

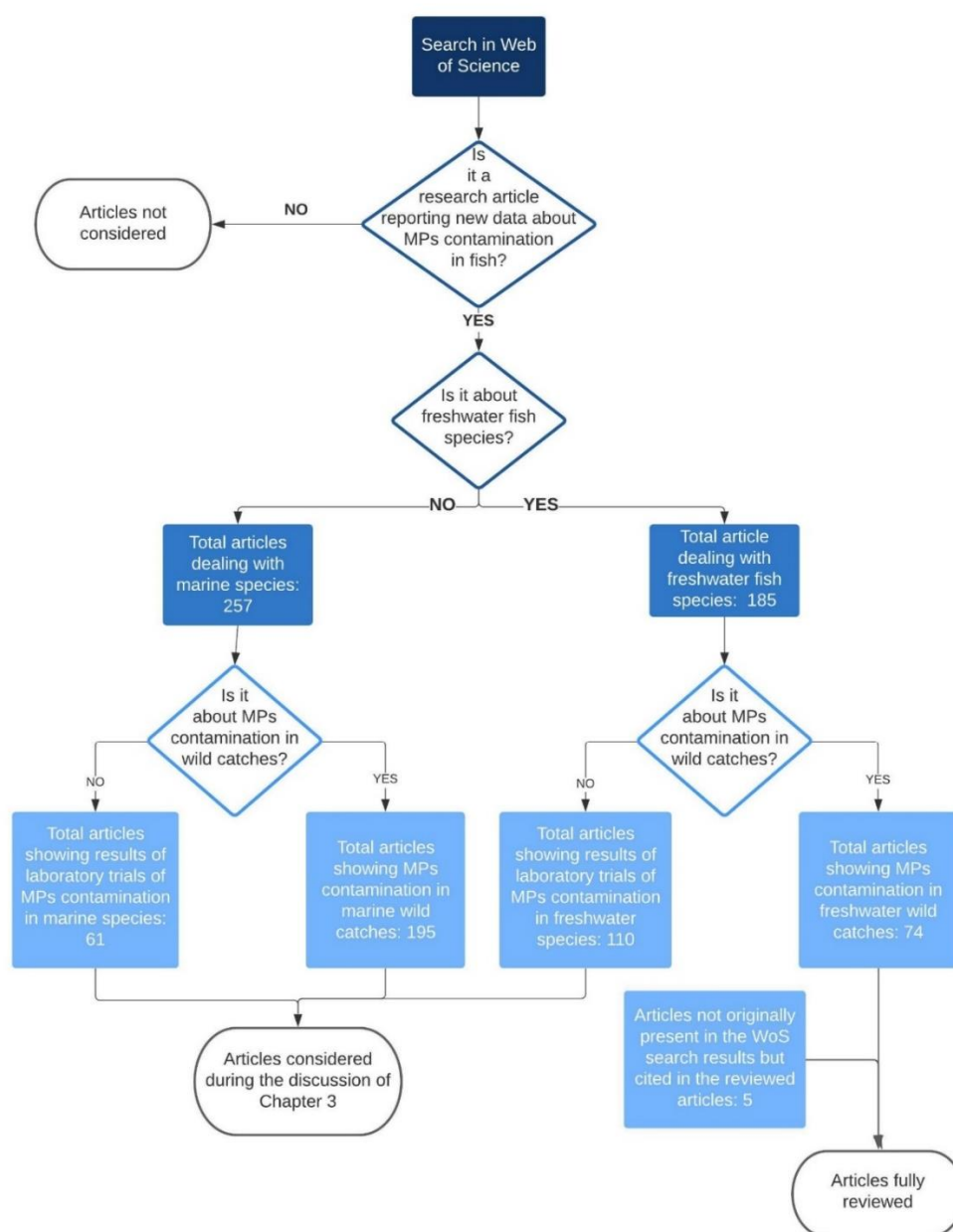
# Do Freshwater Fish Eat Microplastics? A Review with A Focus on Effects on Fish Health and Predictive Traits of MPs Ingestion

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**Figure S1.** Explanatory flow chart of the decisional process used to include/exclude articles in this revision.

**Table S1.** Summary of all the fish species investigated for MPs ingestion with references to the research article, the type of environment and the country in which have been sampled. In the case of taxonomy ambiguity with species registered on FishBase (www.fishbase.se), the name reported on the original article is reported in brackets.

