**APPENDIX 1.** Material used for morphological analyses. MNHN - National Museum of Natural History (Paris, France); NMNH - National Museum of Natural History, Washington, D.C., United States; NHMD – National History Museum, Copenhagen, Denmark; YPM – Yale Peabody Museum.

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| **Species** | **Coordinates** | **Cruise and station information** | **Museum number** |
| *Altelatipes carinatus*  | 20° 47,4' S; 55° 04,4' E | “Marion Dufrense”, MD/32 St. CP 105 | MNHN-Na-6448 |
| *Bentheogennema corbariae* female, **holotype** | 01°43' N; 87°08' E | “Marion Dufresne”, SAFARI II, St. CP 10. Central Indian Ocean, 2.08.1981., Prof. 4350 m. | MNHN-Na-6453 |
| *Bentheogennema corbariae,* male, **paratype** | 13°22' S; 43°38' E | Madagascar GS 2 13:30-14:00, Grand Shmidt, 0- 2000 m, 4/12/1974 | MNHN-IU-2016-11805 |
| *Bentheogennema* *intermedia,* female, **holotype** | - | “Challenger” Exp., off Sierra Leone | NHMUK:ecatalogue:1256676 |
| *Bentheogennema* *intermedia,* two females | 32°28 'N; 59°75' W | “Knorr” Exp., 18.03.1974 St. RHB 3114, depth 3100 m | USNM-167826 |
| *Bentheogennema* *intermedia,* male | 39°59,1'N; 15°00,2'W  | ABYPLANE, St. CP14, chaultage 5330 m. 8.06.1981, 14:55 – 16:00.  | MNHN-Na-12445 |
| *Bentheogennema* *intermedia,* female | 39°59,1'N; 15°00,2'W  | ABYPLANE, St. CP14, chaultage 5330 m. 8.06.1981, 14:55 – 16:00.  | MNHN-Na-12445 |
| *Bentheogennema intermedia,* male | 15°13'S, 42°14' E | “Vityaz”, 17 cruise, St. 2616 | - |
| *Bentheogennema intermedia,* male | 30°17' N, 20°44' W | “Dana” 1921/1922, St. 1152 (1). 22.10.1921 M.W. 7000, 19:30. E. 300 | - |
| *Bentheogennema intermedia,* male | 15°59'S, 5°52.3' W | “Dana”, St. 3986, 22-2-1930. 3550 m | - |
| *Bentheogennema intermedia,* male | 15°13'S, 42°14' E | “Vityaz”, 17 cruise, St. 2616 | - |
| *Bentheogennema intermedia,* male | 23°18'S, 42°14' E | “Vityaz”, 17 cruise, St. 2642 | - |
| *Bentheogennema intermedia,* male | 3°38' S; 52°43' E | Galathea, 266; TOT. Mombasa-Seychelles, 27.3.1951, 4700-4970 m | NHMD-228678 |
| *Bentheogennema stephenseni,* female | 23°40' S; 168°05' E | New Caledonia | BSM51 |
| *Bentheogennema stephenseni,* female | 22°51' S; 166°23' E | New Caledonia | MNHN-IU-2016-11804 |
| *Bentheogennema stephenseni,* 5 females, 5 males  | 3624 | Dana st. 3624-1, ca. 760 km N of New Zealand, 28°17.6' S, 177°1.0' E, depth 4170 m, 5000 m wire, ring trawl, surface temp. 22.6°C, 10 Dec. 1928. | YPM IZ 009397.CR |
| *Bentheogennema stephenseni,* 5 females, 5 males  |  | Dana st. 3602-6, W of Fiji Islands, 20°00' S, 174°29' E, depth 3100 m, 4000 m wire, ring trawl, surface temp. 24.5°C, 22 Nov. 1928 | YPM IZ 040238 |
