

Revisited Syllidae of the English Channel coarse sand communities

Jean-Philippe PEZY^a, Alexandrine BAFFREAU^a & Jean-Claude DAUVIN^a

^aNormandie Univ, UNICAEN, UNIROUEN, Laboratoire Morphodynamique Continentale et Côtière, UMR CNRS 6143, 24, rue des Tilleuls, F-14000 Caen, France



Figure 1: Map of study sites.



Introduction

Coarse sand, gravel and pebbles covered about 80 % of the sea bottom surface (Larsonneur et al., 1982). The Syllidae family (Annelida, Polychaeta) is very well represented in such clean coarse sand sediment in the subtidal and the intertidal zones (Dauvin & Lee, 1983; Olivier et al., 2012). Moreover, the Syllidae family is one of the diverse families of marine Polychaeta with 74 genera and 700 species (San Martín, 2003; San Martín & Worsfold, 2015).

Material and Methods

A PhD study was realized in the project of implantation of the “Dieppe-Le Tréport” offshore windfarm (Eastern part of the English Channel) (Fig. 1). Syllidae had been collected in 19 stations corresponding to the clean coarse sand *Branchiostoma lanceolatum* community (depth between 12 and 25 m). Four sampling surveys were carried out between 2014 and 2016 (September 2014 (Campaign 1: C1), March 2015 (C2), September 2015 (C3) and March 2016 (C4)) with a 0.1 m² Van Veen grab (5 replicates by station).

Results

29 taxa including 27 species had been identified among the 6,549 Syllidae collected during the four campaigns (Fig. 2). The total species richness (SR) was 192 in C1, 169 in C2, 235 in C3 and 265 in C4. The polychaetes represented between 38 and 43% and the Syllidae between 9 to 10% of the SR; the Arthropods account from 30 to 34% of the SR. Three species *Syllis garciai*, *S. variegata* and *Trypanosyllis (Trypanosyllis) coeliaca* showed the highest occurrences and the highest abundances during the 4 campaigns (Fig. 2). The polychaetes represented between 34 to 62% and the Syllidae between 5 and 9% of the total fauna collected during the monitoring (Fig. 3).

