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SEASONAL VARIATION OF NERITIC MESOZOOPLANKTON IN MALI STON BAY (SOUTHERN ADRIATIC)

SEZONSKE FLUKTUACIJE MEZOZOOPLANKTONA MALOSTONSKOG ZALJEVA

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The investigation of seasonal variations in the Mali Ston Bay mesozooplankton was based on 29 day and night sampling performed at stations Usko and Bistrina 1983—1984. Higher specimen numbers were mainly found in the night catches, especially at the shallow station Bistrina. All the year round the copepods exhibiting well pronounced differences between day and night catches were markedly dominant especially *Acartia clausi*. Since pronounced differences between day and night densities of mesozooplankton in surface layers were observed, it is possibile to suggest that in the shallow coastal waters the night samples should be taken as representative for the total net zooplankton. For better understanding of the mechanism of the microdistribution of zooplankton population, a special attention has been paid to the current pattern in the area.

INTRODUCTION

The first investigations of the Mali Bay net zooplankton were performed in 1963/64 and 1967/68. The samples were taken by vertical hauls with 250 μm mesh nets (Hure in Buljan *et al.*, 1973). The results indicated the qualitative composition of the Mali Ston Bay zooplankton as not being markedly different from the other closed areas of the eastern middle Adriatic coast. The paucity of zooplankton was presumably due to high numbers of molluscs and other filter feeders that during their feeding appear to consume certain zooplankton developmental stages.

During the two-years study in the inner part of Mali Ston Bay, Vukanić (1979) recorded high numerical abundance of nauplii, copepodites and other small copepods by using the 150 μm mesh net.

With a vertically towed Nansen net, Regner (1981) analysed the copepod composition and density in Mali Ston Bay and the Neretva Channel. Due to the fact that bigger (320 μm) was used, that failed to take smaller copepods and their developmental stages, a very low number of specimens was recorded.

During the 1979—1980 period, the Biological Institute, Dubrovnik, aboard the vessel »Baldo Kosić« carried out the intensive investigations of Mali Ston Bay hydrography and plankton. The aim of the investigation was to obtain the data that may serve in improving mussel culltivation. Onofri (1984, 1986) gave a detailed description of the Mali Ston mesozooplankton qualitative and quantitative composition. The samples were taken by oblique hauls from the bottom to the surface with a 250 μm mesh net and a flowmeter was used. The zooplankton quantity was osberved to decrease from the inshore to the offshore stations, whereas the opposite applies to the zooplankton quality.

Rudenjak-Lukenda (1985) and Lučić (1985) respectively, first investigated the differences between the diurnal and nocturnal microzooplankton and macrozooplankton samples in Mali Ston Bay.

MATERIAL AND METHODS

The plankton samples were collected twice and three times a month in Mali Ston Bay at Usko and Bistrina stations (Fig. 1). The water depth at the sampling sites was 14 and 9 metres, respectively. As many as 29 field samp-

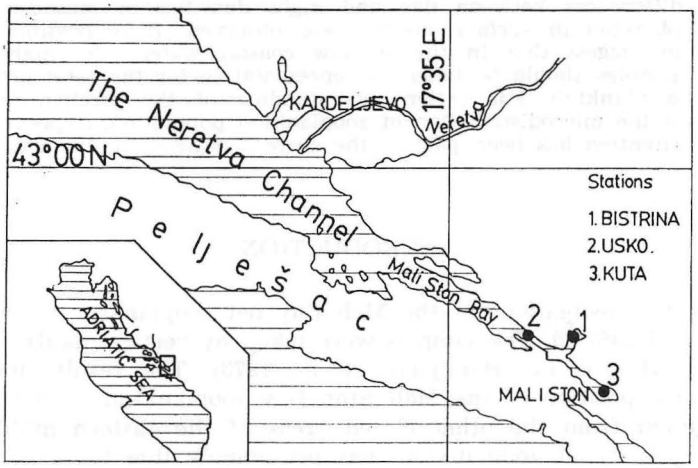

Fig. 1. Location of sampling sites in Mali Ston Bay

ling were performed during a year period (from March 1983 to April 1984). The samples were taken during the period of the most intense daylight and at night, in the first 2 dark hours.

The samples were collected a horizontally towed modified Nansen 250 µm mesh net, 0.56 m mouth diameter and 2.60 m length from 5 m depth to the surface, at 3-min intervals and the towing speed of 2 knots.

The quality of the seawater filtered was measured by a mechanical G. M. M. F. G. Co., N. Y. C., USA floweter. The samples were preserved with 2.6% neutral buffered formaldehyde and counted with a stereomicroscope. Results present number of individuals in m^3.

RESULTS

Mesozooplankton was present in high numbers troughout the year except for the short winter period (Fig. 2). In the early spring and summer-autumn hauls mesozooplankton occurred in mouhedly high densities with the maximum of 13 345 ind. m^{-3} at the station Usko at the beginning of April and 8239 ind. m^{-3} at Bistrina in mid-April. Well-pronounced and irregular differences were observed to exist in mesozooplankton numbers between the

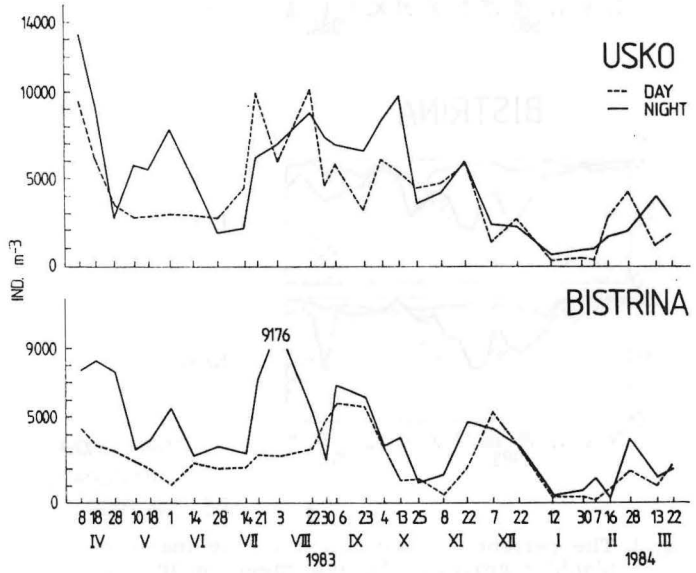

Fig. 2. Seasonal variations in total mesozooplankton population densities (ind. m^{-3}) in Mali Ston Bay.

statoins. Considerable differences existed between mesozooplankton diurnal and nocturnal numerical values. At Usko station, the night catches dominated in 52% of the samples, whereas in 28% of the samples prevailed the specimens collected during the day. In 20% of the samples, the number of specimens in both the night nad day hauls was approximately the same. At Bistrina station, in as many as 72% of the samples the specimens collected

during the dark hours were present in higher numbers. The following mesozooplankton groups were determined in the samples: *Hydromedusae, Siphonophora, Pteropoda, Cladocera, Copepoda, Chaetognatha, Appendicularia* and *Doliolida.* Cladocerans and the copepods dominated, whereas the other groups were less abundant and never constituted more than 30% of the total mesozooplankton (Fig. 3).

