**Supplementary table S1.** Species analysed in the current study with their genbank accession number.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Species | Host | Locality | GenBank Accesion No. | | Reference |
|  |  |  | **28S** | **ITS2** |  |
| Haploporidae Nicoll, 1914 |  |  |  |  |  |
| *Capitimitta* Pulis & Overstreet, 2013 |  |  |  |  |  |
| *C. costata* Pulis & Overstreet, 2013 | *Selenotoca multifasciata* (Richardson) | Brisbane, Queensland, Australia | KC206497 | KC206497 | Pulis & Overstreet (2013) |
| *C. darwinensis* Pulis & Overstreet, 2013 | *S. multifasciata* | Northern Territory, Darwin, Australia | KC206498 | KC206498 | Pulis & Overstreet (2013) |
| *Capitimitta* sp*.* | *S. multifasciata* | Causeway Lake, Queensland, Australia | KC206499 | KC206499 | Pulis & Overstreet (2013) |
| *Dicrogaster* Looss, 1902 |  |  |  |  |  |
| *D. contracta* Looss, 1902 | *Liza aurata* (Risso) | Santa Pola (sea), Spain | FJ211261 | FJ211267 | Blasco-Costa *et al*. (2009) |
| *D. contracta* Looss, 1902 | *Liza ramada* (Risso) | Santa Pola (sea), Spain | FJ211262 | FJ211268 | Blasco-Costa *et al*. (2009) |
| *D. perpusilla* Looss, 1902 | *L. ramada* | Santa Pola (lagoon), Spain | FJ211238 | FJ211248 | Blasco-Costa *et al*. (2009) |
| *Forticulcita* Overstreet, 1982 |  |  |  |  |  |
| *F. apiensis* Andres, Curran, Fayton, Pulis & Overstreet, 2015 | *Mugil cephalus* L. | Salt Springs, St. Johns River, Florida, USA | KP761087 | KP761087 | Andres *et al*. (2015) |
| *F. gibsoni* Blasco-Costa, Montero, Balbuena, Raga & Kostadinova, 2009 | *M. cephalus* | Santa Pola, Spain | FJ211239 | FJ211249 | Blasco-Costa *et al*. (2009) |
| *F. platana* Andres, Curran, Fayton, Pulis & Overstreet, 2015 | *Mugil liza* Valenciennes | Rio de la Plata, Punta Lara, Argentina | KP761086 | KP761086 | Andres *et al*. (2015) |
| *Hapladena* Linton 1910 |  |  |  |  |  |
| *H. nasonis* Yamaguti, 1970 | *Naso unicornis* (Forsskål) | Lizard Island, Australia | AY222265 | – | Olson *et al*. (2003) |
| *Haploporus* Looss 1902 |  |  |  |  |  |
| *H. benedeni* (Stossich, 1887) | *L. ramada* | Santa Pola (sea), Spain | FJ211237 | FJ211247 | Blasco-Costa *et al*. (2009) |
| *Intromugil* Overstreet & Curran, 2005 |  |  |  |  |  |
| *I. alachuaensis* (Shireman, 1964) | *M. cephalus* | Santa Fe, River in Florida, USA | KC430095 | KC430095 | Pulis *et al*. (2013) |
| *I. mugilicolus* Pulis, Fayton, Curran & Overstreet, 2013 | *M. cephalus* | Louisiana and Mississippi, USA | KC430096 | KC430096 | Pulis *et al*. (2013) |
| *Lecithobotrys* Loss, 1902 |  |  |  |  |  |
| *L. putrescens* Loss, 1902 | *Liza saliens* (Risso) | Ebro Delta, Spain | FJ211236 | FJ211246 | Blasco-Costa *et al*. (2009) |
| *Litosaccus* Andres, Pulis, Cribb & Overstreet, 2014 |  |  |  |  |  |
| *L. brisbanensis* (Martin, 1974) | *M. cephalus* | Queensland, Australia | KM253765 | KM253765 | Andres *et al*. (2014) |
| *Platydidymus* Overstreet & Curran, 2005 |  |  |  |  |  |
| *P. flecterotestis* (Zhukov, 1971) | *Liza haematocheila* (Temminck & Schlegel) | Kievka River, Russia | HE806362 | – | Besprozvannyh *et al*. (Unpublished) |
| *Parasaccocoelium* Zhukov, 1971 |  |  |  |  |  |
| *P. haematocheilum* Besprozvannykh, Atopkin, Ermolenko & Nikitenko, 2015 | *Liza haematocheila* | Razdolnaya River, Russia | HF548461 | – | Besprozvannykh *et al*. (2015a) |
| *P. mugili* Zhukov, 1971 | *L. haematocheila* | Kievka River, Russia | HF548468 | – | Besprozvannykh *et al*. (2015a) |
| *P. polyovum* Besprozvannykh, Atopkin, Ermolenko & Nikitenko, 2015 | *L. haematocheila* | Razdolnaya River, Russia | HF548474 | – | Besprozvannykh *et al*. (2015a) |
| *Ragaia* Blasco-Costa, Montero, Gibson, Balbuena & Kostadinova, 2009 |  |  |  |  |  |
| *R. lizae* Blasco-Costa, Montero, Gibson, Balbuena et Kostadinova, 2009 | *L. aurata* | Ebro Delta, Spain | FJ211235 | FJ211245 | Blasco-Costa *et al*. (2009) |
| *Saccocoelioides* Szidat, 1954 |  |  |  |  |  |
|  |  |  |  |  |  |
| *S. chauhani* Lamothe-Argumedo, 1974 | *Astyanax aeneus* (Günther) | Catemaco Lake, Veracruz, Mexico | KU061117- KU061119 | KU061103- KU061105 | Present study |
