

Fish Assemblages as Ecological Indicators in the Büyük Menderes (Great Meander) River, Turkey

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Supplementary Materials

Table S1. Data collected for the application of the EFI+ index for each site. These pertain to (1) water body name, (2) site name, (3) site altitude asl, (4) fished area of the site (in m²), (5) wetted width of the river channel during sampling, (6) presence of natural lakes upstream of site, (7) geomorphology of natural stream form, (8) presence of former floodplain conditions, (9) water source of river, (10) upstream drainage area, (11) distance from source (in km), (12) river gradient slope, (13) air temperature mean annual, (14) air temperature in January, (15) air temperature in July, (16) former sediment substrate size, (17) total number of fish caught, (18) number of fish below 15 cm, and (19) number of fish above 150 mm TL.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Water Body Name	Site Name	Altitude	Fished Area	Wetted Width	Natural Lake Upstream	Geomorphology	Former Flood Plain	Water Source	Upstream Drainage Area	Distance from Source	River Slope	Air temperature Mean Annual	Air temperature January	Air temperature July	Former Sediment Size	Total number run1	Number Length Below 15 cm
Asagi Saricay	BMN37_ST01	11	200	5	No	Meand regular	Yes	Pluvial	168	6.64	2	17.50833333	8.7	27	Sand	83	83
Asagi Cine1	BMN33_ST01	280	300	5	No	Irregularly constraint no	No	Pluvial	102	10.79	18	16.3	7	26.6	Sand	23	23
Asagi Cine1	BMN33-2	310	80	2.2	No	Irregularly constraint no	No	Pluvial	13.5	12.01	14	16.25833333	7	26.5	Boulder/Rock	28	28
Hamam 2	BMN07_ST01	380	380	2.8	No	Irregularly constraint no	No	Pluvial	139.5	14.44	16	13.60833333	3.8	23.5	Gravel/Pebble/Cot	225	224
Gokpinar Deresi	BMN17_ST01	624	300	3	No	Irregularly constraint no	No	Pluvial	188.5	13.22	32	14.24166667	4.4	24.7	Gravel/Pebble/Cot	259	259
Yukari Buyuk Menderes1	BMN12_ST02	843	390	7	No	Sinuus	No	Pluvial	241.5	9.29	8	12.76666667	3.1	23	Sand	55	55
Yukari Akcay1	BMN23_ST02	894	180	4.5	No	Sinuus	No	Pluvial	130	19.68	2	13.275	3.3	23.9	Sand	5	4
Yukari Dandalaz	BMN21_ST01	450	420	4.3	No	Irregularly constraint no	No	Pluvial	297.5	17.81	18	15.625	5.8	26.2	Gravel/Pebble/Cot	160	158
Yukari Ikizdere2	BMN48_ST01	195	370	4.8	No	Irregularly constraint no	No	Pluvial	70.5	12.23	52	16.30833333	7.2	26.2	Gravel/Pebble/Cot	77	77
Yukari Ikizdere1	BMN47_ST01	195	230	6.8	No	Irregularly constraint no	No	Pluvial	89.5	16.84	56	16.30833333	7.2	26.2	Gravel/Pebble/Cot	170	168
Asagi Akcay	BMN28_ST02	60	500	8.5	No	Sinuus	No	Pluvial	4400	116.31	5	17.59166667	7.9	28.1	Gravel/Pebble/Cot	4	4
Asagi Cine2	BMN34_ST02	40	600	30	No	Sinuus	No	Pluvial	2840	82.68	6	17.85	8.4	28	Gravel/Pebble/Cot	13	13
Girme Deresi	BMN29_ST01	497	180	2.5	No	Irregularly constraint no	No	Pluvial	32.5	7.88	8	15.825	6.7	26	Gravel/Pebble/Cot	2	2
Yukari Cine1	BMN30_ST01	266	130	7	No	Irregularly constraint no	No	Pluvial	1190	39.05	12	16.6	7.4	26.9	Boulder/Rock	2	2
Asagi Dandalaz	BMN22_ST01	83	210	9	No	Sinuus	No	Pluvial	1184	43.88	12	17.475	7.9	27.8	Gravel/Pebble/Cot	23	23
Asagi Buyuk Menderes1	BMN55_ST01	21	800	50	No	Meand tortous	Yes	Pluvial	22100	440.4	6	17.59166667	8.3	27.6	Sand	20	20
