

**New findings and two new species of the genus *Pallenopsis*
(Pycnogonida: Pallenopsidae) from the Southern Ocean**

Esperanza Cano-Sánchez and Pablo J. López-González

SUPPLEMENTARY MATERIAL

Table S1. – Selected characters considered in the *Pallenopsis* specimens identified from the cruise ANT XXIII/8

Character	Explanation
Prb L/Trunk L	Ratio between the lengths of Proboscis (Prb) and Trunk
Trunk L/Tunk W	Ratio between the length and width of the Trunk (second somite)
Trunk L/Abd	Ratio between the lengths of Trunk and Abdomen (Abd)
Trunk L/CS	Ratio between the lengths of Trunk and Cephalic segment (CS)
Trunk L/N	Ratio between the lengths of Trunk and Neck (N)
LPL/LPW	Ratio between the length and width of the Lateral Processed of the Trunk (second somite)
Ta/Pr	Ratio between the lengths of Tarsus (Ta) and Propodus (Pr)
Pr/Cl	Ratio between the lengths of Propodus (Pr) and Claw (Cl)
Fe/Pr	Ratio between the lengths of Femur (Fe) and Propodus (Pr)
T2/Fe	Ratio between the lengths of Tibia 2 (T2) and Femur (Fe)
T1/Fe	Ratio between the lengths of Tibia 1 (T1) and Femur (Fe)
T1/T2	Ratio between the lengths of Tibia 1 (T1) and Tibia 2 (T2)
Pr/PrW	Ratio between the length and width of the Propodus
Cox2/Cox1+Cox3	Ratio between the lengths of Coxae 2 (Cox2) and Coxae 1 (Cox1) plus Coxae 3 (Cox3)
ACl/Cl	Ratio between the lengths of Auxiliar Claw and Claw
Sp/Prb L	Ratio between the lengths of the Scape of the Chelifore and Proboscis
PL/PW	Ratio between the length and width of the Chelifore Palm
FL/PW	Ratio between the length of the fingers and width of the Chelifore Palm
Setose pad	Setose pad at base on movable chelae finger
CFG	Chela fingers curved with a gap proximally when closed
Long setae	Setae subequal or longer than the diameter of the article
SLP	Second and third lateral processes separated by less than half their own diameter
LBCS	Little buds on laterodistal cephalic segment
Hell Spines	Hell spines longer than sole spines

Table S2. – Analyzed characters values / specimen (holotype specimen is indicated in bold) used in cluster analysis. Abbreviations: Male (M); Female (L); Holotype (H); Paratype (P); Proboscis length (Prb L); Trunk length (Trunk L); Width of 2nd somite (Trunk W); Abdomen Length (Abd); Neck length (N); Cephalic segment length (CS); Tarsus length (Ta); Propodus length (Pr); Width of Propodus (PrW) ; Claw length (Cl); Auxiliary Claw (ACl); Femur Length (Fe); Tibia 1 length (T1); Tibia 2 length (T2); Coxa 1 length (Cox1); Coxa 2 length (Cox2); Coxa 3 length (Cox3); Chela finger length (FL); Palm length (PL); Width of the Palm (PW); Scape length (Sp); Chelae fingers curved with gap (CFG); Separation of 2nd and 3rd lateral processes < 0.5 their diameter (SLP); Long setae longer than twice article diameter (Long setae); Little buds latero cephalic segment (LBCS); Heel spines longer than sole spines (Heel spines); Lateral Processed length (LPL); Width of the Lateral Processed (LPW) (*Code = 1 Character present; Code = 0 Character absent).

