**Supplementary material S3: Tables**

**Supplementary Table S1:** Measurements for Zorocallida.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Higher taxonomy** | **Genus** | **Species** | **R (mm)** | **R (mm)** | **Geological age** | **Reference** |
| Zoroasteridae | *Doraster* | *constellatus* | 220 | 32 | Recent | Clark & Downey, 1992 |
| Zoroasteridae | *Cnemidaster* | *sigsbeei* | 70 | 10 | Recent | Clark & Downey, 1992 |
| Zoroasteridae | *Zoroaster* | *fulgens* | 150 | 10 | Recent | Clark & Downey, 1992 |
| Zoroasteridae | *Zoroaster* | *whangareiensis* | 115 | 19 | Paleogene | Eagle, 2006 |
| Zoroasteridae | *Zoroaster* | *marambioensis* | 150 | 18 | Paleogene | Palópolo et al. 2021 |
| Zoroasteridae | *Doraster* | *mizunoi* | 63 | 6 | Neogene | Kato & Oji, 2013 |
| Zorocallida | *Alkaidia* | *sumrali* | 43 | 6 | Cretaceous | Blake & Reid, 1998 |
| Zorocallida | *Viridisaster* | *guerangeri* | 38 | 5 | Cretaceous | This study |
| Zorocallida | *Alkaidia* | *megaungula* | 8 | 3 | Cretaceous | Ewin & Gale, 2020 |
| Zorocallida | *Protothyraster* | *priscus* | 19 | 4 | Cretaceous | This study |
| Zorocallida | *Terminaster* | *cancriformis* | 11 | 3 | Jurassic | This study |