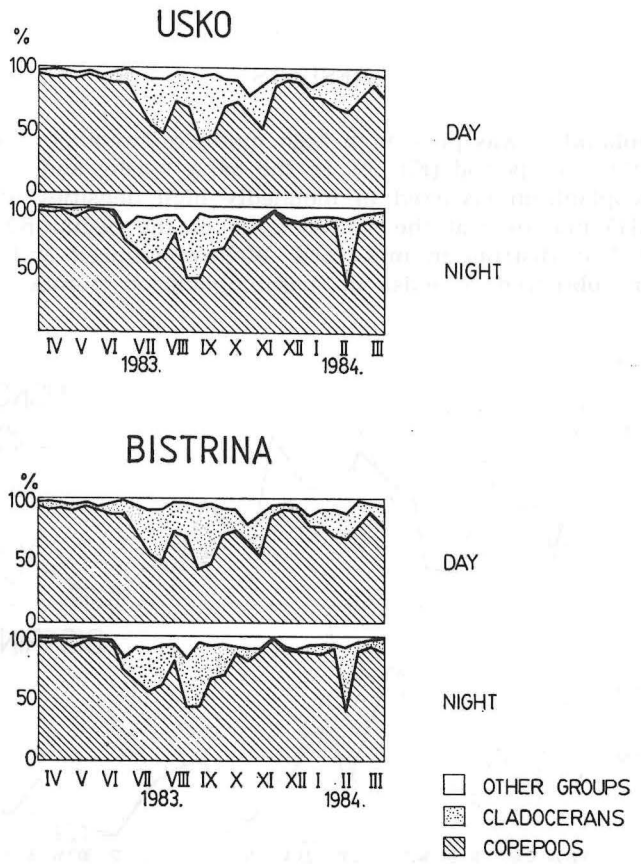

Fig. 3. The percentage contribution of the major mesozooplankton groups to the total mesozooplankton in Mali Ston Bay.

Hydromedusae

Hydromedusae were numerically important in April when at station Usko the day and night maximum of 363 and 611 ind. m^{-3}, respectively, were recorded. These values represented the maximum quantity recorded during the investigation. In the same period, at station Bistrina, the night hauls showed 206 ind. m^{-3}, with maximum of 215 ind. m^{-3} being found at mid-

-April. The late summer night and the early winter daily hauls had higher specimen numbers. In other seasons this group was not so numerically important and only single individuals were recorded (Fig. 4).

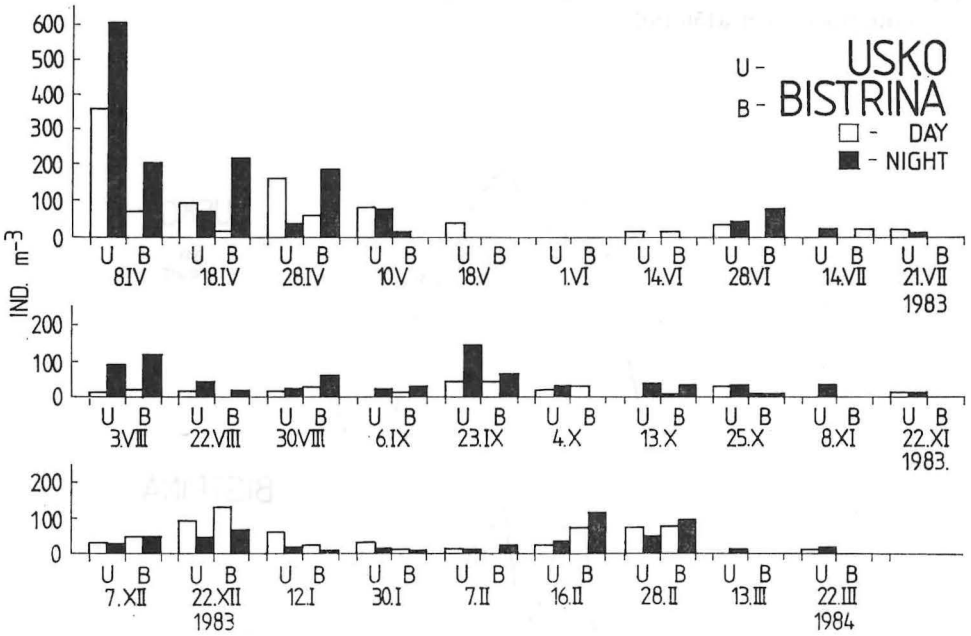

Fig. 4. Season variations in hydromedusan densities (ind. m^{-3}) in Mali Ston Bay.

Siphonophora

Of the siphonophores, only *Muggiaea kochi,* a typically shallow coastal water species was present. This species was more important numerically in spring and early summer with a maximum of 181 ind. m^{-3} found at the end of June at station Usko and 351 ind. m^{-3} at Bistrina. No marked differences between diurnal and nocturnal densities were observed.

Pteropoda

Of the pteropods only the species *Limacina inflata* was present. This species remained permanently in the plankton and was very abundant in winter. At station Usko at the end of February, 142 ind. m^{-3} were registered whereas at Bistrina at the end of December 184 ind. m^{-3} were found. In the samples richer in pteropods, the night hauls were found to contain higher numbers.

Cladocera

The cladocerans were of great importance in the total mesozooplankton over the summer/autumn period when exceptionally large numbers of *Pe-*

nilia avirostris were found (Fig. 5). At station Usko, this species was abundant in day hauls with 4160 ind. m^{-3} found towards the end of July, 3853 ind. m^{-3} in the early September and 2913 ind. m^{-3} in October. At Bistrina, the number of specimens in the night hauls was higher, but total specimen numbers were lower than at Usko. A maximum was reached towards the end of September with 3156 ind. m^{-3}.

