

Supplementary Material

Citizen science and integrative taxonomy reveal a great diversity within Caribbean Chaetopteridae (Annelida), with the description of one new species

Daniel Martin^{A,*}, *Marika Mecca*^{B,F}, *Miguel A. Meca*^{A,C}, *Godfried van Moorsel*^D and *Chiara Romano*^E

^ACentre d'Estudis Avançats de Blanes (CEAB–CSIC), Carrer d'accés a la Cala Sant Francesc 14, E-17300 Blanes, Girona, Catalunya, Spain

^BDipartimento di Scienze Biologiche, Geologiche e Ambientali, University of Bologna, Via Sant'Alberto 163, I-48123 Ravenna, Italy

^CDepartment of Natural History, University Museum of Bergen, University of Bergen, Postboks 7800, NO-5020 Bergen, Norway

^DEcosub, Berkenlaantje 2, NL-3956 DM Leersum, Netherlands

^EDepartment of Integrative Marine Ecology (EMI), Calabria Marine Centre, Stazione Zoologica Anton Dohrn, Italian National Institute for Marine Biology, Ecology and Biotechnology, C. da Torre Spaccata, I-87071 Torre Spaccata, Amendolara (CS), Italy

^FPresent address: Centro Andaluz Superior de Estudios Marinos (CASEM), Avenida República Árabe Saharaui s/n, E-11510 Cádiz, Spain

*Correspondence to: Email: dani@ceab.csic.es

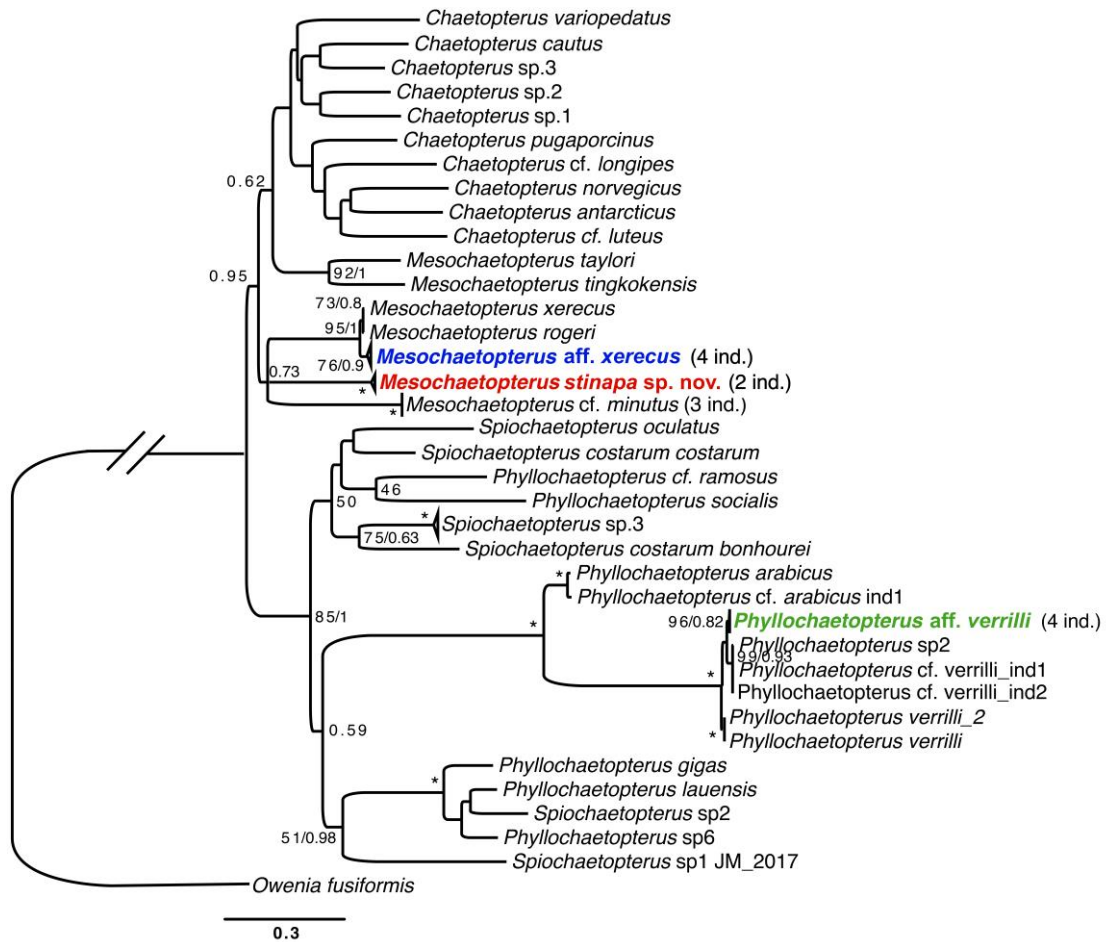


Fig. S1. Bayesian inference (BI) and Maximum likelihood (ML) phylogenetic analysis based on *COI* gene (MAFFT aligned). Statistic support is indicated on the nodes (ML/BI, values <50% bs or 0.5 pp not shown). Support is indicated as an asterisk when both bootstrap >98 and posterior probabilities >0.98.