Species	Publication reference	Type of environment	Country
<i>Abramis brama</i>	[1,2]	River, lake	Germany, Switzerland
<i>Acanthogobius flavimanus</i>	[3]	Estuary	China
<i>Acanthopagrus latus</i>	[4]	Wetland	China
<i>Acentrogobius viridipunctatus</i>	[4]	Wetland	China
<i>Acnodon normani</i>	[5]	River	Brazil
<i>Aequidens tetramerus</i>	[6]	River	Brazil
<i>Alburnoides bipunctatus</i>	[7]	River	France
<i>Alburnus alburnus</i>	[1,7,8]	River, lake	Germany, France, Switzerland
<i>Alosa aestivais</i>	[9]	River	USA
<i>Ambassis ambassis</i>	[10]	Estuary	China
<i>Ambassis dussumieri</i>	[11]	Estuary	South Africa
<i>Ameiurus melas</i>	[7]	River	France
<i>Amoya chlorostigmatoides</i>	[4]	Wetland	China
<i>Anguila anguila</i>	[7]	River	France
<i>Aplocheilus sp</i>	[12]	River	Indonesia
<i>Astyanax bimaculatus</i>	[13]	River	Brazil
<i>Astyanax lacustris</i>	[13,14]	River	Brazil
<i>Astyanax rutilus</i>	[15]	Estuary	Argentina
<i>Barbatula barbatula</i>	[1,7]	River, lake	Germany, France
<i>Barbobymus goniontus</i>	[16]	Reservoir	Thailand
<i>Barbus barbus</i>	[1,7]	River, lake	France, Germany
<i>Blicca bjoerkna</i>	[1]	River, lake	Germany
<i>Boleophthalmus pectinirostris</i>	[3,17]	Estuary	China
<i>Bostrychus sinensis</i>	[3]	Estuary	China
<i>Bryconamericus aff. iheringii</i>	[14]	River	Brazil
<i>Bryconops melanurus</i>	[6]	River	Brazil
<i>Callionymus curvicornis (C. richardsoni )</i>	[4]	Wetland	China
<i>Caquetaia kraussii</i>	[18,19]	Wetland, estuary	Colombia
<i>Caranx latus</i>	[18]	Wetland	Colombia
<i>Carassius auratus</i>	[20–25]	River, lake	China, Taiwan, Korea
<i>Carassius carassius</i>	[26]	Lake	Ethiopia
<i>Carassius cuvieri</i>	[27]	River	Korea
<i>Carassius gibelio</i>	[28]	River	China
<i>Carnegiella strigata</i>	[6]	River	Brazil
<i>Carpoides cyprinus</i>	[29]	River	USA
<i>Cathorops agassizii</i>	[30]	Estuary	Brazil
<i>Cathorops mapale</i>	[18]	Wetland	Colombia
<i>Catostomus commersonii</i>	[29,31]	River	Canada, USA
<i>Centropomus ensiferus</i>	[18]	Wetland	Colombia
<i>Centropomus pectinatus</i>	[18]	Wetland	Colombia
<i>Centropomus undecimalis</i>	[18,32]	Wetland, estuary	Colombia, Brazil
<i>Cetopsorhamdia iheringi</i>	[14]	River	Brazil
<i>Channa argus</i>	[27]	River	Korea
<i>Channa asiatica</i>	[21]	River	China
<i>Channa maculata</i>	[28]	River	China
<i>Chanos chanos</i>	[33]	Aquaculture ponds	Indonesia
<i>Characidium aff. zebra</i>	[14]	River	Brazil
<i>Chrysichthys nigrodigitatus</i>	[34]	Lake	Nigeria
<i>Cirrhinus molitorella</i>	[21,28,35]	River	China
<i>Clarias anguillaris</i>	[36]	River	Ghana
<i>Clarias batrachus</i>	[10]	Estuary	China
<i>Clarias fuscus</i>	[21]	River	China
<i>Clarias gariepinus</i>	[26]	Lake	Ethiopia
<i>Clupeichtys aesarnensis</i>	[16]	Reservoir	Thailand

