



Research Article

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Investigations on the Feeding Ecology of Ohrid Belvica (*Salmo ohridanus*)

Dritan Arapi

*Research Centre of Flora and Fauna, Faculty of Natural Sciences, University of Tirana,
Albania*

Anxhela Kamberaj

Department of Biology, Faculty of Natural Sciences, University of Tirana, Albania

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Abstract

The feeding ecology of Ohrid Belvica was studied based on the species composition of dietary components, their relative importance, and seasonal variability in Simpson's diversity index. Qualitative analysis confirmed the presence of 45 trophic elements, of which 39 were planktonic and benthic hydrobionts, while six represented life stages (eggs, larvae, and imago) of some of these organisms. Planktonic crustaceans (mainly *Daphnia*, *Cyclops*, and their eggs), larvae of *Chironomus* (Insecta), adults of *Limnodrilus* (Annelida), as well as eggs, larvae, and adults of *Alburnus* (Pisces), constituted the main components of the diet of the Ohrid Belvica stock. The highest frequency of trophic elements in the diet was recorded in spring ($n = 43$; $F\% = 93.6$), while the lowest value of feeding intensity was observed in autumn ($n = 21$; $F\% = 46.7$). The average annual value ($M \pm SD$) of the species diversity index (D_s), characterizing the diet of the Ohrid Belvica stock from the Albanian part of Lake Ohrid, was 0.721 ± 0.068 ($Var\% = 9.44$). In addition, annual variability in three organo-somatic indices (RGL, VSI%, and HSI%) was assessed. The mean values of these parameters for the Ohrid Belvica stock were $VSI\% = 10.764 \pm 1.735$, $HSI\% = 1.152 \pm 0.224$, and $RGL = 0.849 \pm 0.072$.

Keywords: Ohrid belvica, trophic biology, planktonic and benthic food, trophic element, species diversity index.

1. Introduction

Fish play a key role in the trophic dynamics of lakes, reservoirs, and shallow aquatic ecosystems. Consequently, knowledge of fish diet is essential for determining the

ecological role of fish species and their function within aquatic food webs (Bobori et al., 2013; Radenković et al., 2024). Assessing the trophic ecology of fish in natural habitats is fundamental for understanding their biological and ecological requirements and for supporting the management and conservation of populations and habitats (da Silveira et al., 2020). In Albanian ichthyological literature, there is a lack of focused studies addressing different aspects of the feeding ecology of natural fish populations. Detailed information on diet composition and alimentary competition among cultured cyprinids can be found in the works of Spaho and Selfo (1985), Palluqi et al. (2000), Sadikaj et al. (2011), Bllaca and Spaho (2013), and Dyli et al. (2014). Data on the ecology of Salmonidae inhabiting inland waters of Albania, including feeding ecology, remain fragmentary. Recently, Sadikaj and Kamberaj (2024) examined aspects of the trophic biology of Ohrid trout (*Salmo letnica*).

According to Belichovska (2010), there is no dedicated research on the feeding biology of Ohrid Belvica (*Salmo ohridanus*). Some earlier information on this topic was provided by Stefanović (1948) and Filipi (1959), where it was suggested that Ohrid Belvica competed with Ohrid trout for planktonic food resources, while alternatively being described as a non-predatory species. One of the key aspects addressed in Sadikaj and Kamberaj (2024) was the assessment of variability in organo-somatic indices in Ohrid trout. Organo-somatic indices are widely used to assess the physiological condition of fish and other aquatic organisms and to evaluate the influence of environmental factors on their health status (Lazarus et al., 2025). Commonly applied indices in stress-related studies include the hepatosomatic index (HSI), renosomatic index (RSI), gill-somatic index (GSI), viscerosomatic index (VSI), spleenosomatic index (SSI), and cardiosomatic index (CSI) (Amachree & Idam, 2022). For the endemic trouts of Lake Ohrid, in addition to the aforementioned study, Belichovska (2010) also investigated organo-somatic indices in the Ohrid Belvica population from the North Macedonian part of the lake. Earlier work by the same author examined these indices in brown trout (*Salmo trutta fario*) and the yellow form of rainbow trout (*Oncorhynchus mykiss*) (Belichovska, 2006).