Table S1. Sequences of Chaetopteridae used for the phylogenetic analysis.

Species	<i>COI</i>	<i>18S</i>
Outgroup		
<i>Owenia fusiformis</i>	KR916900	KP119590
Ingroup		
<i>Chaetopterus antarcticus</i>	KX896494	KX896449
<i>Chaetopterus cautus</i>	KX896507	KX896466
<i>Chaetopterus</i> cf. <i>antarcticus</i>	KX896493	KX896448
<i>Chaetopterus</i> cf. <i>cautus</i>	KX896511	KX896470
<i>Chaetopterus</i> cf. <i>longipes</i>	KX896502	KX896479
<i>Chaetopterus</i> cf. <i>luteus</i>	DQ209253	DQ209220
<i>Chaetopterus pugaporcinus</i>	DQ209256	DQ209224
<i>Chaetopterus norvegicus</i> ^A	DQ209254	DQ209221
<i>Chaetopterus</i> sp1	DQ209252	DQ209219
<i>Chaetopterus</i> sp2	DQ209255	DQ209222
<i>Chaetopterus</i> sp3	KX896508	KX896467
<i>Chaetopterus variopedatus</i>	KX896523	KX896485
<i>Mesochaetopterus</i> cf. <i>minutus</i>	KX896516	KX896475
<i>Mesochaetopterus rogeri</i>	AM503098	AJ966762
<i>Mesochaetopterus japonicus</i> ind1	-	DQ209218
<i>Mesochaetopterus japonicus</i> ind2	-	LC533807
<i>Mesochaetopterus</i> _sp2_JM2017	KX896518	KX896477
<i>Mesochaetopterus</i> sp2 ind2	KX896490	KX896445
<i>Mesochaetopterus sagittarius</i>	-	KX896484
<i>Mesochaetopterus</i> sp3	-	KX896478
<i>Mesochaetopterus taylori</i>	DQ209251	DQ209217
<i>Mesochaetopterus tingkokensis</i>	KP222296	KP222297
<i>Mesochaetopterus xerecus</i>	AM503097	AJ966763
<i>Phyllochaetopterus arabicus</i>	KX896503	KX896462
<i>Phyllochaetopterus</i> cf. <i>arabicus</i> ind1	KX896488	KX896443
<i>Phyllochaetopterus</i> cf. <i>ramosus</i> ind1	KX896492	KX896471
<i>Phyllochaetopterus</i> cf. <i>verrilli</i> ind1	KX896521	KX896482
<i>Phyllochaetopterus</i> cf. <i>verrilli</i> ind2	KX896517	KX896476
<i>Phyllochaetopterus gigas</i>	DQ209248	DQ209213
<i>Phyllochaetopterus lauensis</i>	KX896486	KX896441
<i>Phyllochaetopterus socialis</i>	DQ209247	AJ966761
<i>Phyllochaetopterus</i> sp2	DQ209250	DQ209216
<i>Phyllochaetopterus</i> sp6	KX896487	KX896442
<i>Spiochaetopterus costarum bonhourei</i>	KX896504	KX896463
<i>Spiochaetopterus costarum costarum</i>	KX896483	KX896483
<i>Spiochaetopterus oculatus</i>	KX896514	KX896473
<i>Spiochaetopterus</i> sp1 JM 2017	KX896500	KX896456
<i>Spiochaetopterus</i> sp3	KX896520	KX896480
<i>Spiochaetopterus</i> sp4	KX896497	KX896454
<i>Spiochaetopterus</i> sp2	KX896501	KX896459
<i>Phyllochaetopterus verrilli</i>	MW278804	-

<i>Phyllochaetopterus verrilli</i> _2	MW278851	-
<i>Mesochaetopterus stinapa</i> n. sp. A1	-	OL584041
<i>Mesochaetopterus stinapa</i> n. sp. A2	OM572515	OL584042
<i>Mesochaetopterus stinapa</i> n. sp. A3	OM572516	OL584043
<i>Mesochaetopterus</i> aff. <i>xerecus</i> A1	OM572517	OL584044
<i>Mesochaetopterus</i> aff. <i>xerecus</i> A2	OM572518	OL584045
<i>Mesochaetopterus</i> aff. <i>xerecus</i> A3	OM572519	OL584046
<i>Mesochaetopterus</i> aff. <i>xerecus</i> A4	OM572520	OL584047
<i>Phyllochaetopterus</i> aff. <i>verrilli</i> 1	OM572521	OL584048
<i>Phyllochaetopterus</i> aff. <i>verrilli</i> 2	OM572522	OL584049
<i>Phyllochaetopterus</i> aff. <i>verrilli</i> 3	OM572523	OL584050
<i>Phyllochaetopterus</i> aff. <i>verrilli</i> 4	OM572524	-

GenBank accession numbers are included. *Owenia fusiformis* was used as outgroup.

^ASequences identified as *C. sarsi* in GenBank following Osborn *et al.* (2007), but recently moved to *C. norvegicus* according to Moore *et al.* (2020).

