

**Table S1.** Fishing routes and navigational coordinates of vessels

Route	Navigational coordinates
<b>Vessel SNB-AR-1: during commercial fish species monitoring surveys 2012–2015</b>	
A	14°35' E and 14°30' E, 3 Nm off the coast
B	14°28' E and 14°24' E, 3 Nm off the coast
C	54°00'N;14°28,50'E and 54°00' N;14°19,00'E
F	14°22'E and 14°18'E, 2 Nm off the coast
G	14°24'E and 14°19,00'E; 2 Nm off the coast
R	54°05'N; 14°30,00'E and 54°07'N; 14°28'E
V	54°08'N; 14°23,50'E and 54°05'N; 14°17'E
W	54°11'N; 14°31'E and 54°15'N; 14°35'E
Z	53°55' and 53°58';14°15'E
<b>Vessel DZI- 97: during commercial fish catches 2018–2019</b>	
	53°57'N to 54°10'N and 14°19'E to 14°47'E

**Table S2.** Diet composition of Baltic cod, pikeperch, and round goby (N - higher taxa frequency occurrence in %)

No	Taxon	Baltic cod	Pikeperch	Round goby
1	Polychaetes (Polychaeta)	—	—	N 18.52
2	Mysids (Mysidacea)	N — 4.35 <i>N. integer</i> ; <i>P. flexuosus</i> , <i>M. mixta</i> ; Mysids indet.	N — 2.82 <i>N. integer</i>	—
3	Isopods (Isopoda)	—	—	—
4	Amphipods (Amphipoda)	N — 5.43 <i>C. ischnus</i> ; <i>G. duebeni</i> , <i>C. volutator</i> ; Amphipods indet.	N — 2.82 Amphipods indet.	N — 12.73 <i>G. zaddachi</i> , Amphipods indet.
5	Decapods (shrimps) (Decapoda)	N — 66.3 <i>C. crangon</i> ; <i>P. elegans</i> , <i>Palaemon</i> sp.	N — 23.94 <i>C. crangon</i> , Decapods indet.	N — 9.26 <i>C. crangon</i> ; <i>R. harrisii</i>
6	Mollusks (Mollusca)	N — 8.7 <i>C. glaucum</i> ; <i>M. arenaria</i> , Molluscs indet.	N — 1.41 <i>Mytilus</i> sp.	N — 83.33 <i>Mytilus</i> sp.; <i>Cerastodermum</i> sp., <i>M. balthica</i> ; <i>M. arenaria</i> , <i>Peringia</i> sp., Molluscs indet.
7	Clupeids (Clupeidae)	N — 14.0 <i>C. harengus</i> ; <i>S. sprattus</i> , Clupeids indet.	N — 1.41 Clupeids indet.	—
8	<i>Osmerus eperlanus</i>	N — 1.09	N — 18.31	—
9	Sand eels (Ammodytidae)	N — 11.96 <i>H. lanceolatus</i> ; <i>A. tobianus</i>	—	—
10	<i>Neogobius melanostomus</i>	N — 22.83	N — 5.63	—

11	Flatfishes (Pleuronectidae)	N – 29.35 <i>P. flesus</i> ; Flatfishes indet.	—	—
12	small pelagic fishes – SPF	N – 16.30 <i>C. harengus</i> ; <i>S. sprattus</i> , <i>O. eperlanus</i>	N – 19.72	—
13	small benthic fishes – SBF	N – 47.83 <i>H. lanceolatus</i> ; <i>A. tobianus</i> , <i>N. melanostomus</i> ; <i>P. flesus</i> , Flatfishes indet.	N 5.63	—
	Other	—	N – 8.45 <i>Z. viviparus</i> , <i>S. A. improvisus</i> <i>lucioperca P. minutus</i>	N – 1.85

**Table S3.** Diet composition of all perch specimens in 2012–2014 and 2018–2019 with prey frequency of occurrence (N) and weight contributions (W)