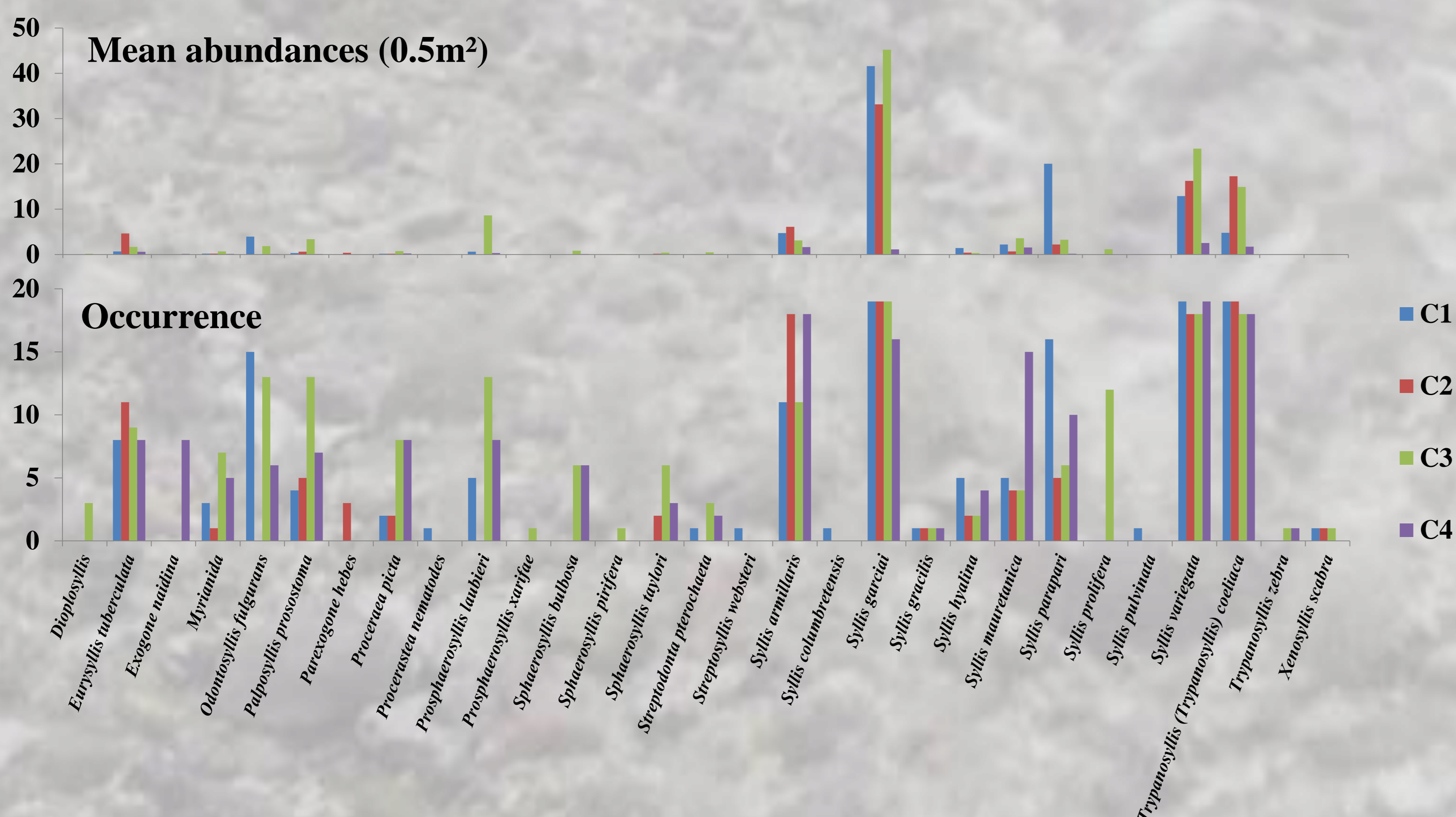


Figure 2: Mean abundance (0.5m²) and occurrence of Syllidae species in the 19 stations.

Identify all the Syllidae instead of a single taxa (family level) leads to an increase in the SR, H' and J' for each campaign for all species and polychaetes species (Fig. 4). Nevertheless, the increases of H' (ANOVA-test significant at 0,01 for polychaetes) and J' remained moderated and were at mean 5%; this was due to the high SR associated with a homogeneous repartition of the individuals among all collected species (high J' values included between 0.7 and 0.76). Moreover, the high H' values (>4) indicated that this coarse sand community was diversified.

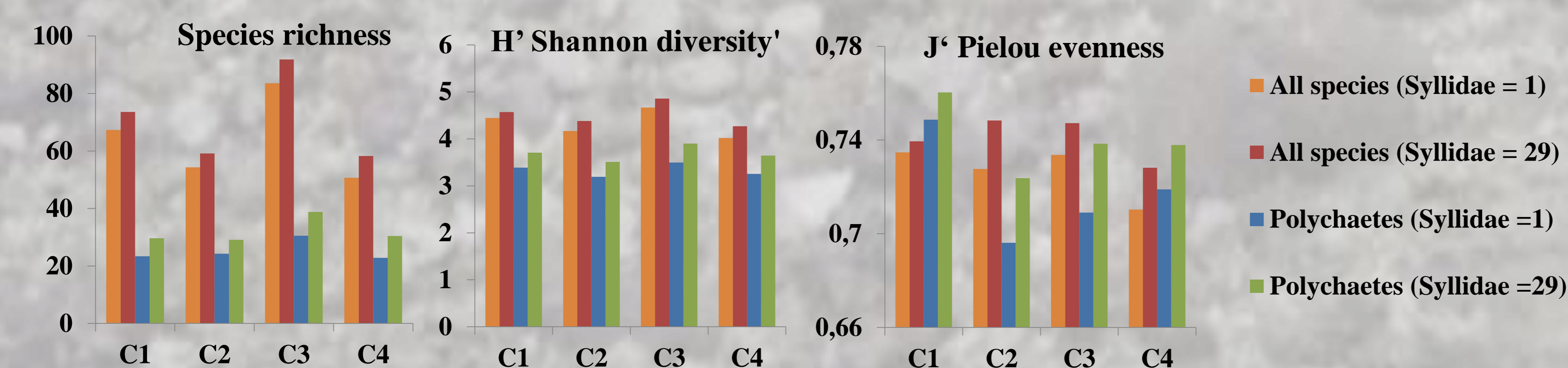


Figure 3: Mean species richness (0.5m²), Pielou evenness (J') and Shannon diversity (H') of Syllidae species in the 19 stations.

Discussion and conclusions

Branchiostoma coarse sands of the eastern part of the EC show very high diversity and abundance in terms of Syllidae. Among the 27 identified species, 7 are new in the EC polychaetes fauna and 6 others are sampled for the first time in the Eastern part of the EC (Table 1). It is remarkable that on the 14 new taxa recorded in the EC by Olivier et al. (2012) and in this study, 13 of them correspond to warm temperate species, the EC corresponding to the Northern limit of their North Eastern Atlantic distribution. In the future, a special attention is required for this interesting polychaetes family particularly in coarse sands.

