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THE CONTRIBUTION TO THE BETTER KNOWLEDGE OF  
ECOLOGY AND DISTRIBUTION OF *BRACHIONUS SESSILIS*  
VARGA 1951 (ROTATORIA)\*

Summary

In this paper some ecological and biological parameters concerning epibiont more exactly epizootic species of *Rotatoria* from Skadar Lake were presented. This small contribution covers an rare epizootic-commensal *Brachionus sessilis*, which according to previous observations (Varga, 1951); that are confirmed in our paper also, lives at the surface of body of *Diaphanosoma brachyurum* Liev. (Cladocera). This rare species of *Rotatoria* in the fauna of the world, was for the first time recorder in Balaton Lake in Hungary. The same species in Skadar Lake (Crna Gora — Jugoslavia), was recorded by Miss Živković, 1965. She also used to find it at *Diaphanosoma brachyurum* but she did not write about it in details.

*Brachionus sessilis* is a thermophilic form. Commensal. It is being found attached to carapaces of *Diaphanosoma*, but its individuals can very frequently found undone from the body »carrier« — *Diaphanosoma*, as freely floating in plankton, and always in samples in which there are *Diaphanosoma*. The samples that do not consist of this cladoceran species do not have *Brachionus sessilis* in themselves. *Diaphanosoma* as the »carrier« enables to its cargo increased passive locomotion, gives to it better possibility for nutrition. *Brachionus sessilis* feeds on nanoplanktonic algae from group *Bacillariophyceae* (Centricae: *Cyclotella* spp.). Since *Diaphanosoma* in Skadar Lake develops from March (rarely from January) until December, and males occur as late as at the end of September, or in October, *Brachionus sessilis* used to be found at females of *Diaphanosoma* at the same time and, very rarely at males. In many other lakes in Crna Gora in which the investigations of rotifers fauna were carried out, the presence of *Brachionus sessilis* was not recorder.

We measured some more important ecological and biological parameters of Skadar Lake in two various lake's ambients (pelagial and littoral). These measurements show that *Diaphanosoma* and *Brachionus* almost equally well develop both in one and the other environment in borders: pH from 7.60

\* From Jugoslav — American project »Limnological investigations of Skadar Lake 1972-1977«.

to 8.00 that is from 7.50 to 8.20; oxygen from 7.51 to 12.00 mg/l that is 3.44 to 12.31 mg/l, and temperature of water from 3.60 to 26.20 that is from 3.16 to 27.50°C (*Diaphanosoma*) and pH from 7.70 to 8.00 that is 7.50 to 8.20, and oxygen from 7.51 to 9.65 that is 3.44 to 9.72 mg/l and water temperature from 12.00 to 26.20 that is 12.00 to 27.50°C (*Brachionus*). Quantitative numeric values of *Brachionus sessilis* at stations in pelagial and littoral rate from 1 to 38 ind./l. There are highest in period June — August (2-38 ind./l) and smallest in period September — November (1-10 ind./l); Either in horizontal or in vertical distribution, of course, there is no any regularity.

The specimens of *Brachionus sessilis* presented in this paper were recorded in material from littoral and pelagial (June, September 1972/1973); Their dimensions are the following: females in June (length excl. »fingers« — 80 to 83 microns; breadth — 68 microns); in September (length excl. »fingers« 86 to 92 microns; breadth — 70-73 microns). The females are well rounded and thickset. They carry one egg each. The eggs are coarse, their dimensions rating from 54 x 36 in June to 56 x 40 microns in September. Besides the females in June and September were also recorded the specimens of *Brachionus sessilis* which were more gracil, narrower; for them we suppose to be males. Their dimensions essentially differ from those in females, and they rate in June (length excl. »fingers« — 63 microns; breadth 46 microns) and in september (length excl. »fingers« — 65 microns, breadth 48 microns). Without aspiration to give a final opinion that dimensions of both females and males differ depending of seasons, recorded differences in dimensions, still indicate that this situation could mean also the difference in sexes. The fact is that density of *Cyclotella* spp., on which *Brachionus sessilis* mostly feeds, is bigger in September (Petković, Sm. and Petković St., 1968) than in June what would support the hypothesis, that September specimens of *Brachionus sessilis* (both sexes) are larger than those in June.

### Introduction and discussion

Epibionts — epiphytes, epizootics, epipellics, epilythics, algal and animal periphyton and parasites — endo and ectoparasites, by one word sessil or semisessil that is almost motionless (juvenile and adult) organisms in wider sence of this word, represent separate categories in large community of biota. They can be found both among plants and animals: in fresh and brackish waters as well as in terrestrial and other environments. They can be recorded at and in movable and unmovable living objects: outside, and in body cavities, as commensals and symbionts, but also as pathogenous forms. They can be also recorded on inorganic and dead organic substrates. All this is due to a certain evolution process and has phylogenetic and ecological importance, but also separate physiological and taxonomic specialities (exp. choice of the specific »host«).

Relationships being established in biota can be different: between the plant and plant, animal and animal, finally, between plant and animal (parasitism, commensalism and symbiosis).

In numerous papers they were treated from various aspects (Canter and Lund, 1969; Hanak, 1967). Their occurrence is frequent at the outside of body of *Cladocera*, *Copepoda*, *Ostracoda*,

*Isopoda*, *Amphipoda* and other *Invertebrata* (Green, 1960, Lepšić, 1965, Matonićkin and Pavletić, 1961 and others) and they are »recruited« from various groups like: *Bacteria*, *Acanthocephala*, *Algae*, *Molusca* (*Lamellibranchiata*), *Ecrinales*, *Ciliata*, *Rotatoria*, *Chonotricha*, *Hydrozoa*, *Suctoria*, *Microsporidia*, various *Insecta* and others.