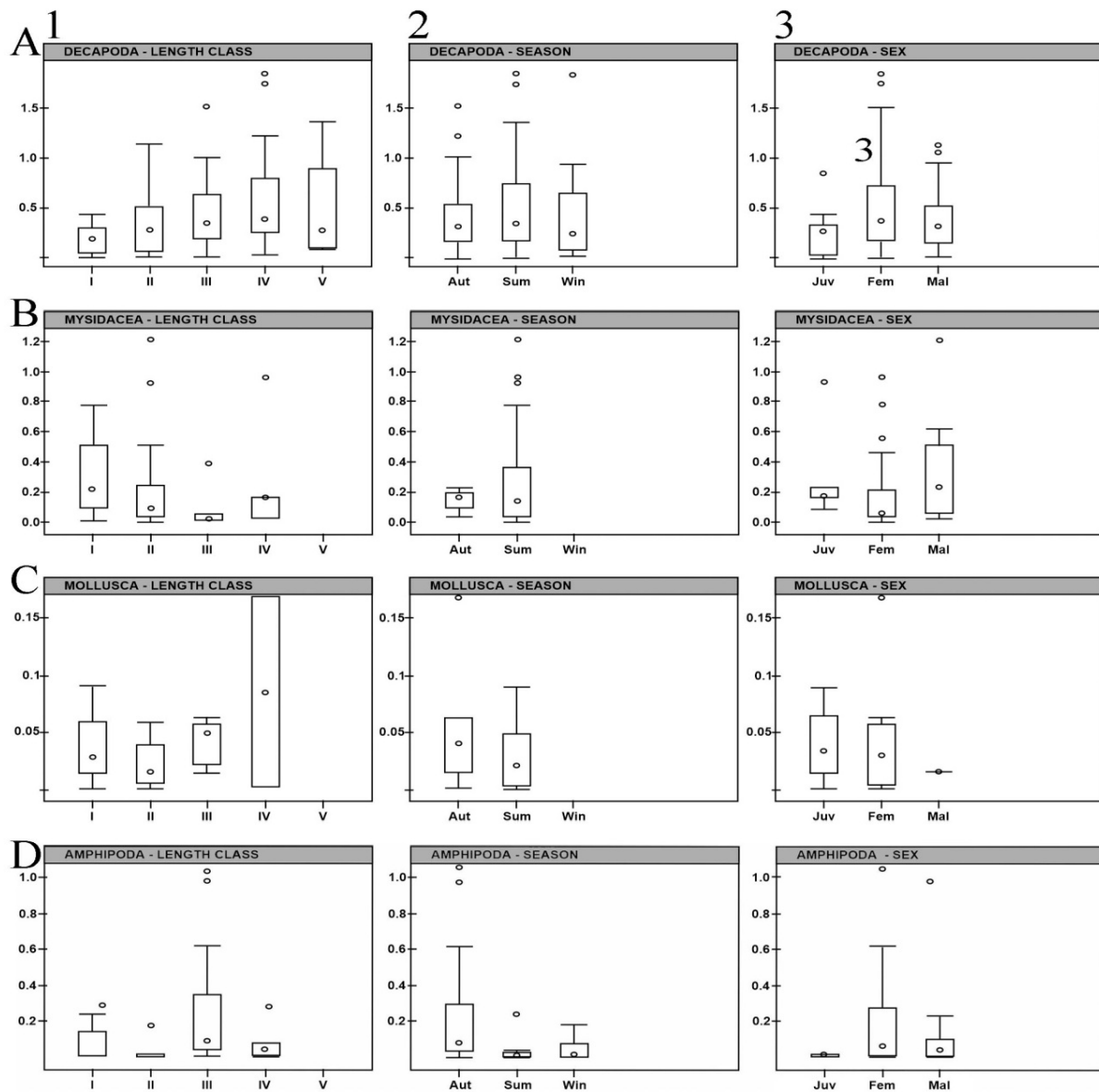
Taxon	All fish		10.0–14.9 cm		15.0–19.9 cm		20.0–24.9cm		25.0–29.9cm		30.0–34.9 cm	
	[%] N	[%] W	[%] N	[%] W	[%] N	[%] W	[%] N	[%] W	[%] N	[%] W	[%] N	[%] W
Polychaeta	0.99	0.00	4.17	0.00	0.93	0.00	—	—	—	—	—	—
Mollusca <sup>1</sup>	4.64	0.28	6.25	0.98	4.67	0.26	4.40	0.21	3.92	0.28	—	—
Mysidacea <sup>2</sup>	21.19	7.16	47.92	55.19	27.10	13.00	7.69	0.71	9.80	2.22	—	—
Decapoda <sup>3</sup>	49.01	31.38	29.17	20.27	42.06	37.48	63.74	33.89	52.94	26.98	80	21.30
Amphipoda <sup>4</sup>	14.57	3.55	8.33	2.39	7.48	0.44	26.37	8.22	15.69	0.86	—	—
Isopoda <sup>5</sup>	0.33	0.02	2.08	0.34	0.00	0.00	—	—	—	—	—	—
<i>N. melanostomus</i>	24.83	38.50	10.42	1.62	31.78	42.92	20.88	32.78	29.41	48.40	40	48.38
Pleuronectidae	1.32	3.15	—	—	—	—	1.10	2.60	3.92	2.68	20	30.32
<i>Osmerus eperlanus</i>	0.66	6.20	—	—	0.93	5.28	—	—	1.96	17.03	—	—
Clupeidae	2.65	9.29	8.33	19.20	0.93	0.62	2.20	20.32	1.96	1.54	—	—
Others <sup>6</sup>	0.66	0.48	—	—	—	—	2.20	1.28	—	—	—	—
SPF – small pelagic fishes	3.31	15.49	8.33	19.20	1.87	5.90	2.20	20.32	3.92	18.58	—	—
SMF – small benthic fishes	25.83	41.65	10.42	1.62	31.78	42.92	21.98	35.38	31.37	51.07	60	78.70