	Prb L/Trunk L	Trunk L/Abd	Trunk L/Trunk W	Trunk L/N	Trunk L/CS	Ta/Pr	Pr/Cl	Fe/Pr	T2/Fe	T1/Fe	T1/T2	Pr/PrW
MZB (2024-3807)-P. aff. vanhoeffeni F	0.47	1.83	1.24	2.20	1.83	0.18	1.47	3.89	1.16	0.87	0.75	4.00
MZB (2024-3808)-P. aff. vanhoeffeni M	0.48	2.09	1.16	2.22	1.87	0.21	1.87	3.14	1.20	0.90	0.75	4.67
MZB (2024-3798)-P. hodgsoni F	0.49	1.77	1.35	2.30	1.86	0.26	1.53	3.61	1.07	0.87	0.81	3.83
MZB (2024-3807)-P. aff. vanhoeffeni F	0.44	2.00	1.26	2.10	1.86	0.21	1.71	3.93	1.05	0.83	0.79	4.14
MZB (2024-3781)-P. gracilis M	0.47	2.54	1.51	2.97	2.28	0.20	1.67	3.69	1.20	0.88	0.74	3.50
MZB (2024-3808)-P. aff. vanhoeffeni F	0.54	2.21	1.38	2.21	2.00	0.29	1.65	3.71	1.11	0.94	0.85	3.11
MZB (2024-3806)-P. aff. vanhoeffeni F	0.58	1.95	1.33	2.25	1.89	0.25	1.65	3.89	1.06	0.86	0.81	4.67
MZB (2024-3799)-P. macronyx F	0.40	2.21	1.40	2.71	2.11	0.25	1.00	2.18	0.86	0.92	1.07	3.08
MZB (2024-3795)-P. hodgsoni F	0.47	2.16	1.49	2.36	2.86	0.20	1.35	2.54	1.18	1.02	0.87	3.50
MZB (2024-3779)-P. gracilis M	0.45	2.70	1.41	2.78	2.13	0.21	1.56	3.44	1.12	0.79	0.71	3.90
MZB (2024-3780)-P. gracilis F	0.50	2.24	1.60	3.03	2.33	0.16	2.05	3.53	1.11	0.80	0.72	3.75
MZB (2024-3788)-P. hodgsoni M	0.46	2.18	1.43	2.49	2.64	0.20	1.36	2.50	1.21	1.07	0.88	3.75
MZB (2024-3783)-P. gracilis M	0.42	2.48	1.49	3.06	2.31	0.21	1.38	4.21	1.20	0.81	0.68	3.67
MZB (2024-3801)-P. macronyx F	0.31	1.90	1.33	2.76	2.11	0.29	0.83	2.57	0.83	0.94	1.13	3.18
MZB (2024-3777)-P. elephantensis (H) F	0.49	2.73	1.45	2.93	2.02	0.23	1.60	3.38	1.11	0.79	0.71	3.69
MZB (2024-3776)-P. tubercula (H) F	0.43	3.00	1.38	3.07	1.97	0.24	2.41	4.51	0.96	0.78	0.81	3.73
MZB (2024-3784)-P. gracilis M	0.45	2.22	1.43	2.86	2.17	0.24	1.48	3.76	1.22	0.86	0.70	3.70
MZB (2024-3786)-P. hodgsoni F	0.50	1.67	1.33	2.50	1.82	0.23	1.29	2.82	1.08	1.06	0.99	5.50
MZB (2024-3802)-P. macronyx F	0.39	2.09	1.39	2.79	2.24	0.19	0.91	2.36	0.79	0.93	1.18	2.63
MZB (2024-3784)-P. gracilis F	0.42	2.33	1.46	3.00	2.14	0.28	1.44	4.28	1.10	0.77	0.70	4.00
MZB (2024-3799)-P. macronyx F	0.32	1.87	1.43	3.00	2.36	0.21	1.05	2.26	0.86	0.95	1.10	3.23
MZB (2024-3783)-P. gracilis F	0.50	2.95	1.47	2.80	2.11	0.25	1.82	4.58	1.09	0.74	0.68	3.64
MZB (2024-3791)-P. hodgsoni F	0.63	1.85	1.40	2.33	2.03	0.17	1.60	2.88	1.09	0.99	0.91	4.00