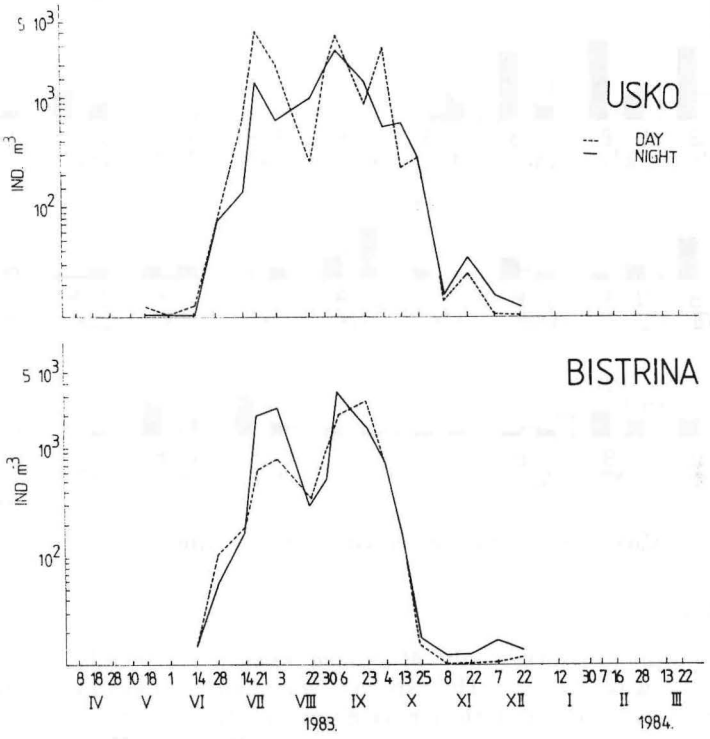

Fig. 5. Seasonal variations in the densities of the species *Penilia avirostris* (ind. m^{-3}) in Mali Ston Bay.

Evadne tergestina, the most numerous species exhibiting well-marked day-night fluctuations in its numbers, along with *Evadne spinifera*, were planktonic only from June to October. A third species *Evadne nordmani* was present from December to May (Fig. 6).

The species *Podon intermedius* (Fig. 7) was present throughout the year. High numbers were registered at both stations in August and mid-February at Bistrina. Markedly irregular differences between day and night densities were observed to exist. Although the quantity maxima were recorded at night, the number of specimens caught in the day hauls was higher

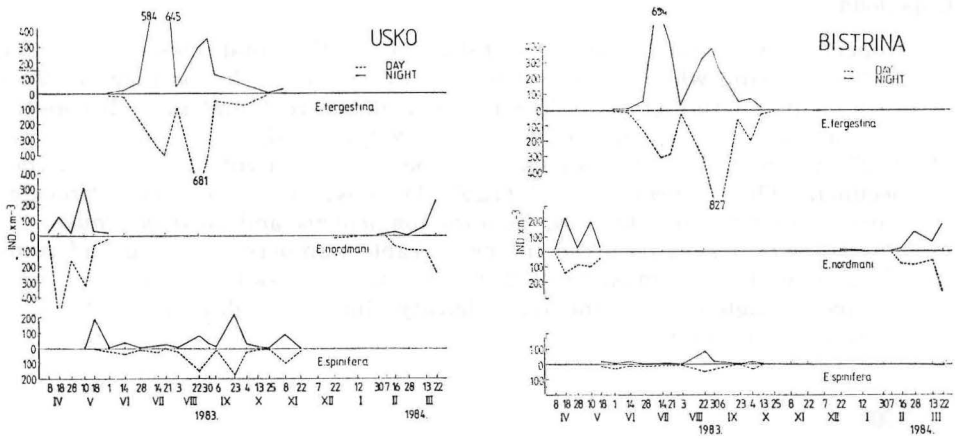

Fig. 6. Seasonal variations in the densities of the three *Evadne* species (ind. m^{-3}) in Mali Ston Bay.

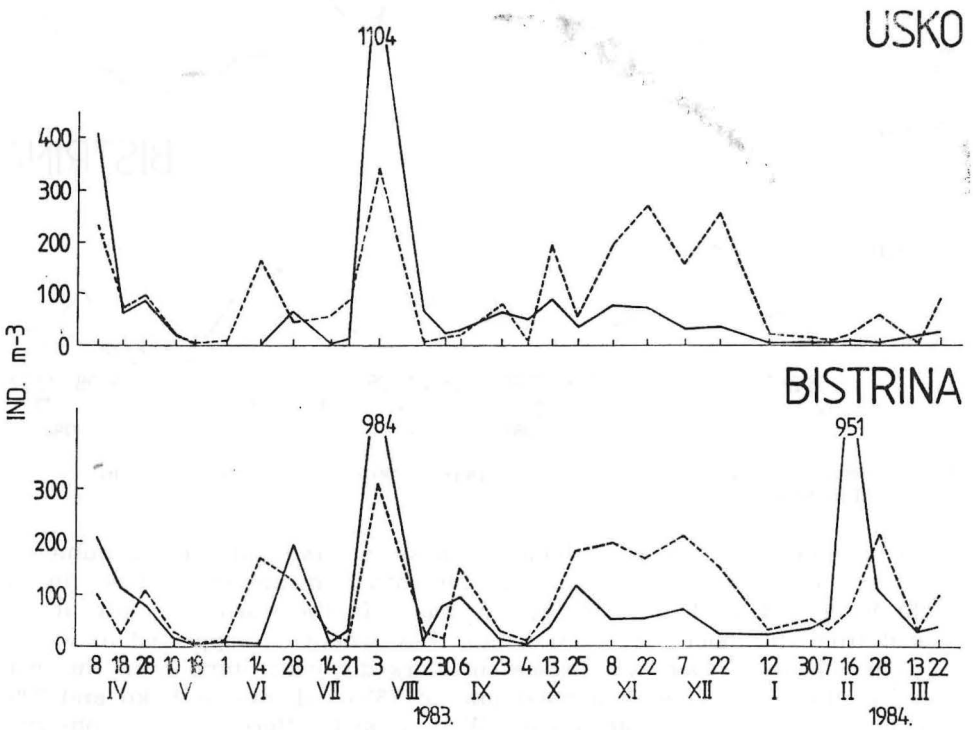

Fig. 7. Seasonal variations in the densities of the species *Podon intermedius* (ind. m^{-3}) in Mali Ston Bay.

Copepoda

Copepods were the dominant constituent of the total mesozooplankton, especially in spring when in some catches they accounted for as much as 90% of the total population (Fig. 3). These organisms were found in high concentration throughout the year, except the early winter (Fig. 8). The maximum of 12 327 ind. m^{-3} at Bistrina in the same period. The night hauls were richer in specimens. Of 37 species found (Table 1), most numerous were *Paracalanus parvus, Centropages kröyeri, Temora longicornis* and *Acartia clausi.*

Paracalanus parvus occurred in considerable numbers in spring and summer (Fig. 9) with June maxima of 2196 ind. m^{-3} at Usko and 1582 ind. m^{-3} at Bistrina. Trough most of the year, density changes in day and night samples were not important.

