**Table S3.** Main morphological characters of the ten-known species of *Branchipolnoe*

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| Species | Postomium | Elytra | Frontal filaments | First branchiae | Branchiae | Dorsal cirri | Parapodium | Notopodialacicular lobe | Notochaetae | Supra-acicularneurochaetae | Subacicular neurochaetae | Habitat | Host *Bathymodiolus* mussel |
| *Branchipolynoe symmytilida* | bilobed | Partially covering parapodia | Minute | Segment 2 | Long | Short | Subbiramous | Rounded,very short | Few, very short | Slightly hooked | Slender, slightlyhooked | Vents | *B. thermophilus* & *B. antarcticus* |
| *B. seepensis* | bilobed | Covering parapodia, dorsum exposed | Absent | Segment 3 | Short, dense | Short | Biramous | Triangular, 1/2 notochaetal length | Several, long | Tapered, blunt tip | Slender, slightlyhooked | Seeps | Unknown B. heckerae? |
| *B. pettibonea* | bilobed | Covering parapodia, dorsum exposed | Absent | Segment 3 | Short, dense | Short | Subbiramous | Digitiform,very short | Few, very short | Slender, slightlyhooked | Slightly hooked | Vents & Seeps | *B. brevior*, *B. japonicas*, & *Gigantidas platifrons* |
| *B. longqiensis* | bilobed | Covering parapodia, dorsum exposed | Absent | Segment 3 | Short, dense | Short | Subbiramous | Straight reachingtip of notochaetae | Few, very short | Stout, slightlyhooked | Slender or stout,slightly hooked | Vents & Seeps | *B. marisindicus* |
| *B. eliseae* | bilobed | Partially covering parapodia | Absent | Segment 2 | Long | Short | Subbiramous | Digitiform, 1/2 notochaetal length | Few, very short | Slender, taperedinto rounded tip | Similar to supra-acicular, slightlyhooked | Seeps | *B. n. sp. 1* and *2* |
| *B. halliseyae* | bilobed | Fully or partially covering parapodia | Absent | Segment 2 | Short, dense | Long | Biramous | Straight reaching tip of notochaetae | Several, long | Slender, taperedtip, subdistalswelling | Similar to supra-acicular, shortersubdistal area | Seeps | *B. n. sp. 1–3* |
| *B. kajsae* | trapezoid | Fully or partially covering parapodia | Absent | Segment 2 | Short, dense | Long | Biramous | Straight, 1/2 notochaetal length | Several, long | Slender, taperedtip, subdistalswelling | Similar to supra-acicular, shortersubdistal area | Seeps | *B. n. sp. 1–3* |
| *B. meridae* | bilobed | Minute, most of parapodia exposed | Absent | Segment 2 | Long | Short | Subbiramous | Rounded,very short | Few, very short | Stout, straight,subdistal swelling | Slender, roundedtip, longersubdistal area | Seeps | *B. n. sp. 1* and *3* |
| *B. tjiasmantoi* | bilobed | Covering parapodia, dorsum exposed | Absent | Segment 3 | Short, dense | Short | Subbiramous | Few, veryshort | Few, very short | Slender, roundedtip, subdistalswelling | Stout, shortersubdistal area | Vents | *Bathymodiolus spp*. Including *B. brevior* |
| *B. onnuriensis* sp. nov | bilobed | Covering parapodia, dorsum exposed | Absent | Segment 3 | Short, dense | Short | Subbiramous | Rounded,very short | Few, very short | Slender, roundedtip, subdistalswelling | Stout, shortersubdistal area | Vents | *Gigantidas vrjienhoeki* |