1: Hydrobiidae, *Cerastoderma glaucum*, *Mytilus sp.*, *Mya arenaria*; 2: *Neomysis integer*, *Praunus flexuosus*; 3: *Crangon crangon*, *Palaemon elegans*, *Rhithropanopeus harrisii*; 4: *Gammarus zaddachi*, *Corophium volutator*; 5: *Idotea sp.* 6. *Amphibalanus improvisus*, *Zoarcas viviparus*; SBF: *Neogobius melanostomus* and Pleuronectidae SPF – Clupeidae and *Osmerus eperlanus*

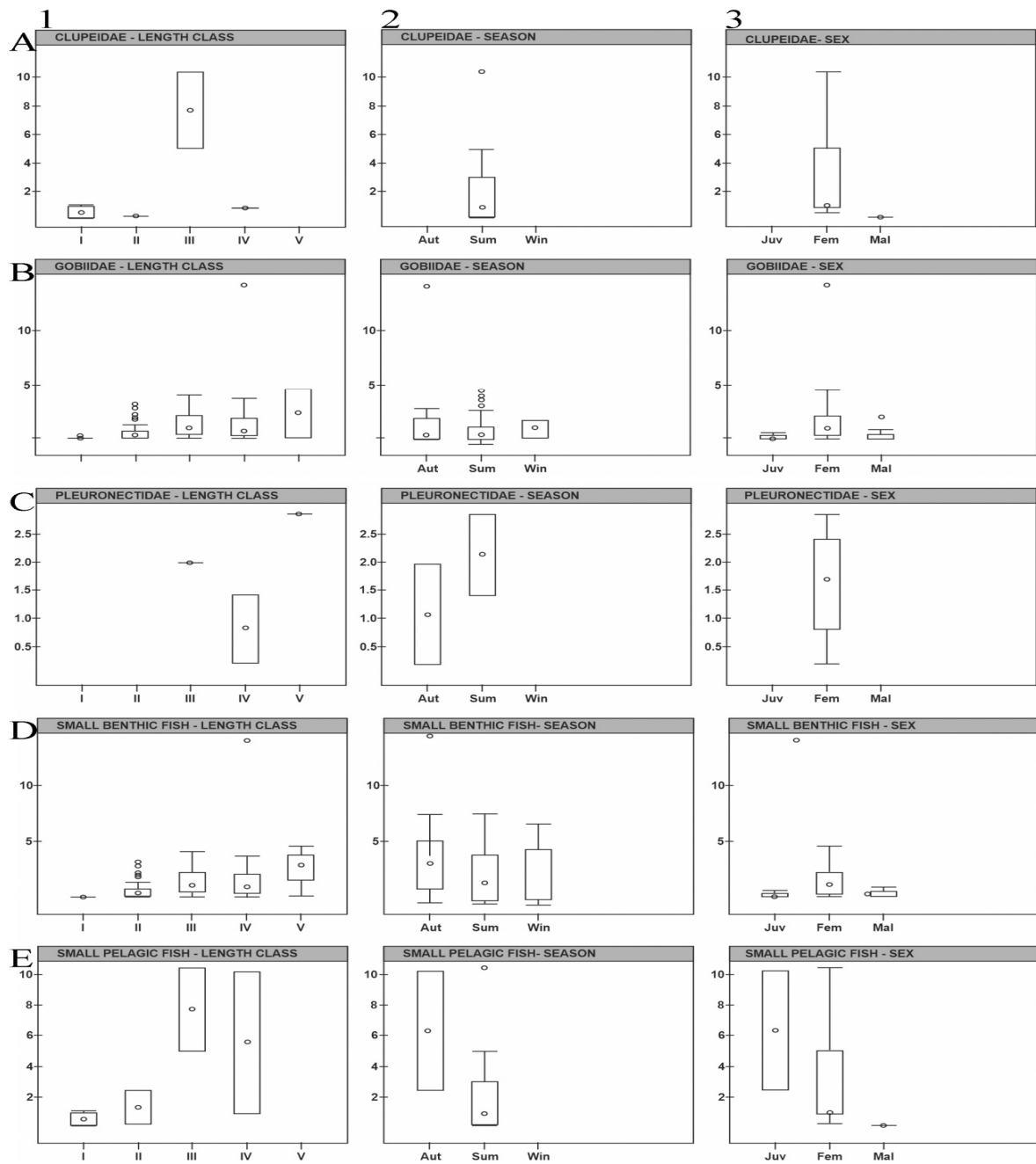
**Table S4.** Distribution of round goby numbers (N) in perch length classes and TL ranges in cm in perch stomach content by study year

Year/Length class TL	10.0–14.9 cm	15.0–19.9 cm	20.0–24.9cm	25.0–29.9cm	30.0–34.9 cm	Total N; Range of TL; mean value of TL [cm]
<b>2012</b>		6	2			8; (4.47–7.93); 6.2
<b>2013</b>		14	36	42	6	98; (1.56–7.45); 4.51
<b>2014</b>		10	6	2		18; (4.06–8.28); 6.17
<b>2018</b>	2		2			4; (2.26–4.19); 3.23
<b>2019</b>	2	24				26; (1.46–5.76); 3.61
<b>Total (N;</b>	4	54	46	44	6	154
<b>TL;</b>	1.46–2.66	1.57–7.93	3.30–8.28	1.56–7.46	4.00–6.64	(1.46–8.28)
<b>mean value of TL)</b>	2.06	4.75	5.79	4.51	5.32	4.87

