

1 **SUPPORTING INFORMATION**

2 **Appendix Table S1.** Freshwater native fish (n=39) in the study with each species' percent  
 3 contribution to the mean alpha taxonomic, functional, and phylogenetic diversity of  
 4 watersheds in France.

<b>Scientific name, common name</b>	<b>Species Contribution (%)</b>		
	Taxonomic	Functional	Phylogenetic
<i>Abramis brama</i> , Freshwater bream	4.8	0.0	1.1
<i>Alburnoides bipunctatus</i> , Schneider	2.7	7.7	4.0
<i>Alburnus alburnus</i> , Bleak	5.1	0.0	2.5
<i>Alosa alosa</i> , Allis shad	7.9	0.0	
<i>Anguilla anguilla</i> , European eel	0.1	0.0	12.9
<i>Barbatula barbatula</i> , Stone loach	8.3	2.3	9.8
<i>Barbus barbus</i> , Barbel	4.7	0.0	1.4
<i>Barbus meridionalis</i> , Mediterranean barbel	1.0	0.0	1.3
<i>Blicca bjoerkna</i> , White bream	3.8	0.0	2.1
<i>Chondrostoma nasus</i> , Common nase	2.4	17.6	3.4
<i>Cobitis taenia</i> , Spined loach	1.2	2.3	
<i>Cottus gobio</i> , Bullhead	7.9	1.2	7.6
<i>Esox lucius</i> , Northern pike	5.5	0.8	9.5
<i>Gasterosteus aculeatus</i> , Three-spined stickleback	3.8	13.5	7.1
<i>Gobio gobio</i> , Gudgeon	8.1	15.6	3.0
<i>Gymnocephalus cernua</i> , Ruffe	3.5	16.7	4.3
<i>Lampetra fluviatilis</i> , River lamprey	0.7	4.6	
<i>Lampetra planeri</i> , European brook lamprey	6.8	4.0	
<i>Leuciscus leuciscus</i> , Common dace	5.9	10.0	2.2
<i>Lota lota</i> , Burbot	1.0	20.0	8.3
<i>Misgurnus fossilis</i> , Weatherfish	0.1	18.6	
<i>Parachondrostoma toxostoma</i> , Ancon	1.9	9.5	
<i>Perca fluviatilis</i> , European perch	6.6	5.3	4.3
<i>Petromyzon marinus</i> , Sea lamprey	1.1	3.5	
<i>Phoxinus phoxinus</i> , Eurasian minnow	8.4	9.9	6.0
<i>Pungitius pungitius</i> , Ninespine stickleback	3.1	14.7	3.7
<i>Rhodeus amarus</i> , Bitterling	3.3	0.0	
<i>Rutilus rutilus</i> , Roach	7.2	15.1	1.7
<i>Salaria fluviatilis</i> , Freshwater blenny	0.0	0.0	
<i>Salmo salar</i> , Atlantic salmon	1.9	5.9	6.5
<i>Salmo trutta</i> , Brown trout	0.7	6.5	3.6
<i>Scardinius erythrophthalmus</i> , Rudd	5.3	5.5	1.9
<i>Squalius cephalus</i> , Chub	7.5	1.3	

<i>Telestes souffia</i> , Vairone	1.4	0.0	
<i>Thymallus thymallus</i> , Grayling	1.4	4.8	6.8
<i>Tinca tinca</i> , Tench	5.2	9.0	3.7
<i>Zingel asper</i> , Rhone streber	0.1	0.0	

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6 **Appendix Table S2.** List of the 10 traits used to characterize the functional diversity of  
 7 each species.

Category	Trait	Description	Categorical units
Morphology	-Maximum body length	-Maximum total body length	≤10, 10-19, 20-39, ≥40 (cm)
	-Swimming factor	-Ratio of minimum depth of the caudal peduncle to the maximum depth of the caudal fin	≤0.38, 0.39-0.43, >0.43
Behavior	-Rheophily habitat	-Prefers fast flows (rheophilic), slow flows (limnophilic), or adapted for a wide range of flow types (eurytopic)	a
Trophic	-Feeding diet	-Invertivore, piscivore, herbivore, omnivore, or hematophagy	A
Life History	-Life span	-Maximum life span	<8, 8-15, >15 (years)
	-Spawning habitat	-Clean rock/gravel (phytophilic), submerged macrophytes (lithophilic), phyto-lithophilic, or other	A
	-Relative fecundity	-Total number of eggs/offspring per breeding season divided by maximum weight	<57, 57-200, >200 (nb.oocytes/g)
	-Egg diameter	-Mean diameter of mature oocytes	<1.35, 1.35-2.00, >2.00 (mm)
	-Female maturity	-Age of female maturation	≤2.0, 2.1-3.0, 3.1-4.0, 4.1-5.0, ≥5 (years)
	-Parental care	-Eggs not hidden without parental care, eggs hidden without parental care, eggs hidden and guarded/protected	a

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9 **Appendix Figure S1.** The box plot displays species contributions to the alpha taxonomic,  
10 functional, and phylogenetic diversity exclusively in watersheds where the species  
11 occurred. Species groups were distinguished based on their IUCN conservation status' (critically  
12 endangered or endangered, EN; vulnerable, VU; near threatened, NT; and least concerned,  
13 LC) with data deficient species not shown here (n=4). Boxes display the median, upper and  
14 lower quartiles, maximum and minimum values excluding outliers, and open circles  
15 indicate outliers.

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