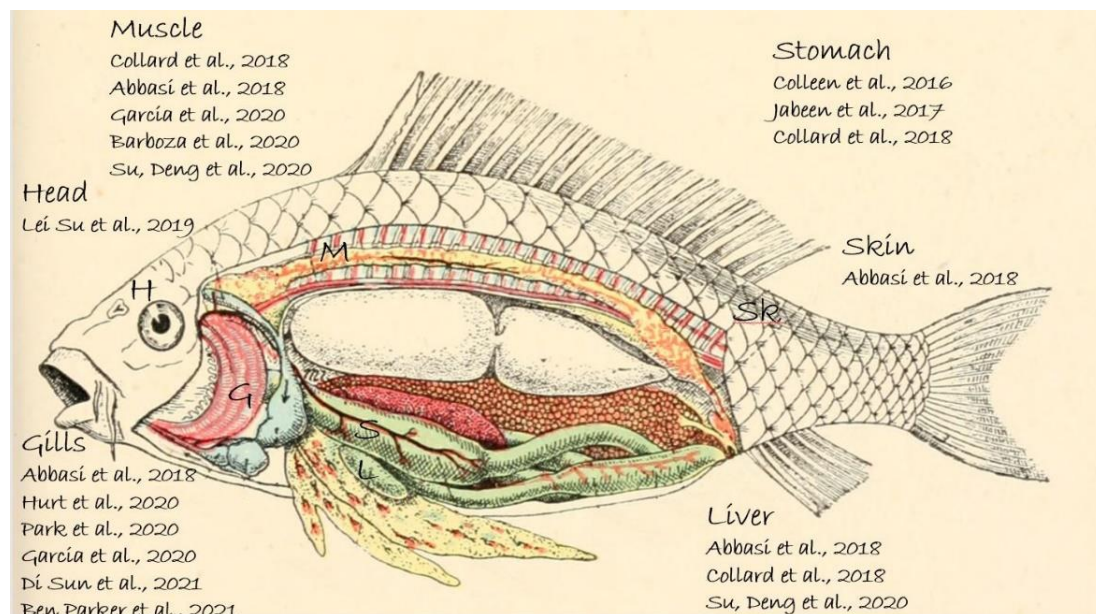
<i>Cobitis taenia</i>	[1]	River, lake	Germany
<i>Coilia grayi</i>	[21]	River	China
<i>Coilia mystus</i>	[3,17]	Estuary	China
<i>Coilia nasus</i>	[17]	Estuary	China
<i>Colomesus psittacus</i>	[37]	Estuary	Brazil
<i>Copella arnoldi</i>	[6]	River	Brazil
<i>Coptodon zillii</i>	[28,34]	River, lake	China, Nigeria
<i>Coregonus wartmanni</i>	[1]	River, lake	Germany
<i>Crenicichla gr regani</i>	[6]	River	Brazil
<i>Ctenopharyngodon idella</i>	[21,28]	River	China
<i>Culter alburnus</i>	[38]	River	China
<i>Culter dabryi</i>	[38]	River	China
<i>Culter mongolicus</i>	[38]	River	China
<i>Culter oxycephaloides</i>	[38]	River	China
<i>Curimatella lepidura</i>	[39]	Reservoir	Brazil
<i>Cyclocheilichthys repasson</i>	[16,40]	Reservoir, river	Thailand
<i>Cynoglossus puncticeps</i>	[4]	Wetland	China
<i>Cynoglossus trigrammus</i>	[3]	Estuary	China
<i>Cynoscion acoupa</i>	[41]	Estuary	Brazil
<i>Cyphocharax voga</i>	[15]	Estuary	Argentina
<i>Cyprinella spiloptera</i>	[29]	River	USA
<i>Cyprinus carpio</i>	[7,15,20,21,23,25,26–28,38,42,43]	Lake, river, estuary	Argentina, China, Ethiopia, France, Korea, USA
<i>Dendrophysa russelii</i>	[4]	Wetland	China
<i>Dicentrarchus labrax</i>	[44]	Estuary	Portugal
<i>Dorosoma cepedianum</i>	[29,45]	Reservoir, river	USA
<i>Esox lucius</i>	[1,2,7,31]	River, lake	Canada, Switzerland, Germany, France
<i>Eucalia inconstans</i>	[31]	River	Canada
<i>Eucinostomus argenteus</i>	[18]	Wetland	Colombia
<i>Eucinostomus melanopterus</i>	[46]	Estuary	Brazil
<i>Eugerres plumieri</i>	[18,19]	Wetland, estuary	Colombia
<i>Fundulus diaphanus</i>	[29]	River	USA
<i>Gambusia holbrooki</i>	[47,48]	Costal lagoons, wetlands	Spain, Australia
<i>Geophagus brasiliensis</i>	[13]	River	Brazil
<i>Gerres decacanthus</i> (Gerreomorpha decacantha)	[4]	Wetland	China
<i>Gerres filamentosus</i>	[4]	Wetland	China
<i>Glossogobius giuris</i>	[3]	Estuary	China
<i>Gobio gobio</i>	[1,49–51]	River, lake	Belgium, France, Germany, Poland
<i>Gobio occitaniae</i>	[7]	River	France
<i>Gymnocephalus cernua</i>	[1]	River, lake	Germany
<i>Gymnocypris przewalskii</i>	[52]	Lake	China
<i>Haemulopsis corvinaeformis</i>	[53]	Estuary	Brazil
<i>Hemibagrus spilopterus</i>	[16,40]	Reservoir, river	Thailand
<i>Hemibarbus maculatus</i>	[17]	Estuary	China
<i>Hemichromis fasiatus</i>	[34]	Lake	Nigeria
<i>Hemiculter bleekeri</i>	[25]	Lake	China
<i>Hemiculter leucisculus</i>	[23]	River	China
<i>Hemigrammus unilineatus</i>	[6]	River	Brazil
<i>Henicorhynchus siamensis</i>	[16,40]	Reservoir, river	Thailand
<i>Hepsetus odoe</i>	[34]	Lake	Nigeria
<i>Hoplias malabaricus</i>	[6,13]	River	Brazil
<i>Hoplosternum littorale</i>	[13,54]	River	Brazil
<i>Hypomasticus copelandii</i>	[13]	River	Brazil