The study of qualitative and quantitative feeding characteristics in closely related fish species with sympatric distribution, as well as investigations of dietary overlap, provides important insights into biotic factors influencing population dynamics. In particular, interspecific competition for food plays a crucial role in shaping ecological interactions and system stability (Bandyopadhyay et al., 2025). Such research is especially important for endemic species subject to commercial exploitation. Accurate knowledge of dietary preferences in endemic and protected species is essential for their effective management and conservation (Berak Cihoric et al., 2024).



Figure 1.a. Three sampling areas in the Albanian part of Ohrid Lake; b. Ohrid belvica (*S.ohridanus*); c. Fishing boats in the Lin area; d. Fishing in the coastal area of the lake using the gill nets.

The results presented in this publication were obtained during the assessments in a stock of Ohrid belvica, in the Albanian part of Ohrid Lake. By revealing some aspects of the trophic biology of Ohrid belvica, it will be possible to make comparisons with analogous data that were previously obtained for Ohrid trout, in order to assess the degree of food competition between these two sympatric salmonids. In this way, the necessary data base will be expanded for the formulation of programs aimed at the conservation of biodiversity and the responsible exploitation of fish species with faunal and commercial values.

2. Materials and Methods

The individuals of the Ohrid belvica for the dietary studies were mainly included in the samples taken during 2023, but some stomach content analyses were also performed in samples taken during 2025. The samples included individuals of all sizes present in the commercial catches of this species. Also, sampling was carried out in three fishing areas, in the Albanian part of Ohrid Lake [Lin (L), Piskopat-Udenishti (PU) and Pogradec-Drilon (PD)] (Figure 1). The samples were taken on the same day of their catch and, using a thermos lunch box, were sent to the Laboratory of Aquaculture, in the Faculty of Natural Sciences (Tirana University).

Before the dissection, each fish was measured for total length (TL, cm), with an accuracy of 0.1 mm and weighed for total weight (W, g), with an accuracy of 0.1 g. The dissection was realised according to Clausen et al.(2017). All visceral mass (V,g) was weighed with an accuracy of 0.01g. The liver was separated from the visceral mass and weighed separately (H,g) with accuracy of 0.01g. The viscerosomatic index (VSI%) and the hepatosomatic index (HIS%) were calculated using the expressions according to Mesina et al. (2023):

$$\text{VSI}\% = (V / W) * 100; \text{HIS}\% = (H / W) * 100$$

Vg-weight of the visceral mass; H,g-weight of the liver; W,g-total weight of the fish. The complete digestive tract was placed in a dissection pan and after being carefully straightened, their length (GL, cm) was measured with an accuracy of 0.1 mm. The relative gut length (RGL) was calculated using the formula according to Peruzzi et al. (2015):

$$RGL = GL / TL$$

GL, cm-gut length; TL,cm- total length of the fish

To extract the digesta we applied the protocol according to De Guzman et al. (2015). As previously done by Sadikaj and Kamberaj (2024) initially, the digesta is observed using a magnifying glass Waltex 2x/4x. The fragments of fish and macroinvertebrates were taken with tweezers and transferred to a Petri dish with ethyl alcohol 70°. The digesta mass is transferred to the laboratory glass bottles and stored in ethyl alcohol 70°. To determine the different taxonomic categories was performed the microscopic analysis, according to Manko (2016). Determination was attempted at the genus level and, if not possible, at the family level. The same identification keys were used as in Sadikaj and Kamberaj (2024). For each of the component of the diet defined in taxonomic terms, the month of encounter, the area of the lake where the respective individual was fished and the length of this individual, were also recorded.

In the estimations about the species diversity index (D_s) of the Ohrid belvica's diet was applied the formula according to Simpson (1949):

$$D_s = 1 - [\Sigma(n/N)^2]$$

D_s - Simpson's index of species diversity; n -total number of individuals for a single species; N -total number of individuals for all species identified in the diet.

