Cah. Biol. Mar. (2002) 43 : 171-178

Faunistic analysis of Syllidae (Annelida: Polychaeta) from the Aegean Sea

Melih Ertan ÇINAR* & Zeki ERGEN
Ege University, Faculty of Fisheries, Department of Hydrobiology
35100 Bornova, Izmir-TURKEY
**Corresponding author: Fax: 00 90 232 388 3685; E-mail: cinar@sufak.ege.edu.tr*

Abstract: A faunistic analysis of a total of 121 benthic samples collected from 31 stations in the infralittoral zone of the Aegean Sea, on various substrata and at various depths, yielded a total of 90 syllid species (18957 individuals). Four species are newly reported for the Mediterranean fauna and 27 species for the Eastern Mediterranean. Further, 60 species out of 90 are newly reported for the fauna of Turkey. Some comments on the Mediterranean syllids are provided.

Résumé : *Analyse faunistique des Syllidae (Annelida: Polychaeta) de la Mer Egée*. Dans le cadre d'une analyse faunistique, les 90 espèces (18957 individus) étudiées proviennent de 121 échantillons récoltés dans divers biotopes et à différentes profondeurs dans 31 stations de l'étage infralittoral de la mer Egée. Quatre espèces sont signalées pour la première fois en Méditerranée et 27 espèces en Méditerranée orientale. Par ailleurs, 60 des 90 espèces sont nouvelles pour la faune de Turquie. Quelques commentaires sur les syllidés méditerranéens sont fournis.

Keywords: Syllidae, Polychaeta, taxonomy, distribution, Aegean Sea, Eastern Mediterranean.

Introduction

Representatives of the family Syllidae have adapted to a variety of substrata and can occur in high numbers, especially on rocky bottoms with algae and sandy bottoms with phanerogams (Gidholm, 1966; San Martín, 1984). This is due to a high plasticity in their reproductive modes, a wide range of body dimensions and diversity in their feeding habits. The family Syllidae has been subdivided into four subfamilies, namely Autolytinae, Exogoninae, Eusyllinae and Syllinae (Fauchald, 1977; San Martín, 1984; Nygren, 1999), based on the degree of fusion of the palps, the presence or absence of ventral cirri, the appearance of dorsal cirri and the reproductive modes.

The subfamily Autolytinae Langerhans, 1879, is defined by the lack of ventral cirri and ventral simple chaetae on the parapodia; the presence of a pair of palps that are rudimentary and entirely fused to each other; the presence of a long convoluted pharynx equipped with several types of teeth (termed trepan); and characteristic epitokous swimming forms called *Polybostrichus* for male and *Sacconereis* for female individuals. Therefore Autolytinae

Reçu le 19 juillet 2001 ; accepté après révision le 7 mai 2002.
Received 19 July 2001; accepted in revised form 7 May 2002.

are considered to be a homogeneous group among the syllid polychaetes (Gidholm, 1966; Nygren, 1999).

The subfamily Exogoninae Langerhans, 1879, is represented by minute and diversified species that generally show an incubation stage during their development. They have a pair of well-developed palps either completely fused or with a terminal notch; and usually very small dorsal cirri, papilliform to oval, smooth, present on all segments or absent on chaetiger 2 in adults of some species.

The Eusyllinae Rioja, 1925, and Syllinae Grube, 1850, present some overlapping morphological characters. The Eusyllinae are easily recognized in having palps that are fused basally, smooth or wrinkled dorsal cirri and an epigamic reproductive mode with a morphological modification of the adults, in which eyes become enlarged and parapodia in mid-region of the body transform from uniramous to biramous and bear long capillary swimming chaetae. The Syllinae comprise species whose palps are not fused and whose dorsal appendages such as antennae and cirri are articulated. They show a schizogamic reproductive mode, i.e. only a part of the adult individual, usually the posterior region, becomes modified into a freely swimming individual.

In spite of a relatively rich body of literature on the species of Syllidae in the Western Mediterranean basins, there are few papers devoted to this family in the Eastern Mediterranean. Only Ben-Eliahu (1977a, b) gave detailed accounts on syllid species found in cavities of *Dendropoma* along the Israeli coast. As far as the Turkish coasts are concerned, prior to this study only 30 species have been reported.

This paper is intended to outline the species richness of Syllidae in the Aegean Sea.

Material and methods

A total of 121 benthic samples were taken from 31 randomly selected stations located on the Turkish Aegean coast, principally in summer 1995 and 1996 as well as in November 1997 (Fig. 1). At each station (St.), various biotopes and depths (0-76 m) were sampled. Samples were taken by snorkelling in the upper infralittoral zone (0-7 m) and by a grab in the lower infralittoral zone (7 m to 76 m). Stones were randomly collected at some stations (St. 1-10, 13, 20, 21, 23-31; depths 0-5 m), and put into a container with 1-2% formalin in order to extract the syllid species from the crevices. Sampling was done using a 20x20 cm quadrat in habitats covered by the photophilic algae of the upper infralittoral zones such as *Padina pavonica* (L.) Thivy (St. 2, 3, 6, 7, 8, 10, 13, 21, 23, 24, 28, 29, 31); *Cystoseira crinita* (Desf.) Bory (St. 1, 5, 8, 10, 13, 20, 22, 25, 27, 28, 30); *Cystoseira* spp. (St. 2, 3, 4, 7, 9, 23, 24, 26, 29, 30), including *Cystoseira compressa* (Esper) Gerloff & Nizamuddin, *C. amanthacea* Bory, *C. spinosa* Sauv., *C. schaffneri* (Hamel) Giaccone and *C. elegans* Sauv.; *Halopteris scoparia* (L.) Sauv. (St. 10, 28) and *H. filicina* (Grateloup) Kütz. (St. 13, 20, 24). The same method was used on bottoms with the phanerogams *Posidonia oceanica* (L.) Delile (St. 1-4, 6-8, 10, 13, 20, 21, 23, 24, 26-28, 30, 31), *Zostera marina* L. (St. 7, 9, 13, 23), *Z. nolthii* Horneman (St. 3) and *Cymodocea nodosa* (Ucria) Asc. (St. 26), and on bare sandy biotopes (St. 20, 22). Syllids were collected randomly on various hosts, such as the bivalve *Pinna nobilis* L., 1758 (St. 9, 13, 25), the sponges *Sarcotragus* sp. (St. 7, 21, 31) and *Aplysina aerophoba* Schmidt, 1862 (St. 5, 25) and the scleractinian coral *Cladocora caespitosa* L., 1767 (St. 5, 10). A van Veen grab with a capacity of 10 dm^3 was used in sampling the muddy sand substrate of the lower infralittoral zone (St. 11, 12, 14-19).