Asagi Cine3	BMN35_ST01	132	480	4	No	Irregularly constraint no	No	Pluvial	306	18.51	42	17.20833333	7.7	27.4	Gravel/Pebble/Cot	11	11
Yukari Cine3	BMN32_ST01	556	180	3.5	No	Irregularly constraint no	No	Groundwater	63.5	10.81	64	15.14166667	5.6	25.6	Boulder/Rock	128	128
Yukari Akcay1	BMN23_ST02	894	200	4	No	Sinuus	No	Pluvial	130	19.68	2	13.275	3.3	23.9	Sand	3	3
Yukari Akcay3	BMN25_ST01	588	450	6	No	Sinuus	No	Pluvial	672	50.98	6	15.14166667	5.3	25.8	Gravel/Pebble/Cot	76	76
Yukari Dandalaz	BMN21_ST01	450	600	4.3	No	Irregularly constraint no	No	Pluvial	297.5	17.81	18	15.625	5.8	26.2	Gravel/Pebble/Cot	68	64
Isikli	BMG01_ST01_5	818	200	18	No	Meand tortous	Yes	Pluvial	960	28.04	2	12.925	3.2	23.2	Silt	75	75
Kufi4	BMN11_Bu	821	600	12	No	Meand regular	Yes	Groundwater	3000	84.18	2	12.85833333	3.1	23	Silt	1	1
Yukari Akcay4	BMN26_ST01	318	700	37	No	Braided	No	Pluvial	1650	55.93	1	16.69166667	7.2	27.3	Gravel/Pebble/Cot	7	7
Yukari Cine3	BMN32_ST01	556	280	4.5	No	Irregularly constraint no	No	Groundwater	63.5	10.81	64	15.14166667	5.6	25.6	Boulder/Rock	66	66
Yukari Ikizdere2	BMN48_ST01	195	400	5	No	Irregularly constraint no	No	Pluvial	70.5	12.23	52	16.30833333	7.2	26.2	Gravel/Pebble/Cot	54	54
Asagi Buyuk Menderes2	BMN56_ST02	4	50	30	Yes	Meand tortous	Yes	Pluvial	25734	550.13	1	17.65	9.7	27.2	Silt	145	145
Asagi Buyuk Menderes2	BMN56_ST02_ds	4	250	40	Yes	Meand tortous	Yes	Pluvial	25745	549.33	1	17.675	9.8	27.1	Silt	2	0
Asagi Buyuk Menderes2	BMN56_ST02_nc	1	500	43	Yes	Meand tortous	Yes	Pluvial	25900	571.25	1	17.99166667	10	26.7	Silt	3	3
Asagi Buyuk Menderes2	BMN56_ST02_m	1	300	36	Yes	Meand tortous	Yes	Pluvial	25805	568.36	2	17.99166667	10	26.7	Silt	7	7
Asagi Buyuk Menderes1	BMN55_ST01	21	450	50	No	Meand tortous	Yes	Pluvial	22100	440.4	6	17.59166667	8.3	27.6	Sand	22	22
Yukari Banaz	BMN01_N3	916	400	5	No	Sinuus	No	Pluvial	387	21.46	1	12.075	2.2	22.3	Gravel/Pebble/Cot	25	24
Yukari Buyuk Menderes 2	BMN13_ST01	811	600	18	Yes	Sinuus	No	Pluvial	3600	118.86	4	13.04166667	3.2	23.3	Gravel/Pebble/Cot	13	13
Yukari Buyuk Menderes 1	BMN12_ST02	843	600	7	No	Sinuus	No	Pluvial	241.5	9.29	8	12.76666667	3.1	23	Sand	5	5
Asagi Banaz2	BMN03_ST02	539	180	5	No	Irregularly constraint no	No	Pluvial	5270	115.27	4	14.14166667	4.4	24.1	Gravel/Pebble/Cot	19	19
Orta Buyuk Menderes	BMN20_ST02	115	150	9.5	No	Sinuus	No	Pluvial	10980	296.96	14	17.25	7.7	27.4	Gravel/Pebble/Cot	3	3
Yukari Akcay3	BMN25_ST01_01	541	250	6	No	Irregularly constraint no	No	Pluvial	540	56.76	16	15.13333333	5.2	25.8	Gravel/Pebble/Cot	52	52
Yukari Akcay4	BMN26_ST01	318	450	37	No	Braided	No	Pluvial	1650	55.93	1	16.69166667	7.2	27.3	Gravel/Pebble/Cot	32	31
Asagi Buyuk Menderes2	BMN56_ST02	4	100	30	Yes	Meand tortous	Yes	Pluvial	25734	550.13	1	17.65	9.7	27.2	Silt	5	5
Asagi Ikizdere2	BMN50_ST01	23	400	5	No	Meand regular	Yes	Pluvial	530	32.58	6	17.7	8.4	27.7	Silt	2	2
Naipili Cayi	BMN53_ST01	164	400	6.5	No	Sinuus	No	Pluvial	78	2.9	12	16.35	8	25.3	Gravel/Pebble/Cot	42	41
Yukari Ikizdere1	BMN47_ST01	195	410	6.8	No	Irregularly constraint no	No	Pluvial	89.5	16.84	56	16.30833333	7.2	26.2	Gravel/Pebble/Cot	75	75
Yukari Buyuk Menderes 2	BMN13_ST01	811	600	20	Yes	Sinuus	No	Pluvial	3600	118.86	4	13.04166667	3.2	23.3	Sand	10	8
Orta Buyuk Menderes	BMN20_ST02	115	220	20	No	Sinuus	No	Pluvial	10980	296.96	14	17.25	7.7	27.4	Gravel/Pebble/Cot	1	1

