THE SUMMER PLANKTON OF SIVUCHYA AND KALEVALA BIGHTS (PETER THE GREAT BAY, SEA OF JAPAN)

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Introduction

Within the framework of the program of complex study of southwestern Peter the Great Bay, spent by Institute of Marine Biology, pelagial of the southern region of Far East State Marine Reserve (FESMR) situated to the south of Posyet Bay was investigated. This field includes two bights – Sivuchya and Kalevala, which plankton practically is not investigated till nowadays. Earlier in series of works on plankton of Posyet Bay the fragmentary information about phyto- and zooplankton of Sivuchya Bight were made resulted (Rura, 1971, 1974; Kos, 1976, 1977; Brodsky, 1981). Recently years the inventory of planktonic flora and fauna of reservation was made. Part of the data about structure, distribution and dynamics of plankton is in the reports and is published (Shkoldina, 1997; Shkoldina & Pogodin, 1999), and the basic results are in press. The given work is a continuation of these publications, representation about composition both dynamic phyto- and zooplankton of Sivuchya and Kalevala Bights in the summer-autumn calendar period for the first time is given.

Material and Methods

Samples were collected from July to September in 1996 from "Lugovoe" in the daytime at 5 stations, situated in Sivuchya and Kalevala Bights (Fig. 1). Three of the zooplankton sampling (15 samples) and 2 phytoplankton sampling (10 samples) were made (Table 1). The samples of zooplankton were taken of the Juday net (mesh size 168 µm, area of entrance aperture 0.1 m^2). The caching bottom-surface was executed at every station. The samples were fixed with 4% solution of formalin. Before cameral count we measured sedimentation volume (in ml) and displacement volume of seston in the Yashnov's voluemeter (1 ml equal 1 g). Then the sample was separated on 3 sized fractions (small – the organisms less 1.2 mm, average – from 1.2 to 3 mm, large – more 3 mm), each of which was examined in the Bogorov clamber. The mass species were counted with the help of the aliquot–divisor. *Cladocera* and *Copepoda* were determined up to species.

The phytoplankton was collected from the surface layer (0.5 m) with 2-liter bathometer. The material was fixed with Lugol's solution and concentrated by sedimentation method. Nanoplankton was counted in a Nojotta-type clamber with a volume of 0.05 ml, microplankton in the 1 ml chamber. The species were considered to dominate if the density was more than 20%, and subdominant – if the density was from 20 to 5%. The classification of phytoplankton towards definite types of biotopes (Kiselev, 1969) was used for ecological analysis. The types of area on basis of phytogeographical division of World Ocean (Semina, 1974) were used for the geographical description.

Table 1

Sampling data, depth (H) and surface temperature of water (T) at the stations in Sivuchya and Kalevala Bights in 1996

Stations	Data			H, m	T, °C		
	I	II	III		I	II	III
19	13.07.96	29.08.96	30.09.96	19.3-21.0	19.6	21.0	17.4
21	13.07.96	29.08.96	30.09.96	8.0-9.6	19.9	20.2	17.5
22	13.07.96	29.08.96	30.09.96	9.4-11.0	20.1	22.4	18.0
27	13.07.96	29.08.96	29.09.96	14.0-15.0	19.8	20.8	17.9
28	13.07.96	29.08.96	29.09.96	6.0-7.0	20.0	21.5	17.8

