**Table S1.** Terminal taxa used in the phylogenetic analysis and their respective GenBank accession numbers. In bold are new sequences

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Species | *COI* | CYTB | MYH6 | RAG2 |
| *Trichogenes longipinnis* | MK123682 | MK123704 | MF431104 | MF431117 |
| *Microcambeva ribeirae* | MN385807 | ─ | MN385819 | MN385832 |
| *Listrura tetraradiata* | JQ231083 | JQ231088 | MN385814 | MN385826 |
| *Eremophilus mutisii* | KY857931 | ─ | KY858086 | KY858171 |
| *‘Trichomycterus’ cachiraensis* | KY857971 | ─ | KY858122 | KY858195 |
| *‘Trichomycterus’ punctulatus* | KY857983 | ─ | KY858134 | KY858203 |
| *‘Trichomycterus’ striatus* | KY858003 | KY858069 | KY858154 | KY858219 |
| *‘Trichomycterus’ transandianus* | KY858007 | KY858073 | KY858158 | KY858222 |
| *Bullockia maldonadoi* | KY857926 | FJ772237 | KY858081 | KY858166 |
| *“Trichomycterus” areolatus* | KY857964 | FJ772214 | ─ | KY858188 |
| *Ituglanis boitata* | MK123684 | MK123706 | MF431105 | MK123758 |
| *Ituglanis amazonicus* | MK123683 | MK123705 | MF431105 | KY858181 |
| *Ituglanis parahybae* | ─ | KY858023 | KY858098 | ─ |
| *Ituglanis eichorniarum* | KY857939 | KY858020 | KY858094 | KY858176 |
| *Ituglanis payaya* | **MW196747** | **MW196757** | **MW196767** | **MW196779** |
| *Ituglanis paraguassuensis* | **MW196748** | ─ | **MW196768** | **MW196780** |
| *Ituglanis amphipotamus* | **MW250305** | **MW247140** | **MW247141** | **MW247142** |
| *Ituglanis goya* | KY857945 | ─ | KY858101 | KY858180 |
| *Ituglanis* cf. *ramiroi* | KY857998 | ─ | KY858149 | KY858215 |
| *Scleronema minutum* | MK123685 | MK123707 | MK123735 | MK123759 |
| *Scleronema* cf*. guapa* | MK123687 | MK123709 | MF431107 | MF431118 |
| *Scleronema* cf. *ibirapuita* | MK123688 | MK123710 | MK123737 | MK123761 |
| *Scleronema macanuda* | MK123686 | MK123708 | MK123736 | MK123760 |
| *Cambeva variegata* | KY857991 | KY858060 | ─ | KY858211 |
| *Cambeva brachykechenos* | MN995669 | MK123711 | MF431108 | ─ |
| *Cambeva diatropoporos* | KY857996 | KY858065 | KY858147 | KY858213 |
| *Cambeva balios* | MT002665 | MT002666 | ─ | ─ |
| *Cambeva naipi* | MN995699 | MN995771 | ─ | ─ |
| *Cambeva cubataonis* | MK123689 | MK123713 | MK123740 | MN385820 |
| *Cambeva davisi* | KR140345 | MK123714 | MK123741 | MK123762 |
| *Cambeva zonata* | KY857986 | KY858053 | KY858137 | ─ |
| *Trichomycterus itatiayae* | KY857977 | KY858046 | KY858128 | KY858198 |
| *Trichomycterus piratymbara* | KY857970 | KY858040 | KY858121 | KY858194 |
| *Trichomycterus reinhardti* | MK123698 | MK123727 | MF431106 | MF431119 |
| *Trichomycterus giganteus* | MK123693 | MK123720 | MK123746 | MT446426 |
| *Trichomycterus nigricans* | MN813005 | MK123723 | MK123750 | MK123765 |
| *Trichomycterus caipora* | MN813008 | MN813000 | MN812996 | MN812992 |
| *Trichomycterus santaeritae* | MN813009 | MN813001 | MN812997 | MN812993 |
| *Trichomycterus immaculatus* | MK123694 | MK144348 | MK123747 | MF431120 |
| *Trichomycterus nigroauratus* | MK123696 | MK123724 | MK123751 | MK123766 |
| *Trichomycterus maculosus* | MN813010 | MN813002 | MN812998 | MN812994 |
| *Trichomycterus quintus* | MT299917 | MN812999 | MT305242 | ─ |
| *Trichomycterus pirabitira* | KY857982 | KY858051 | KY858133 | ─ |
| *Trichomycterus brasiliensis* | MK123691 | MK123717 | MK123744 | MK123763 |
| *Trichomycterus candidus* | MK123692 | MK123718 | MK123745 | **MW196788** |
| *Trichomycterus rubiginosus* | MK123699 | MK123728 | MK123754 | MK123767 |
| *Trichomycterus albinotatus* | MN813007 | MK123716 | MK123743 | MN812990 |
| *Trichomycterus vitalbrazili* | MT435137 | MK748279 | MK748280 | MT446428 |
| *Trichomycterus travassosi* | MK123701 | MK123730 | MK123757 | ─ |
| *Trichomycterus caudofasciatus* | MN812995 | MK123719 | MK123719 | MK123764 |
| *Trichomycterus jacupiranga* | MK123702 | MK123731 | MK123757 | ─ |
| *Trichomycterus pantherinus* | MK123697 | MK123725 | MK123752 | MN812989 |
| *Trichomycterus auroguttatus* | MT435135 | MT436452 | MT436450 | ─ |
| *Trichomycterus alternatus* | MK123690 | MK123715 | MK123742 | MN812991 |
| *Trichomycterus melanopygius* | KY857976 | KY858045 | KY858127 | KY858197 |
| *Trichomycterus pradensis* | MN813003 | MK123726 | MK123753 | MN812988 |