

Coexistence of native and invasive freshwater turtles: the Llobregat Delta (NE Iberian Peninsula) as a case study

Marc Franch ^{1,2,*}, Gustavo A. Llorente ³, Maria Rieradevall ^{4,†}, Albert Montori ⁵, Miguel Cañedo-Argüelles ^{4,6}

Table S1. Landscape metrics for three different diameter buffers and for each species (mean \pm SD). Buffer diameters are related to different movement types of the species: Ø100: Proximity movements; Ø500: Annual movements and Ø2000: Occasional movements. ML: *Mauremys leprosa* and TSE: *Trachemys scripta elegans*. In the main text refers to the name of the variable plus the corresponding buffer diameter (i.e. R(Ø100)).

	Ø100		Ø500		Ø2000	
	ML	TSE	ML	TSE	ML	TSE
R	3.29 \pm 0.77	3.23 \pm 1.10	6.03 \pm 1.01	6.28 \pm 1.00	9.30 \pm 0.86	9.29 \pm 0.77
SDI	0.83 \pm 0.26	0.86 \pm 0.36	1.27 \pm 0.20	1.27 \pm 0.29	1.72 \pm 0.24	1.75 \pm 0.23
SEI	0.74 \pm 0.17	0.76 \pm 0.15	0.71 \pm 0.08	0.70 \pm 0.14	0.77 \pm 0.09	0.78 \pm 0.10
AWMSI	1.34 \pm 0.16	1.34 \pm 0.15	1.94 \pm 0.28	1.94 \pm 0.35	2.85 \pm 0.38	2.82 \pm 0.37
MSI	1.47 \pm 0.16	1.41 \pm 0.11	1.76 \pm 0.09	1.75 \pm 0.11	1.83 \pm 0.07	1.85 \pm 0.07
MPAR	3475.63 \pm 2603.75	2238.15 \pm 1154.38	2237.93 \pm 1641.94	2226.43 \pm 2003.52	1471.47 \pm 561.12	1511.64 \pm 943.21
MPFD	1.49 \pm 0.08	1.46 \pm 0.04	1.45 \pm 0.02	1.44 \pm 0.02	1.43 \pm 0.00	1.43 \pm 0.00
AWMPFD	1.39 \pm 0.04	1.39 \pm 0.03	1.37 \pm 0.02	1.37 \pm 0.03	1.39 \pm 0.02	1.39 \pm 0.02
TE	783.18 \pm 189.42	785.78 \pm 189.52	9825.81 \pm 1903.69	9806.71 \pm 2376.17	115122.86 \pm 17202.50	109152.89 \pm 15366.04
ED	999.81 \pm 241.81	1008.42 \pm 236.23	503.77 \pm 96.42	510.68 \pm 125.89	405.65 \pm 49.39	403.06 \pm 54.01
MPE	201.30 \pm 44.46	207.53 \pm 34.56	570.11 \pm 96.98	561.35 \pm 83.24	786.61 \pm 114.49	811.25 \pm 109.76
PSCoV	74.10 \pm 36.31	64.88 \pm 14.69	152.31 \pm 42.32	156.44 \pm 46.76	312.55 \pm 119.90	294.64 \pm 116.80
NumP	4.25 \pm 1.41	4.08 \pm 1.49	18.26 \pm 5.44	18.24 \pm 5.61	152.65 \pm 44.59	140.09 \pm 44.09
MPS	0.22 \pm 0.09	0.23 \pm 0.09	1.20 \pm 0.34	1.19 \pm 0.37	1.98 \pm 0.42	2.06 \pm 0.44
MedPS	0.19 \pm 0.11	0.21 \pm 0.10	0.43 \pm 0.14	0.47 \pm 0.21	0.35 \pm 0.06	0.36 \pm 0.06
PSSD	0.13 \pm 0.06	0.13 \pm 0.04	1.78 \pm 0.49	1.79 \pm 0.53	5.91 \pm 1.32	5.79 \pm 1.31
TLA	0.78 \pm 0.00	0.78 \pm 0.01	19.52 \pm 0.27	19.28 \pm 1.30	283.78 \pm 25.57	272.77 \pm 34.92
CA	0.78 \pm 0.00	0.78 \pm 0.01	19.52 \pm 0.27	19.28 \pm 1.30	283.78 \pm 25.57	272.77 \pm 34.92

Table S2. Mean values and standard deviations of the environmental variables for each sampling station (mean \pm SD). Typology: IC: Irrigation channel; E: Estuary; L: Lagoon and P: Pond.