References

- Moore JM, Gagnon J-M, Petersen ME. 2020. A new species of *Chaetopterus* (Annelida: Chaetopteridae) from eastern Canada, with a redescription of *Chaetopterus norvegicus* M. Sars, 1835. *European Journal of Taxonomy* 720: 19-34.
- Osborn KJ, Rouse GW, Goffredi SK, Robison BH. 2007. Description and relationships of *Chaetopterus pugaporcinus*, an unusual pelagic polychaete (Annelida, Chaetopteridae). *Biological Bulletin Marine Biological Laboratory, Woods Hole* 212: 40-54.

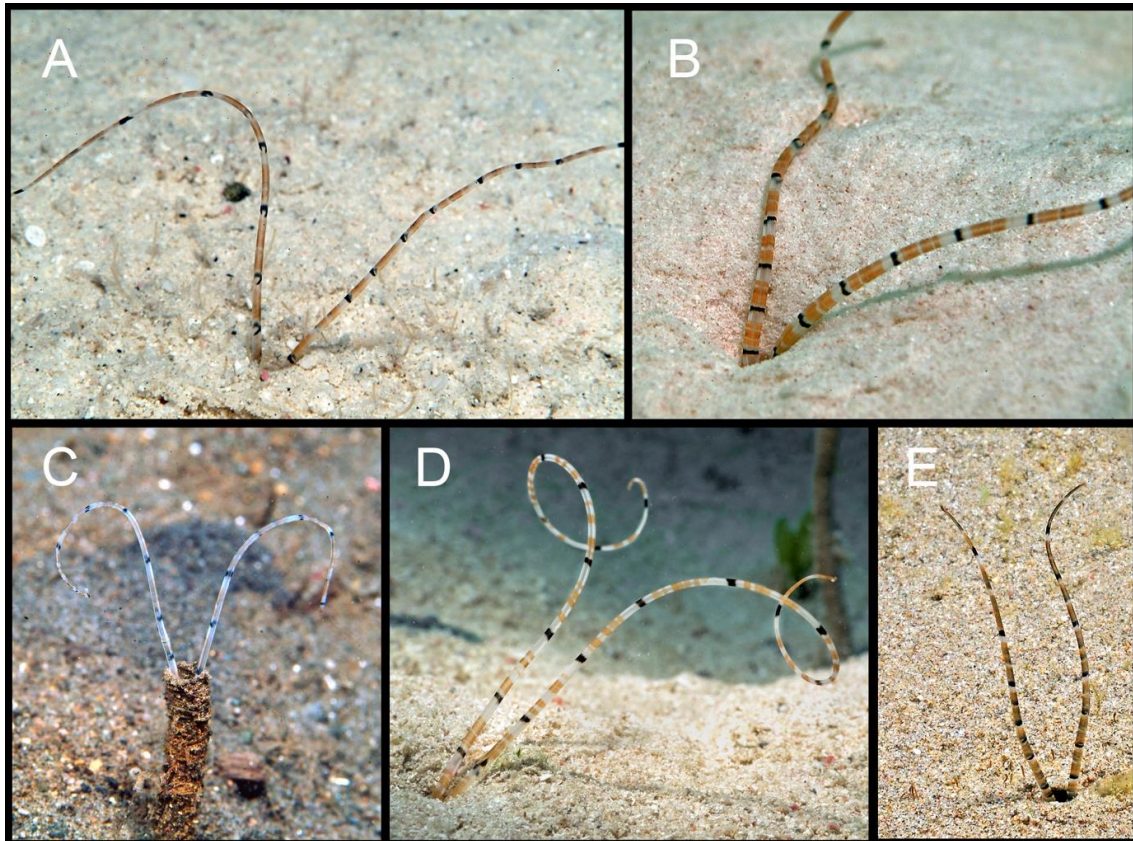


Fig. S2. *Mesochaetopterus stinapa* sp. nov., underwater photos from Caribbean locations. A–B. Bonaire, photographed by Les Wilk. C. Saint Vincent, photographed by Les Wilk. D. Roatan, photographed by Mickey Charteris. E. Dominica, photographed by Les Wilk.

File S1. PTP species delimitation. A. *COI*. B. *18S*.

A. Species delimitation – COI fragment: PTP results

Results based on the Maximum Likelihood reconstruction

Maximum Likelihood partition

Species 1 (support = 1.000)

Phyllochaetopterus_socialis

Species 2 (support = 1.000)

Phyllochaetopterus_cf_ramosus

Species 3 (support = 1.000)

Spiochaetopterus_sp1_JM_2017

Species 4 (support = 1.000)

Mesochaetopterus_cf_minutus,Mesochaetopterus_sp2_JM2017,Mesochaetopterus_sp2_ind2

Species 5 (support = 0.976)

Phyllochaetopterus_arabicus,Phyllochaetopterus_cf_arabicus_ind1

Species 6 (support = 0.901)