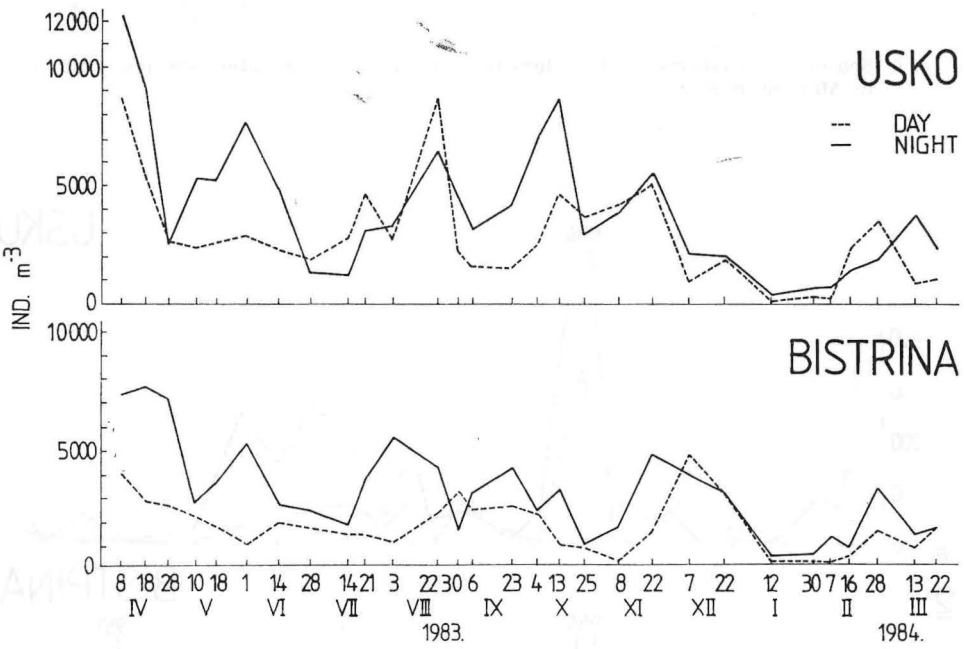

Fig. 8. Seasonal variations in total copepod population densities (ind m^{-3}) in Mali Ston Bay

Ctenocalanus vanus was abundant in spring and particularly numerous towards the beginning of April (Fig. 10) with a maximum at Usko in the night hauls and at Bistrina in the day hauls. In the warmer months it was absent from the inner part of Mali Ston Bay where it reappeared in winter.

Centropages kröyeri was present in markedly high numbers in the warmer months (Fig. 11) with a maximum of 7383 ind. m^{-3} at Usko and 3291 ind. m^{-3} at Bistrina in mid-August. Well-marked differences were observed between day and night densities, with higher specimen numbers in the night hauls.

Table 1. The list of copepod pecies found and their occurrence at the stations of Usko and Bistrina duning 1983/1984

	Usko	Bistrina
1. *Calanus helgolandicus* (Claus)	+	+
2. *Calanus tenuicornis* Dana	+	+
3. *Paracalanus denudatus* Sewell	+	
4. *Paracalanus nanus* G. O. Sars	+	+
5. *Paracalanus parvus* (Claus)	+	+
6. *Calocalanus pavo* Dana	+	+
7. *Calocalanus styliremis* Giesbrecht	+	+
8. *Mecynocera clausi* Thompson	+	+
9. *Clausocalanus arcuicornis* (Dana)	+	+
10. *Clausocalanus jobei* Frost et Flaminger	+	+
11. *Clausocalanus pergens* Farran	+	+
12. *Clausocalanus furcatus* (Brady)	+	+
13. *Ctenocalanus vanus* Giesbrecht	+	+
14. *Pseudocalanus elongatus* Boeck	+	+
15. *Diaixis pygmoea* (T. Scott)	+	+
16. *Centropages typicus* Kroyer	+	
17. *Centropagea kröyeri* Giesbrecht	+	+
18. *Isias clavipes* Boeck	+	+
19. *Temora stylifera* (Dana)	+	+
20. *Temora longicornis* Müller	+	+
21. *Pleuromamma gracilis* (Claus)	+	
22. *Candacia giesbrechti* Grice et Lawson	+	
23. *Pontella mediterranea* Claus)	+	
24. *Labidocera wollastoni* (Lubbock)	+	+
25. *Acartia clausi* Giesbrecht	+	+
26. *Oithona helgolandica* Claus	+	+
27. *Oithona nana* Giesbrecht	+	+
28. *Oithona plumifera* Baird	+	+
29. *Microsetella norvegica* Boeck	+	+
30. *Euterpina acutifrons* (Dana)	+	+
31. *Clytemnestra rostrata* (Brady)	+	+
32. *Oncea media* Giesbrecht	+	+
33. *Oncea mediterranea* (Claus)	+	+
34. *Oncea subtilis* Giesbrecht	+	+
35. *Corycaeus rostrata* Claus	+	+
36. *Corycaeus brehmi* Steuer	+	+
37. *Monstrilla longi* Giesbrecht	+	+
TOTAL	37	31

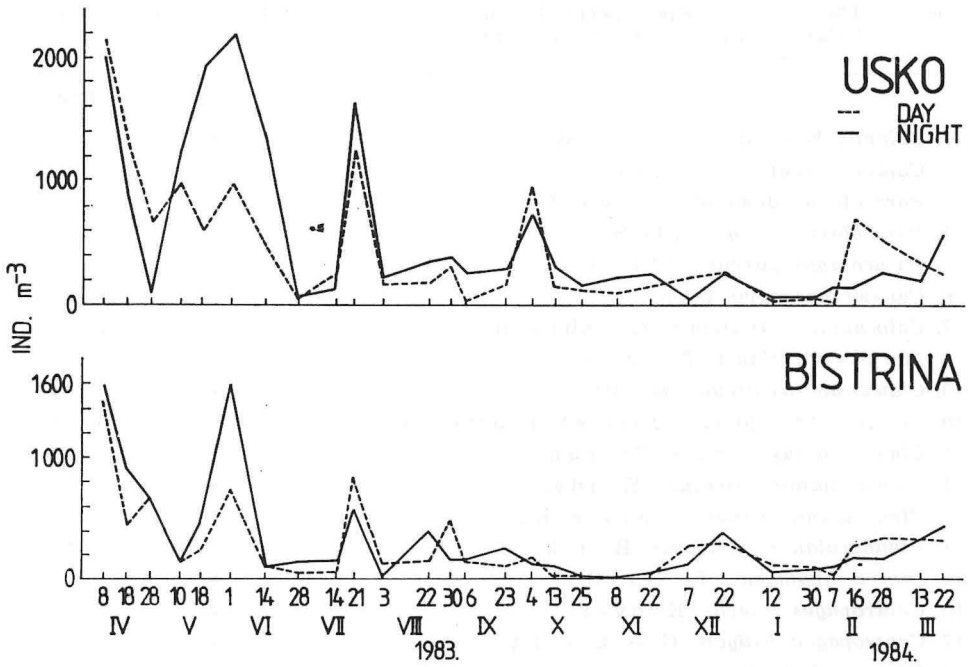

Fig. 9. Seasonal variations in the densities of the species *Paracalanus parvus* (ind. m^{-3}) in Mali Ston Bay.

