|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **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** | *Ophiactis perplexa* (TS) | KF663482 |  | 0.31% | 0.31% | 0.62% | 1.56% | 1.92% | 1.92% | 1.95% | 2.04% | 1.78% | 1.69% | 1.70% | 1.70% | 2.67% | 2.62% | 2.29% | 2.50% | 2.60% | 2.42% | 2.42% |
| **2** | *Ophiactis* cf *perplexa01* (SCS) | MZ198767 | 0.55% |  | 0.00% | 0.66% | 1.60% | 1.91% | 1.91% | 1.94% | 1.97% | 1.74% | 1.65% | 1.66% | 1.66% | 2.58% | 2.53% | 2.28% | 2.54% | 2.63% | 2.38% | 2.44% |
| **3** | *Ophiactis* cf *perplexa02* (SCS) | MZ198768 | 0.55% | 0.00% |  | 0.66% | 1.60% | 1.91% | 1.91% | 1.94% | 1.97% | 1.74% | 1.65% | 1.66% | 1.66% | 2.58% | 2.53% | 2.28% | 2.54% | 2.63% | 2.38% | 2.44% |
| **4** | *Ophiactis perplexa* (NZ) | KU895159 | 2.21% | 2.39% | 2.39% |  | 1.43% | 1.87% | 1.87% | 1.88% | 2.01% | 1.70% | 1.67% | 1.68% | 1.68% | 2.61% | 2.57% | 2.25% | 2.60% | 2.65% | 2.40% | 2.41% |
| **5** | *Ophiactis flexuosa* | KU895160 | 12.56% | 12.76% | 12.76% | 11.02% |  | 1.90% | 1.90% | 1.85% | 1.88% | 1.88% | 1.84% | 1.88% | 1.88% | 2.68% | 2.64% | 2.30% | 2.68% | 2.64% | 2.41% | 2.33% |
| **6** | *Ophiactis profundi*01(SCS) | MZ198771 | 17.08% | 17.05% | 17.05% | 16.84% | 17.77% |  | 0.00% | 0.35% | 0.93% | 1.76% | 1.80% | 1.87% | 1.87% | 2.45% | 2.48% | 2.51% | 2.52% | 2.66% | 2.36% | 2.45% |
| **7** | *Ophiactis profundi*02(SCS) | MZ198772 | 17.08% | 17.05% | 17.05% | 16.84% | 17.77% | 0.00% |  | 0.35% | 0.93% | 1.76% | 1.80% | 1.87% | 1.87% | 2.45% | 2.48% | 2.51% | 2.52% | 2.66% | 2.36% | 2.45% |
| **8** | *Ophiactis profundi* (TS) | KF663474 | 17.32% | 17.28% | 17.28% | 16.84% | 17.06% | 0.73% | 0.73% |  | 0.91% | 1.76% | 1.81% | 1.87% | 1.87% | 2.43% | 2.44% | 2.49% | 2.51% | 2.60% | 2.35% | 2.44% |
| **9** | *Ophiactis plana* | KU895161 | 18.47% | 17.96% | 17.96% | 18.46% | 17.73% | 4.50% | 4.50% | 4.50% |  | 1.71% | 1.77% | 1.82% | 1.82% | 2.37% | 2.37% | 2.48% | 2.46% | 2.57% | 2.26% | 2.28% |
| **10** | *Ophiactis definita* (PNG) | KU895158 | 14.41% | 14.16% | 14.16% | 13.71% | 15.93% | 14.54% | 14.54% | 14.54% | 14.76% |  | 0.55% | 0.60% | 0.60% | 2.49% | 2.46% | 2.48% | 2.58% | 2.66% | 2.21% | 2.23% |
| **11** | *Ophiactis definita* (AUS) | KF663481 | 13.74% | 13.48% | 13.48% | 13.71% | 15.91% | 14.97% | 14.97% | 14.97% | 15.19% | 1.65% |  | 0.44% | 0.44% | 2.54% | 2.50% | 2.43% | 2.67% | 2.80% | 2.30% | 2.32% |
| **12** | *Ophiactis cf. brachygens*01(SCS) | MZ198769 | 13.74% | 13.48% | 13.48% | 13.71% | 16.60% | 15.66% | 15.66% | 15.66% | 15.88% | 2.02% | 1.09% |  | 0.00% | 2.54% | 2.51% | 2.43% | 2.66% | 2.81% | 2.28% | 2.32% |
| **13** | *Ophiactis cf. brachygens*02(SCS) | MZ198770 | 13.74% | 13.48% | 13.48% | 13.71% | 16.60% | 15.66% | 15.66% | 15.66% | 15.88% | 2.02% | 1.09% | 0.00% |  | 2.54% | 2.51% | 2.43% | 2.66% | 2.81% | 2.28% | 2.32% |
| **14** | *Ophiactis affinis* | KU895154 | 26.45% | 25.83% | 25.83% | 25.29% | 27.31% | 25.62% | 25.62% | 25.10% | 24.59% | 24.72% | 25.48% | 25.48% | 25.48% |  | 0.41% | 2.49% | 2.54% | 2.53% | 2.40% | 2.50% |
| **15** | *Ophiactis macrolepidota* | KU895155 | 25.91% | 25.29% | 25.29% | 25.29% | 26.77% | 25.62% | 25.62% | 25.10% | 24.59% | 24.72% | 24.95% | 24.95% | 24.95% | 1.09% |  | 2.46% | 2.54% | 2.51% | 2.39% | 2.55% |
| **16** | *Ophiactis hirta* | KU895147 | 20.50% | 20.45% | 20.45% | 20.93% | 22.18% | 24.85% | 24.85% | 24.59% | 25.12% | 24.83% | 24.57% | 24.57% | 24.57% | 25.17% | 24.39% |  | 2.37% | 2.31% | 2.13% | 2.19% |
| **17** | *Ophiactis abyssicola* | KU895138 | 25.95% | 26.14% | 26.14% | 27.21% | 28.80% | 26.45% | 26.45% | 26.18% | 25.64% | 27.43% | 28.48% | 27.94% | 27.94% | 25.77% | 25.77% | 24.32% |  | 1.88% | 2.30% | 2.36% |
| **18** | *Ophiactis amator* | KU895142 | 27.51% | 27.71% | 27.71% | 27.95% | 29.26% | 29.94% | 29.94% | 29.37% | 28.25% | 29.08% | 30.73% | 29.88% | 29.88% | 26.18% | 26.45% | 23.31% | 16.60% |  | 2.28% | 2.38% |
| **19** | *Ophiothamnus biocal* | KU895365 | 23.90% | 23.35% | 23.35% | 24.11% | 25.13% | 25.42% | 25.42% | 25.16% | 24.41% | 22.65% | 23.64% | 22.88% | 22.88% | 25.67% | 25.14% | 21.61% | 23.12% | 24.08% |  | 0.96% |
| **20** | *Ophiothamnus habrotatus* | KU895366 | 24.69% | 24.63% | 24.63% | 24.89% | 25.67% | 26.77% | 26.77% | 26.50% | 25.48% | 23.17% | 24.17% | 23.40% | 23.40% | 26.99% | 27.53% | 22.58% | 24.94% | 25.63% | 5.12% |  |

Supplementary file 9. Family Ophiactidae, pairwise distance values based on 593 bp mitochondrial COI sequences, calculated using the Kimura 2-parameter method with 1,000 bootstrap replicates (Value in blue represent Standard Error). Abbreviations: NZ = New Zealand, PNG = Papua New Guinea, SCS = South China Sea, TS = Tasman Sea.