**Supplementary Table S2:** Measurements for Forcipulatida.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Higher taxonomy** | **Genus** | **Species** | **R (mm)** | **R (mm)** | **Geological age** | **Reference** |
| Asteriidae | *Anaterias* | *antarctica* | 92 | 25 | Recent | Clark & Downey, 1992 |
| Asteriidae | *Asterias* | *forbesi* | 91 | 16 | Recent | Clark & Downey, 1992 |
| Asteriidae | *Asterias* | *rubens* | 160 | 44 | Recent | Clark & Downey, 1992 |
| Asteriidae | *Coronaster* | *briareus* | 160 | 11 | Recent | Clark & Downey, 1992 |
| Asteriidae | *Coronaster* | *volstellatus* | 110 | 12 | Recent | Clark & Downey, 1992 |
| Asteriidae | *Coscinasterias* | *calamaria* | 60 | 8 | Recent | Clark & Downey, 1992 |
| Asteriidae | *Coscinasterias* | *tenuispina* | 135 | 19 | Recent | Clark & Downey, 1992 |
| Asteriidae | *Diplasterias* | *brandti* | 106 | 20 | Recent | Clark & Downey, 1992 |
| Asteriidae | *Leptasterias* | *austera* | 50 | 12 | Recent | Clark & Downey, 1992 |
| Asteriidae | *Leptasterias* | *compta* | 45 | 9 | Recent | Clark & Downey, 1992 |
| Asteriidae | *Leptasterias* | *danica* | 40 | 7 | Recent | Clark & Downey, 1992 |
| Asteriidae | *Leptasterias* | *hispidella* | 30 | 7 | Recent | Clark & Downey, 1992 |
| Asteriidae | *Leptasterias* | *littoralis* | 40 | 10 | Recent | Clark & Downey, 1992 |
| Asteriidae | *Leptasterias* | *muelleri* | 40 | 7 | Recent | Clark & Downey, 1992 |
| Asteriidae | *Leptasterias* | *tenera* | 40 | 6 | Recent | Clark & Downey, 1992 |
| Asteriidae | *Leptasterias* | *polaris* | 150 | 30 | Recent | Clark & Downey, 1992 |
| Asteriidae | *Lethasterias* | *australis* | 50 | 9 | Recent | Clark & Downey, 1992 |
| Asteriidae | *Marthasterias* | *glacialis* | 300 | 37 | Recent | Clark & Downey, 1992 |
| Asteriidae | *Perissasterias* | *hepatctis* | 270 | 52 | Recent | Clark & Downey, 1992 |
| Asteriidae | *Perissasterias* | *obtusissima* | 160 | 29 | Recent | Clark & Downey, 1992 |
| Asteriidae | *Perissasterias* | *polyacantha* | 310 | 34 | Recent | Clark & Downey, 1992 |
| Asteriidae | *Psalidaster* | *mordax* | 135 | 35 | Recent | Clark & Downey, 1992 |
| Asteriidae | *Sclerasterias* | *contorta* | 134 | 10 | Recent | Clark & Downey, 1992 |
| Asteriidae | *Sclerasterias* | *eustyla* | 60 | 7 | Recent | Clark & Downey, 1992 |
| Asteriidae | *Sclerasterias* | *guernei* | 80 | 12 | Recent | Clark & Downey, 1992 |
| Asteriidae | *Sclerasterias* | *neglecta* | 15 | 3 | Recent | Clark & Downey, 1992 |
| Asteriidae | *Sclerasterias* | *tanneri* | 104 | 15 | Recent | Clark & Downey, 1992 |
| Asteriidae | *Stephanasterias* | *albula* | 60 | 6 | Recent | Clark & Downey, 1992 |
| Asteriidae | *Urasterias* | *lincki* | 300 | 37 | Recent | Clark & Downey, 1992 |
| Pedicellasteridae | *Ampheraster* | *alaminos* | 62 | 8 | Recent | Clark & Downey, 1992 |
| Pedicellasteridae | *Hydrasterias* | *ophiodion* | 28 | 4 | Recent | Clark & Downey, 1992 |
| Pedicellasteridae | *Hydrasterias* | *sexradiata* | 35 | 3 | Recent | Clark & Downey, 1992 |
| Pedicellasteridae | *Pedicellaster* | *pourtalesi* | 21 | 5 | Recent | Clark & Downey, 1992 |
| Pedicellasteridae | *Pedicellaster* | *typicus* | 31 | 3 | Recent | Clark & Downey, 1992 |
| Pedicellasteridae | *Tarsaster* | *fascicularis* | 57 | 9 | Recent | Clark & Downey, 1992 |
| Stichasteridae | *Allostichaster* | *capensis* | 31 | 8 | Recent | Clark & Downey, 1992 |
| Stichasteridae | *Allostichaster* | *hartti* | 18 | 5 | Recent | Clark & Downey, 1992 |
| Stichasteridae | *Cosmasterias* | *felipes* | 90 | 16 | Recent | Clark & Downey, 1992 |
| Stichasteridae | *Cosmasterias* | *lurida* | 240 | 41 | Recent | Clark & Downey, 1992 |
| Stichasteridae | *Neomorphaster* | *forcipatus* | 85 | 16 | Recent | Clark & Downey, 1992 |
| Stichasteridae | *Neomorphaster* | *margaritaceus* | 73 | 13 | Recent | Clark & Downey, 1992 |
| Stichasteridae | *Smilasterias* | *triremis* | 61 | 7 | Recent | Clark & Downey, 1992 |
| Stichasteridae | *Stichastrella* | *ambigua* | 115 | 20 | Recent | Clark & Downey, 1992 |
| Stichasteridae | *Stichastrella* | *rosea* | 150 | 19 | Recent | Clark & Downey, 1992 |
| ‘Asteriidae’ | *Sclerasterias* | *zinsmeisteri* | 98 | 26 | Paleogene | Blake & Aronson, 1998 |
| ‘Asteriidae’ | *Cretasterias* | *reticulatus* | 46 | 13 | Cretaceous | Gale & Villier, 2013 |
| ‘Pedicellasteridae’ | *Afraster* | *scalariformis* | 29 | 6.5 | Cretaceous | Blake et al., 1996 |
| Forcipulatida | *Pegaster* | *stichos* | 51 | 21 | Cretaceous | Blake & Peterson, 1993 |
| Forcipulatida | *‘Compsaster’* | *spiniger* | 39 | 10 | Jurassic | Wright, 1880 |
| Forcipulatida | *‘Asterias’* | *dubium* | 30 | 13 | Jurassic | Whitfield, 1877 |
| Forcipulatida | *"Asterachanton"* | *oolithicum* | 48 | 20 | Jurassic | Terquem & Jourdy, 1869 |
| Forcipulatida | *‘Asterias’* | *deslongchampsi* | 27 | 12 | Jurassic | Morière, 1878 |
| Forcipulatida | *‘Asterias’* | *gaveyi* | 99 | 26 | Jurassic | Forbes, 1850 |
| Forcipulatida | *Dermaster* | *boehmi* | 41 | 14 | Jurassic | Hess, 1972 |
| Forcipulatida | *‘Asterias’* | *ranvillensis* | 21 | 5 | Jurassic | Portes, 1927 |
| Forcipulatida | *Germanasterias* | *amplipapularia* | 105 | 18 | Jurassic | Blake, 1990 |
| Forcipulatida | *Hystrixasterias* | *hettangiurnus* | 31 | 10 | Jurassic | Blake, 1990 |
| Forcipulatida | *Psammaster* | *davidsoni* | 30 | 8 | Jurassic | Fau et al., 2020 |
| Forcipulatida | *Argoviaster* | *occultus* | 90 | 15 | Jurassic | Hess, 1972 |
| Forcipulatida | *Polarasterias* | *janusensis* | 65 | 8 | Jurassic | Rousseau et al., 2018 |

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