Isias clavipes was continuously present, but found in large numbers only at Usko. The highest values and most pronounced day-night differences were noted in the late summer and during the autumn with a maximum of 1000 ind. m^{-3} in the late October in the night hauls whereas at Bistrina, this species was present in lower numbers (Fig. 12).

Although continuously present in the area investigated, *Temora longicornis* was present in large numbers only during the spring (Fig. 13) with maxima of 3147 ind. m^{-3} at Usko and 4211 ind. m^{-3} at Bistrina during April. This species was more plentiful in the night hauls.

Acartia clausi dominated the Mali Ston Bay copepod population and was present in large numbers all year round (Fig. 14) with the maximum of 6156 ind. m^{-3} at Usko in mid-October and 4384 ind. m^{-3} at Bistrina at the beginning of August. Marked differences between night and day densities were noted. The night hauls were quantitatively dominated in as much as 72% and 86% of the samples, respectively, at Usko and Bistrina. At Bistrina the night-day differences were more pronounced. It is worth noting that at this station in early June, the number of specimens collected at night was 17 times that of the day hauls.

Among the abundant copepods, *Oithona plumifera* was the only species that didn't exhibit differences in day-night densities. It was continuously present with a maximum of 672 ind. m^{-3} recorded at Usko and 262 ind. m^{-3} at Bistrina bay the beginning of April.

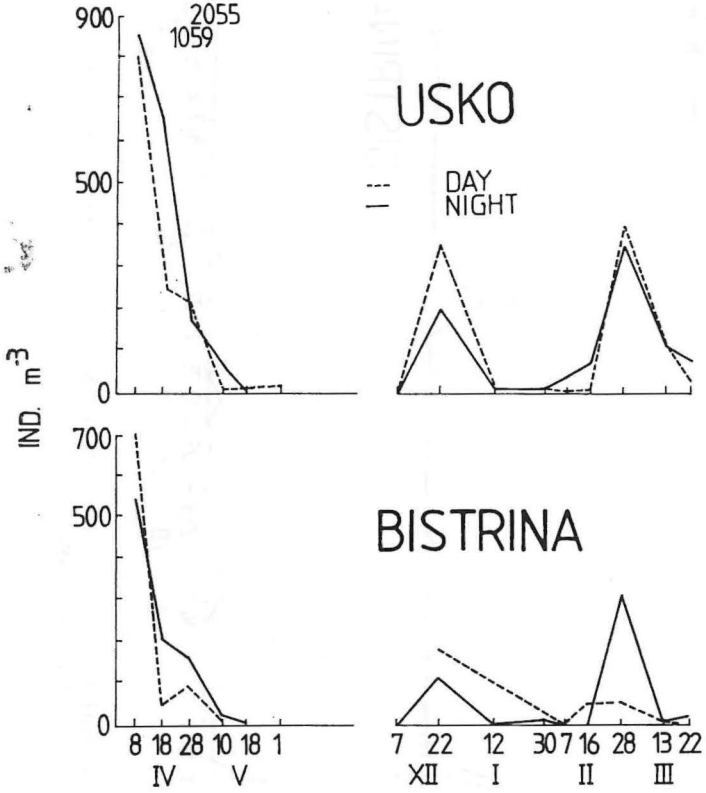

Fig. 10. Seasonal variations in the densities of the species *Ctenocalanus vanus* (ind. m^{-3}) in Mali Ston Bay.

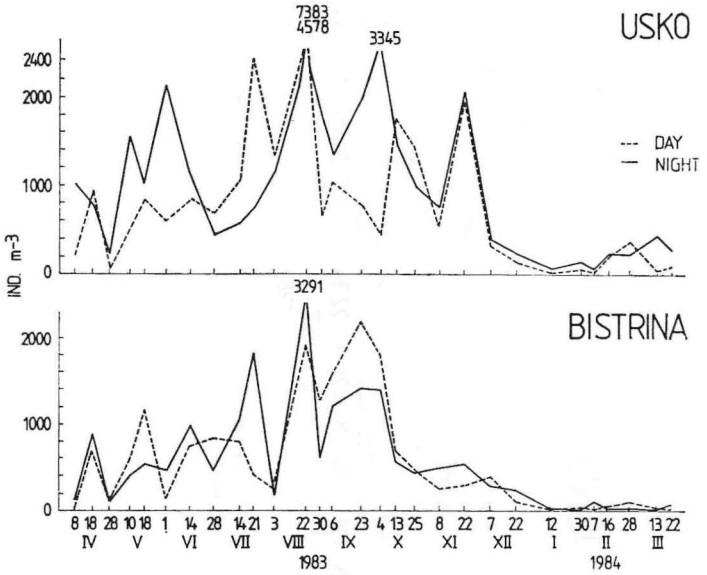

Fig. 11. Seasonal variations in the densities of the species ***Centropages kröyeri*** (ind. m^{-3}) in Mali Ston Bay.

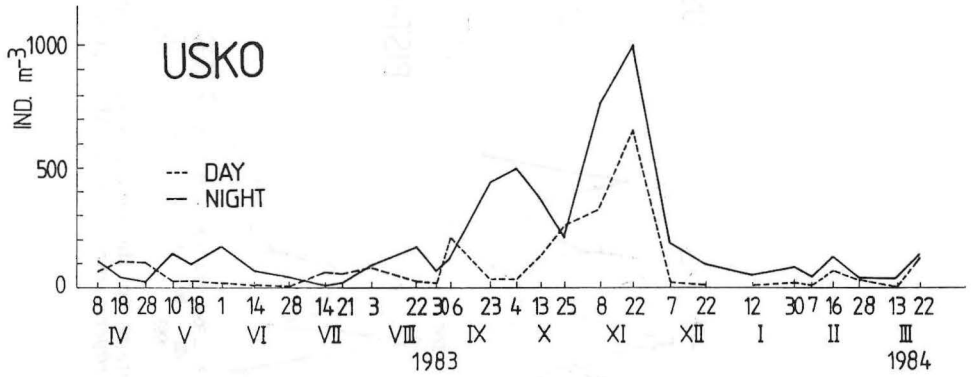

Fig. 12. Seasonal variations in the densities of the species *Isias clavipes* (ind. m^{-3}) in Mali Ston Bay.