However they can be recorded also at various species of *Vertebrata* (Campbell, 1971; Fryer, 1969 and others).

Their presence, sometimes in mass, at the particles of organic dead objects, or at stones, sand, and similar substrates is almost regular and normal phenomenon (Sladeček, 1963, Rudescu, 1960, Bartoš, 1959, Kutikova, 1970 and others).

In planktonic category of biota the examples of epibionts — epizootics are known, like, say, *Collotheca* (*Rotatoria*) at body of *Monospilus dispar* (*Cladocera*) (Sebestyén, 1957), and others (Wiszniewski, 1954 and others).

This small contribution covers an rare epizootic — commensal *Brachionus sessilis* Varga, 1951, from the group *Rotatoria* which, according to previous observations (Varga, 1951) that are confirmed in our paper also, lives at the surface of body of euplanktonic — *Diaphanosoma brachyurum* Liev. (*Cladocera*). This rare species of *Rotatoria* in the fauna of the world, was for the first time recorded in Balaton Lake in Hungary. It was recorded by Lajoš Varga, 1951, and published it in the same year in his paper: »*Brachionus sessilis* n. sp. korekesfereg — faj a Balaton bol«. The same species in Skadar Lake Crna Gora — (Yugoslavia) was recorded by Miss Dr. Anđeliija Živković, 1957-1958 and with D. Milovanović she published it in 1965 in paper: »Plankton Skadarskog jezera« at page 8 and 30, pointing out that ».... it is important to note a presence ..... of several rare species of *Rotatoria* ..... *Brachionus sessilis* .... which are for the first time recorded in this lake« (Milovanović and Živković, 1965). She also used to find it at *Diaphanosoma brachyurum* but she did not write about it in details (personal communication).

In a few papers of Zankai, P. N. and Pónyi, E. J. (1967, 1971, 1972), covering the results of investigations of planktonic *Rotatoria* of Balaton Lake, among other rotatoria also *Brachionus sessilis* is mentioned (page 292, 294, 297, 298, i. e. 198). Its quantitative participation in plankton of that lake is given. Also, what is very important, it is notable that this rotatoria used to be found in planktonic samples in period May—September, that is May—October and July—September. By this, and probably, other papers (Sebestyén, 1951 and others), the presence and existence of this species in Balaton Lake was confirmed.

Among the other authors, from various countries of the world, who gave synthetic survey of *Rotatoria*, (Pennak, 1953, Hutch-

inson, 1967, Edmondson, 1959 — USA; Wiszniewski, 1953 — Poland; Bartoš, 1959 — Czechoslovakia; Rude-sku, 1960 — Romania; Berziņš: in Illies' — Limnofauna europea, 1967; Kutikova, 1970 — USSR; Ruttner — Koliško, 1974 — Austria; Voigt, 1957 — Germany), Bartoš, 1959 on pages 353 and 357 mentions *Brachionus sessilis* only for Hungary — lake Balaton, and gives the dimensions: long 95 — 98 microns, lat. 90 — 98 microns. This author, indeed, says that in Czechoslovakia he found a *Brachionus* similar to *Brachionus sessilis*, but he listed it in *Brachionus rubens*. Further, he says, most probably citing Varga, that *Brachionus sessilis* lives as an epizootic in a small number of specimens, at body surface of *Diaphanosoma brachyrum*



then Berzinš (in Illies' — *Limnofauna europea*, 1976), at page 43, in chapter on geographical distribution, gives a short note — »Donauländer-Ungarische Tiefebene«; Ruttner — Kolisko, 1974 in »Plankton rotifers. Biology and taxonomy«, at page 65, says *Brachionus sessilis* to be »very similar to *Brachionus urceolaris* having only a half of its length (around 150 microns)«.

From the incomplete survey of literature on rotifers of the world it comes out that *Brachionus sessilis*, for now, lives only in lake Balaton (Blatno jezero) in Hungary, and in Skadar Lake (Crna Gora — Yugoslavia) (Fig. 1) It was not recorded in USA, USSR, Romania, Czeskoslovakia, Poland, Austria. To this survey some other countries, in which this species was not recorded, can be added (Barbanti, et al, 1974, Ferrari, 1972 — Italy; Najdenov, 1968, 1969, 1973, 1975 — Bulgaria; Gophen, 1972 — Israel; Serafimova — Hadžišće, 1974 — Greece; Beauchamp, 1952, 1965, Pourriot, 1957 — France; Nauwerck, 1972 — Canada; Bonneto and Ferrato, 1966, Ferrato, 1968 — Argentina; Sudzuki, 1964 — Japan; Pejler, 1957, 1957-a — Sweden; Gillard, 1948 — Belgium).

The presence of *Diaphanosoma brachyurum* in plankton of some lake, or artificial lake, puddle, river and similar, does not automatically enable the presence of its »traveling companion« — *Brachionus sessilis*. It is very discutable, also, if only climate conditions, better to say thermal regime (For example high water temperature in summer time, or some other factors), enable the presence of *Brachionus sessilis*. In case Balaton and Skadar Lake these two, that is three moments, are really present (Milovanović and Živković, 1965, Nedeljković 1959, Zankai and Ponyi, 1967, 1971, 1972, Sebestyen, 1964). Both one and the other lake have *Diaphanosoma brachyurum*, *Brachionus sessilis*, and relatively high water temperature during the year, starting as early as in May, lasting to as late as October (approximately 20—28°C). Maybe, for better understanding and knowledge of these two lakes, one could use a comparative survey of some of their more important characters (Tab. 1).