Station Code	Typology	Secchi (m)	pH	Ox (mg)	Ox (%)	T (°C)	NO ²⁻	NO ³⁻	NH ₄ ⁺
EB5	IC	0.52 \pm 0.25	8.47 \pm 0.84	16.59 \pm 2.49	194.90 \pm 54.05	23.42 \pm 8.77		1.02 \pm 0.87	0.10 \pm 0.09
EC5	IC		7.61 \pm 0.41	7.93 \pm 6.55	90.25 \pm 74.63	22.65 \pm 5.79	0.32 \pm 0.07	7.82 \pm 3.87	0.14 \pm 0.12
EC4	IC		7.06 \pm 0.60	3.66 \pm 3.14	41.67 \pm 33.04	22.72 \pm 2.57		0.38 \pm 0.27	1.78 \pm 2.09
LL1	E	1.16 \pm 0.65	8.02 \pm 0.24	10.43 \pm 6.41	121.48 \pm 78.09	20.26 \pm 5.49	0.43 \pm 0.31	6.12 \pm 4.88	4.83 \pm 4.15
LL2	E	0.78 \pm 0.52	7.89 \pm 0.16	6.47 \pm 1.80	70.66 \pm 20.29	19.78 \pm 5.41	0.47 \pm 0.26	5.58 \pm 4.46	6.87 \pm 4.77
CT	L	1.34 \pm 0.20	8.92 \pm 0.13	8.92 \pm 1.14	96.96 \pm 14.05	19.21 \pm 4.26	0.03 \pm 0.01	1.27 \pm 1.29	0.06 \pm 0.04
EB10	L	0.88 \pm 0.41	8.33 \pm 0.35	10.01 \pm 11.58	107.25 \pm 116.96	22.37 \pm 6.49	1.17 \pm 1.16	4.07 \pm 6.29	37.82 \pm 10.94
RE	L	0.60 \pm 0.11	8.20 \pm 0.15	12.41 \pm 3.36	132.85 \pm 43.56	18.82 \pm 4.54	1.06 \pm 0.32	5.72 \pm 2.21	10.64 \pm 5.53
RI	L	0.70 \pm 0.13	8.28 \pm 0.07	10.82 \pm 1.83	116.82 \pm 21.74	19.84 \pm 4.79	0.02 \pm 0.01	2.25 \pm 1.39	0.05 \pm 0.02
EB6	L	0.55 \pm 0.14	8.65 \pm 0.29	13.07 \pm 6.34	137.32 \pm 68.98	23.10 \pm 7.62	0.25 \pm 0.33	5.82 \pm 8.77	0.86 \pm 1.72
CA	L	1.36 \pm 0.44	8.29 \pm 0.13	8.83 \pm 1.51	93.90 \pm 12.52	19.57 \pm 4.07	0.06 \pm 0.03	1.78 \pm 0.94	0.07 \pm 0.03
EB7	P	1.68 \pm 1.30	8.48 \pm 0.21	12.02 \pm 5.21	133.90 \pm 41.12	22.32 \pm 6.13	0.03 \pm 0.03	0.67 \pm 0.28	0.14 \pm 0.13
EB4	P		8.39 \pm 0.53	8.97 \pm 5.21	98.87 \pm 50.73	23.15 \pm 6.23	0.04 \pm 0.03	0.55 \pm 0.26	0.12 \pm 0.11
		DIN	Chla-a	SRP	SSP	TOC	Cond (μ S/cm)	Cl ⁻	Na ⁺
EB5	IC	1.15 \pm 0.78	0.22 \pm 0.13	1.89 \pm 2.78	0.13 \pm 0.02	46.42 \pm 20.03	15462.50 \pm 2379.98	4236.33 \pm 2574.14	1682.96 \pm 1022.62
EC5	IC	8.29 \pm 3.83		0.64 \pm 0.59	0.11 \pm 0.07	8.36 \pm 3.74	1874.25 \pm 861.43	311.15 \pm 128.69	170.40 \pm 50.70
EC4	IC	2.19 \pm 2.30		2.27 \pm 2.45	0.08 \pm 0.04	12.50 \pm 7.35	1583.00 \pm 301.22	244.67 \pm 134.89	132.76 \pm 85.95
LL1	E			0.53 \pm 0.28	0.13 \pm 0.06	5.35 \pm 1.40	23372.14 \pm 11371.52	5544.37 \pm 3955.66	3183.06 \pm 1791.11
LL2	E			0.72 \pm 0.45	0.25 \pm 0.14	7.37 \pm 2.63	18814.28 \pm 10168.50	4536.97 \pm 2574.94	3305.23 \pm 1996.05
CT	L	1.36 \pm 1.29	0.01 \pm 0.01	0.02 \pm 0.01	0.06 \pm 0.01	11.31 \pm 2.09	6751.53 \pm 775.56	2859.83 \pm 567.41	1014.41 \pm 201.49
EB10	L	43.07 \pm 14.35	0.06 \pm 0.09	6.59 \pm 2.24	0.13 \pm 0.10	15.04 \pm 2.44	2765.50 \pm 493.99	589.28 \pm 117.48	315.07 \pm 51.79
RE	L	17.43 \pm 5.77	0.14 \pm 0.05	3.22 \pm 1.87	0.14 \pm 0.06	12.40 \pm 2.15	4988.41 \pm 1311.49	2090.19 \pm 811.37	912.79 \pm 390.28
RI	L	2.33 \pm 1.39	0.04 \pm 0.01	1.34 \pm 1.26	0.12 \pm 0.03	15.98 \pm 6.14	13284.28 \pm 1361.08	6048.00 \pm 640.83	2209.63 \pm 494.32
EB6	L	6.93 \pm 8.88	0.16 \pm 0.15	2.28 \pm 1.93	0.18 \pm 0.11	17.66 \pm 6.46	10210.50 \pm 9304.17	2905.54 \pm 1238.40	1132.71 \pm 642.53
CA	L	1.91 \pm 0.96	0.02 \pm 0.01	0.07 \pm 0.03	0.10 \pm 0.02	10.31 \pm 1.85	9729.77 \pm 2872.60	4595.98 \pm 1552.77	1501.56 \pm 448.71
EB7	P	0.86 \pm 0.36	0.04 \pm 0.05	0.19 \pm 0.11	0.14 \pm 0.06	15.78 \pm 1.19	4816.25 \pm 652.91	1196.44 \pm 930.85	762.66 \pm 472.22
EB4	P	0.71 \pm 0.26	0.13 \pm 0.10	2.11 \pm 3.18	0.13 \pm 0.06	20.72 \pm 6.78	2577.25 \pm 1362.04	749.79 \pm 231.81	387.23 \pm 123.81