MZB (2024-3783)-P. gracilis F	0.50	2.10	1.55	2.89	2.06	0.29	1.35	4.66	1.10	0.80	0.73	3.89
MZB (2024-3805)-P. aff. vanhoeffeni F	0.53	2.18	1.42	2.24	1.85	0.17	1.58	3.67	1.17	0.91	0.78	3.75
MZB (2024-3793)-P. hodgsoni M	0.43	2.06	1.41	2.48	2.67	0.21	1.75	2.32	1.15	1.08	0.93	3.11
MZB (2024-3804)-P. aff. vanhoeffeni F	0.56	2.31	1.23	2.14	1.91	0.24	1.89	3.56	1.20	0.89	0.74	4.25
MZB (2024-3788)-P. hodgsoni F	0.49	1.97	1.44	2.50	1.81	0.22	1.64	2.83	1.14	0.92	0.81	3.83
MZB (2024-3793)-P. hodgsoni F	0.39	1.87	1.31	2.15	2.63	0.29	1.35	2.43	1.18	1.06	0.90	3.50
MZB (2024-3790)-P. hodgsoni F	0.57	1.90	1.32	2.11	2.38	0.22	1.20	2.92	1.10	1.00	0.91	3.60
MZB (2024-3794)-P. hodgsoni F	0.55	2.10	1.47	2.51	2.51	0.23	1.46	2.57	1.16	0.94	0.82	3.18
MZB (2024-3793)-P. hodgsoni M	0.50	2.31	1.36	2.14	2.57	0.26	1.70	2.32	1.27	1.00	0.79	4.25
MZB (2024-3800)-P. macronyx F	0.41	1.98	1.19	2.70	2.19	0.21	0.97	2.11	0.81	0.94	1.15	3.17
MZB (2024-3778)-P. elephantensis (P) F	0.54	2.74	1.22	2.56	1.89	0.20	1.56	4.16	1.09	0.75	0.69	3.57
MZB (2024-3785)-P. gracilis F	0.44	2.52	1.48	3.60	2.47	0.23	1.52	4.30	1.06	0.73	0.69	3.67
MZB (2024-3803)-P. spicata F	0.57	3.13	1.11	3.43	2.57	0.19	1.69	4.11	1.35	0.87	0.65	4.50
MZB (2024-3803)-P. spicata F	0.53	2.92	1.04	3.84	2.43	0.17	2.00	4.13	1.30	0.90	0.70	5.00
MZB (2024-3803)-P. spicata M	0.56	3.13	1.07	4.00	2.40	0.20	1.56	4.80	1.24	0.87	0.70	5.00
MZB (2024-3803)-P. spicata M	0.48	2.78	1.04	4.17	2.42	0.15	2.06	3.79	1.27	0.91	0.72	5.50
MZB (2024-3803)-P. spicata F	0.56	2.78	1.07	5.00	2.42	0.21	1.61	4.14	1.17	0.78	0.66	4.83
MZB (2024-3803)-P. spicata M	0.52	3.00	1.02	3.88	2.13	0.17	1.58	3.67	1.36	0.86	0.63	5.00
MZB (2024-3803)-P. spicata F	0.58	2.96	1.23	4.35	2.64	0.25	1.41	5.04	1.18	0.81	0.69	4.80
MZB (2024-3803)-P. spicata F	0.58	2.96	1.11	3.94	2.45	0.21	1.81	4.07	1.19	0.82	0.69	4.83
MZB (2024-3782)-P. gracilis M	0.50	2.58	1.52	3.17	2.41	0.25	1.82	3.63	1.21	0.86	0.71	3.64
MZB (2024-3796)-P. hodgsoni F	0.58	1.92	1.68	2.65	1.97	0.20	1.67	2.80	1.04	0.93	0.89	4.17
MZB (2024-3796)-P. hodgsoni M	0.58	1.94	1.43	2.54	1.94	0.23	1.24	2.12	1.29	1.20	0.93	3.71
MZB (2024-3796)-P. hodgsoni M	0.59	1.53	1.30	2.31	1.91	0.28	1.04	3.60	1.28	1.11	0.87	3.13
MZB (2024-3797)-P. hodgsoni M	0.66	1.69	1.33	2.35	1.85	0.17	1.35	2.78	1.16	1.09	0.95	3.83
MZB (2024-3787)-P. hodgsoni M	0.59	2.06	1.42	2.43	1.94	0.29	1.26	2.46	1.24	1.08	0.88	4.00
MZB (2024-3792)-P. hodgsoni M	0.61	2.13	1.32	2.54	2.00	0.22	1.59	2.33	1.22	1.02	0.83	4.50
MZB (2024-3792)-P. hodgsoni M	0.62	1.79	1.42	2.77	1.74	0.30	1.18	2.55	1.22	1.08	0.89	4.00
MZB (2024-3803)-P. spicata M	0.56	3.00	1.00	3.47	2.20	0.19	1.94	4.00	1.24	0.86	0.69	5.17
MZB (2024-3783)-P. gracilis M	0.36	2.23	1.51	2.80	2.04	0.27	1.65	4.21	1.22	0.85	0.70	3.67
P. gracialis (H)	0.47	2.37	1.60	2.64	2.06	0.20	1.50	5.53	1.28	0.84	0.65	3.86