Phyllochaetopterus_cf_verrilli_ind1,Phyllochaetopterus_cf_verrilli_ind2,Phyllochaetopterus_sp2,**Phyllochaetopterus_aff.verrilli_A1, Phyllochaetopterus_aff.verrilli_A2, Phyllochaetopterus_aff.verrilli_A3, Phyllochaetopterus_aff.verrilli_A4**,Phyllochaetopterus_verrilli,Phyllochaetopterus_verrilli_2

Species 7 (support = 1.000)

Chaetopterus_cf_longipes

Species 8 (support = 1.000)

Chaetopterus_pugaporcinus

Species 9 (support = 1.000)

Chaetopterus_antarcticus

Species 10 (support = 1.000)

Mesochaetopterus_stinapa_A2, Mesochaetopterus_stinapa_A3

Species 11 (support = 1.000)

Chaetopterus_variopedatus

Species 12 (support = 1.000)

Chaetopterus_sp1

Species 13 (support = 1.000)

Chaetopterus_sp2

Species 14 (support = 1.000)

Spiochaetopterus_costarum_costarum

Species 15 (support = 1.000)

Spiochaetopterus_oculatus

Species 16 (support = 1.000)

Mesochaetopterus_taylori

Species 17 (support = 1.000)

Mesochaetopterus_tingkokensis

Species 18 (support = 1.000)
Chaetopterus_cf_luteus

Species 19 (support = 1.000)
Chaetopterus_sarsi

Species 20 (support = 1.000)
Chaetopterus_cautus

Species 21 (support = 1.000)
Chaetopterus_sp3

Species 22 (support = 1.000)
Spiochaetopterus_costarum_bonhourei

Species 23 (support = 0.923)
Spiochaetopterus_sp3, Spiochaetopterus_sp4

Species 24 (support = 1.000)
Phyllochaetopterus_lauensis

Species 25 (support = 1.000)
Spiochaetopterus_sp2

Species 26 (support = 1.000)
Phyllochaetopterus_sp6

Species 27 (support = 1.000)
Phyllochaetopterus_gigas

Species 28 (support = 0.580)
Mesochaetopterus_rogeri, Mesochaetopterus_xerecus

Species 29 (support = 0.574)
**Mesochaetopterus_aff._xerecus_A1, Mesochaetopterus_aff._xerecus_A2,
 Mesochaetopterus_aff._xerecus_A4, Mesochaetopterus_aff._xerecus_A3**

Results based on the Bayesian inference reconstruction

Most supported partition found by simple heuristic search

Most supported partition found by simple heuristic search

Species 1 (support = 1.000)
Phyllochaetopterus_socialis

Species 2 (support = 1.000)
Phyllochaetopterus_cf_ramosus

Species 3 (support = 1.000)
Spiochaetopterus_sp1_JM_2017

Species 4 (support = 1.000)
Mesochaetopterus_cf_minutus, Mesochaetopterus_sp2_JM2017, Mesochaetopterus_sp2_ind2

Species 5 (support = 0.976)
Phyllochaetopterus_arabicus, Phyllochaetopterus_cf_arabicus_ind1

Species 6 (support = 0.901)

Phyllochaetopterus_cf_verrilli_ind1,Phyllochaetopterus_cf_verrilli_ind2,Phyllochaetopterus_sp2,
Phyllochaetopterus_aff.verrilli _A1, Phyllochaetopterus_aff.verrilli _A2,
Phyllochaetopterus_aff.verrilli _A3, Phyllochaetopterus_aff.verrilli
_A4,Phyllochaetopterus_verrilli,Phyllochaetopterus_verrilli_2

Species 7 (support = 1.000)
Chaetopterus_cf_longipes

Species 8 (support = 1.000)
Chaetopterus_pugaporcinus

Species 9 (support = 1.000)
Chaetopterus_antarcticus

Species 10 (support = 1.000)
Mesochaetopterus_stinapa _A2, Mesochaetopterus_stinapa _A3

Species 11 (support = 1.000)
Chaetopterus_variopedatus

Species 12 (support = 1.000)
Chaetopterus_sp1

Species 13 (support = 1.000)
Chaetopterus_sp2

Species 14 (support = 1.000)
Spiochaetopterus_costarum_costarum

Species 15 (support = 1.000)
Spiochaetopterus_oculatus

Species 16 (support = 1.000)
Mesochaetopterus_taylori

Species 17 (support = 1.000)
Mesochaetopterus_tingkokensis

Species 18 (support = 1.000)
Chaetopterus_cf_luteus

Species 19 (support = 1.000)
Chaetopterus_sarsi

Species 20 (support = 1.000)
Chaetopterus_cautus

Species 21 (support = 1.000)
Chaetopterus_sp3

Species 22 (support = 1.000)
Spiochaetopterus_costarum_bonhourei

Species 23 (support = 0.923)
Spiochaetopterus_sp3,Spiochaetopterus_sp4

Species 24 (support = 1.000)
Phyllochaetopterus_lauensis

Species 25 (support = 1.000)

Spiochaetopterus_sp2

Species 26 (support = 1.000)

Phyllochaetopterus_sp6

Species 27 (support = 1.000)

Phyllochaetopterus_gigas

Species 28 (support = 0.580)

