering 6 per fascicle. Notopodial hooded hooks could not be examined, since our specimen was posteriorly incomplete.

This species is closely related to *P. steenstrupi* Malmgren, 1867. It differs from it by some distinct characters (see Sigvaldadóttir & Mackie, 1993).

## 3. Distribution

According to Sigvaldadóttir & Mackie (1993): Northeast Atlantic, from northern Atlantic to Mediterranean.

## Discussion

The Manavgat River Delta provides a suitable environment for large populations of *Prionospio saccifera*, reaching up to 2625-8400 individuals m<sup>-2</sup>. Moreover its occurrence should be checked in locations where *P. ehlersi* has been reported, since these two species have possibly been confused previously.

The number of *Prionospio* species, including the present record of *P. saccifera*, is eleven in the Mediterranean Sea (Table 1); eight species were reported from the western part, eight species from the Eastern part, among which five occur in both parts. The number of Turkish *Prionospio* species has risen to six with the present records of *P. ehlersi*, *P. dubia* and *P. saccifera*. The last two species, together with *P. fallax*, are also new records for the Levantine coasts. Other species previously identified under the genus *Prionospio* in the Mediterranean such as *P. pinnata* Ehlers, 1901, *P. pygmaea* Hartman, 1961 and *P. salzi* Laubier, 1970 have been transferred to the genera *Paraprionospio*, *Apoprionospio* and *Laubieriellus* respectively (see Maciolek, 1985). According to Mackie (1984), *P. cirrifera* is a northern water form which does not occur south of Scotland. Thus the records of this species in the Mediterranean Sea given in Table 1 need to be confirmed; the report from Italy (Laubier, 1962) of this species was corrected as *P. multibranchiata* by Mackie (1984). However precise identifications of these two species are still missing since their type species are lost and they have some forms in different zoogeographical areas (Mackie, 1996).

*P. malmgreni* has been reported in many areas in the Mediterranean Sea (Fauvel, 1927; Ergen, 1979; Bellan et al. 1985; Zenetos et al. 1994) and considered as a pollution-indicator organism since it forms dense populations in organically polluted bottoms. The record of this species was questionable and Maciolek (1985) regarded it as indeterminable. We re-examined the species, previously

referred as *P. malmgreni*, which was found in the polluted inner bay of Izmir (Ergen, 1979), and identified it as *P. fallax* since its features coincide with those of the original description and those given by Sigvaldadóttir & Mackie (1993). Thus the records of *P. malmgreni* from the polluted areas should be re-examined in this respect.

The occurrence of *P. saccifera* in the Eastern Mediterranean extends its worldwide distribution. Since the species was reported from Hong Kong and the Gulf of Suez (Red Sea), a phenomenon of Lessepsian migration (i.e. migration of Red Sea species through the Suez Canal into the Eastern Mediterranean) may be hypothesized. This species is considered very common in the Pacific and the Indian Oceans (Blake, 1996). However its worldwide record is very limited and does not allow to give a reliable conclusion about its zoogeographical distribution. A thorough re-examination of the distribution of the related species *P. ehlersi* is also necessary.

The percentage of the Lessepsian migrants within the Mediterranean fauna is ever increasing, both in terms of species and individuals. Ben-Eliahu (1989, 1992) estimated that the Levantine fauna comprised ca. 9-10% of Lessepsian species. An increased frequency of occurrence of Lessepsian migrant species was observed in Serpulidae by Ben-Eliahu & ten Hove (1992). Between 1960-1975 in the Levantine coast 32% of the serpulid samples contained Lessepsian migrants which reach up to 87% in 1990 (Ben-Eliahu, 1992). Thus it appears that Lessepsian components in the Mediterranean fauna are becoming more important. Further studies on the Polychaeta fauna along the Levantine coast should be done to enable better understanding of the range extensions and the roles of the migrant species in the benthic communities of the Eastern Mediterranean.

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