In mountainous natural and artificial lakes of Crna Gora, where *Diaphanosoma brachyurum* was recorded, like: Zmijinja, Riblje, Liverovičko, Krupac (Petković, St. — in Ivanović, et al, 1968, Petković, st., 1970, 1975), or in plainfield lakes like Šasko lake, and also in other lakes and waterstreams of Yugoslavia (Petković and Petković, 1971, 1978, Živković, 1968, 1972, Popovska — Stanković, 1954, 1971, Serafimova — Hadžišće, 1954, Milovanović, and Živković, 1964, Pui, 1971, the presence of *Brachionus sessilis* was not recorded. A large glacial Ohridsko lake, in Macedonia and Albania, as well as Terbuf lake, in Albania, do not have *Diaphanosoma brachyurum* at

all, so they do not have *Brachionus sessilis* either (Serafimova Hadžišće, 1957, Parenzan, 1930, 1931). However, lakes Malik, in Albania and Prespansko, partially Yugoslav, partially Greece and Albanian consist of *Diaphanosoma brachyurum* and, it is very possible, that here one can expect the presence of *Brachionus sessilis*, even more since these two lakes are very similar in many individual characters.

*Diaphanosoma brachyurum* is one of most common and most distributed cladoceran species. Its areals covers whole holarctic and neotropic area. That is a typical summer planktonic form settling mainly the pelagial of the lake. It can be revealed in plankton of small and large rivers (potamoplankton) (Enaceanu, 1967 and others), in the lakes and, in general, in various fresh and brackish stagnant waters of various dimensions (limnoplankton), even in small temporal waters, puddles, fish pools and so on. It has a very small daily amplitudes in vertical migrations (Rylov, 1935). It prefers epilimnion of clean open and warm waters (thermophilic form) in pelagial and littoral of eutrophic and olygotrophic but not acid waters, although according to some authors (Mäemets, 1958 for example) diapason of its tolerance on pH rates from oven 4 to 9. 2. In Skadar lake pH value at which it develops rates 7.5 to 8.2 in macrophytic vegetation that is 7.6 to 8.0 in pelagial. If the waters are rathers polluted (beta-mesosaprobic) it does not stand them and it cannot be recorded, usually, in such waters (Ponyi et al., 1973).

Tab. 1. Some more importante characteristics of Lakes Balaton and Skadar  
 Tab. 1. Neke važnije karakteristike Balaton i Skadarskog jezera

	Balaton	Skadar
1. Geographical coordinates	17° and 18° E GLong. and 46° and 47° N GLat.	42° 03' and 42° 21' N GLat. and 19° 03' and 19° 30' E GLong.
Geografske koordinate	17° i 18° IGD i 46° i 47° SGS	42° 03' i 42° 21' SGS i 19° 03' i 19° 30' IGD
2. Direction	SW-NE	NW-SE
Pravac pružanja	JZ-SI	SZ-JI
3. Sea-level	104 m	6 m
Nadmorska visina	104 m	6 m
4. Length	77 km	44 km
Dužina	77 km	44 km
5. Width — the biggest	14 km	14 km
Širina — najveća	14 km	14 km
6. Width — smallest	1,5 km	—
Širina — najmanja	1,5 km	—
7. Depth—the biggest	12 m	about 50 m (in cryptodepressions): sublacustric springs — »oka«
Dubina — najveća	12 m	oko 50 m (u sublakustr. izvorima) »okima«
8. Depth — mean	3,5 m	3—7 m
Dubina — prosečna	3,5 m	3—7 m
9. Length of the littoral line	200 km	162 km
Dužina obalske linije	200 km	162 km

		Balaton	Skadar
10.	A jagged coastline	small	large coefficient
	Razudenost	sitna	veliki koeficijent
11.	Lake bottom	sand, mud, flate	sand, mud, flate
	Jezersko dno	pesak, mulj, ravno	pesak, mulj, ravno
12.	Surface	596,25 km <sup>2</sup>	369,72 km <sup>2</sup> (low water level) 540,00 km <sup>2</sup> (high water level)
	Površina	596,25 km <sup>2</sup>	369,72 km <sup>2</sup> (pri niskom vodostaju) 540,00 km <sup>2</sup> (pri visokom vodostaju)
13.	Lake origin	tectonic movements	tectonic movements (submerged karst-poljes, and many depressions — sublacustric)
	Nastanak jezera	tektonski pokreti	tektonski pokreti (potopljena kraška polja i vrtače)
14.	Climate	sharp, continental, panonic, warm and dry summers and cold winters, t° of water in summer 28°C; t° of air in summer 28°C; ice regular occurrence	semiarid, modified mediterranean, t° of water in winter 2-5°C; t° of water in spring 9-16°C; t° of water in summer 16-32°C; t° of water in fall 12-16°C; t° of air in winter about 7-10°C; t° of air in summer about 33-35°C; no ice
	Klima	oštra, kontinentalna, panonska; topla i suva leta i hladne zime; temperatura vode leti 28°C; temperatura vazduha leti 28°C; led redovna pojava	semiaridna, izmenjena mediteranska; temperatura vode zimi 2-5°C; temperatura vode u proljeće 9-16°C; temperatura vode leti 16-32°C; temperatura vode u jesen 12-16°C; temperatura vazduha zimj oko 7-10°C; temperatura vazduha leti oko 33-35°C; nema leda