The value resulted from the calculation is included in the interval from 0.0 to 1.0 (the greater the number of taxonomic categories in the respective diet, the closer the value of D_s approaches to the value of 1.0). For the Simpson's index, which informs on the degree of diet polymorphism, the assessments were carried out according to four seasons.

All data processing, different calculations and analysis were realised by using the computer's program IBM SPSS Statistics 21.0 (2019) and a version (2010) of Microsoft Office Excel Software. The analysis of variance (ANOVA) was performed to calculate the means (M), standard deviations (SD) and the levels of variability (Var%) of the data from different biological analysis. In the comparisons between the average values of the calculated parameters, with the aim of verifying the significance of the differences ($P < 0.05$), was applied the Student's t -test (Zar, 2010).

3. Results

3.1 The annual variability of organosomatic indices

The following three figures show the annual changes in the calculated values of the Viscero-Somatic Index (VSI%, Figure 2), the Hepato-Somatic Index (HSI%, Figure 3) and the Relative Gut Length Index (RGL, Figure 4).

3.1.1 Viscero-Somatic Index (VSI%)

The range of values found for the viscero-somatic index was from a minimum of $VSI\%=7.329$ (February) to a maximum of $VSI\%=14.803$ (June). The mean value of $VSI\%$ (M) plus the standard deviation (SD), characteristic for the stock of Ohrid belvica from the Albanian part of Lake Ohrid was: $M\pm SD=10.764\pm 1.735$. The lowest average value of $VSI\%$ belonged to February (7.972 ± 0.453) while the highest average value was found in June (13.128 ± 1.727).

Including these two values in the analysis of variance (ANOVA), for the calculations about the t -value (Student's t -test), this value resulted equal to $t=2.90$. Under such conditions, for $n=36$, the significance of the difference between the minimum and maximum mean values of the $VSI\%$ -index, was proven ($P<0.05$).

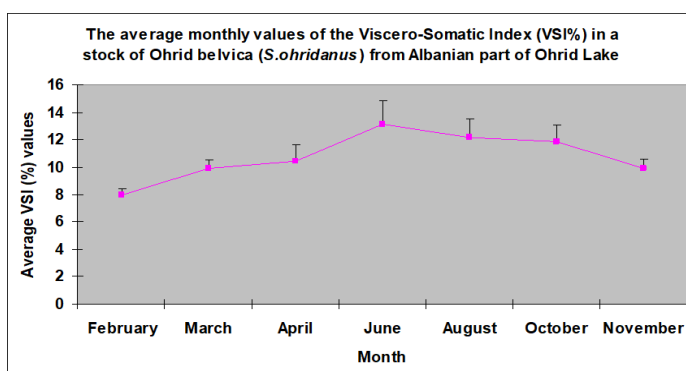


Figure 2. The annual variability in the values of Viscero-Somatic Index (VSI%) in Ohrid belvica (*Salmo ohridanus*) from Albanian part of Ohrid Lake.

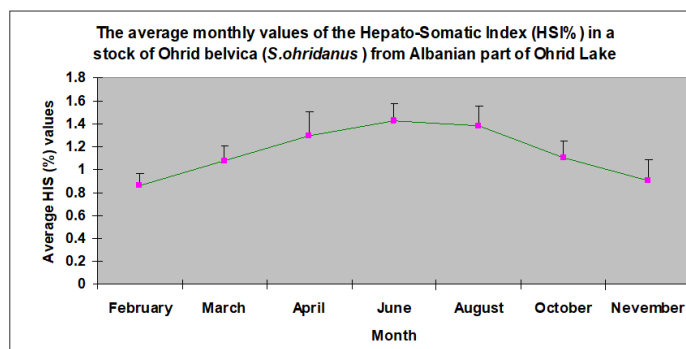


Figure 3. The annual variability in the values of Hepato-Somatic Index (HSI%) in Ohrid belvica (*Salmo ohridanus*) from Albanian part of Ohrid Lake.

3.1.2 Hepato-Somatic Index (HSI%)

The lowest value we found after calculations of the hepato-somatic index, in Ohrid belvica's samples taken from commercial catches realised in the Albanian part of Ohrid Lake was $HIS\%=0.701$ (November), while the highest value was $HIS\%=1.612$ (June).