| *Bentheogennema stephenseni,* 5 females, 5 males  |  | Dana st. 3621-1, SE of New Caledonia, 25°47' S, 172°24' E, depth 4090 m, 5000 m wire, ring trawl, surface temp. not measured, 8 Dec. 1928 | YPM IZ 040239 |
| *Bentheogennema torbenwolffi,* female, **holotype** | 3° 38 S; 52° 43 E  | “Galathea”, St. 266. Mombasa-Seishelles 27.3.51, 4700-4970 m. | NHMD-228683 |
| *Bentheogennema torbenwolffi* female, **paratype** | 3°38'S; 52°43' E | “Galathea”, 266. Mombasa-Seychelles. Depth 4700-4970; 27.3.1951  | NHMD-228681 |
| *Benthesicymus* *altus*  | 11° 59,8' S; 45° 42,6' E  | BENTHEDI, St. 82 CH, Entre Mayotte et le ban du Geyser. 3450 m, 01.04.1977. | MNHN-Na-6380et9998 |
| *Benthesicymus* *altus*  | 20° 32,7' S; 55° 40,9' E | “Marion Dufense”, MD/32, La Reunion Station CP 146; 2830-2850 m, 4.09.1982. | MNHN-Na-6390  |
| *Benthesicymus howensis*  | 24° 16' S; 167° 38' E  | “Tagangaroa” campagne HALIPRO2 Nouvelle-Caledonie: Ride de Norfolk. Stn. BT75, 1128-1150 m, 21.11.1996 | - |
| *Benthesicymus iridescens*  | 37° 20' N; 15° 38' W | ABYPLANE, St. CP02 Chaulage 4490 – 4330 m, 18.05.1981, 9:44-10:35. 12422 | - |
| *Benthesicymus iridescens*  | 44° 41,9' N; 17° 59,1' W | ABYPLANE, St. CP22 Chaulage 4990 m. 21.07.1981, 6:15-7:25. 12427 | - |
| *Benthesicymus iridescens*  | 14° 20' S; 45° 09' E | “Galathea” , St. No. 217 | - |
| *Benthesicymus ivestigatoris* | 02° 41' S; 150° 03' E | N.O. “Alice”, Stn. CP3651, PAPOUASIE NOUVELLE-GUINEE: Sub de la Nouvelle Hanovre, BIOPAPUA. 840-865 m, 24.08.2010 | - |
| *Benthesicymus ivestigatoris*  | 05° 59' S; 147° 39' E | N.O. “Alise”, Stn. CP3724, PAPOUASIE NOUVELLE-GUINEE: Vitiaz strait, BIOPAPUA. 860-880 m. 07.10.2010 | - |
| *Benthonectes filipies*  | 03° 57' S; 153° 49' E  | N.O. “Alis”, BIOPAPUA. Stn. CP3762  | - |
| *Boreogennema borealis*  | 28°03,95' N; 130°31.89' E | “Tansei-Maru”, KT-02 cruise, ST-IK-1, 0-2000 m, IKMT-net. 15-04.2002. | MNHN-IU-2016-9205 |
| *Boreogennema borealis* **holotype** | - | Sta 3783, U.S. Fish Comission, R/V Albatross, Off Copper (Mednyi) Isl., Kamchatka. 25 Jun 1900. Depth 2866 m.  | NMNH-25241(previous identification - *Gennadas borealis*) |
| *Gennadas bouvieri* | 12°20' S; 60°46' E | RV Vityaz, 17 cruise St. 2785 | NHMD-138935 |
| *Gennadas bouvieri* | 12°28' S; 48°06'E | RV Vityaz, 17 cruise,St. 2604 | NHMD-138936 |
| *Gennadas bouvieri* | 10°18'N; 56°17'E | RV Vityaz, 17 cruise, St. 2578 | NHMD-138934 |
| *Gennadas bouvieri* | St 112 IKMT | RV Logatchev, 37 cruise  | NHMD-138937 |
| *Gennadas brevirostris* | St.234 | RV Thor, 1910,  | NHMD-138939 |
| *Gennadas brevirostris* | 35°53' N; 7°21'W  | RV Thor, St.65, 1300 m, 24.2.1909 160 mw | NHMD-138940 |
| *Gennadas brevirostris* | 36°28' N; 9°5'W  | RV Thor, St.232, 3760 m, 300 mw. 9.9.1910 | NHMD-138941 |