	Cox2/Cox1+Cox3	ACI/CI	FL/PW	PL/PW	Sp/Prb L	CFG	SLP*	LPL/LPW	Long setae*	LBCS	Heel spines*	Setose pad*
MZB (2024-3807)-P. aff. vanhoeffeni F	0.93	0.53	0.92	1.75	1.39	0.00	1.00	1.49	0	1	0	0
MZB (2024-3808)-P. aff. vanhoeffeni M	0.95	0.47	1.00	1.89	1.21	0.00	1.00	1.45	0	1	0	0
MZB (2024-3798)-P. hodgsoni F	0.81	0.66	1.00	2.13	1.21	0.00	1.00	1.14	1	0	1	0
MZB (2024-3807)-P. aff. vanhoeffeni F	0.91	0.47	0.69	1.62	1.31	0.00	1.00	1.38	0	1	0	0
MZB (2024-3781)-P. gracilis M	1.21	0.52	1.18	1.64	1.07	0.00	0.00	1.73	0	0	1	1
MZB (2024-3808)-P. aff. vanhoeffeni F	0.89	0.41	0.77	1.62	1.11	0.00	1.00	1.29	0	1	0	0
MZB (2024-3806)-P. aff. vanhoeffeni F	1.00	0.53	1.00	1.80	1.05	0.00	1.00	1.25	0	1	0	0
MZB (2024-3799)-P. macronyx F	0.77	0.00	1.08	0.85	1.05	1.00	1.00	1.11	0	0	1	0
MZB (2024-3795)-P. hodgsoni F	0.91	0.42	1.07	1.73	1.18	0.00	1.00	1.11	1	0	1	0
MZB (2024-3779)-P. gracilis M	1.14	0.40	1.07	1.43	1.04	0.00	0.00	1.50	0	0	1	1
MZB (2024-3780)-P. gracilis F	1.13	0.59	1.21	1.79	1.04	0.00	0.00	1.62	0	0	1	1
MZB (2024-3788)-P. hodgsoni M	1.03	0.32	1.00	1.92	1.25	0.00	1.00	1.23	1	0	1	0
MZB (2024-3783)-P. gracilis M	1.06	0.38	1.00	1.67	1.09	0.00	0.00	1.75	0	0	1	1
MZB (2024-3801)-P. macronyx F	0.77	0.00	1.10	0.80	1.44	1.00	1.00	1.36	0	0	1	0
MZB (2024-3777)-P. elephantensis (H) F	0.96	0.53	1.00	1.33	0.98	0.00	0.00	1.56	0	0	1	0
MZB (2024-3776)-P. tubercula (H) F	0.85	0.71	0.90	1.40	1.07	0.00	0.00	1.61	0	1	1	1
MZB (2024-3784)-P. gracilis M	1.11	0.36	1.00	1.46	1.11	0.00	0.00	1.83	0	0	1	1
MZB (2024-3786)-P. hodgsoni F	0.84	0.35	1.13	2.13	1.17	0.00	1.00	1.03	1	1	1	0
MZB (2024-3802)-P. macronyx F	0.83	0.00	1.09	1.09	1.19	1.00	1.00	1.25	0	0	1	0
MZB (2024-3784)-P. gracilis F	1.24	0.44	1.00	1.67	1.09	0.00	0.00	1.81	0	0	1	1
MZB (2024-3799)-P. macronyx F	0.73	0.00	1.17	1.08	1.56	1.00	1.00	1.25	0	0	1	0
MZB (2024-3783)-P. gracilis F	1.07	0.41	1.14	1.64	1.00	0.00	0.00	1.97	0	0	1	1
MZB (2024-3791)-P. hodgsoni F	0.78	0.47	1.00	1.73	1.13	0.00	1.00	1.13	1	0	1	0
MZB (2024-3783)-P. gracilis F	1.16	0.35	1.00	1.50	0.98	0.00	0.00	1.76	0	0	1	1
MZB (2024-3805)-P. aff. vanhoeffeni F	0.79	0.63	0.67	1.67	1.13	0.00	1.00	1.43	0	1	0	0
MZB (2024-3793)-P. hodgsoni M	0.87	0.56	0.92	1.69	1.45	0.00	1.00	1.00	1	0	1	0
MZB (2024-3804)-P. aff. vanhoeffeni F	1.00	0.50	0.57	1.64	1.10	0.00	1.00	1.44	0	1	0	0
MZB (2024-3788)-P. hodgsoni F	0.82	0.43	0.91	1.36	1.25	0.00	1.00	1.11	1	0	1	0
MZB (2024-3793)-P. hodgsoni F	0.83	0.35	1.00	1.79	1.67	0.00	1.00	1.20	1	0	1	0
MZB (2024-3790)-P. hodgsoni F	0.71	0.40	1.07	2.00	1.15	0.00	1.00	1.00	1	0	1	0
MZB (2024-3794)-P. hodgsoni F	0.76	0.38	1.06	1.47	1.12	0.00	1.00	1.14	1	0	1	0