<i>Hypophthalmichthys molitrix</i>	[21,23,25,28]	River, lake	China
<i>Hypostomus affinis</i>	[13]	River	Brazil
<i>Hypostomus ancistroides</i>	[14]	River	Brazil

<i>Hypostomus auroguttatus</i>	[13]	River	Brazil
<i>Hypostomus cf. strigaticeps</i>	[14]	River	Brazil
<i>Hypostomus commersoni</i>	[15]	Estuary	Argentina
<i>Hypostomus sp.</i>	[13]	River	Brazil
<i>Iguanodectes rachovii</i>	[6]	River	Brazil
<i>Imparfinis mirini</i>	[14]	River	Brazil
<i>Labeo chrysophekadion</i>	[40]	River	Thailand
<i>Labiobarbus leptocheilus</i>	[16]	Reservoir	Thailand
<i>Labiobarbus siamensis</i>	[40]	River	Thailand
<i>Lalides longibarbis</i>	[40]	River	Thailand
<i>Laimosemion strigatus</i>	[6]	River	Brazil
<i>Lateolabrax maculatus</i>	[17]	Coast	China
<i>Lates niloticus</i>	[34,55]	Lake	Tanzania, Nigeria
<i>Leiognathus equulus</i>	[22]	River	Taiwan
<i>Leiognathus ruconius</i>	[3]	Estuary	China
<i>Leiognathus sp.</i>	[10]	Estuary	China
<i>Lepomis gibosus</i>	[7]	River	France
<i>Lepomis macrochirus</i>	[27,56]	River	Korea USA
<i>Lepomis megalotis</i>	[56]	River	USA
<i>Leuciscus leuciscus</i>	[1,8,57]	River, lake	Switzerland, Russia, Germany
<i>Lossogobius giuris</i>	[21]	River	China
<i>Lota lota</i>	[1]	River, lake	Germany
<i>Luciopimelodus pati</i>	[15]	Estuary	Argentina
<i>Mastiglanis cf asopos</i>	[6]	River	Brazil
<i>Megalechis thoracata</i>	[6]	River	Brazil
<i>Megaleporinus conirostris</i>	[13]	River	Brazil
<i>Megalobrama amblycephala</i>	[21,25]	River, lake	China
<i>Megalobrama hoffmanni</i>	[28]	River	China
<i>Megalops atlanticus</i>	[18]	Wetland	Colombia
<i>Metynnis guaporensis</i>	[5]	River	Brazil
<i>Metynnis luna</i>	[5]	River	Brazil
<i>Micropterus dolomieu</i>	[58]	Lake	USA
<i>Micropterus salmoides</i>	[20,27,45,59]	Reservoir, river, aquacul- ture ponds	Korea USA China
<i>Micropterus sp.</i>	[29]	River	USA
<i>Misgurnus anguillicaudatus</i>	[60]	Co-culture ponds	China
<i>Monopterus albus</i>	[60,61]	Aquaculture, co-culture ponds	China
<i>Morone saxatilis</i>	[42]	Lake	USA
<i>Mugil cephalus</i>	[3,62]	Estuary	China, South Africa
<i>Mugil curema</i>	[18]	Wetland	Colombia
<i>Mugil liza</i>	[18]	Wetland	Colombia
<i>Muraenesox cinereus</i>	[3,4]	Wetland, estuary	China
<i>Myloplus asterias</i>	[5]	River	Brazil
<i>Myloplus rhomboidalis</i>	[5]	River	Brazil
<i>Myloplus rubripinnis</i>	[5]	River	Brazil
<i>Myloplus schomburgkii</i>	[5]	River	Brazil
<i>Mystacoleucus marginatus</i>	[16]	Reservoir	Thailand
<i>Mystus bocourti</i>	[40]	River	Thailand
<i>Mystus macropterus</i>	[43]	River	China
<i>Mystus mysticetus</i>	[16]	Reservoir	Thailand
<i>Nannacara taenia</i>	[6]	River	Brazil
<i>Neogobius melanostomus</i>	[1,29,63]	River, lake	France, Germany, Switzerland, USA
<i>Notarius bonillai</i>	[18]	Wetland	Colombia