| *Gennadas brevirostris* | St. 4149(4) | Dana 1930, 11.6.1930 | NHMD-138938 |
| *Gennadas capensis*  | 23°18'S; 43°19'E | RV Vityaz, 17 cruise St. 2642 | NHMD-138944 |
| *Gennadas capensis* | 12°28'S; 48°06'E | RV Vityaz, 17 cruise, St. 2604 | NHMD-138942 |
| *Gennadas capensis* | 17°09.821'N, 46°24.913'W  | RV Logatchev, 37 cruise, St.99 IKMT | NHMD-138945 |
| *Gennadas capensis* | 12°20'S; 60°46'E | RV Vityaz, 17 cruise, St. 2785 | NHMD-138943 |
| *Gennadas pasithea*male, **holotype** | 03o14’ N, 75o21’ E | “Dana”, St. 3915-1, 1000 MW E-300 03.12.1929 | NHMD-263610 |
| *Gennadas pasithea* female, **paratype** | 04o52 N, 77o08’ E | “Dana”, St. 3914-1 1000 MW E-300 02.12.1929 | NHMD-263611 |
| *Gennadas pasithea* | 12o05’ S, 96o45’ E | “Dana”, St. 3844-5, 1000 MW E-300 11.10.1929 | - |
| *Gennadas pasithea* | 05o18’ N, 90o 55’ | “Dana”, St. 3904-1, E 3500 MW E-300 18.11.1929 | - |
| *Gennadas pasithea* | 05o21’ N, 80o 38’ E | “Dana”, St. 3909-3, 3500 MW E-300 22.11.1929 | - |
| *Gennadas pasithea* | 01o20’ S, 138o 42’ E | “Dana”, St. 3768-4, 2500 MW E-300 24.07.1929 | - |
| *Gennadas pasithea* | 09o09’ S, 114o47’ | “Dana”, St. 3804-1, E 1000 MW E-300 30.08.1929 | - |
| *Gennadas pasithea* | 04o03’ N, 123o 26’ | “Dana”, St. 3683-1, E 5000 MW E-300 02.04.1929 | - |
| *Gennadas pasithea* | 03o36’ N, 58o 19’ E | “Dana”, St. 3921-2, 600 MW S-200, 11.12.1929 | - |
| *Gennadas pasithea* | 00o06’ N, 118o 43’ | “Dana”, St. 3795-1, E 1000 MW E-300 14.08.1929 | - |
| *Gennadas pasithea* | 01o45’ N, 71o 05’ E | “Dana”, St. 3917-1, 4200 MW E-300, 05.12.1929 | - |
| *Gennadas pasithea* | 04o05’ S, 128o 16’ E | “Dana”, St. 3678-2, 4000 MW S-150 24.03.1929 | - |
| *Gennadas pasithea* | 05o62’ S, 131o 14’ E | “Dana”, St. 3676-9, 3000 MW S-150 23.03.1929 | - |
| *Gennadas pasithea* | 03o20’ N, 123o 50’ | “Dana”, St. 3739-8, E 3000 MW E-300 02.07.1929 | - |
| *Gennadas pasithea* | 05o18’ N, 90o 55’ E | “Dana”, St. 3904-3, 2500 MW E-300 18.11.1929 | - |
| *Gennadas pasithea* | 01o42’ N, 96o05’ E | “Dana”, St. 3828-7, 3000 MW E-300 08.09.1929 | - |
| *Gennadas pasithea* | 03o45’ N, 56o 33’ E | “Dana”, St. 3922-1, 1000 MW E-300, 12.12.1929 | - |
| *Gennadas scutatus* | 12°28'S; 48°06'E | RV Vityaz, 17 cruise, St. 2604  | NHMD 138959 |
| *Gennadas scutatus* | 10°18'N; 56°17'E | RV Vityaz, 17 cruise, St. 2578  | NHMD-138960 |
| *Gennadas talismani* | 3°45’S, 10°00’W | Dana 1930, St. 3999, mw 600, S 200 | NHMD-138962 |
| *Gennadas talismani* | St. 3999-2 | Dana 1930 | NHMD-138963 |
| *Gennadas valens* | 17°08.210'N, 46°30.09'W | RV Logatchev, 37 cruise, St. 112 РТАК | NHMD-138966 |
| *Gennadas valens*  | 35°53'N; 7°21'W | RV Thor St. 65, 1300 m, 24.2.1909, 1600 mw | NHMD-138967 |