	Balaton	Skadar
15. Precipitations	600-700 mm/m <sup>2</sup> annually	2300—2966 mm/m <sup>2</sup> annually
Padavine	600-700 mm/m <sup>2</sup> godišnje	2300—2966 mm/m <sup>2</sup> godišnje
16. Tributaries	largest—the Sala River drainpipe the Shio River	largest—the Morača River; drainpipe the Bojana River
Pritoke	najveća — reka Sala; otoka — reka Šio	najveća — reka Morača; otoka-reka Bojana
17. ———	not sryptodepression	cryptodepression—at high and low water levels
———	nije kriptodepresija	kriptodepresija — pri visokim i pri niskim vodostajima
18. Water volumen	over 2 km <sup>3</sup>	1,586 km <sup>3</sup>
zapremina vode	preko 2 km <sup>3</sup>	1,586 km <sup>3</sup>
19. Geological base		limestone-dolomites
Geološka podloga		krečnjaci-dolomiti
20. Transparency	0,5-1 m that is 2 m in winter	3-4 m in winter and 1,5—2,5 m in summer
Providnost	0,5-1 m odnosno 2 m — zimi	3-4 m zimi i 1,5—2,5 m leti

In Crna Gora like in other places, it can be found also in waters at bigger altitudes — above 1000 to 1495 m above the sea level (Petković, 1968, Thomasson, 1962 — Pyramid Lake in North-West USA — the lake with clean water at 1178.5 m above the sea level). However, for its development the most favorable conditions are those given by biotopes at smaller altitudes (Petkovski, 1960), and especially in plainfields (Nedeljković, 1959, Petkovski, 1961, Milovanović and Živković, 1965). It stands rather well the changes of salinity so it can be frequently recorded at even large number of individuals in brackish waters (Petković, and Petković, 1971, 1978; Valkanov, 1935, 1936). Both in first and other waters it is almost perennial form. In Skadar Lake it can be recorded already in January (juv. stad.) and it is present until December (tab. 4); in some other lakes of Yugoslavia — from April to December (Popovska — Stanković, 1958). It mostly feeds on planktonic *Chlorococcales*.

## Results

*Brachionus sessilis* is a thermophilic form too. Commensal. It is being found attached to carapaces of *Diaphanosoma*, but its individuals can very frequently found undone from the body »carrier« — *Diaphanosoma*, as freely floating in plankton, and always in samples in which there are *Diaphanosoma*. The samples that do not consist of this cladocerans species do not have *Brachionus sessilis* in themselves. *Diaphanosoma* as the »carrier« enables to its cargo increased passive locomotion, gives to it better possibility for nutrition (*Brachionus sessilis* feeds on nannoplanktonic algae of group *Bacillariophyceae* (*Centricae*: *Cyclotella planctonica*, *C. operculata*, *Coma* and *C. glomerata*). Since *Diaphanosoma brachyurum* in Skadar Lake develops from March (rarely from January) until December, and males occur as late as at the end of September, or in October, *Brachionus sessilis* used to be found at females of *Diaphanosoma* at the same time and, very rarely, at males. In many other lakes of Crna Gora in which the investigations of *Rotifers* fauna were carried out (Petković, 1975, 1972-1973, 1977, Živković, 1975) the presence of *Brachionus sessilis* was not recorded.

Some more important ecological and biological parameters of Skadar Lake's water (pH, the amount of oxygen in mg/l and water temperature) were measured in two various lake's ambients (pelagial and littoral-macrophytic vegetation), 1972-1973, show that *Diaphanosoma brachyurum* that is *Brachionus sessilis* almost equally well develop both in one and the other environment in borders: pH from 7.60 to 8.00 that is from 7.50 to 8.20; oxygen from 7.51 to 12.00 mg/l that is 3.44 to 12.31 mg/l, and temperature of water from 3.60 to 26.20 that is from 3.10 to 27.50°C (*Diaphanosoma*), and

