Supplementary Material

**Supplementary Table1.**All known species records from the hadal water depths (>6000 m) of the Java Trench.

| **Class** | **Order** | **Family** | **Species** | **Depth (m)** | **Reference** |
| --- | --- | --- | --- | --- | --- |
| Hexactinellida | Hexasterophora | Unknown | Unknown | 7040-7196 | This study |
| Hydrozoa | Leptothecata | Aglaopheniidae | *Aglaophenia galathea* | 6900-7000 | Kramp 1956 |
| Anthozoa | Actiniaria | Edwardsiidae | *Paraedwardsia lemchei* | 7160 | Carlgren & Bruun 1951 |
|  |  | Galatheanthemidae | aff. *Galatheanthemum* | 7040-7196 | This study |
|  |  | Bathypheliidae | aff. *Bathyphellia* | 7040-7196 | This study |
| Polychaeta | Phyllodocida | Nereididae | *Nereis* sp. sp.  | 6935-7060 | Belyaev 1989 |
|  |  | Polynoidae | *Bathyeliasona (M) abyssicola* | 7130-7160 | Kirkegaard 1956 |
|  |  |  | *Macellicephaloides* sp. | 7176 | This study |
|  |  |  | *Polynoidae* sp.  | 6820-6850 | Belyaev 1989 |
|  | Drilomorpha | Capitallidae | *Notomastus* sp. sp. | 6820-6850 | Belyaev 1989 |
|  | Terebellida | Flabelligeridae | *Ilyphagus bythincola* | 6730-6850 | Kirkegaard 1956 |
|  |  | Opheliidae | *Travisia glandulosa* | 6740-6850 | Kirkegaard 1956 |
|  |  | Cirratulidae | *Chaetozone* sp*.* | 6935-7060 | Belyaev 1989 |
|  |  |  | *Cossura longocirrata* | 6487 | Belyaev 1989 |
|  |  |  | *Tharyx* sp. sp. | 6820-6850 | Belyaev 1989 |
|  |  | Amparetidae | *Ampharetidae* sp. sp. | 6930-7000 | Kirkegaard 1956 |
|  | Sabellida | Siboglinidae | *Sclerolinum javanicum* | 6820-6850 | Ivanov & Selivanova 1992 |
|  |  |  | *Siboglinum* sp. n 3 | 6841 | Belyaev 1989 |
| Echiuroidae | Bonelliida | Bonelliidae | *Ikedella bogorovi* | 6820-6850 | Zenkevitch 1964 |
| Echinoidea | Spatangoida | Pourtalesiidae | *Echinosigra amphora* sp? | 6433-6850 | Madsen 1956 |
| Ophiuroidea | Ophiurae | Ophiuridae | *Ophiotypa simplex* | 6477-6487 | Madsen 1956 |
|  |  |  | Ophiuroid sp. 1 | 7040-7196 | This study |
|  |  |  | Ophiuroid sp. 2 | 6146 | This study |
| Asteroidea | Paxillosida | Porcellansteridae | *Eremicaster vicinus* | 6433-7000 | Madsen 1956 |
|  |  | Pterasteridae | *Hymenaster* sp. | 7040-7196 | This study |
| Holothuroidea | Apodida | Myriotrochidae | *Prototrochus bruuni* | 6487-7060 | Hansen 1956 |
|  | Elasipodida | Elpidiidae | *Amperima naresi* | 6820-7160 | Hansen 1956 |
|  |  |  | *Amperima cf. naresi* | 7040-7196 | This study |
|  |  |  | *Elpidia hanseni javanica\*\** | 6820-6850 | Hansen 1956 |
|  |  |  | *Elpidia sundensis* | 6433-7160 | Hansen 1956 |
|  |  |  | *Elpidia cf. sundensis* | 7040-7196 | This study |
|  |  | Psychropotidae | *Psychropotes* sp. | 7040-7196 | This study |
|  |  | Pelagothuridae | *Enypniastes* sp. | 7040-7196 | This study |
| Crinoidea | aff. Comatulida | Bathycrinidae | *Bathycrinus* sp*.* | 6433-7060 | Belyaev 1989 |
|  |  | Unknown | Crinoid sp. 1. | 7040-7196 | This study |
|  |  | aff. Bathycrinidae | *Bathycrinus* sp. 2. | 6439 | This study |
| Scaphopoda | Galilida | Unknown | *Siphonodentalium galatheae* | 6900-7000 | Knudsen 1964 |
|  |  | Pulsellidae | *Unknown* | 6820-6850 | Belyaev 1989 |
| Gastropoda | Planilabiata | Cocculinidae | *Pseudococculina* sp. n. 4 | 6820-6850 | Belyaev 1989 |
| Bivalvia | Nuculida | Nuculanidae | *Nuculanidae gen* sp. n. | 6820-6850 | Belyaev 1989 |
|  | Lucinida | Thyasiridae | *Mendicula (A) aff. pygmaeus* | 6820-6850 | Belyaev 1989 |
|  |  |  | *Axinulus* sp. n. 1 | 6841-7060 | Belyaev 1989 |
|  | Pectinida | Pectinidae | *Delectopecten (r) vancouverensis* | 6820-6850 | Belyaev 1989 |
|  | Venerida | Vesicomyidae | *Vesicomya sundaensis* | 6820-7000 | Knudsen 1970 |
| Cephalopoda | Octopoda | Opisthoteuthidae | *Grimpoteuthis* sp. | 5760-6957 | Jamieson & Vecchione 2020 |
| Sipunculidea | Golfingiida | Phascolionidae | *Phascolion (montuga) lutense* | 6820-6850 | Belyaev 1989 |
| Gymnolaemata | Cheilostomatida | Bugulidae | *Kinetoskias*? | 6487 | Belyaev 1989 |
| Ostracoda | Podocopida | Krithidae | *Krithe setosa* | 6487 | Rudjakov 1961 |
| Malacostraca | Cumacea | Diastylidae | *Makrokylindrus hadalis* | 7160 | Belyaev 1989 |
|  |  | Lampropidae  | *Lamprops* sp. n. | 6820-6850 | Belyaev 1989 |
|  | Tanaidacea | Leptognathiidae | *Akanthophoreus (L) longiremis* | 6433-6475 | Belyaev 1989 |
|  | Isopoda | Munnopsidae | *Eurycope* sp. 1 | 6820-6850 | Wolff 1956 |
|  |  |  | *Storthyngurella (S)* sp. n. 1 | 6820-6850 | Wolff 1956 |
|  |  |  | Unknown | 6439-6957 | This study |
|  |  | Haploniscidae | *Haploniscus* sp. n. 1 | 6935-7060 | Wolff 1956 |
|  |  | Macrostylidae | *Macrostylis porrecta* | 6433 | Mezhoz 1988 |
|  | Amphipoda | Eusiridae | *Rhachotropis flemmingi* | 6820-7160 | Dahl 1959 |
|  |  | Alicellidae | *Alicella gigantea* | 6957-7176 | This study |
|  |  | Scopelocheiridae | *Bathycallisoma (S) schellenbergi* | 6935-7060 | Dahl (1959) |
|  |  |  | *Bathycallisoma schellenbergi* | 6957-7176 | This study |
|  |  | Pardaliscidae | aff. *Princaxelia* | 5760-6957 | This study |
|  |  | Stegocephalidae | Stegocephalidaesp. | 6957-7176 | This study |
|  | Decapoda |  | *Cerataspis* cf. *monstrosus*  | 5760-6739 | Swan et al. 2021 |
|  |  |  | Oplophoroidea spp. | 5760-6439 | Swan et al. 2021 |
|  | Mysida | Mysidae | *Amblyops* sp.  | 5760-7176 | This study |
| Actinoptergii | Ateleopodiformes | Ateleopodidae | aff. *Ateleopus* | 6737 | Jamieson et al. 2021 |
|  | Ophidiiformes | Ophidiidae | *Bassozetus* sp. Inc. 1 | 5760-6146 | Jamieson et al. 2021 |
|  |  |  | *Bassozetus* sp.Inc. 2 | 5760-7176 | Jamieson et al. 2021 |
|  |  |  | *Bassozetus* sp.Inc. 5 | 5760 | Jamieson et al. 2021 |
|  |  |  | *Holcomycteronus profundissimus* | 5600-7160 | Roule 1913 |
|  |  |  | aff. *H. profundissimus* | 5760 | Jamieson et al. 2021 |
|  |  |  | aff. *Bathyonus pectoralis* | 6146-6737 | Jamieson et al. 2021 |
|  |  |  | aff. Neobythitinae | 5760 | Jamieson et al. 2021 |
|  | Perciformes | Liparidae | Liparid sp. *indet.* 1-JAV | 6439-7196 | This study/ Jamieson et al. 2021 |
| Appendicularia | Copelata | Fritillariidae | aff. *Fritillaria* | 5760-6957 | Jamieson & Linley 2021 |
|  |  | Oikopleurinae | aff. *Oikopleura* | 6439 | Jamieson & Linley 2021 |
|  |  | Unknown | Morphotype 2 | 6957 | Jamieson & Linley 2021 |
| Ascidacea | Stolidobranchia | Pyuridae | aff. *Culeolus* sp. | 6439 | This study |