The samples were first fixed in 5% formalin. Sorting was then done with a sieve (0.5 mm mesh size). Sorted

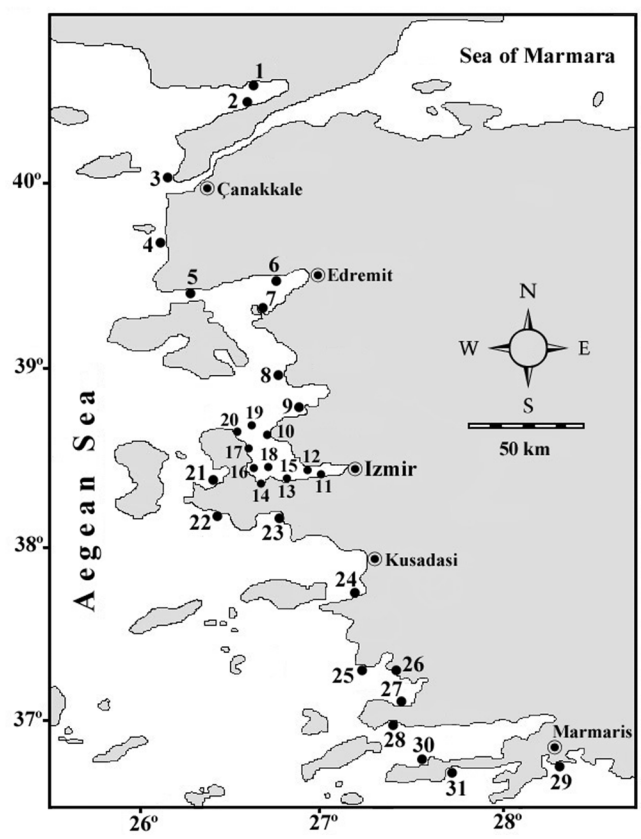

Figure 1. Map of the investigated area with location of sampling sites.

Figure 1. Carte de la région étudiée et stations d'échantillonnage.

zoobenthos was preserved in 70% ethanol. Algal thalli and phanerogam leaves were scraped and algal holdfast and phanerogam rhizomes were picked apart to release the hidden fauna. Sponge samples were cut into small pieces and the infauna was removed from the canals. The syllids were separated from other taxa, identified and counted using dissecting and stereo microscopes.

The specimens were deposited in the authors' collection at the Faculty of Fisheries, Ege University.

Results and Discussion

A total of 90 species and 18957 individuals of Syllidae were recorded (Table 1). Autolytinae were represented by nine species and 249 specimens, the Exogoninae by 30 species and 8839 specimens, the Eusyllinae by 18 species and 1610 specimens, and the Syllinae by 33 species and 8259 specimens. Four species of Syllidae are new to the Mediterranean Sea: *Exogone* (*Parexogone*) *caribensis*, *Exogone* (*Exogone*) sp., *Syllis heterochaeta* and *Syllis* sp. A total of 27 species are new to the Eastern Mediterranean Sea: *Autolytus benazzi*, *A. quindecimdentatus*, *Paraprocerastea crocantinae*, *Exogone* (*Parexogone*) *cognetti*, *E.* (*P.*) *gambiae*, *E.* (*P.*) *parahomoseta mediterranea*, *Grubeosyllis euritmica*, *G. vieitezi*, *G. yraidae*, *Parapionosyllis elegans*, *P. labronica*, *P. minuta*, *Sphaerosyllis austriaca*, *S. belizensis*, *S. campoyi*, *S.* cf. *glandulata*, *S. xarifae*, *Sphaerosyllis* sp., *Pionosyllis anophthalma*, *P. longocirrata*, *Syllides edentatus*, *Syllis bouvieri, S. compacta*, *S. corallicola*, *S. jorgei*, *Syllis pontxioi* and *Syllis westheidei*. Finally a total of 60 species were newly added to the inventory of the species along the Turkish coasts.

Morphological features of the species examined in this study correspond well with those of their original descriptions. However, the specimens of certain species show some discrepancies that are indicated below.

Exogone (*Exogone*) sp., which was only found at 76 m depth on muddy substratum of Izmir Bay, appears to be similar to *Exogone* (*Exogone*) *rostrata* in bearing a long median antenna, and possessing similar shapes and lengths of pseudospinigers and falcigers, but it differs in lacking specialized chaetae on chaetiger 1, and having globular dorsal cirri and distally rounded aciculae. Our specimen seems to be identical to the original description of *E.* (*E.*) *longicornis* from the Galapagos Islands (Westheide, 1974), since this species was reported as lacking specialized chaetae on chaetiger 1. However, it has recently been shown that *E.* (*E.*) *longicornis* in fact bears specialized chaetae on chaetiger 1 (G. San Martín, pers. comm.).