The average value of this organosomatic parameter, characteristic for the analyzed stock, was $HIS\% = 1.152 \pm 0.224$. The lowest average value of $VSI\%$ belonged to February (0.865 ± 0.101) while the highest average value was found in June (1.428 ± 0.149).

The analysis of variance confirmed the existence of a significant difference between the lowest mean value (February) and the highest mean value (June) of the hepatosomatic index ($t=3.13$; $P<0.05$; $n=36$), in the "Albanian" stock of the Ohrid belvica.

3.1.3 Relative Gut Length (RLG)

Unlike the two indices of the gravimetric spectrum, the values of which we showed above, the relative gut length is an index of the morphometric spectrum, which is closely related to the dietary regime of the respective species. The extreme (minimum and maximum) values calculated in Ohrid belvica's stock, exploited in Albanian part of Ohrid Lake, were respectively $RGL=0.707$ (February) and $RGL=0.992$ (August). The average values of this parameter, characteristic for this stock, was $RGL=0.849 \pm 0.072$. In the February was calculated the lowest monthly average value of the relative gut length ($RGL=0.760 \pm 0.044$), while in August the highest monthly average value ($RGL=0.954 \pm 0.036$).

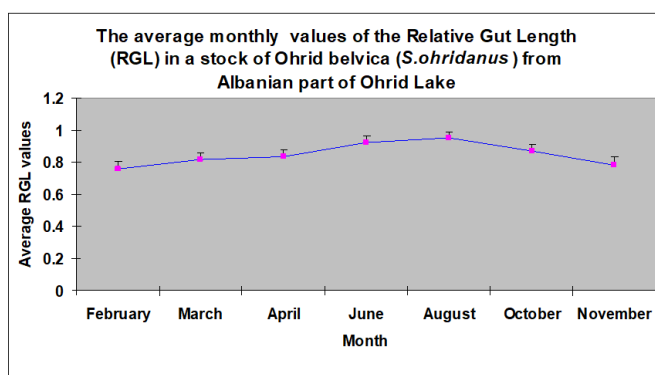


Figure 4. The annual variability in the values of Relative Gut Length (RGL) in Ohrid belvica (*Salmo ohridanus*) from Albanian part of Ohrid Lake.

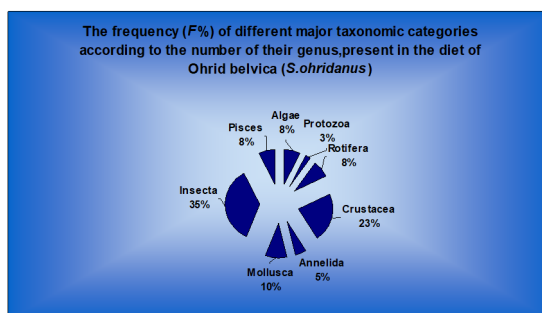


Figure 5. The frequency (F%) of the major taxonomic categories, according to the number of the genus found in the Ohrid belvica's diet, after qualitative analysis of the digesta.

Table 1. Species composition and the importance of different prey components in the diet of Ohrid belvica (*Salmo ohridanus*), according to seasons, area of the lake and fish length categories.