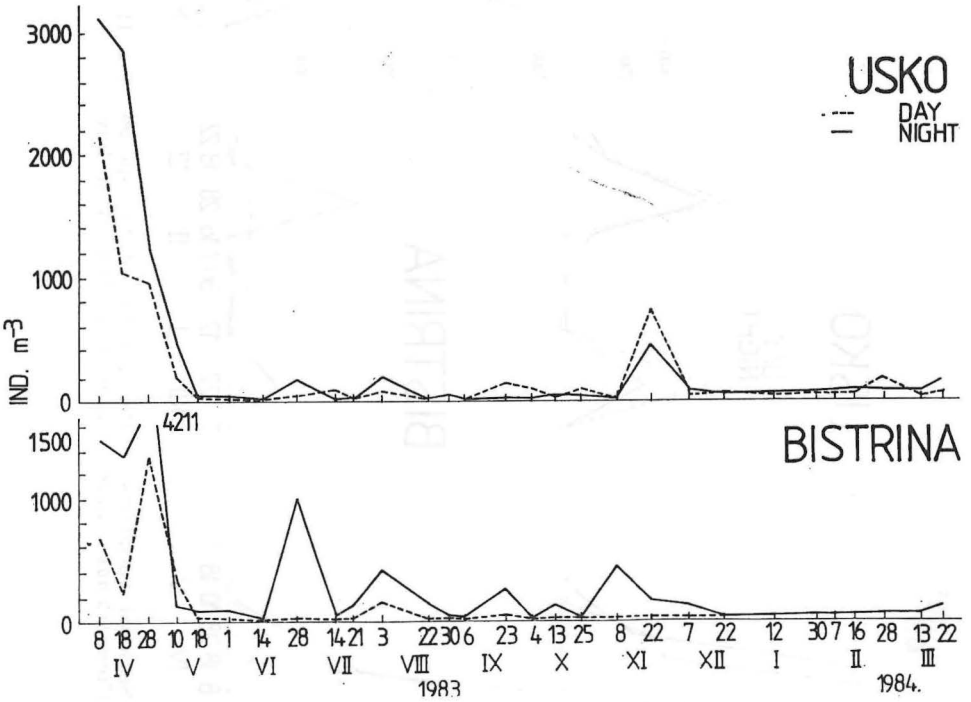

Fig. 13. Seasonal variations in the densities of the species *Temora longicornis* (ind. m^{-3}) in Mali Ston Bay.

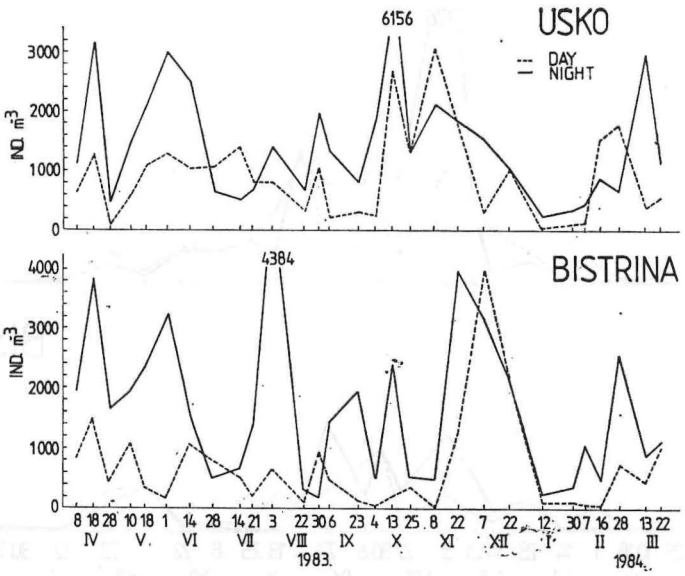

Fig. 14. Seasonal variations in the densities of the species *Acartia clausi* (ind. m^{-3}) in Mali Ston Bay.

Chaetognatha

The chaetognath population was represented by only two species, *Sagitta setosa* and *Sagitta minima. Segitta setosa* was present throughout the year except during the winter period. This species was important numerically only in summer with 109 ind. m^{-3} recorded at Usko and 160 ind m^{-3} at Bistrina in the late July. No marked differences between the day and night densities of this species were noted. Of *Sagitta minima,* the second species present, only single individuals occurred.

Appendicularia

As opposed to spring when these organisms were not numerically important, a regular increase in their numbers was noted towards the summer. Highest quantities were found at night at Usko the early August (1776 ind. m^{-3}), and at Bistrina in the late September (450 ind. m^{-3}). In autumn, a gradual decline to low densities in winter was observed (Fig. 15).

Differences between day and night densities of appendicularian fauna were pronounced only in summer when the number of specimens found in the night hauls at Usko and Bistrina were 3.7 and 2.6 times those of the day catches, respectively.

Oikopleura dioica was the main appendicularian throughout the year at Bistrina. Similarly, at Usko, it dominated the catches all the year round, except during the summer.

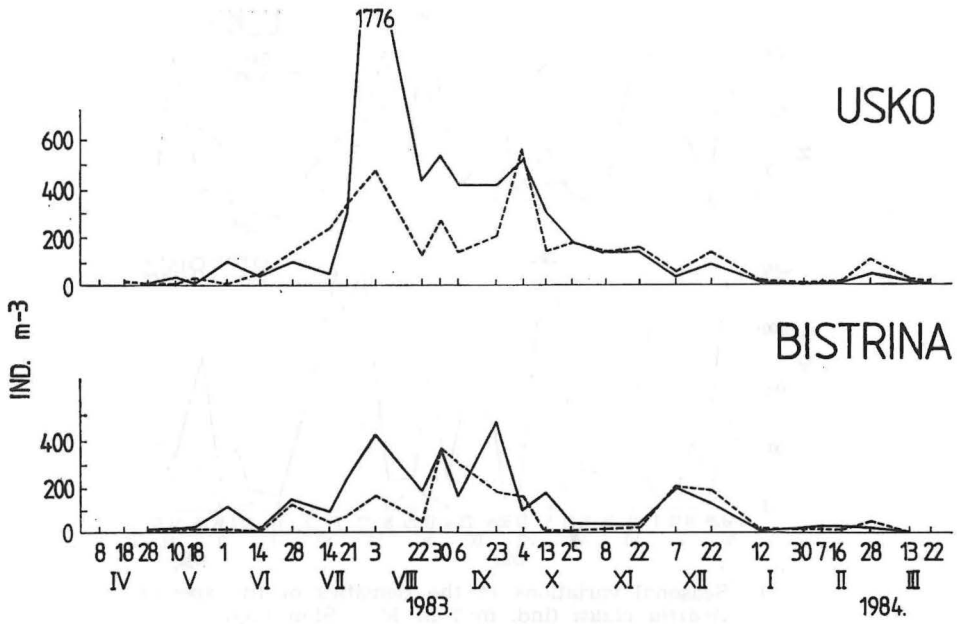

Fig. 15. Seasonal dynamics of appendicularian population (ind. m^{-3}) in Mali Ston Bay.