		SO ₄ ²⁻	Ca ²⁺	Mg ²⁺	Mn ²⁺	K ⁺	Fe ²⁺	Si ²⁺
EB5	IC	430.46 ± 175.30	31.04 ± 12.75	206.00 ± 69.09		95.62 ± 35.05	0.02 ± 0.01	2.01 ± 1.63
EC5	IC	193.33 ± 20.58	78.36 ± 12.38	34.35 ± 3.45	0.04 ± 0.01	31.33 ± 5.50		0.76 ± 0.69
EC4	IC	129.61 ± 46.73	73.16 ± 14.21	28.06 ± 7.46	0.06 ± 0.03	27.40 ± 9.04	0.04 ± 0.02	2.47 ± 1.67
LL1	E	1574.49 ± 1009.54	129.52 ± 37.04	286.46 ± 152.58	0.03 ± 0.01	101.23 ± 49.92	0.02 ± 0.01	0.57 ± 0.22
LL2	E	1371.91 ± 818.61	146.63 ± 45.40	320.10 ± 189.03	0.11 ± 0.14	114.08 ± 63.93	0.03 ± 0.01	0.69 ± 0.19
CT	L	377.95 ± 54.59	37.65 ± 9.79	92.97 ± 29.30	0.03 ± 0.01	57.60 ± 16.48	0.08 ± 0.06	0.11 ± 0.02
EB10	L	262.21 ± 43.85	85.19 ± 22.26	44.86 ± 2.66	0.03 ± 0.01	47.89 ± 7.05	0.04 ± 0.02	4.69 ± 1.31
RE	L	582.85 ± 347.67	92.34 ± 10.89	92.00 ± 24.29	0.05 ± 0.04	49.92 ± 8.04	0.02 ± 0.01	2.23 ± 1.23
RI	L	729.25 ± 64.01	170.44 ± 30.21	216.61 ± 32.91	0.02 ± 0.01	71.44 ± 10.88		2.82 ± 0.48
EB6	L	564.83 ± 225.27	107.39 ± 21.97	161.14 ± 109.09	0.05 ± 0.07	68.65 ± 31.59		2.99 ± 2.30
CA	L	628.35 ± 136.71	107.82 ± 11.99	136.57 ± 31.55	0.03 ± 0.01	57.63 ± 12.35	0.03 ± 0.01	0.63 ± 0.35
EB7	P	683.23 ± 89.39	60.28 ± 9.32	144.67 ± 23.27	0.02 ± 0.01	108.92 ± 19.79		0.35 ± 0.13
EB4	P	214.05 ± 76.27	63.87 ± 29.38	50.46 ± 14.64	0.02 ± 0.01	39.78 ± 14.42	0.03 ± 0.01	0.70 ± 0.68