|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **No** | **Species** | **GenBank Accession No.** | **P-distance (%)** | | | | | | | | | | | | | | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| **1** | *Ophientrema scolopendrica*01(SCS) | MZ203270 |  | 0.20% | 1.45% | 1.45% | 1.52% | 1.48% | 1.42% | 1.44% | 1.44% | 1.57% | 1.54% | 1.62% | 1.69% | 1.80% | 1.68% | 1.67% | 1.56% | 2.29% | 2.71% | 2.78% |
| **2** | *Ophientrema scolopendrica*02(SCS) | MZ203271 | 0.21% |  | 1.43% | 1.43% | 1.54% | 1.50% | 1.39% | 1.41% | 1.42% | 1.59% | 1.56% | 1.63% | 1.71% | 1.82% | 1.71% | 1.68% | 1.57% | 2.28% | 2.74% | 2.81% |
| **3** | *Ophiacantha bathybia*01 (SCS) | MZ203273 | 8.94% | 8.70% |  | 0.00% | 1.47% | 1.43% | 1.58% | 1.59% | 1.77% | 1.85% | 1.82% | 1.79% | 1.95% | 2.09% | 1.80% | 1.72% | 1.87% | 2.38% | 2.87% | 2.97% |
| **4** | *Ophiacantha bathybia*02 (SCS) | MZ203274 | 8.94% | 8.70% | 0.00% |  | 1.47% | 1.43% | 1.58% | 1.59% | 1.77% | 1.85% | 1.82% | 1.79% | 1.95% | 2.09% | 1.80% | 1.72% | 1.87% | 2.38% | 2.87% | 2.97% |
| **5** | *Ophiacantha vorax*01(SCS) | MZ203267 | 10.09% | 10.33% | 9.72% | 9.72% |  | 0.29% | 1.86% | 1.79% | 1.88% | 1.87% | 1.85% | 1.83% | 2.09% | 2.19% | 1.82% | 1.80% | 1.82% | 2.54% | 2.75% | 2.94% |
| **6** | *Ophiacantha vorax*02 (SCS) | MZ203268 | 9.60% | 9.84% | 9.21% | 9.21% | 0.42% |  | 1.83% | 1.76% | 1.86% | 1.86% | 1.84% | 1.83% | 2.07% | 2.16% | 1.81% | 1.76% | 1.79% | 2.44% | 2.77% | 2.93% |
| **7** | *Ophioplinthaca pilicata* (SCS) | MZ203269 | 9.41% | 9.17% | 10.46% | 10.46% | 14.97% | 14.65% |  | 0.55% | 0.95% | 1.67% | 1.66% | 1.52% | 1.73% | 1.73% | 1.63% | 1.72% | 1.69% | 2.45% | 2.56% | 2.67% |
| **8** | *Ophioplinthaca abyssalis* | HM587819 | 9.44% | 9.19% | 10.50% | 10.50% | 13.99% | 13.67% | 1.48% |  | 0.87% | 1.65% | 1.63% | 1.54% | 1.73% | 1.69% | 1.64% | 1.71% | 1.56% | 2.45% | 2.48% | 2.59% |
| **9** | *Ophioplinthaca defensor* | MT031947 | 9.17% | 8.93% | 13.04% | 13.04% | 15.26% | 14.93% | 4.33% | 3.68% |  | 1.66% | 1.64% | 1.50% | 1.79% | 1.82% | 1.71% | 1.70% | 1.62% | 2.52% | 2.61% | 2.65% |
| **10** | *Ophiacantha aster* sp. nov.01(SCS) | MZ203275 | 11.59% | 11.84% | 15.27% | 15.27% | 15.67% | 15.39% | 13.00% | 12.50% | 12.70% |  | 0.21% | 1.50% | 1.77% | 1.80% | 1.69% | 1.55% | 1.80% | 2.53% | 2.58% | 2.77% |