Oikopleura longicauda was a frequent species, numerically important in summer and autumn. A markedly dominant summer species at Usko was *Fritillaria borealis*. No earlier records of this species exist for the area investigated. *Fritillaria pellucida* was a rare winter species sparsely present only at Usko station.

Thaliacea

Of the thaliaceans, only two species were found, *Doliolina muelleri* var. *krohni* and *Doliolum nationalis*. These organisms were present in higher numbers only in summer with the maximum of 250 ind. m^{-3} at mid-July.

DISCUSSION

The data presented in this paper indicate high densities throughout the year that, due to different sampling methods used, earlier investigations in the same area (Hure in Buljan *et al.*, 1973; Vukanić, 1979; Regner, 1981; Onofri, 1986) didn't report. During our investigation, the net was towed from the 5 m depth to the surface where plankton appears to be present in highest densities, especially during the night. Markedly high mesozooplankton numbers found in the night hauls may be explained by the

majority of species migrating to near surface at night. More pronounced differences were observed at the shallow Bistrina station. Cladocerans and copepods were dominant in the Mali Ston Bay mesozooplankton along with appendicularians, numerically important over summer.

Hydromedusae were constantly present in the area investigated. In April, these organisms were present in higher numbers at both stations, when maximum microzooplankton numbers were recorded (Rudenjak-Lukenda, 1985). This may be related to the interrelationship between the links of the marine food web (Turner *et al.*, 1983). Significant differences between day and night samples were observed at both stations.

Of cladocerans, five of six species known to inhabit the Adriatic were found (Bender, 1984) among which only *Podon intermedius* was present in all the catches with maxima at both stations in July. At Bistrina, this species was abundant in February as well. Specchi and Zitter (1973) reported summer and winter maxima of this species in the Bay of Trieste. Different species of cladocerans were observed to occur in different seasons recognized as characteristic for respective species (Specchi, 1973; Specchi *et al.*, 1974; Franco and Gomaschi-Scaramuzza, 1976). Our results on the occurrence and quantity of cladocerans in Mali Ston Bay were not in agreement with previously published data. Hure (in Buljan *et al.*, 1973) found considarable quantities of *Penilia avirostris* whereas *Evadne nordmani* was not mentioned. Onofri (1986) found low numbers of *Evadne tergestina* whereas in our samples it was the main species of the genus *Evadne*. Cladocerans exibited considerable differences between day and night samples. These organisms were more numerous in day hauls, presumably due to the simultaneous presence of large numbers of the dominant cladocera. *Penilia avirostris*. However, this species was more abundant in the night catches at Bistrina. Larger numbers of *Evadne tergestina* were found at Usko at night, whereas at Bistrina during the day. Considerable differences between day and night densities were observed for the species *Podon intermedius*, Although its density peaks were found during the night, this species was present in higher concentrations also during the daytime.

A generally dominant role of copepods in the total mesozooplankton fauna was confirmed during our investigation when markedly high copepod numbers were found, which even in the day catches surpassed the values previously reported for the eastern Adriatic (Gamulin, 1939, 1979; Vučetić, 1957, 1961, 1967, 1971; Hure and Scotto di Carlo, 1968, 1969; Hure *et al.*, 1979; Vukanić, 1975; Regner, 1977, 1985; Benović *et al.*, 1981). Neritic inshore water forms were dominant. Large quantities of a number of species that in the Adriatic exhibit a wide horizontal distribution range were also gound. Species inhabiting the surface layers of the open middle and southern Adriatic waters such as: *Calanus helgolandicus, Clausocalanus pergens, Pleuromamma gracilis, Candacia giesbrechti* and *Pontella mediterranea* were rare at Usko. Of Mali Ston Bay copepods numerically most important were: *Paracalanus parvus, Centropages kröyeri, Temora longicornis* and *Acartia clausi*. High numbers of *Paracalanus parvus* were noted in spring and early summer as found in Mljet lakes by Vučetić, 1957. At Bistrina, during autumn this species was occasionally absent from

the hauls. *Centropages kröyeri* was mainly present in the warmer months. The only winter maximum of this species was recorded in Bokokotorska Bay (Vukanić, 1971). The highest quantities of this species were found in August. It was particularly abundant at Usko. The species *Temora longicornis* was numerous only during the spring. Onorfi (1986) reports this species as being more abundant only at the inner stations of Mali Ston Bay, whereas at outer stations, it was replaced by *Temora stylifera*. Numerically important and present throughaut the year was the copepod *Acartia clausi*. The copepods catches showed marked variation between night and day densities which applies especially to *Acartia clausi*. This markedly migratory species inhabiting surface layers of the Adriatic to the 50 m depth (Hure, 1955, 1961), under highest light intensities was a near-the-bottom dweller, particularly at the shallow station Bistrina. During the night, this species inhabited the whole water column, which accounts mostly for the differences between the night and day catches. Up to date, the dominance of this species has been registered at Kuta station, where, in November, December and February it appeared almost as monoculture, decreasing in abundance with depth (Onofri, 1986). This is in agreement with the results of previous investigations that reported the occurrence of monocultures of certain copepod species in some shallow and closed areas of the eastern Adriatic waters (Hure *et al.*, 1979).

Regner (1987) suggests that high *Acartia clausi* numbers in Kaštela Bay are pollution-induced, which can't be true for the Mali Ston Bay area characterized by high water quality favouring the culltivation of molluscs and other marine organisms.

Considerable differences in the day and night samples of the species *Acartia clausi* and other numerically important copepods may be explained by net avoidance of the species during the day, migrations and grazing during the night, but also by specific movements of the water masses. A considerable influx of surface dwelling copepods presumably carried by stronger flow, may be responsible for their concentrating in significant numbers in the surface layers during the day. The current regime of Mali Ston Bay is dependent primarily upon the direction and the force of the wind and the tides. In winter, an estuarine circulations type was observed to appear (Balenović, 1981; Vučak *et al.*, 1981). In general, the waters have been observed to inflow in the bottom layer and outflow in the surface. The currents of the surface and near-the-bottom layers differ for 180° in both the summer and winter. In summer, dependent on the wind direction, an inflow and outflow in both directions may occur. These particular movements of the surface water masses during the winter may be responsible for *Acartia clausi* being transported from the shallowest station of the Bay (Kuta) with the maximum depth of 10 m where it breeds over the winter (Onorfi, 1984), to station Usko. At this narrowest middle part of the Bay meet the surface water masses outflowing from the inner part of the Bay and near-the-bottom inflowing waters, carrying a number of species that could be recognized as typically open waters species. This may be responsible for the copepods and other plankton species being constantly present in high numbers.