Sphaerosyllis glandulata is easily distinguished from the other species of *Sphaerosyllis* in having parapodial glands with sphaerical glandular materials, and falcigers with unidentate blades of similar length throughout the body (Perkins, 1981). The Turkish specimens examined have a longer proventriculus (through four segments) than that of the type specimens of *S. glandulata* collected off Florida (Perkins, 1981) and non-type specimens from the Western Mediterranean (through two segments) (Somashini & San Martín, 1994). The Aegean Sea material also has debris on transverse lines on the dorsum, which condition was not noted before. However, the chaetal appearance and the shape of the parapodial glands are similar to those of *S. glandulata*.

Sphaerosyllis sp. is similar to specimens which have been previously cited as *S. brevicirra* Hartmann-Schröder, 1960 in the Mediterranean Sea (Gambi et al., 1995), but a detailed study revealed that the specimens reported as *S. brevicirra* from the Mediterranean Sea belong to a new species (G. San Martín, pers. comm.).

Licher (1999) considered *S. bouvieri* Gravier, 1900 as a synonym of *S. prolifera* Krohn, 1852; however, our specimens are not identical to *S. prolifera* but they show strong diagnostic affinities with the specimens from the Balearic Islands, cited as S. *bouvieri* by San Martin (1984). This species exhibits some distinctive characters: short dorsal cirri, short blades of falcigers with strong distal and proximal teeth, and acuminate aciculae.

Syllis sp. resembles *Syllis nuchalis* Hartmann-Schröder, 1960 in possessing bilobed nuchal projections, and in the shape of aciculae and falcigers. But it differs a) in having a large triangular pharyngeal tooth placed posterior to the pharyngeal opening (on the anterior margin in *S. nuchalis*), b) in the rectangular shape of the dorsal cirri (ovoid in *S. nuchalis*), c) in the presence of inclusions inside the dorsal cirri, d) by a long pharynx (extending on five segments in our specimens vs. three in *S. nuchalis*), e) by long blades of the anterior falcigers (16-23 µm in *S. nuchalis* (Licher, 1999), 12.5-27.5 µm in our specimen), f) by antennae and dorsal cirri with a smaller number of articulations.

Prior to this study only seven Autolytinae species were known from the Eastern Mediterranean (*Procerastea nematodes*, *Proceraea picta*, *P. aurantiaca*, *Autolytus prolifer*, *A. alexandri*, *A. brachycephalus, A. edwarsi*). The number of species of Autolytinae in the Eastern Mediterranean now rises to ten. As far as the Turkish fauna is concerned, only three species were recognized prior to this study: *Autolytus prolifer* (Ergen, 1976), *A. convolutus* (Ergen & Çinar, 1997) and *Proceraea picta* (Çinar & Ergen, 1998). The present study adds six species new to the Turkish fauna.

Autolytinae previously identified in the Eastern Mediterranean Sea and not found in our study are *Proceraea*

Table 1. Species of Syllidae collected in the Aegean Sea; number of specimens and distribution in the biotopes and the stations. A: *Padina pavonica*, B: *Cystoseira crinita*, C: *Cystoseira* spp., D: *Halopteris scoparia* and *H. filicina*; E: *Aplysina aerophoba* and *Sarcotragus* sp.; F: *Cladocora caespitosa* and *Pinna nobilis*; G: Rocks; H: *Posidonia oceanica*; I: *Cymodocea nodosa*, *Zostera marina* and *Z. nolthii*; J: mud, sandy-mud and sand. *new to the Turkish fauna, **new to the Eastern Mediterranean fauna, ***new to the Mediterranean fauna.

Tableau 1. Espèces de Syllidae récoltées dand la mer Egée; nombre de spécimens et distribution dans les biotopes et les stations. A: *Padina pavonica* ; B : *Cystoseira crinita* ; C : *Cystoseira* spp. ; D : *Halopteris scoparia* et *H. filicina* ; E : *Aplysina aerophoba* et *Sarcotragus* sp. ; F : *Cladocora caespitosa* et *Pinna nobilis* ; G : Rocheux ; H : *Posidonia oceanica* ; I : *Cymodocea nodosa*, *Zostera marina* et *Z. nolthii*; J : vase, vase sableuse et sable. *nouvelle pour la faune de Turquie, **nouvelle pour la faune de Méditerranée orientale, ***nouvelle pour la faune de Méditerranée.