<i>Notropis atherinoides</i>	[29,31]	River	USA, Canada
<i>Notropis hudsonius</i>	[29]	River	USA
<i>Notropis stramineus</i>	[29]	River	USA

<i>Odontesthes bonariensis</i>	[15]	Estuary	Argentina
<i>Oligosarcus hepsetus</i> ,	[13]	River	Brazil
<i>Oligosarcus oligolepis</i>	[15]	Estuary	Argentina
<i>Oncorhynchus clarkii bouvieri</i>	[64]	Lake	USA
<i>Oncorhynchus mykiss</i>	[7,58]	River, lake	France, USA
<i>Oreochromis aureus</i>	[36]	River	Ghana
<i>Oreochromis mossambicus</i>	[11,21,36,59]	Aquaculture pond, river, estuary	China, Ghana, South Africa
<i>Oreochromis niloticus</i>	[4,35,26,34,22,55,65, 66,67,36]	Reservoir, wetland, river, lake, aquaculture pond	Mexico, China, Ethiopia, Egypt, Tanzania, Nigeria, Taiwan, Colombia, Ghana
<i>Osmerus eperlanus</i>	[68]	River	England
<i>Ossubtus xinguense</i>	[5]	River	Brazil
<i>Osteochilus vittatus</i>	[16]	Reservoir	Thailand
<i>Pachychilon pictum</i>	[7]	River	France
<i>Pachyurus adspersus</i>	[13]	River	Brazil
<i>Parabramis pekinensis</i>	[21]	River	China
<i>Paralaubuca harmandi</i>	[16]	Reservoir	Thailand
<i>Parambassis siamensis</i>	[16]	Reservoir	Thailand
<i>Parachanna obscura</i>	[34]	Lake	Nigeria
<i>Parapimelodus valenciennis</i>	[15]	Estuary	Argentina
<i>Pelteobagrus vachelli</i>	[38]	River	China
<i>Pelteobagrus fulvidraco</i>	[43]	River	China
<i>Pelteobagrus fulvidraco</i>	[21]	River	China
<i>Pelteobagrus fulvidraco</i>	[38]	River	China
<i>Pelteobagrus nitidus</i>	[38]	River	China
<i>Pelteobagrus vachelli</i>	[43]	River	China
<i>Pennahia argentata</i>	[21]	River	China
<i>Perca fluviatilis</i>	[1,8,7,69]	River, lake	Germany, Switzerland, France, Italy
<i>Periophthalmus modestus</i>	[4]	Wetland	China
<i>Periophthalmus waltoni</i>	[70]	Wetland	Iran
<i>Phoxinus phoxinus</i>	[1,7]	River, lake	Germany, France
<i>Piabarchus stramineus</i>	[14]	River	Brazil
<i>Piaractus brachipomus</i>	[71]	Lake	India
<i>Pimelodella geryi</i>	[6]	River	Brazil
<i>Pimelodus fur</i>	[13]	River	Brazil
<i>Pimelodus grosskopfii</i>	[66]	Reservoir, aquaculture pond	Colombia
<i>Pimelodus maculatus</i>	[13,15]	Estuary, river	Argentina, Brazil
<i>Pimephales promelas</i>	[29,31]	River	Canada, USA
<i>Pisodonophis boro</i>	[4]	Wetland	China
<i>Plagioscion squamosissimus</i>	[13]	River	Brazil
<i>Planiliza haematocheilus (Liza haematocheila)</i>	[17]	Estuary	China
<i>Platichthys flesus</i>	[68,44]	Estuary, river	England, Portugal
<i>Poecilia latipinna</i>	[72]	Estuary	USA
<i>Poecilia reticulata</i>	[14]	River	Brazil
<i>Polycentrus schomburgkii</i>	[6]	River	Brazil
<i>Polydactylus sexfilis</i>	[3]	Estuary	China
<i>Pomadasys argenteus</i>	[22]	River	Taiwan
<i>Pristobrycon cf. scapularis</i>	[5]	River	Brazil
<i>Pristobrycon eigenmanni</i>	[5]	River	Brazil