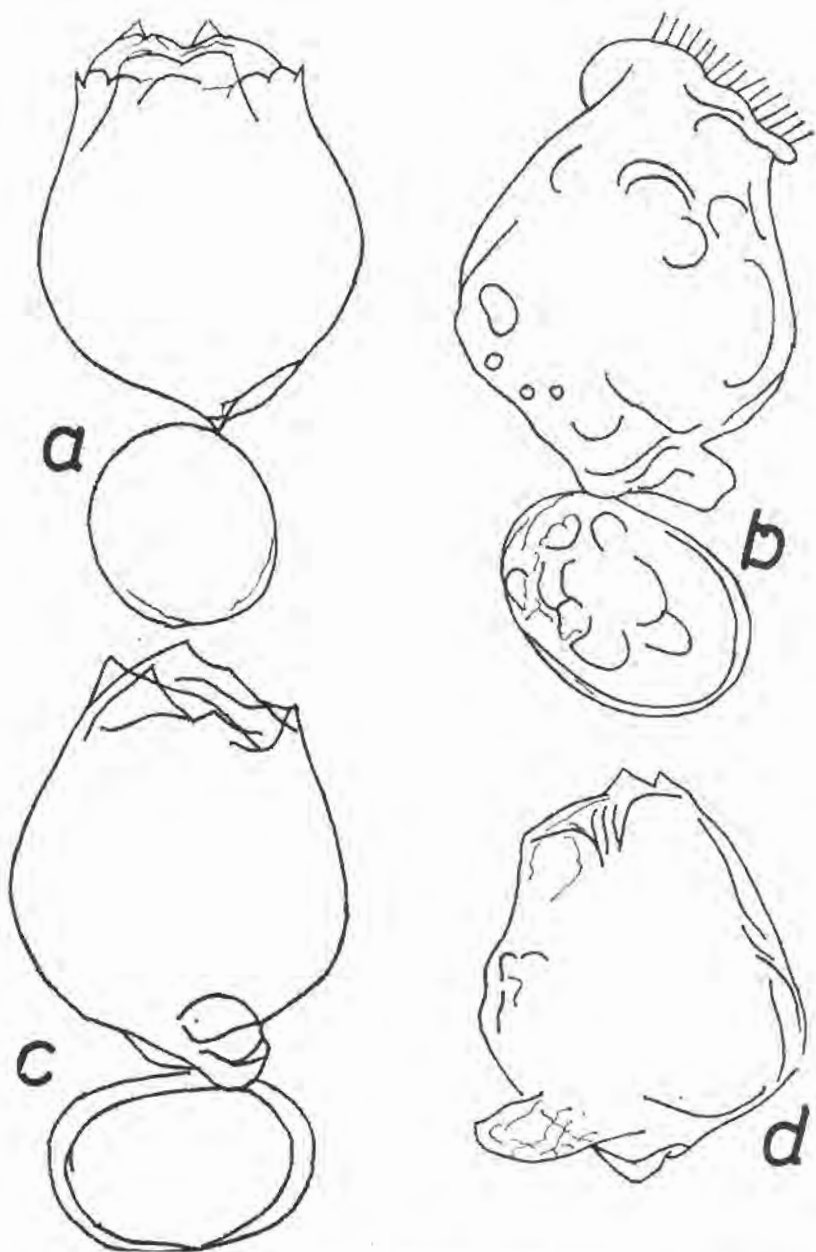


Fig. 2. *Brachionus sessilis*: a, b, c- females with eggs (June 1972) pelagial and littoral; d- female without egg (June 1972) -littoral

Sl. 2. *Brachionus sessilis*: a, b, c- ženke sa jajima (jun 1972) — pelagijal i littoral; d- ženka bez jajeta (jun 1972) — littoral.

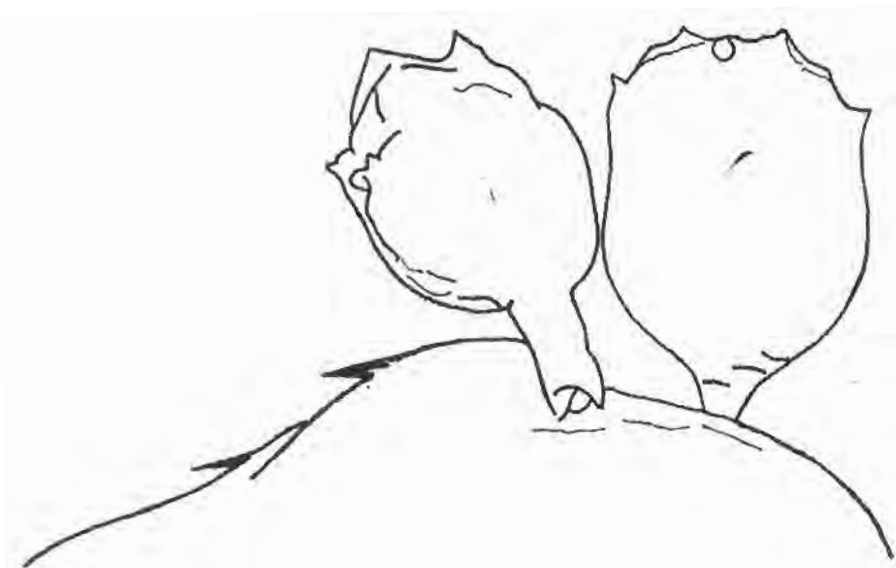


Fig. 3. *Brachionus sessilis*: two specimens (male and female) attached to carapax of *Diaphanosoma* (September 1972) — littoral.

Sl. 3. *Brachionus sessilis*: dve jedinke (mužjak i ženka) prikačene za pancir *Diaphanosoma*, (septembar 1972) — litoral.