SPECIES	BIOTOPES										STATIONS (See Fig. 1)
	A	B	C	D	E	F	G	H	I	J	
AUTOLYTINAE											
**Autolytus brachycephalus* (Marenzeller, 1874)	-	15	2	-	-	-	-	26	-	-	10,13,20,21,22,24,27,29,31
***Autolytus benazzi* Cognetti, 1953	-	2	2	2	-	-	5	6	-	1	2,7,11,13,20,21,26,28
Autolytus convolutus Cognetti, 1953	-	-	-	-	-	-	2	-	-	-	10
**Autolytus edwarsi* Saint-Joseph, 1887	4	22	30	1	-	2	8	58	-	-	1,2,3,5,6,8,10,13,20,21,24,30,31
Autolytus prolifer (O. F. Müller, 1788)	-	18	-	2	-	-	1	-	-	-	5,10,13,21
***Autolytus quindecimdentatus* Langerhans, 1884	-	-	1	1	-	-	1	2	-	3	8,9,13,17,19,20
***Paraprocerastea crocantinae* San Martín & Alós, 1989	-	-	-	-	1	-	-	1	-	-	5,20
**Proceraea aurantiaca* Claparède, 1868	1	2	-	-	-	-	-	5	-	-	10,28,30,31
Proceraea picta Ehlers, 1864	-	2	3	-	2	-	-	15	-	-	2,5,7,8,10,20,25,30,31
EXOGONINAE											
**Brania arminii* (Langerhans, 1881)	27	2	2	2	-	-	13	35	6	-	2,3,5,6,7,10,20,21,24,27,30,31
**Brania pusilla* (Dujardin, 1839)	-	2	3	6	-	1	8	25	-	-	3,5,6,7,10,20,21,24,30
**Exogone (Exogone) dispar* (Webster, 1879)	75	19	18	5	3	13	36	50	2	2	2,3,5,6,7,8,9,10,13,18,21,24, 25,26,28,29,31
****Exogone* (*Exogone*) sp.	-	-	-	-	-	-	-	-	-	1	19
Exogone (*Exogone*) *naidina* Örsted, 1846	140	35	46	102	-	15	65	164	1	9	All stations except 1,4,8,12,14-18,29
Exogone (*Exogone*) *rostrata* Naville, 1933	17	6	-	5	1	10	9	270	1	2	1,6,7,9,10,13,19,20,21,24,26,27,28,30
**Exogone* (*Exogone*) *verugera* (Claparède, 1868)	-	-	-	-	-	-	-	1	-	16	12,17,18,19,24
****Exogone* (*Parexogone*) *caribensis* San Martín, 1991	-	-	-	-	-	-	-	-	-	1	19
***E.* (*P.*) *cognetti* Castelli, Badalamenti & Lardicci, 1987	-	-	-	-	-	-	-	-	-	4	14,15,18,19
***E.* (*P.*) *gambiae* Lanera, Sordino & San Martín, 1994	-	-	-	-	-	-	-	-	-	7	18,19
***E.* (*P.*) *parahomoseta mediterranea* San Martín, 1984	-	-	-	-	-	-	-	-	-	1	19
Grubeosyllis clavata (Claparède, 1863)	960	1463	380	1190	5	62	516	202	2	-	All stations except 4,11,12,14-19,22
***Grubeosyllis euritmica* (Sardá, 1984)	1	1	-	-	-	5	-	1	-	-	10,13
***Grubeosyllis vieitezi* (San Martín, 1984)	-	35	-	-	-	-	3	76	-	-	6,7,10,13,20,21,22,24,26,30,31
***Grubeosyllis yraidae* (San Martín, 1984)	-	-	-	-	-	-	4	1	-	-	10,21
**Parapionosyllis brevicirra* Day, 1954	-	-	-	-	-	2	2	52	-	14	6,7,9,10,18,20,24,26,27,30
***Parapionosyllis elegans* (Pierantoni, 1903)	-	-	-	-	-	-	1	-	4	124	3,21,22
***Parapionosyllis labronica* Cognetti, 1965	-	-	-	-	-	-	2	-	-	2	19,20
***Parapionosyllis minuta* (Pierantoni, 1903)	3	-	-	1	-	-	-	2	1	7	10,19,20,21,23,24
***Sphaerosyllis austriaca* Banse, 1959	167	79	54	123	2	-	25	113	-	-	All stations except 1,4-6,11-19,25,27
***Sphaerosyllis belizensis* Russell, 1989	-	-	-	-	-	-	-	-	1	-	3
***S. campoyi* San Martin, Acero, Contonente & Gómez, 1982	-	-	-	-	-	-	1	-	-	-	10
**Sphaerosyllis cryptica* (Ben-Eliahu, 1977)	1	-	-	2	-	-	2	3	-	-	13,21,24,30
***Sphaerosyllis* cf. *glandulata* Perkins, 1981	-	-	-	-	-	-	-	-	-	2	19
Sphaerosyllis hystrix Claparède, 1863	99	249	38	238	1	7	43	144	1	9	All stations except 4,11,12,14,15,17,27
Sphaerosyllis pirifera Claparède, 1868	118	340	28	94	2	19	33	317	1	2	All stations except 11,12,15-19
**Sphaerosyllis taylori* Perkins, 1981	1	-	-	1	-	-	14	10	-	5	13,18,21,24
**Sphaerosyllis thomasi* San Martín, 1984	1	-	-	2	-	-	2	1	8	-	3,10,23,24,31
***Sphaerosyllis xarifae* Hartmann-Schröder, 1960	-	-	-	5	-	-	3	-	-	-	24,31
***Sphaerosyllis* sp.	1	-	-	2	-	1	2	-	-	9	9,17,18,19, 20,21,24,
EUSYLLINAE											
Amblyosyllis formosa (Claparède, 1863)	1	2	11	1	1	1	20	-	-	-	2,3,5,7,8,9,10,13,24,26,27,29,30
Ehlersia ferrugina Langerhans, 1881	74	15	7	5	-	8	47	391	3	3	all stations, except 11,12,13,14,15,16,17,18
Eusyllis assimilis Marenzeller, 1875	-	2	-	-	-	-	1	1	-	1	5,8,18

