**Table S2.** Mitogenome sequences obtained from GenBank for phylogenetic analyses

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| **Species** | **GenBank ID** | **References** |
| *Acanthogobius hasta* | AY486321 | Kim et al. 2004 |
| *Acanthogobius flavimanus* | MW376908 | Unpublished |
| *Lophiogobius ocellicauda* | KC480264 | Quan et al. 2014 |
| *Gymnogobius petschiliensis* | AY525784 | Kim et al. 2004 |
| *Gymnogobius urotaenia* | KT601093 | Unpublished |
| *Gymnogobius laevis* | MW049117 | Peng et al. 2022 |
| *Luciogobius platycephalus* | JX971538 | Jin et al. 2013 |
| *Luciogobius pallidus* | KF040451 | Yu et al. 2015 |
| *Luciogobius elongatus* | MH682217 | Jun et al. 2018 |
| *Chaenogobius gulosus* | KP696748 | Oh et al. 2015 |
| *Eucyclogobius newberryi* | KP013101 | Unpublished |
| *Gillichthys mirabilis* | FJ211845 | Unpublished |
| *Gillichthys seta* | FJ211846 | Unpublished |
| *Tridentiger obscurus* | KT601092 | Unpublished |
| *Rhinogobius brunneus* | KT601096 | Unpublished |
| *Rhinogobius duospilus* | MH127918 | Tan et al. 2020 |
| *Rhinogobius giurinus* | KF371534 | Xie et al. 2015 |
| *Stigmatogobius pleurostigma* | KU376498 | Unpublished |
| *Mugilogobius abei* | KF128984 | Huang et al. 2015 |
| *Mugilogobius chulae* | KP144793 | Cai et al. 2016 |
| *Mugilogobius myxodermus* | MF537252 | Cai et al. 2017 |
| *Pseudogobius javanicus* | KF193873 | Huang et al. 2015 |
| *Pseudogobius taijiangensis* | KM624630 | Unpublished |
| *Pseudogobius fulvicaudus* | KM199637 | Unpublished |
| *Hemigobius hoevenii* | KF916564 | Huang et al. 2015 |
| *Eugnathogobius polylepis* | KF769442 | Unpublished |
| *Amblychaeturichthys hexanema* | KT781104 | Chen et al. 2016 |
| *Chaeturichthys stigmatias* | MN038166 | Unpublished |
| *Eugnathogobius oligactis* | KJ082038 | Unpublished |
| *Sicydium altum* | MF927496 | Alda et al. 2018 |
| *Sicyopterus aiensis* | MK496934 | Lord et al. 2019 |
| *Sicyopterus stimpsoni* | MK496983 | Lord et al. 2019 |
| *Sicyopterus pugnans* | MK496971 | Lord et al. 2019 |
| *Stiphodon pelewensis* | MK496967 | Lord et al. 2019 |
| *Stiphodon tuivi* | MK496969 | Lord et al. 2019 |
| *Stiphodon percnopterygionu* | MW548257 | Unpublished |
| *Boleophthalmus pectinirostris* | JN631352 | Liu et al. 2012 |
| *Boleophthalmus boddarti* | KF874277 | Zhang et al. 2016. |
| *Scartelaos gigas* | KT277705 | Li et al. 2016 |
| *Parapocryptes serperaster* | KT965855 | Qiu et al. 2017 |
| *Taenioides cirratus* | KJ944420 | Chen and Wen 2016 |
| *Taenioides anguillaris* | KT188772 | Wei et al. 2016 |
| *Oxuderces dentatus* | JN831381 | Jin et al. 2012 |
| *Amblyotrypauchen arctocephalus* | MK541896 | Unpublished |
| *Trypauchen vagina* | JQ027694 | Shi et al. 2012 |
| *Paratrypauchen microcephalus* | MH678617 | Yang et al. 2018 |
| *Apocryptodon punctatus* | KJ434599 | Wen and Chen 2014 |
| *Periophthalmus magnuspinnatus* | KT284931 | Unpublished |
| *Periophthalmus novemradiatus* | MG680457 | Unpublished |
| *Periophthalmus argentilineatus* | KT821095 | Qiu et al. 2017 |
| *Periophthalmodon schlosseri* | KX355324 | Yi et al. 2016 |
| *Odontamblyopus lacepedii* | KR815520 | Liu et al. 2018 |
| *Odontamblyopus rebecca* | KT633953 | Liu et al. 2018 |
| *Pomatoschistus microps* | MN122842 | Unpublished |
| *Gobiusculus flavescens* | MT410909 | Unpublished |
| *Tridentiger barbatus* | JX536694 | Jin et al. 2015 |
| *Tridentiger bifasciatus* | JN244650 | Jin et al. 2015 |
| *Crystallogobius linearis* | MN122854 | Unpublished |
| *Glossogobius olivaceus* | JQ001860 | Sun et al. 2015 |
| *Glossogobius circumspectus* | JX536695 | Unpublished |
| *Amoya chusanensis* | KC196075 | Jin et al. 2013 |
| *Exyrias puntang* | KU674801 | Unpublished |
| *Istigobius campbelli* | MK409978 | Zhang et al. 2019 |
| *Favonigobius gymnauchen* | MN194589 | Jo et al. 2019 |
| *Favonigobius reichei* | MN617828 | He et al. 2020 |
| *Oxyurichthys formosanus* | KC237282 | Sun et al. 2013 |
| *Myersina filifer* | MK758112 | Zhang et al. 2019 |
| *Cryptocentrus cinctus* | MT199211 | Nam and Rhee 2020 |
| *Yongeichthys criniger* | KT894736 | Hu et al. 2017 |
| *Acentrogobius caninus* | MH678615 | Shi et al. 2018 |
| *Nemateleotris decora* | KT284932 | Wang et al. 2016 |
| *Nemateleotris magnifica* | MT199210 | Nam and Rhee 2020 |
| *Lesueurigobius friesii* | MT410904 | Unpublished |
| *Ponticola kessleri* | KM583832 | Kalchhauser et al. 2016 |
| *Proterorhinus semilunaris* | MW856852 | Unpublished |
| *Neogobius melanostomus* | MW856835 | Unpublished |
| *Neogobius fluviatilis* | MW856896 | Unpublished |
| *Glossogobius aureus* | MT968499 | Amin et al. 2020 |
| *Bathygobius coalitus* | KU674799 | Unpublished |
| *Bathygobius cocosensis* | MG704838 | Evans et al. 2018 |
| *Pandaka pygmaea* | KT183034 | Huang et al. 2016 |
| *Brachygobius kabiliensis* | KT153060 | Huang et al. 2016 |
| *Brachygobius doriae* | KU674800 | Unpublished |
| *Gobiopterus lacustris* | MH512902 | Huang et al. 2019 |
| *Odontobutis platycephala* | DQ010651 | Ki et al. 2008 |
| *Eleotris fusca* | KU674798 | Unpublished |
| *Gobiomorus maculatus* | MF927494 | Alda et al. 2018 |

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