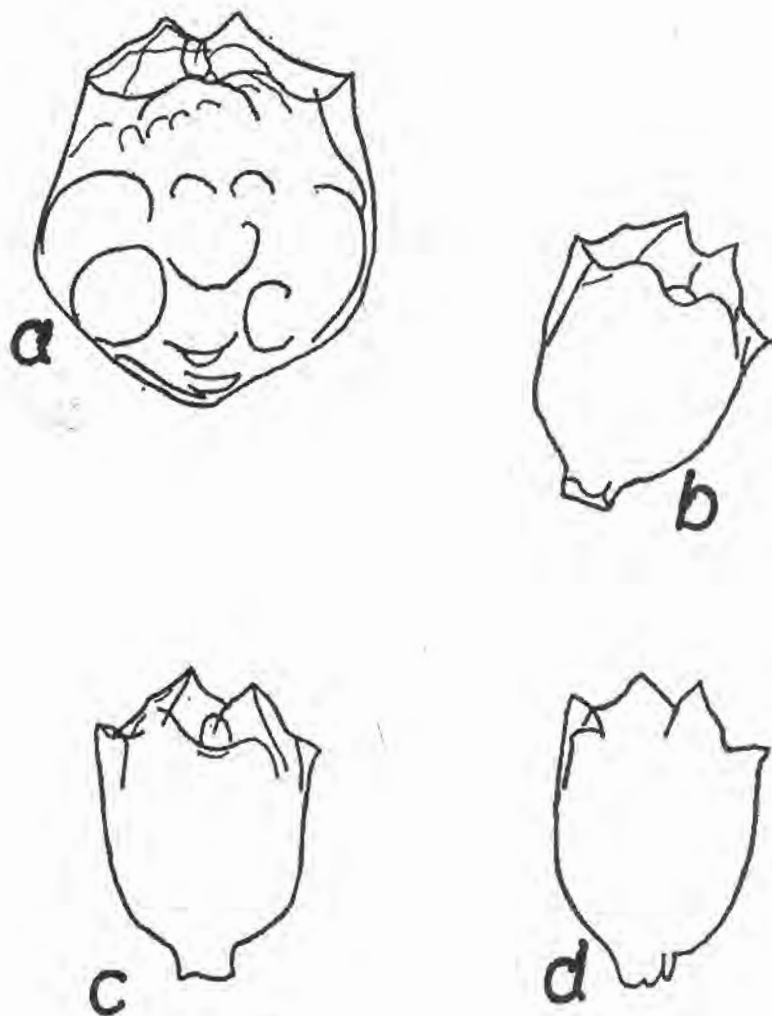


Fig. 4. *Brachionus sessilis*: a- female; b, c, d- males (June 1973) — littoral Sl. 4. *Brachionus sessilis*: a- ženka; b, c, d- mužjaci (jun 1973) — litoral.

pH from 7.70 to 8.00 that is 7.50 to 8.20 and oxygen from 7.51 to 9.65 that is 3.44 to 9.72 mg/l and water temperature from 12.00 to 26.20 that is 12.00 to 27.50°C (*Brachionus*). (Tab. 2 and 3 and 4).

Quantitative numeric values of *Brachionus sessilis* at stations in pelagial and littoral rate from 1 to 38 ind/l. They are hig-

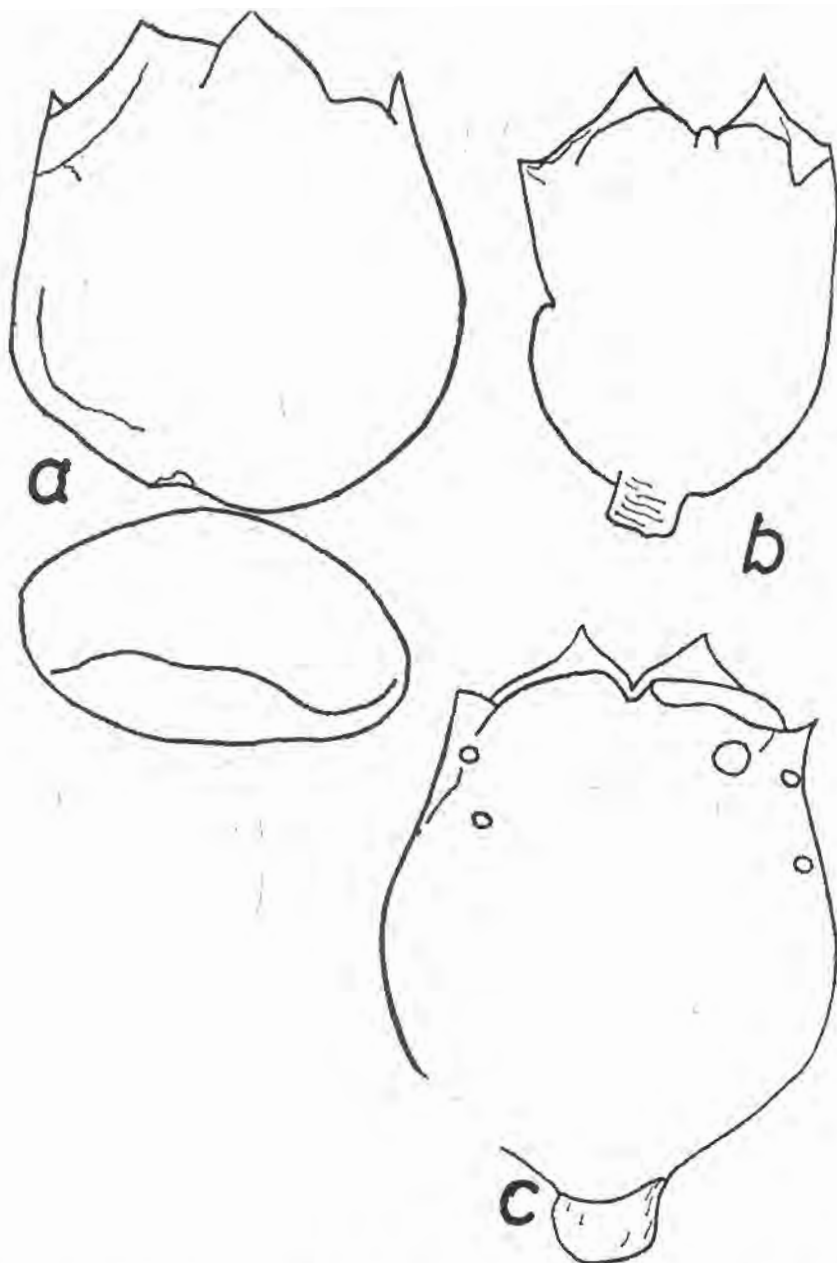


Fig. 5. *Brachionus sessilis*: a- female with egg; b- male; c- female without egg (September 1973) — littoral.