| **11** | *Ophiacantha aster* sp. nov.02(SCS) | MZ203275 | 11.34% | 11.59% | 15.01% | 15.01% | 15.40% | 15.12% | 12.73% | 12.24% | 12.44% | 0.21% |  | 1.48% | 1.77% | 1.80% | 1.67% | 1.55% | 1.78% | 2.53% | 2.58% | 2.75% |
| **12** | *Ophiacantha antarctica* | KU672408 | 11.74% | 11.99% | 13.64% | 13.64% | 15.81% | 15.53% | 10.63% | 10.65% | 10.62% | 9.95% | 9.71% |  | 1.61% | 1.76% | 1.52% | 1.65% | 1.81% | 2.61% | 2.80% | 2.62% |
| **13** | *Ophiomoeris petalis* sp. nov. (SCS) | MZ203278 | 12.83% | 13.08% | 16.57% | 16.57% | 18.30% | 18.01% | 12.88% | 12.40% | 13.64% | 13.40% | 13.40% | 11.12% |  | 1.34% | 1.30% | 1.58% | 1.76% | 2.44% | 2.69% | 2.86% |
| **14** | *Ophiomoeris obstricta* | AB605125 | 14.27% | 14.53% | 18.18% | 18.18% | 19.58% | 19.28% | 12.84% | 12.11% | 13.58% | 14.66% | 14.66% | 13.26% | 8.43% |  | 1.47% | 1.64% | 1.81% | 2.46% | 2.61% | 2.73% |
| **15** | *Ophiomoeris* sp.(SCS) | MZ203277 | 12.84% | 13.10% | 14.51% | 14.51% | 15.15% | 14.87% | 11.68% | 11.72% | 12.18% | 11.93% | 11.67% | 10.87% | 8.23% | 10.10% |  | 1.54% | 1.59% | 2.44% | 2.68% | 2.86% |
| **16** | *Ophiurothamnus clausa* (SCS) | MZ203272 | 11.57% | 11.81% | 12.94% | 12.94% | 14.06% | 13.55% | 12.39% | 12.18% | 12.18% | 11.38% | 11.38% | 12.08% | 11.35% | 12.27% | 11.36% |  | 1.40% | 2.26% | 2.73% | 2.78% |
| **17** | *Ophiacantha bidentata* | KU672412 | 11.53% | 11.78% | 14.43% | 14.43% | 14.50% | 13.98% | 12.12% | 10.67% | 11.39% | 14.57% | 14.31% | 13.78% | 13.55% | 13.99% | 12.34% | 9.37% |  | 2.35% | 2.61% | 2.66% |
| **18** | *Ophiolimna antarctica* | KF713452 | 22.08% | 21.79% | 22.64% | 22.64% | 25.94% | 25.03% | 23.72% | 23.47% | 25.19% | 25.69% | 25.69% | 26.48% | 23.36% | 23.59% | 23.61% | 21.72% | 22.64% |  | 2.39% | 2.78% |
| **19** | *Ophiomyxa vivipara* | KU672420 | 28.24% | 28.56% | 30.83% | 30.83% | 29.13% | 29.43% | 26.40% | 25.53% | 27.92% | 27.22% | 27.54% | 29.11% | 26.72% | 26.22% | 26.92% | 28.12% | 26.42% | 24.66% |  | 2.26% |
| **20** | *Ophiomyxa flaccida* | KU672429 | 27.53% | 27.86% | 31.03% | 31.03% | 29.94% | 30.24% | 26.35% | 25.19% | 25.66% | 28.12% | 27.78% | 26.26% | 28.29% | 27.54% | 28.09% | 27.42% | 25.93% | 29.02% | 20.24% |  |

Supplementary file 7. Family Ophiacanthidae, pairwise distance values based on 608 bp mitochondrial 16S sequences, calculated using the Kimura 2-parameter method with 1,000 bootstrap replicates (Value in blue represent Standard Error). Abbreviation: SCS = South China Sea.