

eDNA biomonitoring of macroinvertebrate communities for bioassessment of river ecological status

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Table S1. Classification of water quality based on the comprehensive water quality index (WQI).

Items	Classification
$1.0 < WQI \leq 2.0$	I
$2.0 < WQI \leq 3.0$	II
$3.0 < WQI \leq 4.0$	III
$4.0 < WQI \leq 5.0$	IV
$5.0 < WQI \leq 6.0$	V

Table S2. Classification of ecological status based on the Biotic Pollution Index (BPI).

Items	Classification
$BPI < 0.1$	Clean
$0.1 < BPI < 0.5$	Light
$0.5 < BPI < 1.5$	<i>B</i> medium pollution
$1.5 < BPI < 5$	<i>a</i> medium pollution
$BPI > 5$	Heavy pollution

Table S3. Classification of ecological status based on the Biotic Index (BI).

Items	Classification
$BI \leq 5.5$	Very Good
$5.5 < BI \leq 6.6$	Good
$6.6 < BI \leq 7.7$	Fair
$7.7 < BI \leq 8.8$	Poor
$BI > 8.8$	Very Poor

Table S4. Comparison of species composition of macroinvertebrates between historical records and the eDNA approach in the Dongjiang river.

Class	Order	Family	Genus	History	eDNA
Annelida					
Oligochaeta	Lumbriculida	Lumbriculidae	Lumbriculus	+	
		Megascolecidae	Amyntas		+
	Tubificida		Cephalobanchia	+	
			Branchiura	+	+
		Naidiae	Nais	+	+
			Slavina	+	+
			Stylaria	+	+

Class	Order	Family	Genus	History	eDNA
		Tubificidae	Dero	+	+
			Aulophorus	+	
			Allonais	+	+
			Pristina	+	+
			Specaria		+
			Tubifex	+	
			Limnodrilus	+	
			Hymenoptera	+	
			Monopylephorus	+	
Mollusca					
Gastropoda	Mesogastropoda	Viviparidae	Cipangopaludina	+	
			Bellamyia	+	
			Hemifusus	+	
		Aillpullaridae	Pomacea	+	
		Bithyniidae	Parafossarulus	+	
		Assimineidae	Assimineia	+	
		Dendrobaceae	Alocinma	+	
		Spiridae	Stenothyra	+	
	Neogastropoda	Curculaceae	Semisulcospira	+	+
		Buccinidae	Anentome	+	
		Muricidae	Rapana		+
		Thiaridae	Melanoides	+	
	Basommatophora	Lymnaeidae	radix	+	
			galba	+	
		Spiridae	Hippeutis	+	
	Cephalaspidae	Planorbidae	Polypylis	+	
			Bulinus		+
Physidae		Physella	+	+	
Bivalvia	Anisomyaria	Mytilidae	Limnoperna	+	
	Eulamellibranchia	Unionidae	Acuticosta	+	
			Hyriopsis	+	
			Cuneopsis	+	
			Hyriopsis	+	
			Lanceolaria	+	
			Anodonta	+	
			Cristaria	+	
	Veneroida	Corbiculidae	corbicula	+	
	Arthropoda				
Malacostraca	Decapoda	Crabaceae	Somanniathelphusa	+	
		Potamidae	Sinopotamon	+	
		Sesarmidae	Chiromantes	+	
		Palaemonidae	Macrobrachium	+	
		Atyidae	Caridina	+	
			Neocaridina	+	+
		Dynomenidae	Dynomene		+
		Homolidae	Moloha		+
		Lithodidae	Lithodes		+
		Penaeidae	Farfantepenaeus		+
			Marsupenaeus		+
		Portunidae	Portunus		+
Insecta	Odonata	/	Chironomidae	+	
	Blattaria	Ectobiidae	Larvae		
			Blattella		+
	Ephemeroptera	Baetidae	Baetis	+	+
			Labiobaetis		+

Class	Order	Family	Genus	History	eDNA
			Tenuibaetis		+
		Caenidae	Caenis	+	
		Ephemeraidae	Ephemera	+	+
		Potamanthidae	Potamanthus		+
		Siphonuridae	Siphuriscus		+
			Hydropsyche	+	
		Hydropsychidae	Ceratopsyche	+	
	Trichoptera		Cheumatopsyche	+	
			Parapsyche	+	
		Philopotamidae	Hymenoptera	+	
		Dytiscidae	Dytiscus	+	
		Echinococcidae	Psephenidae	+	
		Trichotomidae	Stenelmis	+	
			Hydrophilidae		
	Coleoptera	Tortricidae	Latreille	+	
		Elmidae	Phyllanthus	+	
		Coleoptera	Xantnorinus	+	
		Carabidae	Carabus		+
		Lampyridae	Aquatica		+
		Notonectidae	Lycoridae	+	
		nepidae	Laccotrephes	+	
		Belostomatidae	/	+	
	Hemiptera	Aphelocheiridae	Aphelocheirus	+	
		Naucoridae	Naucoris	+	
		Corixidae	/	+	
		Pentatomidae	Lycoris		+
			Procladius	+	+
			Chironomus	+	+
			Cladopelma		+
			Cladotanytarsus		+
			Corynoneura		+
			Cryptochironomus		+
			Cryptochironomus	+	+
			Dicrotendipes	+	+
			Glyptotendipes		+
			Kiefferulus		+
			Harnischia	+	
			Microtendipes		+
	Diptera	Chironomidae	Micropsectra	+	+
			Microchironomus		+
			Paracladopelma	+	
			Polypedilum	+	+
			Rheotanylarsus	+	
			Saethria	+	
			Stictochironomus	+	
			Tanytarsus	+	+
			Cricotopus	+	+
			Demicryptochironomus	+	
			Limnophyes	+	

Class	Order	Family	Genus	History	eDNA
			Nanocladius	+	+
			Parachironomus		+
			Parakiefferiella		+
			Orthoclaadiinae	+	+
			Psectrocladius	+	
			Rheocricosopus	+	
			Ablabesmyia	+	+
			Rheopelopia	+	
			Stempellinella		+
			Stenochironomus		+
		Simuliidae	Simulium		+
		Syrphidae	Eristalinus		+
		Hybotidae	Elaphropeza		+
		Psychodidae	Psychoda	+	+
			Phlebotomus		+
		Tabanidae	Tabanus	+	
			Culicidac	+	
		Culicidae	Anopheles		+
			Culex		+
		Dixidae	Dixella		+
			tipula	+	
		Tipulidae	Hexatoma	+	
			Antocha	+	
			Limnophlia	+	
			Aquarits	+	
		Ephydriidae	Ochthera		+
			Parydra		+
	Megaloptera	Corydalidae	Neochauliodes	+	+
			Protohermes	+	
	Neuroptera	Chrysopidae	Chrysoperla		+
		Hemerobiidae	Neuronema		+
			Elophila	+	+
		Crambidae	Eristena Warren	+	
			Eoophyla	+	
	Lepidoptera		Paracymoriza		+
			Evergestis		+
		Pyralidae	Tyspanodes		+
			Corcyra		+