Taxonomic category	Species (Genus)	Area of the Lake	Importance in the diet (Points)	Season	TLcm-category
Algae (Diatomeae)	Navicula	In three areas	1	Sp.A	<22
	Nitzschia	"	1	Sp.A	"
Algae (Chlorophyta)	Scendesmus	"	1	Sp.Su	"
Protozoa (Infusoria)	Paramecium	In three areas	1	Sp.Su	14-26
Rotifera	Asplanchna	PD	1	Sp.A	<25
	Brachionus	In three areas	1	Sp.Su	"
	Trichocerca	"	1	Sp.A	"
					<25 (high frequency); >25 (reduced frequency)
Crustacea (Cladocera)	Daphnia	In three areas	5	Sp.Su	
	Cydorus	L,PU	2	Sp.Su	"
	Leptodora	L	1	Sp	"
Crustacea (Copepoda)	Cyclops	In three areas	3	Sp.A	"
	Eudiaptomus	"	2	Sp.Su	"
	Mesocyclops	PU,PD	2	Sp.A	"
Entomostraca (larvae)	-	In three areas	2	Sp.Su	<20
Entomostraca (egg)	-	"	3	Sp.Su	In all TL-categ.
Crustacea (Amphipoda)	Gammarus	In three areas	2	Sp.Su	In all TL-categ.
	Niphargus	"	1	Sp.Su	>20
Crustacea (Isopoda)	Asellus	In three areas	3	Sp.Su	>20
Annelida	Limnodrilus	In three areas	3	Sp.Su	<20 cm (reduced frequency); >25 cm (high frequency)
	Tubifex	"	2	Sp.Su	"
Mollusca (Bivalvia)	Sphaerium	PD	1	Sp.Su	>25
	Dreissena	PU,PD	1	SP,SU	"
Mollusca (Gastropoda)	Lymnaea	In three areas	1	Sp	>25
	Goceia	PD	1	Sp.Su	"
Insecta (Ephemeroptera) larvae	Ephemerella	In three areas	1	Sp	<25 (reduced frequency); >25

					5 (high frequency)
	<u>Baetis</u>	"	1	Sp	"
<u>Insecta (Diptera)</u>	<u>Chironomus</u>	"	4	Sp, Su	"
	<u>Tipula</u>	"	1	Sp, Su	"
	<u>Culex</u>	"	1	Sp, Su	"
<u>Insecta (Odonata)</u>	<u>Calopteryx</u>	L, PU	1	Sp, Su	"
	<u>Cordulia</u>	PU, PD	1	Sp, Su	"
	<u>Libellula</u>	In three areas	1	Sp, Su	"
<u>Insecta (Coleoptera)</u>	<u>Hydrophilus</u>	PD, PU	1	Sp, Su	"
	<u>Ilybius</u>	PD	1	Sp, Su	"
	<u>Rhantus</u>	In three areas	1	Sp, Su	"
	<u>Gyrinus</u>	"	1	Sp, Su, A	"
	<u>Agabus</u>	L, PU	1	Sp, Su	"
<u>Insecta</u>	<u>Trichoptera</u>	In three areas	1	Sp, Su, A	"
<u>Pisces (Larvae and adult)</u>	<u>Alburnus</u>	In three areas	3	Sp, Su, A	>25
	<u>Rutilus</u>	"	1	Sp, Su, A	"
	<u>Gobio</u>	"	1	Sp, Su, A	"
<u>Pisces (egg)</u>	<u>Cyprinidae and Salmonidae</u>	"	2	Sp, Su	In all TL-categ.

The value calculated for the statistical indicator “*t*”, after performing the analysis of variance, resulted equal to 3.46. In this way, it was confirmed that for $n=36$ the differences between the two average values of the RGL parameter, which belonged to the months of February and June, were significant ($P<0.05$).

3.2 The taxonomy of the different components in the diet of Ohrid belvica

3.2.1 The frequency (%) of the diet components according to major taxonomic categories

After the major taxonomic categories were identified and the number of genera for each of them (n) as well as the total number of genera (N) found in the qualitative analyses of the gut content of the Ohrid Belvica samples were determined, the frequencies of presence ($F\%$) for each taxonomic category were calculated. The results are shown in the Figure 5.

The lowest value of the frequency ($n=1$; $F\%=2.57$) was found for the unicellular Paramecium (Phylum Infusoria/Ciliophora) while the highest value of this variable was found for the genera included in the Class Insecta ($n=14$; $F\%=35.89$). The Subphylum Crustacea was represented by the Superorder Diplostraca (Cladocera)

(3 genera), the Superorder Podoplea (Copepoda) (3 genera), the Order Amphipoda (2 genera) and the Order Isopoda (1 genus). The crustaceans found in the qualitative analyses of the digesta belonged to 9 genera while the frequency of the Subphylum Crustacea in the diet of the Ohrid belvica exploited in the Albanian part of Ohrid Lake was $F\%=23.08\%$.