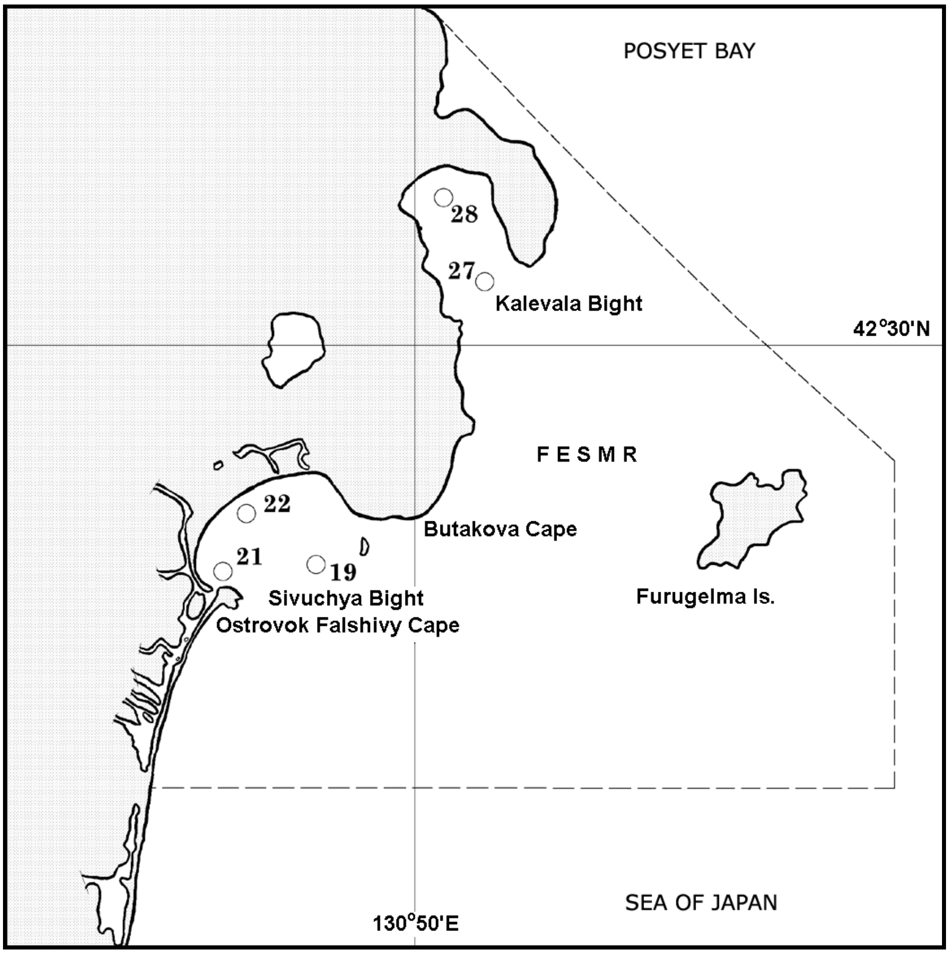

Fig. 1. Scheme of plankton stations in Sivuchya and Kalevala Bights (Peter the Great Bay, the Sea of Japan)

Results and Discussion

The characteristic of the research area. Sivuchya Bight occupies more south position, than Kalevala Bight, and it is the southern bight of FESMR (Fig. 1). The bight is open on south-east with depth on an exit up to 20 m. The streams from the little salt water lakes and lagoons of South Primorye are falling into it in the region of Falshivy Ostrovok Cap. Two parts can be distinguished in bight: inside part (central station 22, near-lagoon station 21) and exit from the bight (station 19). Kalevala Bight is situated farther north and it goes far into the continent, and thanks to it the Kalevala Bight is more closed and stretched than the Sivuchya Bight. The depth does not exceed 15 m on the exit. Two parts can be distinguished in Kalevala Bight: inside part (station 28) and exit from the bight (station 27).

The water areas of the southern part of FESMR, where the investigated bights are situated, is divided into two parts by an underwater ride, going from Butakova Cape to Furugelma Island. Central part of it has a channel. Therefore the waters of Posyet Bay have more strong influence on Kalevala Bight, than on Sivuchya Bight. The open waters of Sea of Japan have more significant influence on Sivuchya Bight.

The southern part of FESMR is situated in area with complex hydrological conditions. In southwest part of Peter the Great Bay, besides the basic Primorsky current, which follows from northeast along outside of a continental shelf, inversely directed nearly coastal current exists. It passes Tuman River mouth to the east-northeast and also is included in anticyclonic circulation in the open part of area. Besides constant currents, the movement of water masses is influenced by monsoons in this area (Vyshkvartsev & Lebedev, 1997; Grigorjeva & Moshchenko, 1998). The investigated water area is also influenced by waters from southeastern part of the Sea of Japan brought by synoptic whirlwinds (Danchenkov *et al*., 1997).

The Characteristic of Plankton in Common

The work was made in the summer hydrological period, when the temperature of the surface layer was from 17.4 °C to 22.4 °C (Table 1). Quantitative plankton parameters changed considerably from sampling to sampling and along stations (Table 2). The first sampling is characterized by high numbers of volume and biomass of seston (the maximum was registered in central part of Sivuchya Bight – 400 ml/m^3 and 32.9 g/m^3). Mainly “bloom” of the net phytoplankton determined this maximum. However, the data of the bottle don’t give the ground to speak about “bloom”. Non-uniform of the vertical distribution microalgae caused such distinctions between net and bottle samples possibly, as bottle samples were taken in sub-surface layer only.

Table 2

The quantitative parameters of plankton in Sivuchya and Kalevala Bights in 1996.

