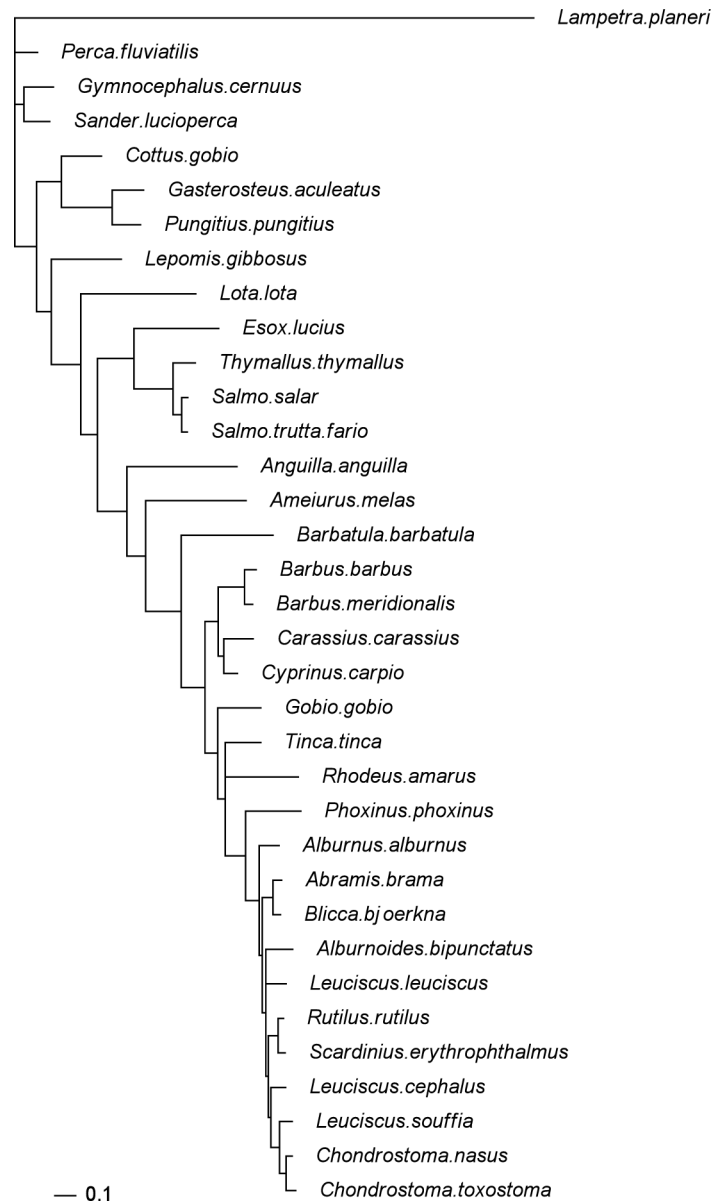


Supplementary material

Appendix 1. The phylogenetic tree used in the comparative analyses to calculate the species-to-species correlation matrix.



Appendix 2. Attributes of the fish species distribution patterns. PV = prevalence; LR = latitudinal range (km); TR = thermal range; GR = stream gradient range; ER = elevation range (m). See Methods for details.

Family	Species	PV	LR	TR	GR	ER
Anguillidae	<i>Anguilla anguilla</i>	0.35	759.65	3.78	5.24	323.41
Balitoridae	<i>Barbatula barbatula</i>	0.56	708.14	4.39	4.06	703.47
Centrarchidae	<i>Lepomis gibbosus</i>	0.14	623.87	4.14	4.91	464.87
Cottidae	<i>Cottus gobio</i>	0.50	669.53	3.95	4.11	736.91
Cyprinidae	<i>Abramis brama</i>	0.09	713.21	3.41	4.61	282.80
	<i>Alburnoides bipunctatus</i>	0.11	654.26	4.06	3.80	422.33
	<i>Alburnus alburnus</i>	0.18	710.40	3.64	4.03	332.80
	<i>Barbus barbus</i>	0.19	694.81	4.00	4.32	562.81
	<i>Barbus meridionalis</i>	0.06	200.80	4.09	3.53	497.14
	<i>Blicca bjoerkna</i>	0.06	673.86	3.93	4.85	253.43
	<i>Carassius carassius</i>	0.03	713.34	4.57	5.29	318.33
	<i>Chondrostoma nasus</i>	0.08	614.54	3.34	4.35	427.22
	<i>Chondrostoma toxostoma</i>	0.04	275.26	3.58	3.74	603.75
	<i>Cyprinus carpio</i>	0.06	711.48	3.91	5.06	294.29
	<i>Gobio gobio</i>	0.49	744.32	4.43	4.46	666.20
	<i>Leuciscus cephalus</i>	0.45	728.66	4.16	4.70	505.52
	<i>Leuciscus leuciscus</i>	0.23	706.47	3.71	4.22	357.50
	<i>Leuciscus souffia</i>	0.06	423.08	4.84	3.72	647.14
	<i>Phoxinus phoxinus</i>	0.56	729.73	4.84	3.98	826.52
	<i>Rhodeus amarus</i>	0.07	622.95	3.08	3.66	265.00
	<i>Rutilus rutilus</i>	0.36	716.95	3.88	4.76	358.60
	<i>Scardinius erythrophthalmus</i>	0.09	654.77	3.52	5.26	389.70
	<i>Tinca tinca</i>	0.12	686.33	3.94	4.92	378.07
Esocidae	<i>Esox lucius</i>	0.17	667.12	3.61	4.54	313.11
Gasterosteidae	<i>Gasterosteus aculeatus</i>	0.09	737.75	3.72	4.44	284.10
	<i>Pungitius pungitius</i>	0.07	426.69	2.41	3.86	194.88
Ictaluridae	<i>Ameiurus melas</i>	0.05	489.05	2.89	4.84	390.60
Lotidae	<i>Lota lota</i>	0.03	330.81	1.67	4.58	278.00
Percidae	<i>Gymnocephalus cernuus</i>	0.05	588.61	2.64	4.10	264.00
	<i>Perca fluviatilis</i>	0.24	660.88	3.47	4.89	411.48
	<i>Sander lucioperca</i>	0.03	664.64	3.49	4.49	253.33
Petromyzontidae	<i>Lampetra planeri</i>	0.26	658.75	3.78	3.78	482.14
Salmonidae	<i>Salmo salar</i>	0.05	661.96	3.09	3.88	421.20
	<i>Salmo trutta</i>	0.76	765.03	6.05	3.94	1162.69
	<i>Thymallus thymallus</i>	0.03	600.12	3.92	4.27	703.50