3.2.2 *The distribution of the diet components (taxa) according to lake area and the season*

Of the 45 trophic elements identified in the samples of Ohrid belvica, in the samples taken from the commercial catches in the Lin area (L), 37 (or 82.2%) of them were present in the digesta, in the samples from the Piskupat-Udenisht area (PU), 40 trophic elements (or 88.9%) were identified and in the Pogradec-Drilon area (PD) this number was 41 (or 91.1%). Although the differences between the values found were small, it can be assumed that the diversity of planktonic and benthic fauna in the area Pogradec-Drilon of the lake, at least according to the analysis of the trophic elements ingested by the Ohrid belvica during grazing, may be more pronounced compared to the other two areas.

Of the 45 trophic elements that were identified in the gut content that characterized the Ohrid belvica's stock, the samples analyzed in the Spring season had 43 of them (or 93.6%), the samples analyzed in the Summer season had 36 trophic elements (or 80.0%), and those analyzed in the Autumn season had 21 trophic elements (or 46.7%). It is very likely that the reduction in the number of trophic elements present in the diet of this trout was caused by the combined action of three factors:

- spontaneous reduction in the abundance of hydrobionts after seasonal alternation,
- the completion of the metamorphoses characteristic of holometabolous aquatic insects, a fact that transitions these animals from aquatic to terrestrial (aerial) life, and
- the decrease in grazing intensity, as the breeding season approaches.

However, more detailed studies should be carried out to evaluate the aforementioned factors and to identify other factors.

3.2.3 *The importance of different taxa in the feeding of the Ohrid belvica*

By counting the 39 taxa of hydrobionts found in the digestive tract of the Ohrid belvica and adding the other life stages (eggs, larvae or adults) of some of them, the total number of trophic elements (TE) resulted equal to 45. Of these, 29 trophic elements (64.4%) were rated with 1 point each (including the flying imagoes of insects that are absent in the Table 1), testifying their modest role in the nutrition of the respective salmonid. With 2 points were rated 7 (15.6%) trophic elements. The number of trophic elements rated with more than 2 points was 9 (20.0%) (including mollusc's larvae and eggs, which are not reflected in the Table 1). The highest quotation was given to planktonic crustaceans of the genus *Daphnia* (5 points) and insect larvae of the genus *Chironomus* (4 points). High content in the Ohrid belvica's diet (3 points) was confirmed for the planktonic crustaceans of the genus *Cyclops*, crustaceans of the genus *Asellus*, annelids of the genus *Limnodrilus*, as well as for the eggs and larvae of planktonic crustaceans, mollusks and fishes.

From the above presentation, it resulted that more than half of the trophic elements that were identified in the Ohrid belvica's digesta had limited value in the nutrition of this salmonid, while during grazing it ingest a small number of these elements. Such trophic elements as algae and protozoa may be ingested occasionally during grazing by zooplankton. The numerical values representing the importance of particular components in the diet of Ohrid belvica confirms that this lake trout, in relation to the exploitation of the ecosystem's food resources, behaves mainly as a stenophagous carnivore with moderate predatory tendencies.

3.3 Simpson's index (D_s) of species diversity in the Ohrid belvica's diet

Initially, we must clarify that the fish samples taken in the winter for this analysis were in small number and obtained from experimental fisheries of immature individuals, due to the ban on commercial catches in this season, due to the reproduction of salmonids.

The values calculated for the Simpson's index, according to four seasons, after the qualitative assessments of the Ohrid belvica's digesta were completed, were: $D_s=0.803$, in the Spring, $D_s=0.747$, in the Summer, $D_s=0.683$, in the Autumn and $D_s=0.649$, in the Winter. The average annual value ($M \pm SD$) of the species diversity index (D_s), characteristic for the diet of the Ohrid belvica's stock from the Albanian part of Ohrid Lake was 0.721 ± 0.068 ($Var\%=9.44$).