Stations	Biomass (g/m^3) and (in brackets) sedimentation volume (ml/m^3) of seston			Phytoplankton density, 10^3 cells/l		Zooplankton density, 10^3 spm/m^3			Density of *Noctiluca scintillans*, 10^3 spm/m^3		
	I	II	III	I	II	I	II	III	I	II	III
19	11.4 (68)	0.6 (1.9)	1.1 (11.9)	325	253	29.3	14.1	16.5	4.1	0.024	0
21	10.6 (93)	5.3 (25)	0.8 (6.2)	190	799	36.2	25.6	11.3	9.4	0	0
22	32.9 (400)	2.1 (17)	0.7 (6.8)	195	217	78.9	18.7	21.3	7.5	0.357	0
27	6.1 (68)	1.2 (22)	1.5 (15.9)			31.4	19.5	30.8	8.5	0.068	0
28	1.2 (2.3)	1.2 (23)	1.5 (14.7)	140	120	49.0	11.7	39.4	33.8	0.882	0
Average density	12.4 (126.4)	2.1 (18.2)	1.1 (11.1)	212.5	347.25	44.9	17.9	23.8	12.7	0.266	0

The average quantitative parameters of sestons from beginning to end of the research decreased (in 10 times). However, this trend was characteristic for Sivuchya Bight, and on the contrary inside Kalevala Bight sestons parameters increased slightly. The density of phytoplankton changed in interval $120 \cdot 10^3$ – $800 \cdot 10^3$ cells/L in all period of research (Table 2). In Sivuchya Bight the density of microalgae increased from July to August in central part and decreased in Kalevala Bight. The density of zooplankton was from $11.3 \cdot 10^3$ to $78.9 \cdot 10^3$ spm/m^3. Maximum density was in July. In August the density decreased, later the density of zooplankton increased again (except near-lagoon part of Sivushiya Bight). In average in July the density of zooplankton was higher in Sivuchya Bight ($48.1 \cdot 10^3$ compared with $40.2 \cdot 10^3$ spm/m^3), in September – in Kalevala Bight ($35.1 \cdot 10^3$ compared with $16.4 \cdot 10^3$ spm/m^3).

Thus, the absolute values of quantitative parameters of the plankton in Sivuchya and Kalevala Bights were considerably different. The dynamics of zooplankton was the same in both bights, but the dynamics of seston and phytoplankton had the opposite trends in each of bights.

Phytoplankton

For all period of research in Sivuchya and Kalevala Bights 65 species and infraspecies taxa of microalgae, belonging to 6 divisions were found. According to number of species *Dinophyta* (30 species) and *Bacillariophyta* (30 species) dominated, among diatoms – genus *Chaetoceros* (8 species), among dinophytes – *Protoperidinium* (8 species).

At all stations neritic species dominated (70%). Pantalas species (species meeting both in coastal and in ocean waters) compounded 12%, oceanic – 9% from number of all species with distinct ecological description. Most species belonged to a real planktonic microalgae, the bentic microalgae compounded 9%. For a type of area microalgae belonged to the next group: cosmopolitan (48%), tropical-boreal (23%), tropical-arctic-boreal (13%), tropical (8%), arctic-boreal (8%) (Table 3). A lot of species with tropical-boreal and tropical characteristic confirm the known performance about influence on forming of local phytoplankton of the warm currents running up to the southern Peter the Great Bay in summer (Konovalova, 1974; Orlova, 1990).

Diatoms performed the foundation of phytoplankton community, mainly the species of the genus *Chaetoceros* (51-78% from all numbers of microalgae). Dinophytes (12-20%) and “small flagellate algae” – non-identified pigmented flagellates with size less 10 μm (11-15%) were on the second place. So potentially toxic and harmful species microalgae were found (dinophytes *Noctiluca scintillans, Prorocentrum minimum, Dinophysis acuminata*; diatoms *Pseudo-nitzschia pungens, P. multiseries, Leptocilindrus danicus*). The high density of *N. scintillans* (by net samples) was observed in inside part of Kalevala Bight in July (Table 2), and in this bight in August (by the bottle samples) *P. minimum* developed significantly (up to $10 \cdot 10^3$ cells/L). Mass development of these species has been the cause of numerous poisonings of people and the cases of deaths of mollusks (Tangen, 1983; Freudenthal & Jijina, 1985).

In July the density of microalgae was $190 \cdot 10^3$ cells/L both in lagoon and in shallow part of Sivuchya Bight. On the exit from the bight (station 19) the density of phytoplankton was $320 \cdot 10^3$ cells/L (Table 2). Tropical-boreal species *Chaetoceros affinis* and tropical-arctic-boreal *C. compressus* dominated at all stations (the maximum – 52% from all numbers of microalgae – it was noted on exit from the bight). Cosmopolitan species *Sceletonema costatum* (14%), *Chaetoceros laciniosus* (9%), tropical-boreal *Leptocilindrus danicus* (6%) and “small flagellate algae” (11%) subdominated. In Kalevala Bight the density of phytoplankton was $140 \cdot 10^3$ cells/L. *Chaetoceros affinis* dominated (78%), *C. compressus* subdominated (10%).

