**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 | Notopodial  acicular lobe | Notochaetae | Supra-acicular  neurochaetae | 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, slightly  hooked | 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, slightly  hooked | 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, slightly  hooked | 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 reaching  tip of notochaetae | Few, very short | Stout, slightly  hooked | 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, tapered  into rounded tip | Similar to supra-acicular, slightly  hooked | 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, tapered  tip, subdistal  swelling | Similar to supra-  acicular, shorter  subdistal 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, tapered  tip, subdistal  swelling | Similar to supra-  acicular, shorter  subdistal 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, rounded  tip, longer  subdistal area | Seeps | *B. n. sp. 1* and *3* |
| *B. tjiasmantoi* | bilobed | Covering parapodia, dorsum exposed | Absent | Segment 3 | Short, dense | Short | Subbiramous | Few, very  short | Few, very short | Slender, rounded  tip, subdistal  swelling | Stout, shorter  subdistal 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, rounded  tip, subdistal  swelling | Stout, shorter  subdistal area | Vents | *Gigantidas vrjienhoeki* |