Sl. 5. *Brachionus sessilis*: a- ženka sa jajetom; b- mužjak; c- ženka bez jajeta (septembar 1973) — litoral.

hest in period June — August (2-38 ind./l), and smallest in period September — November (1-10 ind./l). Either in horizontal or in vertical distribution, of course, there is no any regularity (Tab. 5 and 6).

The specimens of *Brachionus sessilis* presented in this paper were recorded in material from littoral and pelagial (June, September 1972-1973). Their dimensions are the following females in June (length excl. »fingers« — 80 to 83 microns; breadth-68 microns); in September (length excl. »fingers« 86 to 92 microns; breadth — 70-73 microns). The females are well rounded and thickset. They carry one egg each. The eggs are coarse, their dimensions rating from 54 × 36 in June to 56 × 40 microns in September. Besides the females in June and September were also recorded the specimens of *Brachionus sessilis* which were more gracil, narrower; for them we suppose to be males. Their dimensions essentially differ from those in females, and they rate in June (length excl. »fingers« — 63 microns; breadth 46 microns) and in September (length excl. »fingers« — 65 microns, breadth 48 microns). Without aspiration to give a final opinion that dimensions of both females and males differ depending of seasons, recorded differences in dimensions, stil indicate that this situation could mean also the difference in sexes. The fact is that density of *Cyclotella* spp. on which *Brachionus sessilis* mostly feeds, is bigger in September (Petković, Sm. and Petković, St., 1968) than in June what would support the hypothesis, that September specimens of *Brachionus sessilis* (both sexes) are larger than those in June (Fig. 2 to 5).

Tab. 2 Some more important ecological parameters of water in Skadar Lake in macrophytic zone in 1972-1973

Tab. 2 Neki važniji ekološki parametri vode Skadarskog jezera u zoni makrofitske vegetacije u 1972-1973

	J.	F.	M.	A.	M.	J.	J.	A.	S.	O.	N.	D.
pH	7,70	7,70	7,80	7,70	7,70	8,20	7,70	7,50	7,50	7,50	7,70	7,70
10 <sup>6</sup> vode												
10 <sup>6</sup> of water	4,20	3,10	9,20	13,90	18,00	26,50	25,80	27,50	22,50	17,20	12,00	8,50
0 <sub>2</sub> mg/l	12,11	12,31	10,14	9,89	9,72	8,20	7,50	3,44	6,32	4,89	9,15	10,20

Tab. 3 Some more important ecological parameters of water in Skadar Lake in pelagic zone in 1972-1973

Tab. 3 Neki važniji ekološki parametri vode Skadarskog jezera u pelagijalu u 1972-1973

	J.	F.	M.	A.	M.	J.	J.	A.	S.	O.	N.	D.
pH	7,60	7,70	7,90	7,80	7,70	8,00	8,00	8,00	8,00	7,90	7,70	7,65

to vode												
to of water	5,00	3,60	9,50	13,20	16,50	25,50	25,00	26,20	21,80	17,20	12,00	8,00
O <sub>2</sub> mg/l	11,80	12,00	12,00	10,30	9,65	8,50	8,57	7,51	8,46	9,60	9,37	11,36

Tab. 4 Comparativ survey of occurrence of *Diaphanosoma brachyurum* Liev and *Brachionus sessilis* Varga in Skadar Lake during the period 1972-1973

Tab. 4 Komparativni pregled pojavljivanja *Diaphanosoma brachyurum* Liev. i *Brachionus sessilis* Varga u Skadarskom jezeru u toku 1972-1973

	J	F	M	A	M	J	J	A	S	O	N	D
<i>Diaphanosoma brachyurum</i>			+	+	+	+	+	+	+	+	+	+
<i>Brachionus Sessilis</i>					+	+	+	+	+	+	+	

Tab. 5 Numerosity of *Brachionus sessilis* Varga at different stations of pelagic and littoral zone of Skadar Lake in 1972-1973 ind./l

Tab. 5 Brojnost *Brachionus sessilis* Varga u Skadarskom jezeru na raznim tačkama pelagijala i litorala u 1972-1973 ind./l

	J	F	M	A	M	J	J	A	S	O	N	D
P I/1						8	8					
P I/2						2	7					
P I/3							10		7			
P II/1						38		7				
P II/2						14		8			1	
P II/3						10		10				
P III/1						6	15	12	4			
P III/2 O								4	10	6		
●								2	4	4	2	
P III/3							4	8	1			
P IV/2 O							13	8				
●						2	8	2	1			

LEGEND: O = surface; ● = bottom; P I/1,3; P II/1,3; P III/1,3 = littoral; (P I, P II, P III, P IV) 2 = pelagial

LEGENDA: O = površina; ● = dno; P I/1,3; P II/1,3; P III/1,3 = litoral; (P I, P II, P III, P IV) 2 = pelagial



Tab. 6 Vertikalna distribucija *Brachionus sessilis* Varga na tački P III/2 12. June, 12 1973. ind./l

Tab. 6 Vertikalna distribucija *Brachionus sessilik* Varga na tački P III/2 12. juna 1973. ind./l

depth dubina m	0	1	2	3	4	5	6	7
ind./l	18	2	14	8	4	4	8	9

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**PRILOG BOLJEM POZNAVANJU EKOLOGIJE I DISTRIBUCIJE  
BRACHIONUS SESSILIS VARGA 1951 (ROTATORIA)**