Continued 1; suite 1

SPECIES	A	B	C	D	E	F	G	H	I	J	STATIONS (See Fig. 1)
Eusyllis blomstrandi Malmgren, 1867	-	4	-	-	-	1	-	5	-	-	5,8,10,30
**Eusyllis lamelligera* Marion & Bobretzky, 1875	-	5	-	-	2	11	19	23	-	1	1,5,7,8,10,13,20,21,23,24,30,31
Odontosyllis ctenostoma Claparède, 1868	19	57	51	27	-	-	59	89	-	-	All stations except 1,11-19,21,27
Odontosyllis fulgurans (Audouin & M. Edwards, 1833)	10	23	1	4	1	-	1	61	-	1	10,13,19,21,24,28,29,30,31
Odontosyllis gibba Claparède, 1863	4	7	7	2	-	1	2	11	-	1	All stations except 3,4,6,8,11-16,18,19,24-27
***Pionosyllis anophthalma* Capaccioni & San Martín, 1990	-	-	-	-	-	-	-	-	1	-	3
**Pionosyllis dionisi* Núñez & San Martín, 1991	-	-	-	-	-	-	-	-	-	1	19
Pionosyllis lamelligera Saint-Joseph, 1856	2	13	21	3	-	-	9	23	-	-	2,5,6,7,8,10,20,24,27,28,30
***Pionosyllis longocirrata* Saint-Joseph, 1886	-	2	2	9	-	-	14	11	-	-	2,3,7,8,10,20,25,27,28,30,31
**Pionosyllis pulligera* (Krohn, 1852)	144	49	31	15	-	-	13	1	-	-	All stations except 1,4,6,11,12,14-19,22,25,27
**Pionosyllis weissmanni* Langerhans, 1879	-	-	-	-	-	-	-	-	-	1	19
**Streptosyllis websteri* Southern, 1914	-	-	-	-	-	-	-	-	-	39	20,22
**Syllides bansei* Perkins, 1981	-	-	-	-	-	-	-	1	-	1	10,31
***Syllides edentatus* (Westheide, 1974)	4	2	-	-	-	-	3	-	-	-	3,8,20,23,28,29
**Syllides fulvus* (Marion & Bobretzky, 1875)	2	20	10	4	1	-	6	46	-	1	2,3,5,7,10,19,20,21,24,26,27,28,29,30
SYLLINAE											
**Branchiosyllis exilis* (Gravier, 1900)	2	41	48	7	1	1	24	13	-	-	All stations except 4,11-21
**Eurysyllis tuberculata* Ehlers, 1864	3	7	4	1	-	1	54	48	-	10	all stations, except 4,11,12,14, 15,116,17,22,23
Haplosyllis spongicola (Grube, 1855)	7	16	97	-	6	34	44	123	-	-	All stations except 1,6,11,12,14-19,22,23,25
**Opisthosyllis brunnea* Langerhans, 1879	-	-	-	-	-	-	1	-	-	-	20
**Plakosyllis brevipes* Hartmann-Schröder, 1956	-	-	-	-	-	-	-	-	-	1	12
Pseudosyllis brevipennis Grube, 1863	8	4	6	-	1	6	5	57	1	1	2,5,7,8,9,10,13,18, 20,21,24,26,28,29,30
Syllis alternata Moore, 1908	-	1	-	-	-	14	2	13	-	-	4,5,10,20,21
Syllis amica Quatrefages, 1865	-	-	3	-	-	-	-	-	-	-	29
Syllis armillaris (Müller, 1776)	14	13	7	-	3	14	45	133	-	-	2,3,4,5,6,7,8,9,10,13, 20,21,24,25,26,28,30,31
**Syllis beneliahui* (Campoy & Alquézar, 1982)	6	-	-	-	-	-	5	10	1	-	3,7,10,21,24,26,28,29,30,31
***Syllis bouvieri* sensu San Martín, 1984	2	-	-	-	4	4	3	7	-	-	2,3,5,10,13,21,25,30,31
**Syllis columbretensis* (Campoy, 1982)	3	3	2	-	1	3	8	143	-	-	1,3,4,5,6,7,8,9,10,13, 21,24,25,26,28,30
***Syllis compacta* Gravier, 1900	88	16	13	1	-	-	3	2	-	-	2,5,10,20,24,30
***Syllis corallicola* Verrill, 1900	-	1	11	1	2	19	4	38	-	-	4,5,7,9,10,21,24,29,30,31
Syllis garciai (Campoy, 1982)	69	10	-	10	6	4	-	301	22	51	all stations, except 11,12,15,21,22
Syllis gerlachi (Hartmann-Schröder, 1960)	11	44	17	7	3	23	36	436	-	-	all stations, except 2,11,12,14,15,16,17,18,19
Syllis gracilis Grube, 1840	-	12	7	-	1	22	13	9	-	23	2,3,4,5,9,10,11,13,21,24,29,30
****Syllis heterochaeta* Moore, 1909	-	-	-	-	-	-	-	-	-	1	18
Syllis hyalina Grube, 1863	68	36	14	10	2	8	27	87	1	-	all stations, except 1,4,6,11,12,14,15,16,17,18,19
***Syllis jorgei* San Martín & López, 2000	-	-	-	-	1	4	1	25	-	-	5,7,10,21,24,26,30
Syllis krohni Ehlers, 1864	20	32	27	20	-	-	16	26	1	-	All stations except 11,12,14 19,21,22,25,26
***Syllis pontxioi* San Martín & López, 2000	-	-	-	-	-	-	-	4	-	-	26
Syllis prolifera Krohn, 1852	978	1500	577	801	26	34	394	564	2	-	all stations, except 11,12,14,15,16,17,18,19
**Syllis rosea* (Langerhans, 1879)	4	-	1	-	-	-	-	1	-	-	10,26,29
**Syllis torquata* Marion & Bobretzky, 1875	-	-	-	-	-	-	1	3	-	-	2,7,13,23
Syllis variegata Grube, 1860	6	8	19	-	1	2	11	229	-	-	all stations, except 9,11,12,14,15,16,17,18,19,23
Syllis vittata Grube, 1840	2	1	-	2	-	-	6	-	-	-	2,3,7,8,9,10,28,30
***Syllis westheidei* San Martín, 1984	-	-	1	-	-	-	2	8	-	-	7,10,24,26,30
****Syllis* sp. (not *nuchalis* Hartmann-Schröder, 1960)	-	-	-	-	-	-	-	1	-	-	21
Trypanosyllis aeolis Langerhans, 1879	-	-	-	-	-	1	-	1	-	-	7,13
Trypanosyllis coeliaca Claparède, 1868	-	1	-	-	1	-	-	-	-	-	7,8
Trypanosyllis zebra (Grube, 1860)	3	35	13	-	4	12	21	54	-	-	2,3,4,5,6,7,8,9,10,13, 24,25,26,28,29,30,31
**Xenosyllis scabra* (Ehlers, 1864)	-	-	-	-	-	-	-	2	-	-	1

