

Table S1: changes of Zinc (Zn) concentration ($\mu\text{g/g}$ dry wt.) (Means \pm SE) in fish *T.zilli* caught from different sites of Qarun lake seasonally.

Site Season	East					Middle					West					P Value
	Liver	Muscle	Gills	M \pm SE	%	Liver	Muscle	Gills	M \pm SE	%	Liver	Muscle	Gills	M \pm SE	%	
Summer	21.5 \pm 0.78	14.3 \pm 0.66	20.1 \pm 0.23	18.63 \pm 2.2	93.4	20.4 \pm 0.13	13.2 \pm 0.85	18.9 \pm 0.18	17.50 \pm 2.19	121.5	17.7 \pm 0.76	11.6 \pm 0.45	12.3 \pm 0.47	13.86 \pm 1.92	51.8	0.319
Autumn	18.3 \pm 0.63	12.9 \pm 0.36	16.2 \pm 0.28	15.80 \pm 1.5	64	14.2 \pm 0.54	12.3 \pm 0.29	11.2 \pm 0.26	12.56 \pm .876	58.9	15.4 \pm 0.89	10.1 \pm 0.23	11.9 \pm 0.27	12.46 \pm 1.55	36.4	0.229
Winter	10.9 \pm 0.33	8.6 \pm 0.12	9.4 \pm 0.07	9.63 \pm .67	-	9.4 \pm 0.06	6.1 \pm 0.21	8.2 \pm 0.14	7.9 \pm .964	-	10.5 \pm 0.15	7.5 \pm 0.11	9.4 \pm 0.08	9.13 \pm .876	-	0.389
Spring	17.1 \pm 0.37	13.3 \pm 0.67	20.7 \pm 0.53	17.03 \pm 2.1	76.8	18.3 \pm 0.79	6.6 \pm 0.23	13.3 \pm 0.33	12.73 \pm 3.38	61.1	14.3 \pm 0.38	10.8 \pm 0.23	11.3 \pm 0.17	12.13 \pm 1.09	32.8	0.354

Data are presented as mean \pm SE of 6 fish. - M \pm SE: mean \pm standard error for (liver, muscle and gill) tissue.

% percentage of change related to the lowest mean tissue value from season (-) -The mean difference is significant at ($p \leq 0.05$)

Table S2: Seasonal variation of Zinc (Zn) concentration ($\mu\text{g/g}$ dry wt.) (Means \pm SE) in *M. capito* fish caught from different sites of lake Qarun.

Site Season	East					Middle					West					<i>P value</i>
	liver	muscle	gills	M \pm SE	%	liver	muscle	gills	M \pm SE	%	liver	muscle	gills	M \pm SE	%	
summer	22.1 \pm 1.29	15.4 \pm 0.30	20.6 \pm 1.39	19.36 \pm 2.0	52.9	21.9 \pm 0.54	9.95 \pm 0.33	19.7 \pm 0.79	17.18 \pm 3.67	67.4	20.9 \pm 0.56	10.4 \pm 1.12	16.4 \pm 1.31	15.90 \pm 3.04	14.9	0.723
autumn	18.4 \pm 1.29	10.8 \pm 0.24	13.6 \pm 0.73	14.26 \pm 2.2	12.6	16 \pm 0.98	8.9 \pm 0.15	16.9 \pm 0.65	13.93 \pm 2.53	35.7	17.4 \pm 0.26	11.3 \pm 0.31	15.5 \pm 0.91	14.73 \pm 1.80	6.5	0.967
winter	17.1 \pm 0.96	9.2 \pm 0.54	11.7 \pm 0.42	12.66 \pm 2.3	—	14.4 \pm 0.37	7.1 \pm 0.25	10.8 \pm 0.50	10.76 \pm 2.10	4.87	16.3 \pm 0.52	10.9 \pm 0.51	14.3 \pm 0.99	13.83 \pm 1.57	—	0.588
spring	18.7 \pm 0.47	11.99 \pm 0.34	16.7 \pm 0.74	15.79 \pm 1.9	24.7	17.3 \pm 0.34	6.1 \pm 0.28	7.4 \pm 0.37	10.26 \pm 3.53	—	18.4 \pm 0.62	9.3 \pm 0.34	16 \pm 0.57	14.56 \pm 2.72	5.27	0.404

Data are presented as mean \pm SE of 6 fish. - M \pm SE: mean \pm standard error for (liver, muscle and gill) tissue.