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**Rezime**

U ovom radu prezentirani su neki ekološki i biološki parametri koji se odnose na epibiontske odnosno epizoične vrste Rotatoria iz Skadarskog jezera. Ovaj prilog opisuje jednu retku epizoičnu, komensalsku vrstu *Brachionus sessilis* koji, prema dosadašnjim zapažanjima (Varga, 1951), koja su i u našem radu potvrđena, živi na površini tela euplanktonskog račića *Diaphanosoma brachyurum* Ljev. (*Cladocera*). Ova retka vrsta *Rotatoria* u fauni sveta nađena je prvi put u Balaton jezeru u Mađarskoj. Istu vrstu u Skadarskom jezeru prvi put je našla Dr. Anđelija Živković, 1965. Ona je ovu vrstu takođe nalazila na *Diaphanosoma brachyurum* ali o tome nije detaljnije pisala.

*Brachionus sessilis* je termofilna forma. Komensal. Nalazi se prikačen za pancir *Diaphanosoma*, ali se njegove jedinke vrlo često nalaze i otkaçene od tela »nosača« — *Diaphanosoma*, kao slobodno plivajuće u planktonu, i uvek u probama u kojima ima *Diaphanosoma*. Probe u kojima nema ovog račića, nemaju ni *Brachionus sessilis* u sebi. *Diaphanosoma*, kao »nosač« obezbeđuje svome tereću povećanu pasivnu lokomociju, pruža mu veću mogućnost za ishranu (*Brachionus sessilis* se hrani nanoplanktonskim algama iz grupe *Bacillariophyceae* (*Centricae*: *Cyclotella planctonica*, *C. oper-*

*culata*, *C. comta* i *C. glomerata*). S obzirom da se *Diaphanosoma brachyurum* u Skadarskom jezeru razvija od marta (retko od januara) do decembra, a mužjaci se pojavljuju tek krajem septembra ili u oktobru, *Brachionus sessilis* je nalažen uglavnom na ženka i, vrlo retko, na mužjacima od maja do novembra. U mnogim drugim jezerima Crne Gore u kojima su vršena istraživanja faune *Rotatoria* (Petković, 1972-1973, 1975, 1977, Živković, 1975) nije bilo zabeleženo prisustvo *Brachionus sessilis*.

Mereni su neki važniji ekološki i biološki parametri vode Skadarskog jezera (pH, količina kiseonika u mg/l i temperatura vode) u dva različita jezerska ambijenta (pelagijal i litoral odnosno makrofitska vegetacija). Ova merenja pokazala su da se *Diaphanosoma brachyurum* odnosno *Brachionus sessilis* skoro podjednako dobro razvijaju i u jednoj i u drugoj sredini u granicama vrednosti: pH od 7,60 do 8,00 odnosno od 7,50 do 8,20; kiseonika od 7,51 do 12,00 odnosno 3,44 do 12,31 mg/l, i temperature vode od 3,60 do 26,20°C odnosno od 3,10 do 27,50°C (*Diaphanosoma*); i pH od 7,70 do 8,00 tj. 7,50 do 8,20 i kiseonika od 7,51 do 9,65 tj. 3,44 do 9,72 mg/l, i temperature vode od 12,00 do 26,20 tj. od 12,00 do 27,50°C (*Brachionus*).

Kvantitativne numeričke vrednosti *Brachionus sessilis* na tačkama u pelagijalu i litoralu kretale su se od 1 — 38 ind./l. Najveće su bile u periodu jun — avgust (2-38 ind./l) a najmanje u periodu septembar — novembar (1-10 ind./l). Ni u horizontalnoj ni u vertikalnoj distribuciji, naravno, nije bilo nekih pravilnosti.

Jedinke *Brachionus sessilis* predstavljene u ovom radu bile su prisutne u materijalu iz litorala i pelagjala (jun, septembar 1972-1973). Njihove dimenzije bile su sledeće: ženke u junu imale su dužinu isključujući »prste« od 80 do 83 mikrona i širinu 68 mikrona; u septembru njihova dužina isključujući »prste« iznosila je od 86 do 92 mikrona i širina od 70 do 73 mikrona. Ženke su prilično zaobljene i zdepaste. One su nosile po jedno jaje. Jaja su krupna i njihove dimenzije su iznosile od  $54 \times 36$  u junu, do  $56 \times 40$  mikrona u septembru. Pored ženki u junu i septembru takođe su zapažene jedinke *Brachionus sessilis* koje su bile gracilnije i uže; Pretpostavlja se za njih da su to mužjaci. Njihove dimenzije bitno su se razlikovale od onih kod ženki i iznosile su u junu: dužina bez »prstiju« — 63 mikrona i širina 46 mikrona; i u septembru: dužina bez »prstiju« — 65 mikrona, širina 48 mikrona. Bez pretenzija da se da konačno mišljenje o tome da se dimenzije mužjaka i ženki razlikuju po sezonama, zapažene razlike ipak ukazuju da bi ovakva situacija mogla da znači i razlike u polovima. Činjenica da je gustina *Cyclotella spp.* kojima se *Brachionus sessilis* pretežno hrani veća u septembru (Petković, Sm. i Petković, St., 1968) nego u junu ide u prilog pretpostavci da su septembarski primerci *Brachionus sessilis* (oba pola) veći nego oni u junu.