nematodes Langerhans, 1884, and *Autolytus alexandri* Malmgren, 1867. *P. nematodes* was recorded (as *P. perrieri* Gravier, 1900) on hard substrate with *Halimeda tuna* and calcareous algae in the Aegean Sea (Simboura et al., 1995); *A. alexandri* (as *A. longeferiens* Saint-Joseph, 1887) was found in sediment of broken *Lithothamnion* with silty sand in the Aegean Sea (Kisseleva, 1983) and on a fishing ground in the Levant Sea (Fauvel, 1937).

The records of other species of Autolytinae in the Mediterranean Sea seem to be doubtful. *Autolytus rubrovittatus* Claparède, 1864, was originally described from the Western Mediterranean and subsequently Fauvel (1923) confirmed its occurrence in the same area. Its trepan features, which are good characters in taxonomy of the Autolytinae, were originally described as "*Cette couronne porte, en général, sept dents principales, longues et aigues, séparées les unes des autres par quelques dents (en général, quatre ou cinq) de même forme, mais plus petites. Le bord postérieur de la couronne est aussi finement dentelé*". These features are consistent with those of *A. brachycephalus* (Marenzeller, 1874), which carries a trepan comprised of a circlet of 30 teeth, alternating 3-4 small teeth with one large tooth, and well-developed infra-dental spines. Since the general body characteristics are also identical for both species, *A. brachycephalus* might be a synonym of *A. rubrovittatus*. However, the respective type material should be re-examined to clarify the situation.

Autolytus paradoxus Saint-Joseph, 1887 was described from the north-eastern Atlantic (Dinard, France) and subsequently reported in the Mediterranean Sea (Fauvel, 1923). The distinctive characters of the species according to Saint-Joseph (1887) are 1) presence of dorsal cirri, alternately very long (as compared with the body width) and short, starting from chaetiger 2 to the end of body; and 2) pharyngeal structure with a series of short equal teeth. Unfortunately no data concerning the number of teeth, an important taxonomic character, are available in the original and subsequent papers. A species closely resembling *A. paradoxus* in having such dorsal cirri and pharyngeal teeth is *A. neapolitanus* Cognetti, 1953 which was originally described from the Gulf of Naples (Cognetti, 1953, 1957). This species is characterized by relatively long dorsal cirri on chaetiger 2 and the arrangement of dorsal cirri throughout the body as alternately long and short as in *A. paradoxus*. Similarly, *A. rubropunctatus* (Grube, 1860) possesses dorsal cirri and a pharyngeal structure closely resembling those of *A. neapolitanus* and *A. paradoxus*. The peculiar features of *A. rubropunctatus*, according to Grube (1860), Fauvel (1923) and Campoy (1982), are the red spots on the dorsum of anterior segments. These descriptions seem to be consistent with each other and the nominate species cited above should be re-examined in order to verify whether the three species are conspecific.

Several species of Exogoninae previously reported from the Eastern Mediterranean Sea and not found during this study are: *Brania tenuicirrata* (Claparède, 1864), *Exogone* (*Parexogone*) *hebes* (Webster & Benedict, 1884), *Grubeosyllis limbata* (Claparède, 1868), *Sphaerosyllis bulbosa* Southern, 1914, *Sphaerosyllis capensis* Day, 1953, *Sphaerosyllis erinaceus* Claparède, 1863, *Sphaerosyllis ovigera* Langerhans, 1879, *Sphaerosyllis tetralix* Eliason, 1920 and *Spermosyllis torulosa* Claparède, 1864.

Sphaerosyllis erinaceus Claparède, 1863 has frequently been cited elsewhere in the Mediterranean Sea in association with a variety of substrata. However, these records seem to be doubtful because the species has never been found in any of the numerous benthic samples from the Aegean Sea. The specimens previously cited under the name *S. erinaceus* from the Turkish coasts (Çinar & Ergen, 1998) were re-examined; in fact they belong to *Sphaerosyllis austriaca* and *S. pirifera*. Therefore it is possible that some or all of the Mediterranean records of *S. erinaceus* as well as of *Exogone* (*Parexogone*) *hebes* (Webster & Benedict, 1884), *Sphaerosyllis ovigera* Langerhans, 1879, and *Spermosyllis torulosa* Claparède, 1864 (Fauvel, 1923; Cognetti, 1957, 1965) are incorrect, so the published material of these species should be reexamined.