References:

Carlgren, O. H., and Bruun, A. F. (1951). Actiniaria from depths exceeding 6000 Mtr. Galathea Rep. 2, 9–16.

Dahl, E. (1959). Amphipoda from depths exceeding 6000 meters. Galathea Rep. 1, 211–241.

Kirkegaard, J. B. (1956). Benthic Polychaeta from depths exceeding 6000 meters. Galathea Rep. 2, 63–78.

Knudsen, J. (1964). Scaphopoda and gastropoda from depths exceeding 6000 meters. Galathea Rep. 7, 125–136.

Kramp, P. L. (1956). Hydroids from depths exceeding 6000 meters. Galathea Rep. 2, 17–20.

Madsen, F. J. (1956). Echinoidea, asteroidea, and ophiuroidea from depths exceeding 6000 meters. Galathea Rep. 2,

23–32.

Mezhov, B. V. (1988). The first findings of Macrostylidae (Isopoda, Asellota) in the Indian Ocean. Zoologicheskii Zhurnal 67, 983–994.

Roule, L. (1913). Notice préliminaire sur Grimaldichthys profundissimus nov. gen.,nov. sp: poisson abyssal recueilli a 6035 mètres de profondeur dans l’océan Atlantique par SAS le prince de Monaco. Bull. Ins. Océanogr. Monaco. 261, 1–8. doi: 10.1016/s0753-3969(02)01037-6

Wolff, T. (1956). Isopoda from depths exceeding 6000 meters. Galathea Rep. 1, 85–158.

Zenkevitch, L. A. (1964). New deep-sea echiurids from the Indian Ocean. Trudy Ins. Okeanologii. 69, 178–182.