N – number of round goby; TL – length of round goby

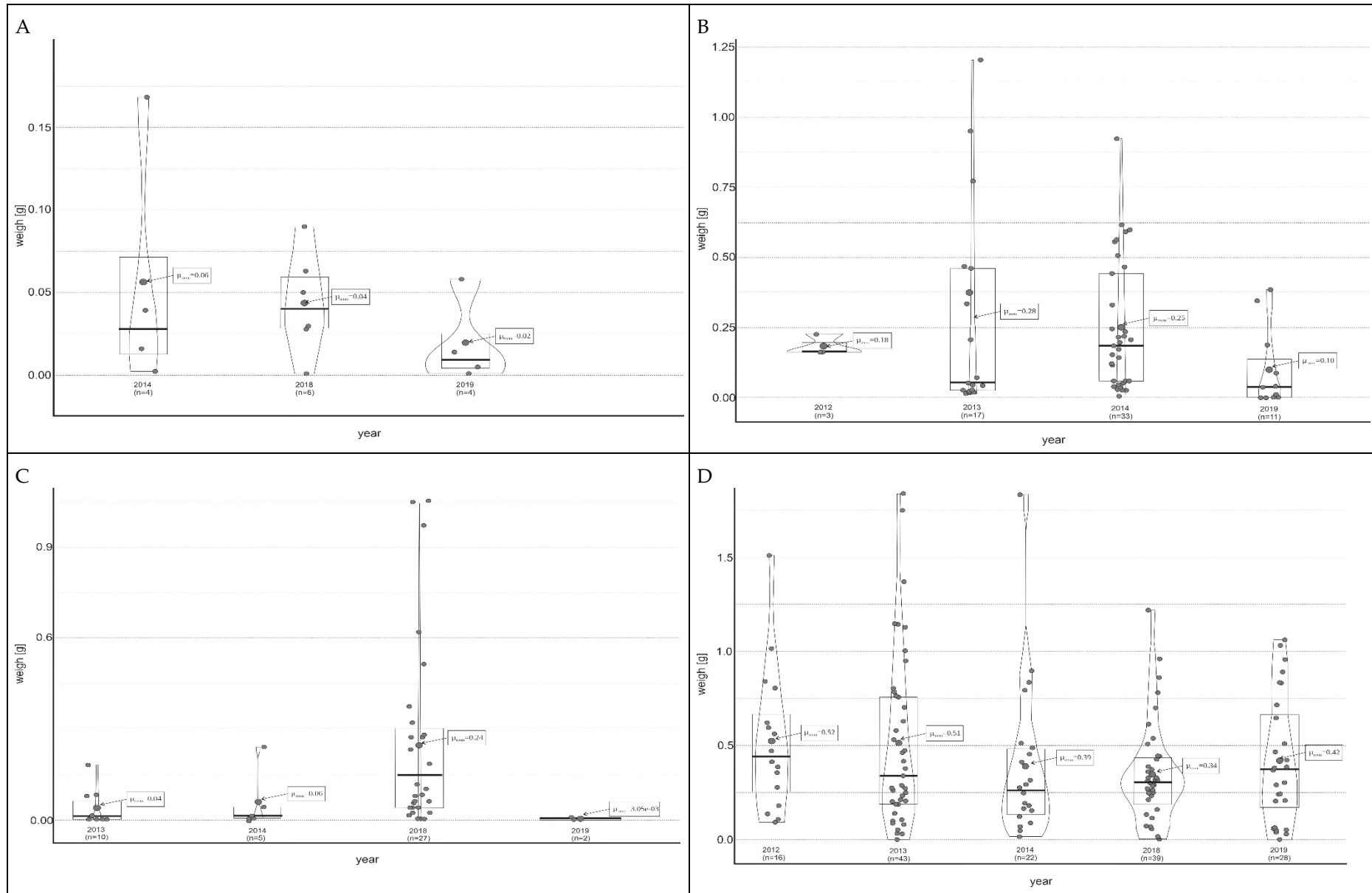


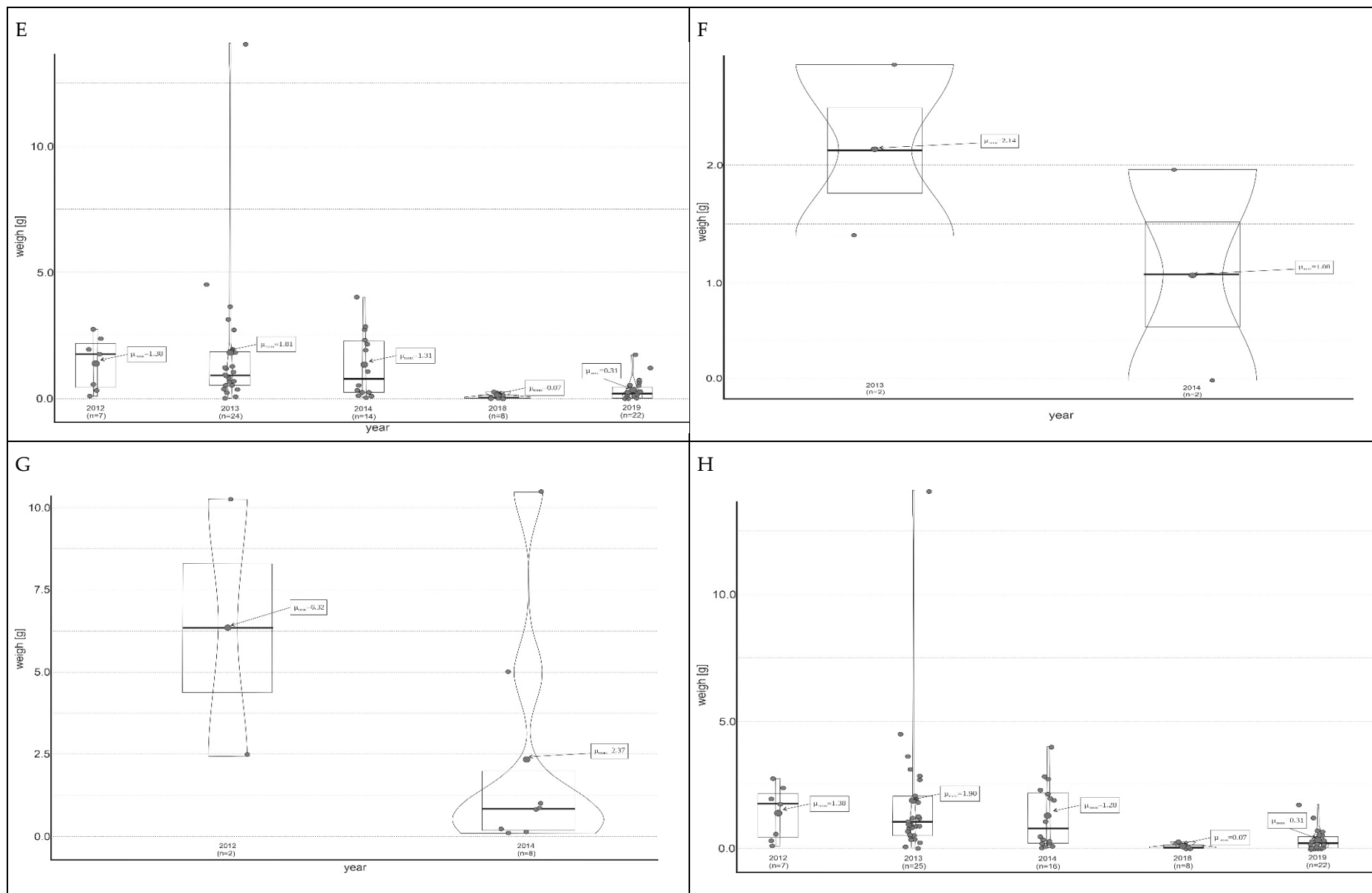
**Figure S1.** Plot of interaction among length class, research season, and predator sex and higher taxa biomass in perch diets for invertebrate prey: A Decapods; B Mysids; C Molluscs; D Amphipods; perch length class (TL); 2 – research season (Aut – Autumn; Sum – summer; Win – winter); 3 – perch sex (J – juveniles; F – female; M – males).



**Figure S2.** Plot of interaction among length class, research season, and predator sex for higher fish prey taxa in perch diets.