% percentage of change related to the lowest mean tissue value from season (-) -The mean difference is significant at ($p \leq 0.05$)

Table S3: Lead (Pb) concentration ($\mu\text{g/g}$ dry wt.) (Means \pm SE) in fish *T. zilli* caught from different sites of lake Qarun seasonally.

Site Season	East					Middle					West					<i>P value</i>
	liver	muscle	gills	M \pm SE	%	liver	muscle	gills	M \pm SE	%	liver	muscle	gills	M \pm SE	%	
summer	2.03 \pm 0.02	1.1 \pm 0.05	1.5 \pm 0.10	1.54 \pm .26	104.5	2.01 \pm 0.01	1.09 \pm 0.02	1.58 \pm 0.12	1.56 \pm .256	84.3	1.07 \pm 0.08	1 \pm 0.04	1.03 \pm 0.03	1.03 \pm .020	323.8	0.233
autumn	1.05 \pm 0.02	0.38 \pm 0.01	0.98 \pm 0.01	.803 \pm .21	6.64	1.2 \pm 0.05	0.8 \pm 0.01	1.08 \pm 0.02	1.02 \pm .118	20.5	1.04 \pm 0.05	0.23 \pm 0.02	0.82 \pm 0.03	0.696 \pm .241	186.4	0.523
winter	1.03 \pm 0.02	0.4 \pm 0.01	0.825 \pm 0.01	.753 \pm .18	–	1.04 \pm 0.01	0.6 \pm 0.03	0.9 \pm 0.03	0.846 \pm .129	–	1 \pm 0.02	ND	0.27 \pm 0.02	0.243 \pm .298	–	0.405
spring	1.7 \pm 0.03	0.54 \pm 0.01	1.2 \pm 0.10	1.14 \pm .33	51.3	1.8 \pm 0.06	0.9 \pm 0.05	1.3 \pm 0.05	1.33 \pm .260	57.2	1.09 \pm 0.02	0.7 \pm 0.04	1.02 \pm 0.01	0.936 \pm .120	285.1	0.576

(N.D): Not Detected: under the instrument detection limit (0.1-20 ppm) -Data are presented as mean \pm SE of 6 fish. - M \pm SE: mean \pm standard error for (liver, muscle and gill) tissue.-% percentage of change related to the lowest mean tissue value from season (-)

The mean difference is significant at ($p \leq 0.05$).

Table S4: Seasonal variation of lead (Pb) concentration ($\mu\text{g/g}$ dry wt.) (Means \pm SE) in fish *M. capito* collected from different sites of lake Qarun.

Site Season	East					middle					west					<i>P value</i>
	liver	muscle	gills	M \pm SE	%	liver	muscle	gills	M \pm SE	%	liver	muscle	gills	M \pm SE	%	
summer	4.3 \pm 0.19	1.02 \pm 0.11	1.5 \pm 0.16	2.27 \pm 1.0	94	1.09 \pm 0.20	0.5 \pm 0.08	1.08 \pm 0.21	0.89 \pm .195	19.7	3.07 \pm 0.28	0.6 \pm 0.05	1.08 \pm 0.15	1.58 \pm .756	152.3	0.467
autumn	1.9 \pm 0.28	0.99 \pm 0.09	1.45 \pm 0.28	1.44 \pm .26	23	1.07 \pm 0.15	0.33 \pm 0.02	0.96 \pm 0.05	0.786 \pm .230	5.78	2.4 \pm 0.13	ND	0.96 \pm 0.09	1.12 \pm .697	78.9	0.61
winter	1.6 \pm 0.19	0.53 \pm 0.03	1.4 \pm 0.22	1.17 \pm .32	_	1.04 \pm 0.13	0.29 \pm 0.03	0.9 \pm 0.02	0.743 \pm .230	_	0.89 \pm 0.10	ND	0.99 \pm 0.06	0.626 \pm .314	_	0.432
spring	2.74 \pm 0.19	0.96 \pm 0.07	1.01 \pm 0.10	1.57 \pm .58	34.1	1.06 \pm 0.13	0.3 \pm 0.04	1.02 \pm 0.13	0.793 \pm .246	6.72	1.05 \pm 0.12	0.23 \pm 0.02	1.01 \pm 0.20	0.763 \pm .266	21.8	0.334

(N.D): Not Detected: under the instrument detection limit (0.1-20 ppm) -Data are presented as mean \pm SE of 6 fish. - M \pm SE: mean \pm standard error for (liver, muscle and gill) tissue. -% percentage of change related to the lowest mean tissue value from season (-)

The mean difference is significant at ($p \leq 0.05$)