Mesochaetopterus_rogeri, Mesochaetopterus_xerecus

Species 29 (support = 0.574)

**Mesochaetopterus_aff._xerecus_A1, Mesochaetopterus_aff._xerecus_A2,
Mesochaetopterus_aff._xerecus_A4, Mesochaetopterus_aff._xerecus_A3**

B. Species delimitation – 18S fragment: PTP results

Results based on the Maximum Likelihood reconstruction

Maximum Likelihood partition

Species 1 (support = 1.000)

Mesochaetopterus_taylori

Species 2 (support = 0.870)

Mesochaetopterus_cf_minutus, Mesochaetopterus_sp2_JM2017, Mesochaetopterus_sp2_ind2

Species 3 (support = 0.814)

Mesochaetopterus_stinapa_A2, Mesochaetopterus_stinapa_A1, Mesochaetopterus_stinapa_A3

Species 4 (support = 1.000)

Mesochaetopterus_tingkokensis

Species 5 (support = 1.000)

Mesochaetopterus_sagittarius

Species 6 (support = 1.000)

Mesochaetopterus_sp3

Species 7 (support = 0.879)

Mesochaetopterus_japonicus_ind1, Mesochaetopterus_japonicus_ind2

Species 8 (support = 0.990)

Chaetopterus_variopedatus

Species 9 (support = 0.626)

Phyllochaetopterus_gigas, Phyllochaetopterus_lauensis, Phyllochaetopterus_sp6, Spiochaetopterus_sp1_JM_2017, Spiochaetopterus_sp2, Phyllochaetopterus_limicolus, Phyllochaetopterus_monroi, Spiochaetopterus_bergensis

Species 10 (support = 0.327)

Spiochaetopterus_costarum_bonhourei, Spiochaetopterus_sp3, Spiochaetopterus_sp4, Spiochaetopterus_costarum_costarum, Spiochaetopterus_oculatus

Species 11 (support = 0.815)

Phyllochaetopterus_cf_ramosus_ind1, Phyllochaetopterus_cf_ramosus_ind2

Species 12 (support = 0.909)
Phyllochaetopterus_socialis

Species 13 (support = 0.815)
Phyllochaetopterus_arabicus,Phyllochaetopterus_cf_arabicus_ind1

Species 14 (support = 0.576)

Phyllochaetopterus_cf_verrilli_ind1,Phyllochaetopterus_sp2,Phyllochaetopterus_cf_verrilli_ind2,Phyllochaetopterus_sp, **Phyllochaetopterus_aff._verrilli_A1, Phyllochaetopterus_aff._verrilli_A2, Phyllochaetopterus_aff._verrilli_A3**

Species 15 (support = 0.879)
Chaetopterus_cautus

Species 16 (support = 0.879)
Chaetopterus_cf_luteus

Species 17 (support = 0.492)
Chaetopterus_antarcticus,Chaetopterus_pugaporcinus

Species 18 (support = 0.620)
Chaetopterus_sarsi

Species 19 (support = 0.814)
Mesochaetopterus_rogeri

Species 20 (support = 0.469)
Mesochaetopterus_xerecus, **Mesochaetopterus_aff._xerecus_A4, Mesochaetopterus_aff._xerecus_A1, Mesochaetopterus_aff._xerecus_A2, Mesochaetopterus_aff._xerecus_A3**

Species 21 (support = 0.616)
Chaetopterus_cf_longipes_ind1,Chaetopterus_cf_longipes_ind2

Species 22 (support = 0.790)
Chaetopterus_sp1

Results based on the Bayesian inference reconstruction

Most supported partition found by simple heuristic search

Species 1 (support = 1.000)
Mesochaetopterus_taylori

Species 2 (support = 0.870)
Mesochaetopterus_cf_minutus,Mesochaetopterus_sp2_JM2017,Mesochaetopterus_sp2_ind2

Species 3 (support = 0.814)
Mesochaetopterus_stinapa_A2, Mesochaetopterus_stinapa_A1, Mesochaetopterus_stinapa_A3

Species 4 (support = 1.000)
Mesochaetopterus_tingkokensis

Species 5 (support = 1.000)
Mesochaetopterus_sagittarius

Species 6 (support = 1.000)
Mesochaetopterus_sp3

Species 7 (support = 0.879)

Mesochaetopterus_japonicus_ind1, Mesochaetopterus_japonicus_ind2

Species 8 (support = 0.626)

Phyllochaetopterus_gigas, Phyllochaetopterus_lauensis, Phyllochaetopterus_sp6, Spiochaetopterus_sp1_JM_2017, Spiochaetopterus_sp2, Phyllochaetopterus_limicolus, Phyllochaetopterus_monroi, Spiochaetopterus_bergensis

Species 9 (support = 0.990)

Chaetopterus_variopedatus

Species 10 (support = 0.815)

Phyllochaetopterus_arabicus, Phyllochaetopterus_cf_arabicus_ind1

Species 11 (support = 0.576)