Up to now three species of *Amblyosyllis* have been recorded in the Mediterranean Sea; *A. dorsigera* (Claparède, 1864), *A. formosa* (Claparède, 1863) and *A. madeirensis* Langerhans, 1879. The main diagnostic features for species separation within the genera *Amblyosyllis* are type and number of pharyngeal teeth: monocuspid in *A. formosa*, tricuspid in *A. dorsigera* and pentacuspid in *A. madeirensis*. However, some intermediate characters also exist in the specimens of *Amblyosyllis* collected from the Aegean Sea in this study, thus the specimens were recorded under the oldest name, "*A. formosa*".

A total of 15 Eusyllinae species previously known from the Western Mediterranean and Levant coasts were not found in this study: *Dioplosyllis cirrosa* Gidholm, 1962, *Miscellania dentata* Martín et al.,1991, *Odontosyllis dugesiana* Claparède, 1864, *Opisthodonta morena* Langerhans, 1879, *O. pterochaeta* Southern, 1914, *Petitia amphophthalma* Siewing, 1956, *Pionosyllis divaricata* (Keferstein, 1862), *P. neapolitana* Goodrich, 1930, *P. serratisetosa* López et al., 1997, *Streptosyllis templadoi* San Martín, 1984, *Syllides articulosus* Ehlers, 1897, *S. convolutus* Webster & Benedict, 1884, *S. edentulus* (Claparède, 1868), *S. japonicus* Imajima, 1966 and *S. longocirratus* (Örsted, 1845).

In the Mediterranean Sea, as well as in other areas, there has been confusion in identification of the *Syllis* species that have pseudospinigers in addition to falcigers and simple chaetae. Six species with such chaetal characters have been

recorded from the Mediterranean Sea: *S. beneliahui* (Campoy & Alquézar), *S. caeca* (Katzman, 1973), *S. cornuta* Rathke, 1843, *S. garciai* (Campoy, 1982), *S. rosea* (Langerhans, 1879) and *S. parapari* San Martín & López, 2000. The previous records for the "cosmopolitan" species *S. cornuta* in the Mediterranean Sea are doubtful and three distinct species were recognized from the materials that are identified as *S. cornuta* in the Western Mediterranean: *Syllis beneliahui*, *S. garciai* and *S. parapari*. Our materials also yielded another species, *S. heterochaeta*, which is only known from the Pacific Ocean (Licher, 1999). This species is easily recognized from other species with pseudospinigers, forming "the *cornuta* complex-group" (sensu Licher, 1999), in having 28 compound chaetae on each anterior parapodium and a long proventriculus extending through 12 segments.

In his revisionary work, Licher (1999) studied the taxonomy of Syllinae all over the world, based on the type specimens. According to his observations, the Mediterranean species *Syllis truncata cryptica* (Ben-Eliahu, 1977) and *S. luquei* San Martín, 1984 are identical to *S. gerlachi* (Hartmann-Schröder, 1960); *S. zonata* Haswell, 1883 and *S. bouvieri* Gravier, 1900 identical to *S. prolifera* Krohn, 1852; *S. compacta* Gravier, 1900 and *S. columbretensis* (Campoy, 1982) identical to *S. variegata* Grube, 1860. In addition Licher (op. cit.) considered *S. golfonovensis* (Hartmann-Schröder, 1962) as a distinct species, which was previously proposed to be conspecific with *S. compacta* (see López et al., 1996). However, the status of *S. compacta* and *S. columbretensis* as synonyms seems to be uncertain and most probably these species are distinct (San Martín, pers. comm.).

The following 18 Mediterranean Syllinae species were absent among our materials: *Haplosyllis chamaeleon* (Laubier, 1960), *Paratyposyllis peresi* Laubier, 1968, *Pseudosyllides balearica* San Martín, 1984, *Syllis kabilica* (Ben-Eliahu, 1977), *S. caeca* (Katzmann, 1973), *S. cornuta* Rathke, 1843, *S. ferrani* Alós & San Martín, 1987, *S. gerundensis* (Alós & Campoy, 1981), *S. lutea* (Hartmann-Schröder, 1960), *S. nigricirris* Grube, 1863, *S. nuchalis* (Hartmann-Schröder, 1960), *S. parapari* San Martín & López, 2000, *S. pectinans* Haswell, 1920, *S. rosea* cf. *magna* (Westheide, 1974), *S. tyrrhena* (Licher & Kuper, 1998), *S. schulzi* (Hartmann-Schröder, 1960), *S. vivipara* (Krohn, 1960) and *Trypanosyllis rosea* (Grube, 1863). Among the above-mentioned species, only *S. caeca*, a syllid without eyespots, occurred at depths greater than 500 m (Campoy, 1982). San Martín & López (2000) checked specimens of *S. lutea* collected along the Spanish coasts and compared them with the type specimens described by Licher (1999). The results showed that some specimens from the Spanish coasts, previously assigned to *S. lutea*, indeed belonged to a new species, *S. jorgei* (San Martín & Lopez, 2000). Observations on our materials revealed that only *Syllis jorgei* inhabited the Aegean Sea, not *S. lutea*.

Acknowledgments

We are indebted to Dr. Guillermo San Martín (Universidad Autónoma de Madrid, Madrid) for help with literature, identification of some species, and helpful advice. We are also thankful to Dr. Helmut Zibrowius (Station Marine d'Endoume, Marseille) and Dr. Mary E. Petersen (Zoological Museum, University of Copenhagen) for their valuable suggestions on the manuscript, and to Dr. Veysel Aysel (18 Mart University, Çanakkale) for identification of the algae and phanerogams.