A Clupeidae; B *N. melanostomus*; C Pleuronectidae; D Small Benthic Fish; E Small Pelagic Fish. 1 - Length class (TL) of perch; 2 - Study season (Aut- Autumn; Sum - summer; Win - winter); 3 - Perch sex (Juv - juveniles; Fem - female; Mal - males)

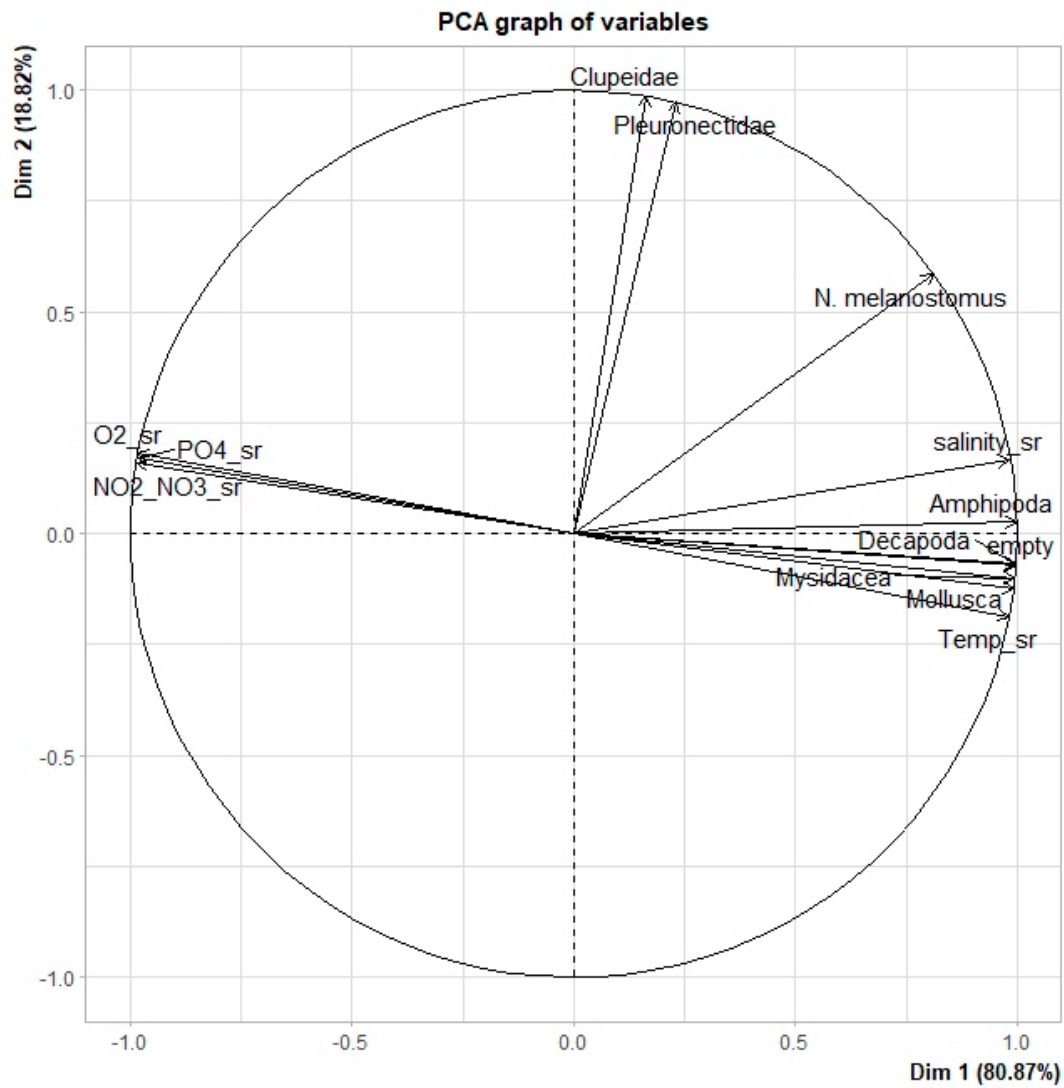




**Figure S3.** Comparison of higher prey taxa weight by study years.

Where: A – Mollusca, B – Mysidacea, C – Amphipoda, D - Decapoda, E – *N. melanostomus*, F – Pleuronectidae, G – SPF, H – SBF, SPF: Clupeidae and *Osmerus eperlanus*;  $\mu_{\text{mean}}$  – average weight of particular diet components by study year





**Figure S4.** PCA graph for the average values of physicochemical variables of water and higher perch food taxa in 2012-2019.