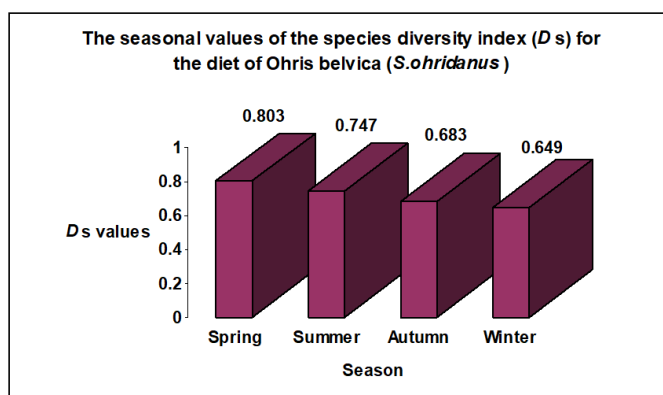


Figure 6. The values of species diversity index (D_s) for the hydrobionts consumed by Ohrid belvica (*S.ohridanus*), according to four seasons.

The average value of the D_s parameter testifies to the relatively high biological diversity of the Ohrid belvica diet, confirming that this species is not characterized by the bathymetric specialization related to the grazing area. The remarkable polymorphism and the considerable breadth of the diets can be considered as an "advantage" that life in lentic basins creates for ichthyic populations, compared to life in lotic basins. On the other hand, it seems that the abundance of food resources in the lacustrine environment has removed the present salmonids from the predatory diet, turning them into carnivores of a wider alimentary spectrum.

4. Discussion

The quantification of relative diet composition—that is, identifying which prey taxa are consumed and the extent to which each contributes to the overall diet—is a primary objective in most fish feeding studies (Manko, 2016). Such studies provide essential information on trophic ecology and dietary niche use, including feeding habits, resource utilization, and seasonal and ontogenetic diet shifts (Amundsen & Sánchez-Hernández, 2019). Despite numerous studies on salmonid feeding ecology, a comprehensive synthesis of their dietary patterns across habitats remains lacking (Keeley & Grant, 2001). This is also the case for the endemic trouts of Lake Ohrid, where not only syntheses of trophic ecology are absent, but primary information on feeding behavior is still scarce.

Analysis of diet composition across fish length classes showed that small-bodied hydrobionts (protozoa, rotifers, cladocerans, and copepods) occurred frequently in the diet of Ohrid Belvica individuals smaller than 20–25 cm. In these size classes, trout also consumed larvae of planktonic crustaceans, mollusks, and fish, as well as fish eggs. In larger individuals, the frequency of these prey items decreased significantly, while larger organisms such as adult annelids, isopod and amphipod crustaceans, and aquatic insect larvae became more prevalent. Adult fish were rare dietary components and were observed only in individuals exceeding 25 cm in length. These results indicate two key aspects of the trophic ecology of Ohrid Belvica. First, the species exhibits ontogenetic dietary shifts while maintaining a carnivorous feeding strategy throughout its life cycle. Second, seasonal variation in diet composition reflects the life cycles of prey organisms, particularly aquatic insects. Previous studies on salmonids across riverine, lacustrine, and marine habitats have shown similar ontogenetic niche shifts, from invertebrate-based diets in juveniles to piscivory in larger individuals (Keeley & Grant, 2001). In lakes, crustaceans dominate juvenile diets, followed by a transitional stage in which both insects and crustaceans are consumed before a shift toward piscivory. This transition typically occurs at approximately 31 cm body length, regardless of habitat type (Keeley & Grant, 2001). Such ontogenetic dietary shifts are thought to reflect increasing energetic efficiency in prey selection with growth (Sánchez-Hernández, 2016) and may influence higher trophic levels by shaping energy flow and food web structure. They can also enhance community stability by facilitating resource partitioning among sympatric species (Rudolf & Eveland, 2021). Generalist salmonids typically consume a broad range of aquatic invertebrates at small sizes and may expand their diet to include terrestrial invertebrates, fish, amphibians, or small mammals as they grow (Prati et al., 2021). Seasonal variation in trout nutrition is driven by fluctuations in aquatic biocenoses and the life cycles of prey organisms. Interannual and seasonal changes in prey availability are common in aquatic systems and strongly influence predator diet composition and foraging behavior (Baudrot et al., 2016; Frainer et al., 2016; Prati et al., 2021). Seasonal variation in benthic invertebrate communities is primarily determined by species life-history traits and may have important consequences