In August in Sivuchya Bight the density of microalgae decreased 1.3 times on exit and increased in inside part, especially high (four times) the density increased at near-lagoon station (Table 2). Tropical-arctic-boreal *Chaetoceros compressus* dominated in the bight (the maximum – 60% from all numbers of microalgae – it was noted on exit from the bight). The part of *C. affinis*, dominating in July, decreased (10% from all numbers of microalgae). *C. affinis* and at the same time *C. laciniosus* (17%), “small flagellate algae” (15%), *Sceletonema costatum* (10%) subdominated. In Kalevala Bight the density of species was the same July – $120 \cdot 10^3$ cells/L. *C. compressus* as in the Sivushiya Bight dominated (35%). *C. affinis* (17%) and *Prorocentrum minimum* (10%) subdominated.

The maximum of phytoplankton density was observed in August at exit station of Sivuchya Bight. The density of microalgae has not changed significantly at other stations in this bight. The same species dominated at all stations in both bights. Mainly the distinctions concerned the subdominant species. So subdominated species were presented by the most number of species in Sivuchya Bight. As whole such situation is characteristic for the shallow bights of Peter the Great Bay in the summer hydrological period (Konovalova, 1974, 1979; Orlova, 1990).

Zooplankton

The zooplankton of investigated area was represented by holoplankton, in that composition of the representatives of 6 phyla, of 9 classes and of 17 orders were found, and by larvae of invertebrate (meroplankton) of 6 phyla and 11 classes were found. 19 species of *Copepoda Calanoida*, 4 species of *Cyclopoida* and 5 species of *Cladocera* were determined.

The basis of density of zooplankton community compounded of holoplankton (Fig. 2). Part of meroplankton was not significant and it decreased in average by samplings from July to the end of September: I – 7.3%, II – 4.3%, III – 1.6%. Maximal density and the number part of larvae of bottom invertebrate was in July in central part of Sivuchya Bight (more $12 \cdot 10^3$ spm/m^3 and 15.7%), at the same with maximal seston density and net phytoplankton “bloom” (Fig. 2a). Larvae *Bivalvia* dominated here this time. In Kalevala Bight the density of meroplankton was nearly $3 \cdot 10^3$ spm/m^3 (9.5%), larvae *Echinodermata* dominated. In August the quantitative parameters of meroplankton were higher in inside part of Kalevala Bight ($2.2 \cdot 10^3$ spm/m^3 and 11.5%), where mass development of larvae *Gastropoda* was observed. In September its was higher again in Sivuchya Bight (up to $1 \cdot 10^3$ spm/m^3 and 4.2%), where larvae *Polychaeta*, *Gastropoda* and *Echinodermata* were numerous. Thus the periods of mass development of different groups of larvae of bottom invertebrates were not similar in the bights. The density of meroplankton and its part of common quantity of zooplankton were essentially distinguished.

Table 3

The ecological-biogeographical structure of phytoplankton in Sivuchya and Kalevala Bights

Ecological description	Biogeographical description	Number of species			
		July (I)		August (III)	
		absolute	%	absolute	%
Neritic	Cosmopolitan	16	42	15	36
	Tropical-Boreal	10	26	10	24
	Tropical-Arctic-Boreal	7	18	4	10
	Tropical			5	12
	Arctic-Boreal	2	6	1	2
	Non identify	3	8	7	16
		38	100	42	100
Oceanic	Cosmopolitan	1	20	2	40
	Tropical-Boreal	3	60	2	40
	Tropical-Arctic-Boreal	1	20		
	Tropical				
	Arctic-Boreal				
	Non identify			1	20
		5	100	5	100
Pantalas	Cosmopolitan	3	60	1	20
	Tropical-Boreal				
	Tropical-Arctic-Boreal			2	40
	Tropical				
	Arctic-Boreal	2	40	2	40
	Non identify				
		5	100	5	100
Bentic	Cosmopolitan	2	50	3	75
	Tropical-Boreal				
	Tropical-Arctic-Boreal				
	Tropical				
	Arctic-Boreal				
	Non identify	2	50	1	25
		4	100	4	100
In all		52		56	