Phyllochaetopterus_cf_verrilli_ind1, Phyllochaetopterus_sp2, Phyllochaetopterus_cf_verrilli_ind2, Phyllochaetopterus_sp, **Phyllochaetopterus_aff._verrilli_A1, Phyllochaetopterus_aff._verrilli_A2, Phyllochaetopterus_aff._verrilli_A3**

Species 12 (support = 0.814)

Mesochaetopterus_rogeri

Species 13 (support = 0.469)

Mesochaetopterus_xerecus, **Mesochaetopterus_aff._xerecus_A4, Mesochaetopterus_aff._xerecus_A1, Mesochaetopterus_aff._xerecus_A2, Mesochaetopterus_aff._xerecus_A3**

Species 14 (support = 0.815)

Phyllochaetopterus_cf_ramosus_ind1, Phyllochaetopterus_cf_ramosus_ind2

Species 15 (support = 0.909)

Phyllochaetopterus_socialis

Species 16 (support = 0.659)

Spiochaetopterus_oculatus

Species 17 (support = 0.616)

Chaetopterus_cf_longipes_ind1, Chaetopterus_cf_longipes_ind2

Species 18 (support = 0.790)

Chaetopterus_sp1

Species 19 (support = 0.242)

Spiochaetopterus_costarum_bonhourei, Spiochaetopterus_sp3, Spiochaetopterus_sp4

Species 20 (support = 0.453)

Spiochaetopterus_costarum_costarum

Species 21 (support = 0.492)

Chaetopterus_antarcticus, Chaetopterus_pugaporcinus

Species 22 (support = 0.620)

Chaetopterus_sarsi

Species 23 (support = 0.879)

Chaetopterus_cautus

Species 24 (support = 0.879)

Chaetopterus_cf_luteus

File S2. PTP species delimitation. A. COI. B. 18S.

A. Species delimitation – COI fragment: ASAP results

Partition 1

Score: 1

Proba: 2.355289e-01

nb groups:25 (24)

Group[1] n: 1 ;id: *Owenia_fusiformis*
Group[2] n: 1 ;id: *Chaetopterus_antarcticus*
Group[3] n: 1 ;id: *Chaetopterus_cautus*
Group[4] n: 1 ;id: *Chaetopterus_cf_longipes*
Group[5] n: 1 ;id: *Chaetopterus_cf_luteus*
Group[6] n: 1 ;id: *Chaetopterus_pugaporcinus*
Group[7] n: 1 ;id: *Chaetopterus_sarsi*
Group[8] n: 1 ;id: *Chaetopterus_sp1*
Group[9] n: 2 ;id: *Chaetopterus_sp2* *Chaetopterus_sp3*
Group[10] n: 6 ;id: *Mesochaetopterus_rogeri* *Mesochaetopterus_xerecus*
Mesochaetopterus_aff._xerecus_A1 **Mesochaetopterus_aff._xerecus_A2**
Mesochaetopterus_aff._xerecus_A4 **Mesochaetopterus_aff._xerecus_A3**
Group[11] n: 1 ;id: *Chaetopterus_variopedatus*
Group[12] n: 3 ;id: *Mesochaetopterus_cf_minutus* *Mesochaetopterus_sp2_JM2017*
Mesochaetopterus_sp2_ind2
Group[13] n: 1 ;id: *Mesochaetopterus_taylori*
Group[14] n: 1 ;id: *Mesochaetopterus_tingkokensis*
Group[15] n: 2 ;id: *Phyllochaetopterus_arabicus* *Phyllochaetopterus_cf_arabicus_ind1*
Group[16] n: 1 ;id: *Phyllochaetopterus_cf_ramosus*
Group[17] n: 9 ;id: *Phyllochaetopterus_cf_verrilli_ind1* *Phyllochaetopterus_cf_verrilli_ind2*
Phyllochaetopterus_sp2 **Phyllochaetopterus_aff._verrilli_A1** **Phyllochaetopterus_aff._verrilli_A2**
Phyllochaetopterus_aff._verrilli_A3 **Phyllochaetopterus_aff._verrilli_A4** *Phyllochaetopterus_verrilli*
Phyllochaetopterus_verrilli_2
Group[18] n: 4 ;id: *Phyllochaetopterus_gigas* *Phyllochaetopterus_lauensis* *Phyllochaetopterus_sp6*
Spiochaetopterus_sp2
Group[19] n: 1 ;id: *Phyllochaetopterus_socialis*
Group[20] n: 1 ;id: *Spiochaetopterus_costarum_bonhourei*
Group[21] n: 1 ;id: *Spiochaetopterus_costarum_costarum*
Group[22] n: 1 ;id: *Spiochaetopterus_oculatus*
Group[23] n: 1 ;id: *Spiochaetopterus_sp1_JM_2017*
Group[24] n: 2 ;id: *Spiochaetopterus_sp3* *Spiochaetopterus_sp4*
Group[25] n: 2 ;id: **Mesochaetopterus_stinapa_A2** **Mesochaetopterus_stinapa_A3**

Partition 2

Score: 2

Proba: 9.221557e-01

nb groups:28 (26)