The annual fluctuations in appendicularian numbers were dependent on the abundance of only three species. *Oikopleura dionica* was present in all the samples, whereas *Oikopleura longicauda* was present only during the warmer months when high numbers of both species were registered. During the period of appendicularian maxima, the species *Fritillaria borealis* was markedly dominant only at Usko. This was its first record for the Mali Ston Bay area. Skaramuca (1982) found higher numbers of this species in the summer months at the outer stations of the Neretva Channel. This confirms the exchange of water masses from the inner to the outer part of the Bay. The differences in lower day and higher night densities were pronounced only during summer-autumn period when highest appendicularian numbers were recorded.

On the basis of the data presented as well as the results reported Benović and Onorfi, 1981; Kršinić and Mušin, 1981; Marasović and Pucher-Petković, 1981; Viličić, 1981; Vukadin, 1981) Mali Ston Bay may be ranked amongst highly productive areas. Relatively high differences in mesozooplankton densities when compared to the earlier investigations were primarily due to a change in the sampling methods. For future investigations, we would like to suggest the night samples to be taken as representative for the total net zooplankton. Special attention should be paid to the spatial zooplankton microdistribution, the current patterns and specific food requirements of the commercially important organisms inhabiting the Mali Ston Bay area.

CONCLUSIONS

1. Mesozooplankton was present in high numbers throughout the year being especially abundant during the spring and summer.

2. Considerable differences were observed to exist between the day and night catches. Higher numbers were found in the night samples. These differences were more pronounced at Bistrina station.

3. Hydromedusae were most abundant during the spring when a marked difference in day-night catches was recorded.

4. Cladocerans were important constituent of the total mesozooplankton fauna, especially in summer-autumn. Five cladoceran species were found among which *Penilia avirostris* was dominant. The only species present throughout the year and numerous during the winter was *Podon intermedius*. Day and night catches considerably differred in species density. At Usko, the day hauls were richer in specimens, whereas at Bistrina quantitatively dominant were the night hauls.

5. The siphonophora *Muggiaea kochi* was found in larger numbers in the early summer. No marked differences between day and night catches were found.

6. The pteropod species *Limacina inflata* was present throughout the year. Its presence was not numerically important.

7. Copepods dominated the total mesozooplankton fauna. They were especially abundant during the spring when in some of the samples their contribution to the total amounted to as much as 90%. These species exhibited marked differences between day and night catches. Higher values were recorded in the night hauls, especially at Bistrina. Of 37 pecies present numerically most important were *Paracalanus parvus*, *Centropages kroeyeri*, *Temora longicornis* and *Acartia clausi*. This species was present in particularly high numbers exhibiting most pronounced differences between day--night catches.

8. The chaetognath *Sagitta setosa* was present all the year round. It was present in higher numbers only during the summer-autumn period. No marked differences between day and night hauls were observed.

9. The appendicularians were numerically important during the summer--autumn period. Of five species found, present in larger numbers were *Oikopleura dioica* and *Oikopleura longicauda*. During summer, when these organisms were most abundant, the species *Frittilaria borealis* was markedly dominant at Usko. No previous records of this species exist for the study area. Differences between day and night catches were noted, with the night hauls being richer in specimens.

10. The thaliacean species *Doliolina muelleri* var. *krohni* and *Doliolum nationalis* were present in higher numbers only during the spring.

11. High mesozooplankoton numbers and pronounced differences in their densities may be explained, in addition to night vertical migrations and grazing, by a possible influx of these organisms by a pecific circulation of water masses.

12. Since pronounced differences between day and night densities of mesozooplankton were observed, for future investigations we would like to suggest that in the shallow coastal waters the night samples should be taken as representative for the total net zooplankton.

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SEZONSKE FLUKTUACIJE MEZOZOOZLANKTONA MALOSTONSKOG ZALJEVA

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KRATKI SADRŽAJ

Istraživanje mezozooplanktona Malostonskog zaljeva temelji se na 29 terenskih izlazaka na postajama Usko i Bistina od travnja 1983. do travnja 1984. godine. Uzorci su uzimani danju pri najjačem osvjetljenju i noću mrežom finoće tkanja 250 μm, horizontalnim potezima od pet metara dubine do površine. Rezultati su kvantificirani brojem jedinki u m^3.

Visoke vrijednosti mezozooplanktona su u većem dijelu godine, a maksimum od 13 345 ind. m^{-3} početkom travnja na postaju Usko, dok je u Bistrini polovinom travnja nađeno 8239 ind. m^{-3}. Razlike između dnevno-noćnih lovina su značajne. Više vrijednosti su najčešće zabilježene u noćnim lovinama, što je osobito naglašeno na plićoj postaji Bistrina.

Hidromeduze su stalno prisutne u istraživanom području s većim količinama u travnnju na obje postaje. Tokom ljeta i jeseni značajni udio u ukupnoj količini mezozooplanktona imaju kladocere, prvenstveno zbog visokih vrijednosti vrste *Penilia avirostris*. Utvrđene su velike dnevno-noćne razlike u gustoći. Njihov udio na postaji Usko veći je danju, dok su u Bistrini bogatije zastupljene u noćnim lovinama. Izrazito dominantna skupina kroz cijelu godinu su kopepodi. Ddnevno-noćne razlike su jasno izražene. Najbrojnija vrsta je *Acartia clausi*, za koju su utvrđene najveće promjene dnevno-noćne gustoće. Godišnje promjene kvantiteta apendikularija ovise o brojnosti samo tri vrste. Dnevno-noćne razlike izrazite su samo u ljetno-jesenskom razdoblju, kada je ova skupina prisutna u većim količinama.

S obzirom na velike dnevno-noćne razlike u gustoći lovina, smatramo da su u obalnim plitkim područjima noćni uzorci reprezentativniji za ukupni mrežni zooplankton. Ujedno, uz detaljno istraživanje režima strujanja vodenihnih masa, u budućim istraživanjima potrebno je posvetiti posebnu pažnnju razlikama u prostornoj mikrodistribuciji zooplanktona dovodeći to u vezu s ishranom ekonomski važnih predatora u Malostonskom zaljevu.