In the whole *Copepoda* was dominated in composition of holoplankton (in average by samplings: I – 70%, II – 40%, III – 55%). Among others groups *Cladocera* (10%, 3%, 10%), *Appendicularia* (12%, 30%, 20%) and *Chaetognata* (14% in August) composed large part. However, in various fields of water area of both bights the interrelation of holoplankton groups essentially differed. So, in July copepods made up only half part of the zooplankton density in consequence significance quantity of *Cladocera* and *Appendicularia* (Fig. 2a). In August copepods dominated in open part of Sivuchya Bight only, and *Appendicularia* dominated at other stations, especially in near-lagoon part. Besides, the mass development of *Chaetohnatha* and other holoplankton groups – *Cnidaria, Euphausiacea, Decapoda* and ichtioplankton (in sum average 7.7%) – was observed (Fig. 2b). In September the quantitative role of *Copepoda* increased again in Kalevala Bight and in central part of Sivuchya Bight, *Appendicularia* and *Cladocera* composed significant part in open and near-lagoon parts in this bight (Fig. 2c). In the beginning and in the end of the research period in both bights (except near-lagoon part of Sivuchya Bight) mass development of *Tintinnidae* was observed. Especially it was expressed in July in Kalevala Bight (up $0.7{\cdot}10^3$ spm/m^3). Thus the significant distinctions in structure of zooplankton were observed both between bights and between stations in each of the bights, what is result of their situation, determined biotopic conditions for development of plankton.

In species compound of zooplankton of both bights the regular seasonal changes were observed (analyzed on *Copepoda* and *Cladocera)*. In beginning of the research *Cladocera* was presented by two boreal (*Podon leuckarti* and *Evadne nordmanni*) and one subtropical-lowboreal (*Pleopis polyphemoides*) species. Later the first of them disappeared from plankton, but two tropical species *Penilia avirostris* (more abundant in August) and *Pseudevadne tergestina* (in September) appeared. The species composition of *Cladocera* of the both bights was equal, however, the peculiarity of its distribution on water area was noted.

In July the density of dominated *Evadne nordmanni* in number in both bights was higher on an exit ($1.1 \cdot 10^3$ spm/m^3 in Sivuchya Bight and $3.5 \cdot 10^3$ spm/m^3 in Kalevala Bight). *Podon leuckarti* was more abundant in the central part of Sivuchya Bight (up to $0.5 \cdot 10^3$ spm/m^3). *Pleopis polyphemoides* was in its near-lagoon part with the same density, as this species educes in mass in a little soline fields of water area. In August density of *E. nordmanni* and *P. polyphemoides* was low and *Penilia avirostris* dominated, which greatest density was observed in area of Falshivy Ostrovok Cape (up to 560 spm/m^3) and in Kalevala Bight (up to 227 spm/m^3). In September in Sivuchya Bight *P. polyphemoides* dominated (75%), and in Kalevala Bight *P. polyphemoides* and *E. nordmanni* dominated, and common density of the cladocerans was higher here ($3.3 \cdot 10^3$ spm/m^3).

More than half of species of copepods-calanoids found in Sivuchya and Kalevala Bights for all period of research, belonged to a neritic group (58%). Nevertheless, in July the number of oceanic and neritic species was equal, and in other time the number of neritic species twice exceeded number of oceanic species (Table 4). The warm-water and cold-water species were presented almost equally, in common. From 19 species *Calanoida* almost half (9) were boreal, 4 species were subboreal and 6 species were subtropical.

In July fauna of *Copepoda Calanoida* consisted of boreal species (Fig. 3a): oceanic *Neocalanus plumchrus*, *Eucalanus bungii*, *Pseudocalanus minutus*, *P. newmani*, *Metridia pacifica*, *Calanus pacificus*, neritic *Acartia longiremis*, *A. hudsonica*, *Centropages abdominalis*, *Tortanus discaudatus*, *Pseudodiaptomus marinus* and *Eurytemora pacifica*. *Oithona similis*, *O. plumifera*, *O. brevicornis* and *O. sp.* were occurred from *Cyclopoida*. Such a composition of *Copepoda* is usual for middle summer in neritic zone of Peter the Great Bay, when cold-water species are present in plankton still, but their density is decreased (Mikulich & Biryulina, 1977; Chavtur *et al.*, 1992; Pogodin *et al.*, 1994). Because of the increased temperature of a superficial layer interzonal species leave for the large depths, and their occurrence in the investigated area circumscribed by the open parts of bights this time, and most stenotermic *E. bungii* completely was absent in Kalevala Bight. Thus, despite of significant warming up of a superficial layer of water in July (up to 20 °C), the occurrence of species of cold-water complex testifies to the presence of more low-temperature near-bottom layer on water area of outside parts of both bights. At these stations epipelagic species *P. newmani* and *O. similis* dominated this time (their total part compounds about 90%).