<i>Pristolepis fasciatus</i>	[16]	Reservoir	Thailand
<i>Prochilodus brevis</i>	[39]	Reservoir	Brazil
<i>Prochilodus lineatus</i>	[13,15,73,74]	River, estuary	Brazil, Argentina
<i>Prochilodus magdalenae</i>	[66]	Reservoir, aquaculture pond	Colombia
<i>Psalidodon aff. paranae</i>	[14]	River	Brazil
<i>Psalidodon fasciatus</i>	[13,14]	River	Brazil
<i>Pseudobagrus ussuriensis</i>	[38]	River	China

<i>Pseudogobio esocinus</i>	[20]	River	Korea
<i>Pseudoplatystoma corruscans</i>	[15]	Estuary	argentina
<i>Pseudorasbora parva</i>	[7,25]	River, lake	France, China
<i>Pterygoplichthys pardalis</i>	[22]	River	Taiwan
<i>Puntioplites proctozysron</i>	[40,16]	River, reservoir	Thailand
<i>Pygocentrus nattereri</i>	[5]	River	Brazil
<i>Rasbora aurotaenia</i>	[16]	reservoir	Thailand
<i>Rhamdia quelen</i>	[13]	River	Brazil
<i>Rhodeus sericeus</i>	[7]	River	France
<i>Rineloricaria pentamaculata</i>	[14]	River	Brazil
<i>Rutilus frisii</i>	[75]	Coastal area	Iran
<i>Rutilus rutilus</i>	[2,7,8,51,76]	River, lake	France, Poland, England, Swizerland
<i>Salmo trutta</i>	[7,77,78]	River, estuary	Ireland, Sweden, France
<i>Salvelinus fontinalis</i>	[58]	Lake	USA
<i>Salvelinus namaycush</i>	[64]	Lake	USA
<i>Sander lucioperca</i>	[7,1]	River, lake	France, Germany
<i>Sarotheron melanotheron</i>	[34,36]	Lake, river	Nigeria, Ghana
<i>Scardinius erythrophthalmus</i>	[1]	River, lake	Germany
<i>Sciades herzbergii</i>	[30]	Estuary	Brazil
<i>Sciades proops</i>	[18]	Wetland	Colombia
<i>Serrasalmus cf. altispinis</i>	[5]	River	Brazil
<i>Serrasalmus manuelei</i>	[5]	River	Brazil
<i>Serrasalmus rhombeus</i>	[5]	River	Brazil
<i>Silurus asotus</i>	[27]	River	Korea
<i>Silurus glanis</i>	[7,1]	River, lake	France, Germany
<i>Sinibrama wui</i>	[38]	River	China
<i>Siniperca chuatsi</i>	[21,38]	River	China
<i>Squalidus argentatus</i>	[38]	River	China
<i>Squaliobarbus curriculus</i>	[28]	River	China
<i>Squalius cephalus</i>	[79,1,7]	River, lake	Germany, France
<i>Synechogobius ommaturus (Acanthogobius ommaturus)</i>	[17]	Estuary	China
<i>Taenioides anguillaris</i>	[3]	Estuary	China
<i>Trachelyopterus insignis</i>	[18]	Wetland	Colombia
<i>Terapon jarbua</i>	[4,11]	Wetland, estuary	China, South Africa
<i>Tinca tinca</i>	[1]	River, lake	Germany
<i>Tometes ancyloirhynchus</i>	[5]	River	Brazil
<i>Tometes kranponhah</i>	[5]	River	Brazil
<i>Trachelyopterus striatulus</i>	[13]	River	Brazil
<i>Tylosurus melanotu</i>	[4]	Wetland	China
<i>Zacco platypus</i>	[20]	River	Korea

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**Figure S2.** Summary of the studies that reported MPs presence in fish organs different from the whole gastrointestinal tract (that is the most frequently studied body compartment).

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