**Supplementary Table 1.**List of digeneans included in the phylogenetic analyses, with details of the host, locality and GenBank accession numbers of sequences from the 28S rDNA and COI mtDNA genes. New sequences obtained are in bold. \* = sequence used as outgroup.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Parasites** | **Host** | **Locality** | **Genbank** | | | **Reference** |
| **28S rDNA** | **COI mtDNA** | |
| **Allocreadiidae** |  |  |  | |  |  |
| *Acrolichanus auriculatum* | *Acipenser schrenckii*; | Russia | MN524585; | | – | Atopkin *et al.* (2020) |
| *Allocreadium gotoi* | *Misgurnus anguillicaudatus* | Iiyama City, Japan | LC215274 | | – | Shimazu (2017) |
| *Allocreadium isoporum* | *Alburnus alburnus* | Oster Lake, Karelia | GU462125 | | – | Petkevičiūtė *et al.* (2010) |
| *Allocreadium lobatum* | *Semotilus atromaculatus* | Tobacco Creek, Canada | – | | KC899847 | Martinez-Aquino *et al.* (2013) |
| *Allocreadium neotenicum* | *Hydroporus rufifrons* | Cumbria, England | JX977132 | | – | Bray *et al.* (2012) |
| *Bunodera luciopercae* | *Gymnocephalus*  *Cernuus* | Tvertsa River, Russia | GU462123 | | – | Petkevičiūtė *et al.* (2010) |
| *Bunodera vytautasi* | *Pungitius pungitius* | Magadan region, Chernoe Lake, Russia | MG262545 | | – | Atopkin *et al.* (2018) |
| *Bunodera mediovitellata* | *Gasterosteus aculeatus* | Kamchatka, Azabachye River, Russia | MG262549 | | – | Atopkin *et al.* (2018) |
| *Crepidostomum affine* | *Hiodon tergisus* | Pearl River, Mississippi, USA | KF356363 | | – | Tkach *et al.* (2013) |
| *Crepidostomum auritum* | *Aplodinotus grunniens* | Pearl River, Mississippi, USA | KF356373 | | – | Tkach *et al.* (2013) |
| *Crepidostomum cornutum* | *Lepomis gulosus* | Pascagoula River, Mississippi, USA | KF356374 | | – | Tkach *et al.* (2013) |
| *Crepidostomum farionis* | *Oncorhynchus masou* | Russia | FR821404 | | – | Atopkin & Shedko (2014) |
| *Crepidostomum illinoiense* | *Hiodon alosoides* | Missouri River, North Dakota, USA | KF356372 | | – | Tkach *et al.*  (2013) |
| *Crepidostomum metoecus* | *Salvelinus leucomaensis* | Russia | FR821409 | | – | Atopkin & Shedko (2014) |
| *Crepidostomum oschmarini* | *Pisidium casertanum* | River Nedzingė, Lithuania | MH159994 | | – | Petkevičiūtė *et al.* (2018) |
| *Creptotrema astyanace* | *Astyanax aeneus* | Guanacaste, Costa Rica | KF631422 | | – | Curran *et al.* (2011) |
| *Creptotrema creptotrema* | *Megaleporinus elongatus* | Mogi-Guaçu River, Upper Paraná River basin, Brazil | OK044371 | | OK075291 | Franceschini *et al.* (2021) |
| ***Creptotrema cruste* n. sp.** | ***Crossodactylus schmidti*** | **Paraná, Brazil** | OR557501–02 | | OR552537 | **Present study** |
| *Creptotrema conconae* | *Imparfinis mirini* | Upper Paraná River basin, Brazil | OK044374 | | OK075288 | Franceschini *et al.* (2021) |
| *Creptotrema funduli* | *Fundulus notatus* | Biloxi River, Mississippi, USA | JQ425256 | | – | Curran *et al.* (2012) |
| *Creptotrema lobatum* | *Brycon guatemalensis* | El Managal Lagoon, Tenosique, Mexico | KX954170 | | – | Hernández-Mena *et al.* (2016) |
| *Creptotrema megacetabulare* | *Auchenipterus osteomystax* | Upper Paraná River basin, Brazil | OK044376 | | OK075289 | Franceschini *et al.* (2021) |
| *Creptotrema schubarti* | *Characidium schubarti* | Upper Paraná River basin, Brazil | OK044373 | | OK075293 | Franceschini *et al.* (2021) |
| *Creptotrema tica* | *Gymnotus maculosus* | Orosí River, Costa Rica | MH997001 | | – | Hernández-Mena *et al.* (2018) |
| *Creptotrema totonacapanense* | *Astyanax mexicanus* | Filipinas, Veracruz, Mexico | KF631420 | | – | Razo-Mendivil *et al.* (2014a) |
| *Creptotrema ocloye* **n. comb.** | *Heptapterus qenqo* | Salta, Argentina | MT140287 | | – | Liquin *et al.* 2022 |
| *Creptotrematina aguirrepequenoi* | *Astyanax mexicanus* | Filipinas creek, Veracuz, Mexico | KF631421 | | – | Razo-Mendivil *et al.* (2014a) |
| *Creptotrematina batalhensis* | *Astyanax lacustris* | Batalha River, Brazil | MT512642 | | – | Dias *et al.* (2020) |