Table S2. The European Fish Index (EFI+) adaptation of the species. Column 1 gives the documented taxon name (as identified in this study). Column 2 gives the name used within the EFI+ software, i.e., the identical name, the adaptation (based on slight taxonomic changes), or the congeneric/ecologically equivalent surrogate name. By congeneric surrogate, we mean that an ecologically equivalent species that is of the same genus (or closely related genus) was chosen in place of the local endemic form that does not exist in the European Union states or the EFI+ database. Column 3 shows which names were changed and in what category pertaining to column 3. Species with (+) are considered alien (non-indigenous, including translocated species) to the river basin in this study.

1	2	3
Taxon	EFI+ Name Used	Name changes for EFI+
<i>Alburnoides smyrnae</i>	<i>Alburnoides bipunctatus</i>	Adaptation
<i>Alburnus demiri</i>	<i>Alburnus alburnus</i>	Adaptation
<i>Anatolichthys maeandricus</i>	<i>Aphanius iberus</i>	Congeneric surrogate
<i>Barbus xanthos</i>	<i>Barbus cyclolepis</i>	Adaptation
<i>Capoeta aydinensis</i>	<i>Barbus albanicus</i>	Congeneric surrogate
<i>Carassius gibelio</i> +	<i>Carassius gibelio</i> +	Identical
<i>Chelon labrosu</i>	<i>Chelon labrosus</i>	Identical
<i>Chondrostoma turnai/meandrense</i>	<i>Chondrostoma nasus</i>	Congeneric surrogate
<i>Cobitis afifeae</i>	<i>Cobitis taenia</i>	Congeneric surrogate
<i>Cyprinus carpio</i> +	<i>Cyprinus carpio</i> +	Identical
<i>Dicentrarchus labrax</i>	<i>Dicentrarchus labrax</i>	Identical
<i>Gambusia holbrooki</i> +	<i>Gambusia holbrooki</i> +	Identical
<i>Garra menderesensis</i>	<i>Pachychilon macedonicus</i>	Congeneric surrogate
<i>Gobio maeandricus</i>	<i>Gobio gobio</i>	Adaptation
<i>Knipowitschia caucasica</i>	<i>Knipowitschia caucasica</i>	Identical
<i>Lepomis gibbosus</i> +	<i>Lepomis gibbosus</i> +	Identical
<i>Liza ramada</i>	<i>Liza ramada</i>	Identical
<i>Liza saliens</i>	<i>Liza saliens</i>	Identical
<i>Luciobarbus kottelati</i>	<i>Barbus graecus</i>	Adaptation
<i>Mugil cephalus</i>	<i>Mugil cephalus</i>	Identical
<i>Oxynoemacheilus germencicus</i>	<i>Barbatula bureschi</i>	Adaptation
<i>Petroleuciscus ninae</i>	<i>Leuciscus borysthenticus</i>	Adaptation
<i>Pseudorasbora parva</i> +	<i>Pseudorasbora parva</i> +	Identical
<i>Rhodeus amarus</i> +	<i>Rhodeus amarus</i> +	Identical
<i>Squalius fellowesi/carinus</i>	<i>Leuciscus cephalus</i>	Congeneric surrogate
<i>Tinca tinca</i> +	<i>Tinca tinca</i> +	Identical
<i>Vimba mirabilis</i>	<i>Vimba vimba</i>	Congeneric surrogate