Table 4

The ecological-biogeographical structure of Calanoida in Sivuchya and Kalevala Bights

Ecological description	Biogeographical description	Number of species					
		July (I)		August (III)		September (IV)	
		absolute	%	absolute	%	absolute	%
Oceanic	Arctic-Boreal	1	16.7				
	Boreal-Arctic	1	16.7	1	33	1	25
	Boreal	2	33.3				
	Lowboreal	2	33.3	1	33	1	25
	Subtropical			1	33	2	50
		6	100	3	100	4	100
Neritic	**Arctic-Boreal**	1	16.7				
	Boreal-Arctic	1	16.7				
	Boreal	3	50	2	25	2	25
	Lowboreal	1	16.7	2	25	2	25
	Subtropical			4	50	4	50
		6	100	8	100	8	100
In all		12		11		12	

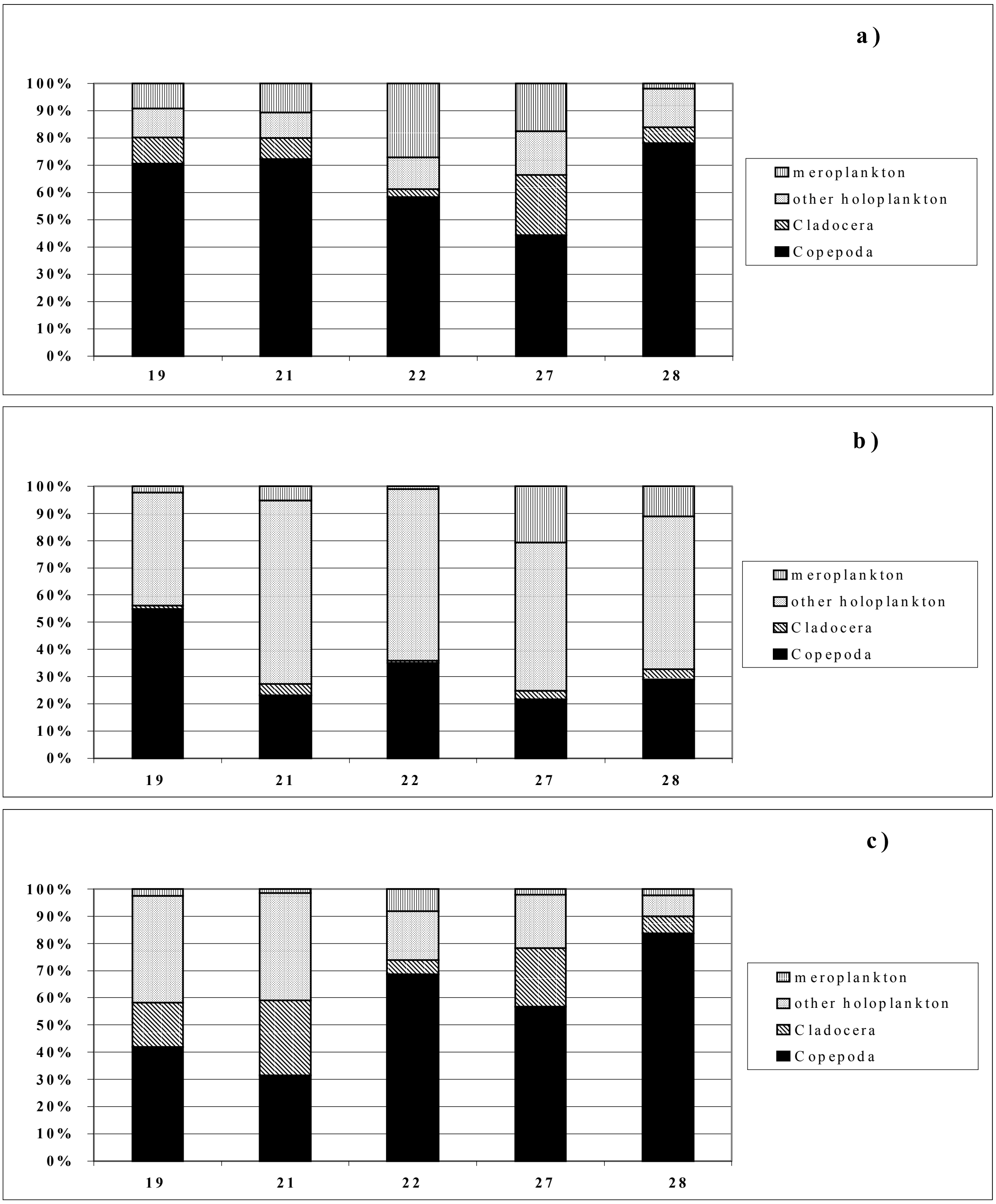

Fig. 2. Structure of zooplankton community (%) in July (a), August (b) and September (c) at stations (№ 19, 21, 22, 27, 28) in Sivuchya and Kalevala Bights in 1996