References

Dauvin J.C. and Lee J.H. (1983) Description d'une nouvelle espèce de Syllidae: *Pionosyllis prope-weismanni* n.sp. (Annélide Polychète) de la région de Roscoff. *Bulletin de la Société Zoologique de France*, 108, 129-134.
Larsonneur C., Bouysse P. and Auffret J.P. (1982) The superficial sediments of the English Channel and its western approaches. *Sedimentology*, 29, 851-864.
Olivier F., Grant C., San Martín G., Archambault P. and McKindsey C.W. (2012) Syllidae (Annelida: Polychaeta: Phyllocladida) from the Chausey Archipelago (English Channel, France), with a description of two new species of the Exogoninae *Prospiraerosyllis*. *Marine Biodiversity* 42, 55-63.

San Martín G. (2003) Annelida, Polychaeta II: Syllidae. In: Ramos MA et al. (Eds) *Fauna Ibérica* (Vol. 21). Museo Nacional de Ciencias Naturales, CSIC, Madrid, 554 pp.
San Martín G. and Worsfold T.M. (2015) Guide and keys for the identification of Syllidae (Annelida, Phyllocladida) from the British Isles (reported and expected species). *ZooKeys*, 488, 1-29.

Table 1: Syllidae in the English Channel, PRI: Primel from Dauvin & Lee, 1983; CHA: Chausey from Olivier et al. 2012; TRE: Le Tréport this study; red : new species for the Channel; blue : new species for the eastern part of the English Channel. ? Doubtful presence which remains to be confirmed in the future.

Scientific Name after revision in WORMS <small>(http://www.marinespecies.org, accessed on 1 July 2016) plus additional records since 2003</small>	PRI	CHA	TRE
<i>Brania pusilla</i> (Dujardin, 1851)		+	
<i>Dioplosyllis cirrosa</i> Gidholm, 1962	+		
<i>Dioplosyllis</i> Gidholm, 1962			+
<i>Euryssyllis tuberculata</i> Ehlers, 1864	+		+
<i>Eusyllis blomstrandii</i> Malmgren, 1867	+		
<i>Exogone naidina</i> Örsted, 1845	+	+	+
<i>Myrianida</i> Milne Edwards, 1845			+
<i>Myrianida prolifera</i> (O.F. Müller, 1788)		+	
<i>Nudisyllis pulligera</i> (Krohn, 1852)	+		
<i>Odontosyllis fulgurans</i> (Audouin & Milne Edwards, 1833)	+		+
<i>Odontosyllis gibba</i> Claparède, 1863	+		
<i>Palposyllis propeweismanni</i> (Dauvin & Lee, 1983)	+		
<i>Palposyllis prosostoma</i> Hartmann-Schröder, 1977*		+	+
<i>Parapionosyllis brevicirra</i> Day, 1954		+	
<i>Parapionosyllis minuta</i> (Pierantoni, 1903)		+	
<i>Parexogone hebes</i> (Webster & Benedict, 1884)*			+
<i>Plakosyllis brevipes</i> Hartmann-Schröder, 1956	+	+	
<i>Proceraea picta</i> Ehlers, 1864			+
<i>Procerastea nematodes</i> Langerhans, 1884			+
<i>Prospiraerosyllis chauseyensis</i> Olivier, Grant, San Martín, Archambault & McKindsey, 2012		+	
<i>Prospiraerosyllis giandoi</i> (Somaschini & San Martín, 1994)		+	
<i>Prospiraerosyllis laubieri</i> Olivier, Grant, San Martín, Archambault & McKindsey, 2012		+	+
<i>Prospiraerosyllis tetralix</i> (Eliason, 1920)	+		
<i>Prospiraerosyllis xariffae</i> (Hartmann-Schröder, 1960)**			+
<i>Salvatoria limbata</i> (Claparède, 1868)	+		
<i>Salvatoria swedmarki</i> (Gidholm, 1962)		+	
<i>Sphaerosyllis bulbosa</i> Southern, 1914	+	+	+
<i>Sphaerosyllis glandulata</i> Perkins, 1981		+	
<i>Sphaerosyllis hystrix</i> Claparède, 1863	+		
<i>Sphaerosyllis pirifera</i> Claparède, 1868**			+
<i>Sphaerosyllis taylori</i> Perkins, 1981*		+	+
<i>Streptodonta pterochaeta</i> (Southern, 1914)**			+
<i>Streptosyllis bidentata</i> Southern, 1914	+		
<i>Streptosyllis campoyi</i> Brito, Núñez & San Martín, 2000		+	
<i>Streptosyllis websteri</i> Southern, 1914		+	+
<i>Syllis armillaris</i> (O.F. Müller, 1776)	+	+	+
<i>Syllis columbretensis</i> (Campoy, 1982)**			+
<i>Syllis garciai</i> (Campoy, 1982)*	?	+	+
<i>Syllis gracilis</i> Grube, 1840			+
<i>Syllis hyalina</i> Grube, 1863*	?	?	+
<i>Syllis licheri</i> Ravara, San Martín & Moreira, 2004		+	
<i>Syllis mauretanicus</i> (Licher, 1999)**	?		+
<i>Syllis parapari</i> San Martín & López, 2000**	?		+
<i>Syllis pontxioi</i> San Martín & López, 2000		+	
<i>Syllis prolifera</i> Krohn, 1852			+
<i>Syllis pulvinata</i> (Langerhans, 1881)**			+
<i>Syllis variegata</i> Grube, 1860	+	+	+
<i>Symnerosyllis lamelligera</i> (de Saint-Joseph, 1886)		+	
<i>Trypanosyllis (Trypanosyllis) coeliaca</i> Claparède, 1868	+	+	+
<i>Trypanosyllis zebra</i> (Grube, 1860)			+
<i>Xenosyllis scabra</i> (Ehlers, 1864)*			+