| *Margotrema bravoae* | Goodeidae; *Allotoca dugesii* | Mexico (Central region) | KT833278 | | KC899908 | Martinez-Aquino *et al.* (2013); Pérez-Ponce de Leon *et al.* (2016) |
| *Margotrema resolanae* | Goodeidae; *Xenotaenia resolanae* | Mexico (Central region) | KT833272 | | KC899862 | Martinez-Aquino *et al.* (2013); Pérez-Ponce de Leon *et al.* (2016) |
| *Megalogonia ictaluri* | *Ictalurus punctatus* | Pearl River, Mississipi, USA | EF032694 | | – | Curran *et al.* (2006) |
| *Mesoamericatrema magnisacculus* | *Atherinella alvarezi* | Chiapas, Mexico | OP279639 | | – | Mendoza-Garfias *et al.* (2022) |
| *Paracreptotrema blancoi* | *Priapichthys annectens* | Orosí River, Costa Rica | KT833283 | | – | Pérez-Ponce de León *et al.* (2016) |
| *Paracreptotrema rosenthali* | *Xiphophorus malinche* | Malila River, Hidalgo, Mexico | KT833288 | | – | Pérez-Ponce de León *et al.* (2016) |
| *Paracreptotrema heterandriae* | *Heterandria bimaculata* | Agua Bendita, Xico, Veracruz, Mexico | KF697697 | | – | Razo-Mendivil *et al.* (2014b); Pérez-Ponce de León *et al.* (2016) |
| *Pseudoparacreptotrema axtlaense* | *Dajaus monticola* | Río Axtla, Axtla de Terrazas, San Luis Potosí, Mexico | MT180832 | | – | Pérez-Ponce de León *et al.* (2020) |
| *Pseudoparacreptotrema falciforme* | *Dajaus monticola* | River at Matías Romero, Oaxaca, Mexico | MT180829 | | – | Pérez-Ponce de León *et al.* (2020) |
| *Pseudoparacreptotrema macroacetabulatum* | *Profundulus guatemalensis* | Puente Sansare, Guatemala | KT833320 | | – | Pérez-Ponce de León *et al.* (2016) |
| *Pseudoparacreptotrema pacificum* | *Dajaus monticola* | Puente Novillero, Chiapas, Mexico | MT180811 | | – | Pérez-Ponce de León *et al.* (2020) |
| *Pseudoparacreptotrema profundulusi* | *Profundulus* sp. | Templo River, San Juan del Río, Oaxaca, Mexico | KT833290 | | – | Pérez-Ponce de León *et al.* (2016) |
| *Walinia brasiliensis* | *Astyanax fasciatus* | Upper Paraná River Basin, Brazil | MH520995 | | – | Dias *et al.* (2018) |
| *Wallinia anindoi* | *Astyanax aeneus* | San Juan, Oaxaca, Mexico; San Juan River, Chiapas, Mexico; las Cabezas River, El  Progreso, Guatemala | MH997003 | | – | Hernández-Mena *et al.* (2018) |
| *Wallinia chavarriae* | *Astyanax aeneus*; *Gephyrocharax* sp. | Animas River, Guanacaste, Costa Rica; Gamboa, Panama | HQ833703 | | KC899851 | Curran *et al.* (2011); Martinez-Aquino *et al.* (2013) |
| *Wallinia mexicana* | *Astyanax mexicanus* | Covadonga River, Durango, Mexico; Huichihuayan River, San Luis Potosí, Mexico | KJ535505 | | – | Pérez-Ponce de León *et al.* (2015) |
| *Wallinia caririensis* | *Astyanax bimaculatus* | Ceará, Brazil | MW024866 | | – | Silva *et al.* (2020) |
| ***Gorgoderidae*** |  |  |  | |  |  |
| *Degeneria halosauri\** | *Halosauropsis macrochir* | Atlantic Ocean | AY222257 | | – | Olson *et al.* (2003) |
| *Phyllodistomum angulatum\** | *Sander lucioperca* | Chesnava River, Russia | KJ729531 | | – | Petkevičiūtė *et al.* (2015) |
| *Phyllodistomum folium\** | *Gymnocephalus cernua* | Curonian Lagoon, Lithuania | KX957729 | | – | Stunzenas *et al.* (2017) |
| *Phyllodistomum macrocotyle\** | *Dreissena polymorpha* | Lake Lepelskoe, Belarus | AY288828 | | – | Stunzenas *et al.* (2004) |
| *Phyllodistomum parasiluri\** | *Silurus asotus* | Takashima City, Japan | – | | LC002524 | Urabe *et al.* (2015) |
| ***Dicrocoeliidae*** |  |  |  | |  |  |
| *Dicrocoelium chinensis\** | *Bos grunniens* | Maqu (Gansu Province), China | – | | NC025279 | Liu *et al.* (2014) |
| *Dicrocoelium dendriticum\** | *Marmota bobak* | Kharkiv region, Ukraine | AF151939 | | NC025280 | Tkach *et al.* (2000); Liu *et al.* (2014) |
| **Callodistomidae** |  |  |  | |  |  |
| *Prosthenhystera caballeroi\** | *Astyanax aeneus* | Tampisquto River, Guanacaste, Costa Rica | KM871186 | | – | Tkach & Curran (2015) |
| *Prosthenhystera obesa\** | *Hoplias* sp. | Itaya River, Iquitos, Peru | EF032690 | | – | Olson *et al*. (2003) |
| *Prosthenhystera oonastica\** | *Pylodictis olivaris* | Pearl River, Mississippi, USA | KM871182 | | – | Tkach & Curran (2015) |