for higher trophic levels (Kreiling et al., 2021). Compared with previous studies on Ohrid trout (Sadikaj & Kamberaj, 2024) and Ohrid Belvica (Belichovska, 2010), where diet components were identified at genus and species levels, the present study identified taxa only at the genus level. This methodological standardization simplifies taxonomic classification but increases uncertainty in estimating dietary polymorphism by excluding species-level resolution. The diet of Ohrid Belvica in the Albanian part of Lake Ohrid consisted predominantly of animal taxa, comprising 39 identified genera. The algal component included three genera. Insects represented the most diverse group (14 genera), followed by crustaceans (9 genera, including 6 planktonic forms), mollusks (4 genera), fishes and rotifers (3 genera each), annelids (2 genera), and unicellular organisms (1 genus). The presence of unicellular taxa should be interpreted cautiously, as these organisms are likely ingested passively during feeding and are rapidly digested, complicating identification.

Belichovska (2010) noted that Stefanović (1948) was among the first to study the feeding ecology of Ohrid Belvica, suggesting competition with Ohrid trout for planktonic resources. In a sample of 20 individuals aged 4–6 years, zooplankton dominated the diet, with *Daphnia pulex* identified as the primary species. Additional studies (Stojanovski, 1997; Stojanovski et al., 2005) further confirmed the consumption of zooplankton and benthic fauna based on parasitological evidence. The most comprehensive study to date on Ohrid Belvica from the North Macedonian part of the lake (Belichovska, 2010) included analyses of morphometry, tissue chemistry, condition indices, organosomatic parameters, and feeding ecology. Given the overlap between that study and the present research, comparative analysis was conducted to assess whether observed differences suggest population structuring.

In Belichovska (2010), dietary components were classified across multiple taxonomic levels (class, order, family, genus, and species), including Ostracoda (class), Odonata and Trichoptera (order), Chironomidae (family), and several genera and species such as *Daphnia pulex*, *Leptodora kindtii*, *Eudiaptomus gracilis*, and *Cyclops ochridanus*. In total, 15 taxa were identified. Including larvae and eggs of crustaceans and mollusks, the total number of trophic elements reached 19. In comparison, the present study identified 39 taxa and 45 trophic elements in the Albanian population. Despite these differences in richness, several similarities are evident. First, key taxa such as Ostracoda and *Synurella* were absent in the present dataset, while most other taxa identified by Belichovska (2010) were also present. Second, differences in taxonomic richness likely reflect methodological objectives rather than true differences in dietary breadth. Excluding taxa not shared between studies reduces the dietary difference to approximately 11.14%, suggesting high similarity between populations. This supports the hypothesis of a single Ohrid Belvica stock across the lake.

Belichovska (2010) also reported relative gut length (RGL) values ranging from 0.73 to 0.99 across habitats and life stages. In the present study, RGL ranged from 0.707 (February) to 0.992 (August), indicating broadly consistent values across populations. For hepatosomatic index (HSI), Belichovska (2010) reported values of 1.03–1.04, whereas the present study recorded a minimum of 0.701 (November), a maximum of

1.612 (June), and a mean annual value of 1.152 ± 0.224 .

5. Conclusion

Assessments of the feeding ecology of Ohrid Belvica confirmed that this endemic trout exhibits ontogenetic shifts in diet composition. Individuals smaller than 20–25 cm fed predominantly on zooplankton, whereas larger size classes (>25 cm) showed a marked reduction in zooplankton consumption and a corresponding shift toward zoobenthic prey. In addition, the diet of this species displayed seasonal variation, largely driven by the life cycles of certain hydrobionts, particularly holometabolous aquatic insects.

The present study, conducted on the Ohrid Belvica stock (*Salmo ohridanus*), represents a continuation of previous research on another endemic salmonid, the Ohrid trout (*Salmo letnica*). Future research should focus on more integrated and in-depth comparative studies of the feeding ecology of these sympatric species in order to evaluate biological indicators of interspecific food competition. Such approaches would contribute to the identification of biotic factors influencing population dynamics and would support management strategies aimed at conservation and sustainable exploitation of these endemic resources.

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