MZB (2024-3793)-P. hodgsoni M	0.89	0.40	1.08	1.69	1.24	0.00	1.00	1.03	1	0	1	0
MZB (2024-3800)-P. macronyx F	0.82	0.00	1.00	0.91	1.06	1.00	1.00	1.32	0	0	1	0
MZB (2024-3778)-P. elephantensis (P) F	0.90	0.56	0.89	1.39	1.00	0.00	0.00	1.50	0	0	1	0
MZB (2024-3785)-P. gracilis F	0.97	0.38	1.07	1.64	1.11	0.00	0.00	1.53	0	0	1	1
MZB (2024-3803)-P. spicata F	1.18	0.00	1.20	1.90	0.90	0.00	0.00	1.94	0	0	0	1
MZB (2024-3803)-P. spicata F	1.52	0.00	1.20	1.90	0.90	0.00	0.00	1.97	0	0	0	1
MZB (2024-3803)-P. spicata M	1.37	0.00	1.11	2.00	0.98	0.00	0.00	2.00	0	0	0	1
MZB (2024-3803)-P. spicata M	1.28	0.00	1.10	1.80	1.00	0.00	0.00	1.86	0	0	0	1
MZB (2024-3803)-P. spicata F	1.31	0.00	1.10	1.70	1.17	0.00	0.00	1.62	0	0	0	1
MZB (2024-3803)-P. spicata M	1.20	0.00	1.20	1.70	1.18	0.00	0.00	1.94	0	0	0	1
MZB (2024-3803)-P. spicata F	1.11	0.00	1.20	1.70	0.91	0.00	0.00	1.83	0	0	0	1
MZB (2024-3803)-P. spicata F	1.36	0.00	1.10	1.60	0.95	0.00	0.00	1.94	0	0	0	1
MZB (2024-3782)-P. gracilis M	1.28	0.64	1.25	1.83	0.96	0.00	0.00	1.95	0	0	1	1
MZB (2024-3796)-P. hodgsoni F	0.88	0.33	1.09	1.45	0.95	0.00	1.00	1.30	1	1	1	0
MZB (2024-3796)-P. hodgsoni M	1.00	0.29	1.00	1.89	1.05	0.00	1.00	1.12	1	0	1	0
MZB (2024-3796)-P. hodgsoni M	0.71	0.42	0.92	2.00	1.04	0.00	1.00	1.33	1	0	1	0
MZB (2024-3797)-P. hodgsoni M	1.10	0.35	1.00	1.67	0.90	0.00	1.00	1.33	1	0	1	0
MZB (2024-3787)-P. hodgsoni M	1.09	0.47	1.30	2.00	1.10	0.00	1.00	1.03	1	0	1	0
MZB (2024-3792)-P. hodgsoni M	0.76	0.41	1.00	2.10	1.05	0.00	1.00	1.18	1	0	1	0
MZB (2024-3792)-P. hodgsoni M	0.93	0.41	1.22	1.89	0.97	0.00	1.00	1.00	1	0	1	0
MZB (2024-3803)-P. spicata M	1.26	0.00	0.91	1.73	1.03	0.00	0.00	2.00	0	0	0	1
MZB (2024-3783)-P. gracilis M	1.00	0.35	1.08	1.67	1.40	0.00	0.00	1.62	0	0	1	1
P. gracialis (H)	1.43	0.50	0.97	1.72	1.10	0.00	0.00	1.86	0	0	1	1