Group[1] n: 1 ;id: *Owenia_fusiformis*
Group[2] n: 1 ;id: *Chaetopterus_antarcticus*
Group[3] n: 1 ;id: *Chaetopterus_cautus*
Group[4] n: 1 ;id: *Chaetopterus_cf_longipes*
Group[5] n: 1 ;id: *Chaetopterus_cf_luteus*
Group[6] n: 1 ;id: *Chaetopterus_pugaporcinus*
Group[7] n: 1 ;id: *Chaetopterus_sarsi*

Group[8] n: 1 ;id: Chaetopterus_sp1
 Group[9] n: 1 ;id: Chaetopterus_sp2
 Group[10] n: 1 ;id: Chaetopterus_sp3
 Group[11] n: 1 ;id: Chaetopterus_variopedatus
 Group[12] n: 3 ;id: Mesochaetopterus_cf_minutus Mesochaetopterus_sp2_JM2017
 Mesochaetopterus_sp2_ind2
 Group[13] n: 6 ;id: Mesochaetopterus_rogeri Mesochaetopterus_xerecus
Mesochaetopterus_aff._xerecus_A1 Mesochaetopterus_aff._xerecus_A2
Mesochaetopterus_aff._xerecus_A4 Mesochaetopterus_aff._xerecus_A3
 Group[14] n: 1 ;id: Mesochaetopterus_taylori
 Group[15] n: 1 ;id: Mesochaetopterus_tingkokensis
 Group[16] n: 2 ;id: Phyllochaetopterus_arabicus Phyllochaetopterus_cf_arabicus_ind1
 Group[17] n: 1 ;id: Phyllochaetopterus_cf_ramosus
 Group[18] n: 9 ;id: Phyllochaetopterus_cf_verrilli_ind1 Phyllochaetopterus_cf_verrilli_ind2
 Phyllochaetopterus_sp2 **Phyllochaetopterus_aff._verrilli_A1 Phyllochaetopterus_aff._verrilli_A2**
Phyllochaetopterus_aff._verrilli_A3 Phyllochaetopterus_aff._verrilli_A4 Phyllochaetopterus_verrilli
 Phyllochaetopterus_verrilli_2
 Group[19] n: 1 ;id: Phyllochaetopterus_gigas
 Group[20] n: 2 ;id: Phyllochaetopterus_lauensis Phyllochaetopterus_sp6
 Group[21] n: 1 ;id: Spiochaetopterus_sp2
 Group[22] n: 1 ;id: Phyllochaetopterus_socialis
 Group[23] n: 1 ;id: Spiochaetopterus_costarum_bonhourei
 Group[24] n: 1 ;id: Spiochaetopterus_costarum_costarum
 Group[25] n: 1 ;id: Spiochaetopterus_oculatus
 Group[26] n: 1 ;id: Spiochaetopterus_sp1_JM_2017
 Group[27] n: 2 ;id: Spiochaetopterus_sp3 Spiochaetopterus_sp4
 Group[28] n: 2 ;id: **Mesochaetopterus_stinapa_A2 Mesochaetopterus_stinapa_A3**

B. Species delimitation – 18S fragment: ASAP results

Partition 1

Score: 1
 Proba: 3.592814e-01
 nb groups:22 (21)

 Group[1] n: 1 ;id: Owenia_fusiformis
 Group[2] n: 3 ;id: Chaetopterus_antarcticus Chaetopterus_pugaporcinus Chaetopterus_sarsi
 Group[3] n: 1 ;id: Chaetopterus_cautus
 Group[4] n: 2 ;id: Chaetopterus_cf_longipes_ind1 Chaetopterus_cf_longipes_ind2
 Group[5] n: 1 ;id: Chaetopterus_cf_luteus
 Group[6] n: 1 ;id: Chaetopterus_sp1
 Group[7] n: 1 ;id: Chaetopterus_variopedatus
 Group[8] n: 3 ;id: Mesochaetopterus_cf_minutus Mesochaetopterus_sp2_JM2017
 Mesochaetopterus_sp2_ind2
 Group[9] n: 1 ;id: Mesochaetopterus_rogeri
 Group[10] n: 5 ;id: Mesochaetopterus_xerecus **Mesochaetopterus_aff._xerecus_A1**
Mesochaetopterus_aff._xerecus_A2 Mesochaetopterus_aff._xerecus_A4
Mesochaetopterus_aff._xerecus_A3
 Group[11] n: 1 ;id: Mesochaetopterus_taylori
 Group[12] n: 1 ;id: Mesochaetopterus_tingkokensis
 Group[13] n: 2 ;id: Phyllochaetopterus_arabicus Phyllochaetopterus_cf_arabicus_ind1
 Group[14] n: 2 ;id: Phyllochaetopterus_cf_ramosus_ind1 Phyllochaetopterus_cf_ramosus_ind2
 Group[15] n: 7 ;id: Phyllochaetopterus_cf_verrilli_ind1 Phyllochaetopterus_cf_verrilli_ind2
 Phyllochaetopterus_sp Phyllochaetopterus_sp2 **Phyllochaetopterus_aff._verrilli_A1**
Phyllochaetopterus_aff._verrilli_A3 Phyllochaetopterus_aff._verrilli_A2