Neritic species *Acartia hudsonica* (50% in near-lagoon part in Sivuchya Bight and 65% in shallow part in Kalevala Bight) and *Tortanus discaudatus* (up 10% in Sivuchya Bight) dominated at stations, located in inside part of both bights (Fig. 3a). The most dense abundance *of A. longiremis* and *Centropages abdominalis* was observed in central part of Sivuchya Bight. *Eurytemora pacifica* was found in Kalevala Bight only. It is quite normal, as this species is usual inhabitant of Posyet Bay (Kos, 1976, 1977), and farther south Furuhelm Island it wasn't found practically (Shkoldina *et al*, in press). Also it is necessary to note the appearance of *Oithona brevicornis* in shallow part of Kalevala Bight, that, alongside with absence of series of cold-water species, testifies to the greater degree of water heating in this field of investigated water area, though the superficial temperature in both bights differed a little.

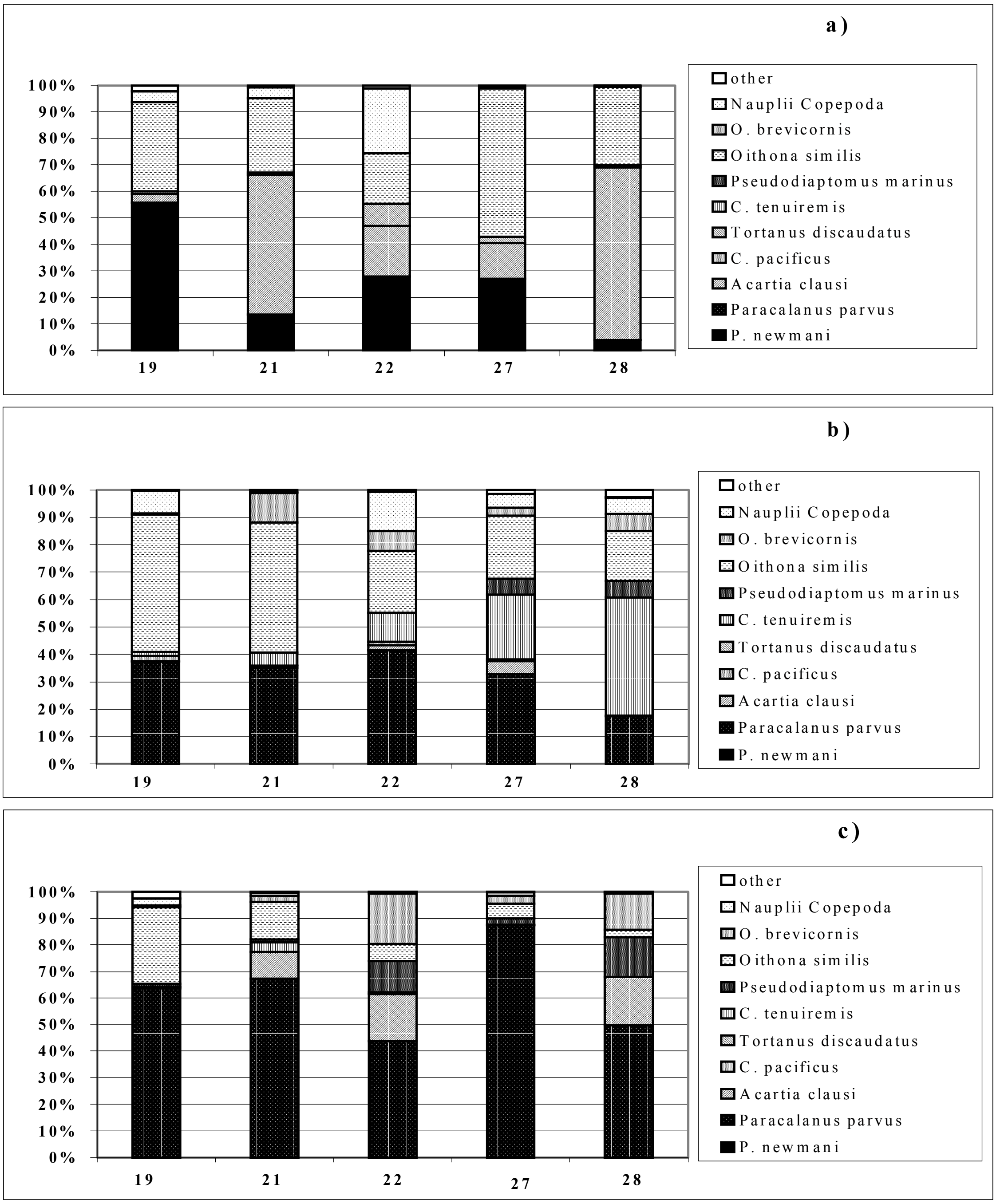

Fig. 3. Structure of Copepoda taxocene (%) in July (a), August (b) and September (c) at stations (№ 19, 21, 22, 27, 28) in Sivuchya and Kalevala Bights in 1996

In August, in the period of maximal water temperature, the oceanic species of the boreal genesis disappeared from plankton of the bights, excluding singly occurred *Pseudocalanus newmani* and eurybiotic *Oithona similis,* the density of what has decreased in some time. Subtropical and tropical species (50% from all numbers species of *Calanoida*, Table 4) appeared (oceanic epipelagic *Paracalanus parvus* and neritic *Acartia omorii*, *A. pacifica*, *Centropages tenuiremis*, *Labidocera bipinnata*) (Fig. 3b).

In inside part of Sivuchya Bight, where the streams from lakes and lagoons run into, little-saline-water *Sinocalanus tennelus* was found. The species *Calanus pacificus*, *Oithona brevicornis* and *Pseudodiaptomus marinus* have increased density and began to occur on all investigated water area. In Sivuchya Bight *Paracalanus parvus* (up to 40%), *O. similis* (up to 50%) and *O. brevicornis* (up to 13%) dominated in number. The predominance of species of an oceanic complex was especially expressed in open and near-lagoon its parts. In Kalevala Bight a part of neritic species *Centropages tenuiremis* (up to

40% in shallow part) and *P. marinus* (8%) – mass species, characteristic for a Posyet Bay – was more significant (Fig. 3b).

In September in spite of the beginning of cooling of the temperature of the upper layer of water the part of warm-water species was still great (Table 4). Besides the other warm-water species in Sivuchya Bight the oceanic subtropical species *Mesocalanus tenuicornis* was found, whose appearance can be connected with intensifying water influence from south part of Sea of Japan. This period is characterized by the increase in number of *Paracalanus parvus*, especially on the exit from the both bights (63-87%), *Acartia aff. clausi* (up 18%) and *Oithona brevicornis* (up 20%) in shallow part of the both bights (Fig. 3c).