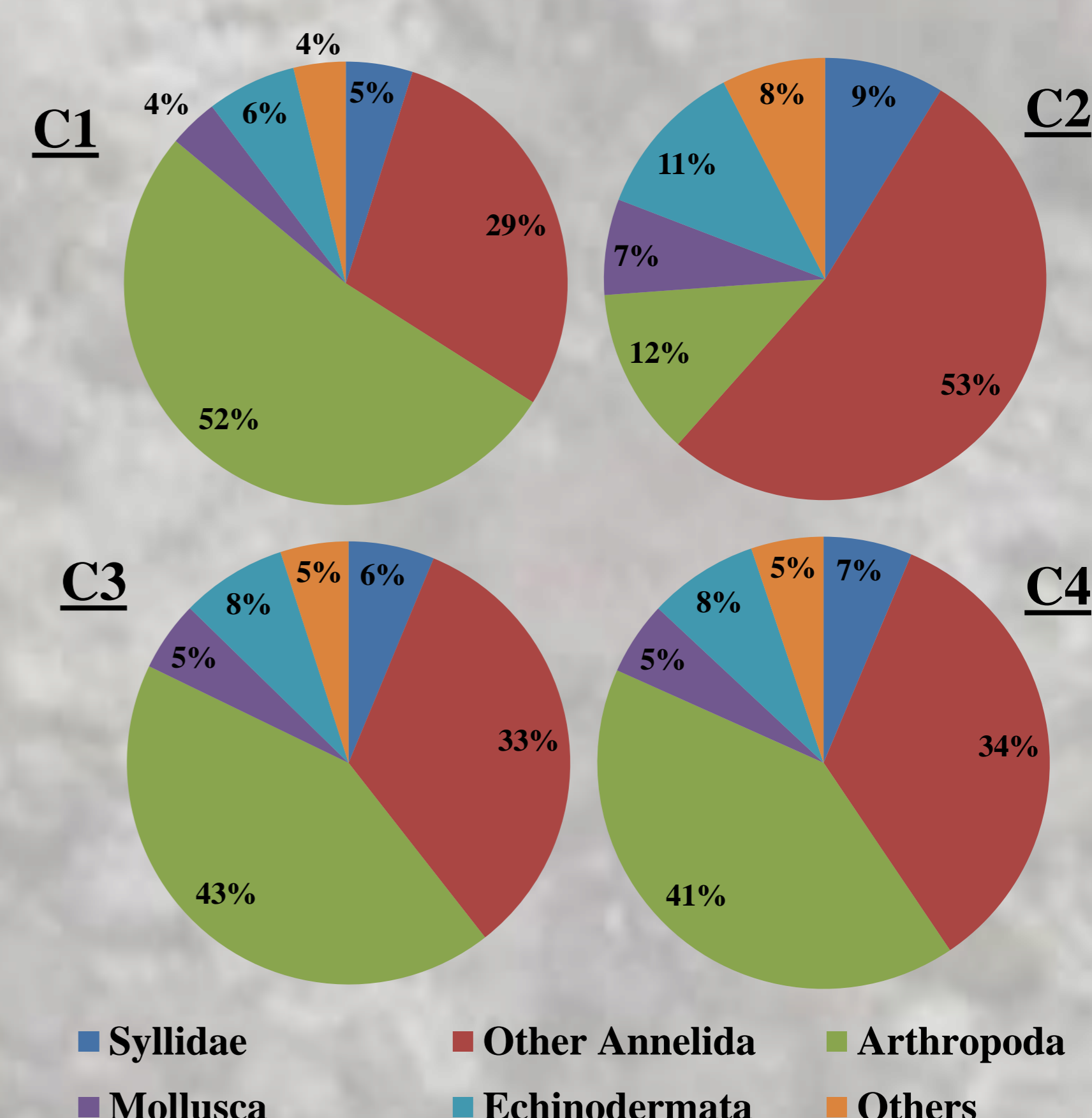


Figure 4: Abundance contribution of Syllidae species for the four campaigns.