Group[16] n: 8 ;id: Phyllochaetopterus_gigas Phyllochaetopterus_lauensis Phyllochaetopterus_sp6
 Spiochaetopterus_sp2 Spiochaetopterus_sp1_JM-2017 Phyllochaetopterus_limicolus
 Phyllochaetopterus_monroi Spiochaetopterus_bergensis
 Group[17] n: 1 ;id: Phyllochaetopterus_socialis
 Group[18] n: 5 ;id: Spiochaetopterus_costarum_bonhourei Spiochaetopterus_oculatus
 Spiochaetopterus_sp3 Spiochaetopterus_sp4 Spiochaetopterus_costarum_costarum
 Group[19] n: 3 ;id: **Mesochaetopterus_stinapa_A2 Mesochaetopterus_stinapa_A1**
Mesochaetopterus_stinapa_A3
 Group[20] n: 2 ;id: Mesochaetopterus_japonicus_ind1 Mesochaetopterus_japonicus_ind2
 Group[21] n: 1 ;id: Mesochaetopterus_sagittarius
 Group[22] n: 1 ;id: Mesochaetopterus_sp3

Partition 2

Partition 2

Score: 2

Proba: 2.954092e-01

nb groups:21 (20)

Group[1] n: 1 ;id: Owenia_fusiformis
 Group[2] n: 3 ;id: Chaetopterus_antarcticus Chaetopterus_pugaporcinus Chaetopterus_sarsi
 Group[3] n: 1 ;id: Chaetopterus_cautus
 Group[4] n: 2 ;id: Chaetopterus_cf_longipes_ind1 Chaetopterus_cf_longipes_ind2
 Group[5] n: 1 ;id: Chaetopterus_cf_luteus
 Group[6] n: 1 ;id: Chaetopterus_sp1
 Group[7] n: 1 ;id: Chaetopterus_variopedatus
 Group[8] n: 3 ;id: Mesochaetopterus_cf_minutus Mesochaetopterus_sp2_JM2017
 Mesochaetopterus_sp2_ind2
 Group[9] n: 6 ;id: Mesochaetopterus_rogeri Mesochaetopterus_xerecus
Mesochaetopterus_aff_xerecus_A1 Mesochaetopterus_aff_xerecus_A2
Mesochaetopterus_aff_xerecus_A4 Mesochaetopterus_aff_xerecus_A3
 Group[10] n: 1 ;id: Mesochaetopterus_taylori
 Group[11] n: 1 ;id: Mesochaetopterus_tingkokensis
 Group[12] n: 2 ;id: Phyllochaetopterus_arabicus Phyllochaetopterus_cf_arabicus_ind1
 Group[13] n: 2 ;id: Phyllochaetopterus_cf_amosus_ind1 Phyllochaetopterus_cf_amosus_ind2
 Group[14] n: 7 ;id: Phyllochaetopterus_cf_verrilli_ind1 Phyllochaetopterus_cf_verrilli_ind2
 Phyllochaetopterus_sp Phyllochaetopterus_sp2 **Phyllochaetopterus_aff_verrilli_A1**
Phyllochaetopterus_aff_verrilli_A3 Phyllochaetopterus_aff_verrilli_A2
 Group[15] n: 5 ;id: Spiochaetopterus_costarum_bonhourei Spiochaetopterus_oculatus
 Spiochaetopterus_sp3 Spiochaetopterus_sp4 Spiochaetopterus_costarum_costarum
 Group[16] n: 8 ;id: Phyllochaetopterus_gigas Phyllochaetopterus_lauensis Phyllochaetopterus_sp6
 Spiochaetopterus_sp2 Spiochaetopterus_sp1_JM-2017 Phyllochaetopterus_limicolus
 Phyllochaetopterus_monroi Spiochaetopterus_bergensis
 Group[17] n: 1 ;id: Phyllochaetopterus_socialis
 Group[18] n: 3 ;id: **Mesochaetopterus_stinapa_A2 Mesochaetopterus_stinapa_A1**
Mesochaetopterus_stinapa_A3
 Group[19] n: 2 ;id: Mesochaetopterus_japonicus_ind1 Mesochaetopterus_japonicus_ind2
 Group[20] n: 1 ;id: Mesochaetopterus_sagittarius
 Group[21] n: 1 ;id: Mesochaetopterus_sp3

Video S1. *Mesochaetopterus stinapa* sp. nov. Sequence of microscopic images showing the disposition of the serration in the tip of the A4 cutting chaetae. See

<https://saco.csic.es/index.php/s/M9qBHNANrT83nrc>

Video S2. Underwater images of *Mesochaetopterus stinapa* sp. nov. and *Mesochaetopterus* aff. *xerecus* at Lac Bay (Bonaire). See

<https://saco.csic.es/index.php/s/iiNyxAaSLkSCiAs>

Video S3. *Mesochaetopterus* aff. *xerecus*. Sequence of microscopic images showing the disposition of the serration in the tip of the A4 cutting chaetae. See

<https://saco.csic.es/index.php/s/X2TXwAwbm2JDDgz>