Thus, the bights had difference both in structure taxocene and in character of dominance of different species of the copepods, though the general laws of dynamics of a fauna were followed. Inside each bight these parameters depended on a place of station.

Conclusion

During the period of research from July to September in compound and structure of phyto- and zooplankton were observed the regular seasonal changes usual for Peter the Great Bay (Konovalova, 1974, 1979; Kos, 1977; Mikulich & Biryulina, 1977; Orlova, 1990; Ermakova, 1994; Chavtur *et al*., 1992; Pogodin *et al*., 1994). However, their course had their own features in each of the investigated bights, that manifested in the character of dominance of complexes of a phytoplankton and quantitative interrelation of copepods and cladocerans species, and also groups of holo- and meroplankton. So, in plankton in Kalevala Bight during all research period the species of a neritic grouping dominated, that corresponds to the greater degree of its closing. In more open Sivuchya Bight the parts of mass species are leveled, and in near-lagoon part the dominance of 1-2 species is brightly expressed. The influence of the open waters has an effect for an exit from both bights, that is expressed in predominance of species of an oceanic grouping. Qualitative structure of a plankton and its dynamics confirm the assumption that the bights are in a different degree under influence of environmental waters: Kalevala Bight in greater degree is connected with waters of Posyet Bay, and Sivuchya Bight is affected by the open waters of Peter the Great Bay, fresh drains, and also water from southern part of the Sea of Japan. Besides the distinctions between bights are caused also by their topological features: in more closed, shallow and better getting warm Kalevala Bight the specific conditions are, congenial for development of a neritic complex of species there, and in more open and biotopically various Sivuchya Bight there is an assemblage of a mixed type and more various on structure.

Thus, we for the first time carry out research of phyto- and zooplankton of Sivuchya and Kalevala Bights of FESMR. Both investigated bights have practically similar structure of phyto- and zooplankton, the distinctions concern quantitative parameters and dynamics of plankton, and also density, allocation and character of dominance of separate species and groups, that is caused by features of a hydrological mode of bights.

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