| *S. lamothei* Aguirre-Macedo and & Violante-González. 2008 | *Dormitator latifrons* (Richardson) | Tres Palos Lagoon, Guerrero, Mexico | KU061120- KU061121 | KU061099 | Present study |
|  |  | Chacahua Lagoon, Oaxaca, Mexico | KU061122- KU061124 | KU061100- KU061102 | Present study |
| *S. olmecae* n. sp. | *Dormitator maculatus* (Bloch) | El Milagro Lagoon, Campeche, Mexico | KU061135- KU061136 | KU061115- KU061116 | Present study |
|  |  | Boca del Río, Veracruz, Mexico | KU061125- KU061127 | KU061106- KU061108 | Present study |
|  |  | Tamiahua Lagoon, Veracruz, Mexico | KU061128 | KU061109 | Present study |
|  |  | Tlacotalpan, Veracruz, Mexico | KU061129- KU061130 | KU061110 | Present study |
|  |  | La Palma River, Veracruz, Mexico | KU061131- KU061132 | KU061111- KU061112 | Present study |
|  |  | El Corchito Progreso, Yucatan, Mexico | KU061133 | KU061113 | Present study |
|  | *Gambusia yucatana* Regan | El Corchito Progreso, Yucatan, Mexico | KU061134 | KU061114 | Present study |
| *Saccocoelioides* sp. | Unidentified molly (Poeciliidae) | Campusano River, Nicaragua | EF032696 | – | Curran *et al*. (2006) |
| *Saccocoelium* Looss, 1902 |  |  |  |  |  |
| *S. brayi* Blasco-Costa, Balbuena, Raga, Kostadinova & Olson, 2010 | *L. saliens* | Ebro Delta, Spain | FJ211234 | FJ211244 | Blasco-Costa *et al*. (2009) |
| *S. cephali* Blasco-Costa, Montero, Gibson, Blabuena, Raga & Kostadinova, 2009 | *M. cephalus* | Ebro Delta, Spain | FJ211233 | FJ211243 | Blasco-Costa *et al*. (2009) |
| *S. obesum* Looss, 1902 | *L. aurata* | Ebro Delta, Spain | FJ211260 | FJ211266 | Blasco-Costa *et al*. (2009) |
| *S. obesum* Looss, 1902 | *L. ramada* | Ebro Delta, Spain | FJ211259 | FJ211265 | Blasco-Costa *et al*. (2009) |
| *S. tensum* Looss, 1902 | *L. aurata* | Ebro Delta, Spain | FJ211258 | FJ211264 | Blasco-Costa *et al*. (2009) |
| *S. tensum* Looss, 1902 | *L. ramada* | Santa Pola (sea) and Santa Pola (lagoon), Spain | FJ211257 | FJ211263 | Blasco-Costa *et al*. (2009) |
| *Saccocoelium* sp. | *M. cephalus* | Ebro Delta, Spain | GQ357169 | GQ357170 | Blasco-Costa *et al*. (2010) |
| *Skrjabinolecithum* Belous, 1954 |  |  |  |  |  |
| *S. spasskii* Belous, 1954 |  | Razdolnaya River, Russia | HE806380 | – | Besprozvannykh *et al*. (2015b) |
| *S. spasskii* Belous, 1954 |  | Razdolnaya River, Russia | HE806378 | – | Besprozvannykh *et al*. (2015b) |
| *Spiritestis* Nagaty, 1948 |  |  |  |  |  |
| *S. herveyensis* Pulis & Overstreet, 2013 | *Moolgarda seheli* (Forsskål) | Hervey Bay, Queensland, Australia | KC206500 | KC206500 | Pulis & Overstreet (2013) |
| Xiha Andres, Curran, Fayton, Pulis & Overstreet, 2015 |  |  |  |  |  |
| *X. fastigata* (Thatcher et Sparks, 1958) | *M. cephalus* | Grand Isle, Louisiana and Davis Bayou, Mississippi, USA | KP761088 | KP761088 | Andres *et al*. (2015) |
|  |  |  |  |  |  |
| Outgroup |  |  |  |  |  |
| Atractotrematidae Yamaguti, 1939 |  |  |  |  |  |
| Atractotrema Goto & Ozaki, 1929 |  |  |  |  |  |
| *A. sigani* Durio & Manter, 1969 | *Siganus lineatus* (Valenciennes) | Lizard Island, Australia | AY222267 | – | Olson *et al*. (2003) |
| *Pseudomegasolena* Machida & Komiya, 1976 |  |  |  |  |  |
| *P. ishigakiense* Machida et Kamiya, 1976 | *Scarus rivulatus* Valenciennes | Heron Island, Australia | AY222266 | – | Olson *et al*. (2003) |
| Cadenatellinae Gibson & Bray, 1982 |  |  |  |  |  |
| *Cadenatella* Dollfus, 1946 |  |  |  |  |  |
| *C. isuzumi* Machida, 1993 | *Kyphosus vaigiensis* (Quoy & Gaimard) | Heron Island, Australia | FJ788497 | – | Bray *et al*. (2009) |
| *C. pacifica* (Yamaguti, 1970) | *K. vaigiensis* | Heron Island, Australia | FJ788498 | – | Bray *et al*. (2009) |
| Lepocreadiidae Odhner, 1905 |  |  |  |  |  |
| *Preptetos* Pritchard, 1960 |  |  |  |  |  |
| *P. trulla* (Linton, 1907) | *Ocyurus chrysurus* (Bloch) | Kingston, Jamaica | AY222237 | – | Olson *et al*. (2003) |
| Paragonimidae |  |  |  |  |  |
| *Paragonimus* Braun, 1899 |  |  |  |  |  |
| *P. westermani* (Kerbert, 1878) | Experimentally infected final host | Meghlaya, India | DQ836244 | DQ836243 | Unpublished |

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