References

Ben-Eliahu M. N. 1977a. Polychaete cryptofauna from rims of similar intertidal vermetid reefs on the Mediterranean coast of Israel and in the Gulf of Elat: Exogoninae and Autolytinae (Polychaetae Errantia: Syllidae). *Israel Journal of Zoology*, **26**: 59-99.

Ben-Eliahu M. N. 1977b. Polychaete cryptofauna from rims of similar intertidal vermetid reefs on the Mediterranean coast of Israel and in the Gulf of Elat: Syllinae and Eusyllinae (Polychaeta Errantia: Syllidae). *Israel Journal of Zoology*, **26**: 1-58 pp.

Campoy A. 1982. Fauna de Anélidos Poliquetos de la Península Ibérica. *Ediciones de la Universidad de Navarra,* S.A. Serie Biologica, 781 pp.

Çinar M. E. & Ergen Z. 1998. Polychaetes associated with the sponge *Sarcotragus muscarum* Schmidt, 1864 from the Turkish Aegean coast. *Ophelia*, **48 (3)**: 167-183.

Cognetti G. 1953. Ricerche sui Sillidi del Golfo di Napoli. II. Due nuove specie di *Autolytus* dei fondi a Coralline. *Bolletino Zoologica*, **20**: 123-127.

Cognetti G. 1957. I sillidi del Golfo di Napoli. *Pubblicazioni della Stazione Zoologica di Napoli*, **5 (30)**: 1-100.

Cognetti G. 1965. Sillidi mesopsammici delle secche della Meloria (Livorno). *Archivio Zoologico Italiano*, **50**: 65-72.

Ergen Z. 1976. Taxonomy and ecology of Polychaeta in Izmir Bay and its vicinity. *Scientific Rapport Series of the Faculty of Science, Ege University*, **209**: 1-73 pp (in Turkish).

Ergen Z. & Çinar M. E. 1997. Polychaeta of Antalya Bay (Mediterranean coast of Turkey). *Israel Journal of Zoology*, **43**: 229-241.

Fauchald K. 1977. The polychaete worms. Definitions and keys to the orders, families and genera. *Natural History Museum of Los Angeles Country*, *Science Series*, **28**: 1-188 pp.

Fauvel P. 1923. Polychètes Errantes. *Faune de France*, Paris, **5**: 1-488.

Fauvel P. 1937. *Les fonds de pêche près d'Alexandrie. XI. Annélides Polychètes*. Ministère du Commerce & de l'Industrie, Le Caire. Direction des Recherches des Pêcheries. Notes & Mémoires No. **19**: 1-60, 2 maps.

Gambi M. C., Giangrande A., Martinelli M. & Chessa L. A. 1995. Polychaetes of a *Posidonia oceanica* bed off Sardinia (Italy): Spatio-temporal distribution and feeding guild analysis. *Scientia Marina*, **59 (2)**: 129-141.

Gidholm L. 1966. A revision of Autolytinae (Syllidae, Polychaeta) with special reference to Scandinavian species, and with description on external and internal morphology, reproduction and ecology. *Arkiv för Zoologi*, **19 (7)**: 157-213.

Grube A. E. 1860. Beschreibung neuer oder wenig bekannter Anneliden. 4. Beitrag. Zahlreiche Gattungen. *Archiv für Naturgeschichte*, **26**: 71-118.

Kisseleva M. I. 1983. Comparative characteristics of the benthos at some banks in the Aegean Sea. *Thalassographica*, **6**: 107-118.

Licher F. 1999. Revision der Gattung *Typosyllis* Langerhans, 1879 (Polychaeta: Syllidae). Morphologie, Taxonomie und Phylogenie. *Abhandlungen der Senckenbergischen Naturforschenden Gesellschaft*, **551**: 336 pp.

López E., San Martín G. & Jiménez M. 1996. Syllinae (Syllidae, Annelida, Polychaeta) from Chafarinas Islands (Alborán Sea, W Mediterranean). *Miscellania Zoologica*, **19**: 105-118.

Nygren N. 1999. Phylogeny and reproduction in Syllidae (Polychaeta). *Zoological Journal of the Linnean Society*, **126**: 365-386.

Perkins T. H. 1981. Syllidae (Polychaeta), principally from Florida, with descriptions of a new genus and twenty-one new species. *Proceedings of the Biological Society of Washington*, **93 (4)**: 1080-1172.

Saint-Joseph A. 1887. Les Annélides polychètes de Dinard. *Annales des Sciences Naturelles, Zoologie, Paris*, **1**: 127-270.

San Martín G. 1984. Estudio biogeográfico, faunístico y sistemático de los Poliquetos de la Familia Sílidos (Syllidae:Polychaeta) en Baleares. *Publicaciones de la Universidad Compluense de Madrid*, **187/84**; pp. 1-529.

San Martín G. & López E. 2000. Three new species of *Syllis* (Syllidae: Polychaeta) from Iberian coasts. *Cahiers de Biologie Marine*, **41**: 425-433.

Simboura N., Zenetos A., Thessalou-Legaki M., Pancucci M.-A. & Nicolaidou A. 1995. Benthic communities of the infralittoral in the N. Sporades (Aegean Sea): a variety of biotopes encountered and analysed. *Marine Ecology-Pubblicazioni della Stazione Zoologica di Napoli*: **16**: 283-306.

Westheide W. 1974. Interstitielle Fauna von Galapagos XI. Pisionidae, Hesionidae, Pilargidae, Syllidae (Polychaeta), *Microfauna des Meeresbodens*, **44**: 146 pp.