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CURRENT STATUS OF ZOOBENTHIC FAUNA ASSOCIATED WITH MACROALGAE FIELDS FROM THE SOUTHERN ROMANIAN BLACK SEA COAST

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ABSTRACT

The European environmental policies related to marine water management require a periodic environmental status assessment. The Marine Strategy Framework Directive 2008/56/EC clearly specifies that assessment must take into consideration benthic habitat types, including their associated biological communities. The aim of this study is to present the results of the ecological analysis of the zoobenthic communities associated with benthic habitats with macrophytic substrate and to provide new data regarding the qualitative and quantitative structure of macroinvertebrates that populate these habitats type. The broad habitats type Infralittoral rock and biogenic reef and Infralittoral sands were investigated. The analyzed data covers the summer season, 2023 based on the processing of 13 samples collected from Navodari to 2 Mai – Vama Veche, on depths ranging between 1m to 3 m. A total of 80 macrozoobenthic species were found in all macrophytic assemblages, the Polychaeta, Crustacean and Gastropod were the dominant groups, especially Perinereis cultrifera, Platynereis dumerilii, Ampithoe ramondi, Stenothoe monoculoides, Rissoa splendida, Tricolia pullus registering a large number of individuals. For data interpretation a synecological analysis was performed allowing the identification of the species with the most significant contribution in the ecosystem in terms of function, energy exchanges with the environment, the characteristic species of a biotope or those that have an accidental presence in the studied area.

Keywords: Benthic invertebrates, associated fauna, macroalgae association, Romanian Black Sea coast

INTRODUCTION

Marine ecosystems, the source of a vast biological richness, are constantly subjected to the action of natural and anthropogenic environmental factors, becoming extremely vulnerable once with the economic development of the coastal area. They can be affected by various pressures generated by anthropogenic activities, including pollution and physical modification of the habitat. In the long term, the structural and functional changes of the marine ecosystem can lead to a degradation of benthic habitats, with a profound impact on other components and on life in the marine environment, generally.

Benthic marine habitats illustrate the natural diversity of the marine environment and are considered key elements in assessing ecological status. The study of these habitats and the associated communities in the shallow waters from the southern part of the Romanian littoral is extremely important considering the fact that they have a high conservation value due to the presence of diverse flora and fauna, some of which are included in the Red List of endangered marine species on the Romanian coast (cf. Ord. 488/2020).

Phytobenthic communities are an important component of benthic habitats, having the role of populating the substrate and transforming denuded, lifeless areas into favorable zones for the development of life in the shallow waters. On the other hand, the macrophytes substrate occupies a special place among the other types of substrates, constituting, at the same time, a habitat for the benthic fauna associated with it, but also a representative biocoenosis of the area. The macrophytes living substrate protect the associated fauna against the traumatic action of the waves thanks to their flexible character, provide shelter from excessive light and predators outside the phytophilic zoocenosis and can represent food and substrate for some phytophagous animals (Băcescu et al., 1971; Abaza et al., 2006; Filimon et al., 2016).

The aim of the study is to present new data regarding the benthic fauna associated with several types of major habitats from the southern part of the Romanian coast by analyzing the specific diversity as well as from a quantitative point of view. For this purpose, the study was focused on the broad habitat type Infralittoral rock and biogenic reef with its related subtypes: Upper infralittoral rock with variable annual green and red macroalgae (1-10 m) and Upper infralittoral rock dominated by Gongolaria barbata (syn. Cystoseira barbata) (3-10 m). Also, the associated fauna which populates the infralittoral sand habitats with marine phanerogame, namely, meadows with Zostera noltei and mixed meadows of Stuckenia pectinata and Zannichellia palustris from sheltered areas with anthropogenic influence, was studied. The study of zoobenthos has a major importance in biodiversity conservation strategy of benthic habitats, especially for understanding the changes that occur in the quality parameters of communities and the habitats under the influence of anthropogenic pressures. The importance of this ecological group in the functioning of ecosystems of waters bodies makes it necessary to regularly monitor and assess the state of benthic organism communities.

MATERIALS AND METHODS

In order to conduct the study, 13 benthic samples were collected from Navodari to 2 Mai–Vama Veche, on depths ranging between 1m to 3 m, during the summer season, 2023.

Macrozoobenthic samples were taken with scuba diver who was able to observe the nature of the substrate and the extent of its coverage with macroalgae and associated fauna (census visual by scientific diving) (Fig. 1).

For benthic fauna sampling, a metal frame (20x20cm) with an attached net was used to retain all animal organisms. The instrument was placed on a plane surface covered with fauna and with the help of spatula all the epibiontic fauna was scraped into the mesh bag attached.

The collected material was placed in plastic containers, fixed with 4% formaldehyde, and labeled. In the laboratory, the samples were washed using 1 mm and 0.5 mm mesh size sieves. Each fraction of the sample was analyzed under a stereomicroscope and the organisms identified to the lowest possible taxonomic level (e.g. species) using specific identification keys and all names were update according to the World Register of Marine Species (WORMS) (www.marinespecies.org).

Fig. 1. Visual observations and sampling (original photo, 2023)

The quantitative analysis of zoobenthos consisted in assessing the number of organisms as density (ind/m2) and biomass (g/m2). For ecological evaluation, a synecological analysis was performed. This analysis allows the identification of the species with the most significant contribution to the ecosystem in terms of function and energy exchanges with the environment. Also, establishes the number of characteristic and accidental species. Dominance D% (relative abundance), constancy (C%) and the ecological significance index (W, Dzuba index, that reflects the relationship between structural (constancy, C) and productive (dominance, D) indices, showing the position of a species into biocoenosis), were used as analytical ecological indices (Gomoiu *et al*., 2001).

RESULTS AND DISCUSSION

Following the sample processing, 80 macrozoobenthic species were identified in the entire studies habitats belonging to the groups: Polychaetes worms – 25 species (32%), Bivalvia -10 species (11%), Gastropoda – 7 species (9%), Crustacean - 29 species (36%), and "Other groups" - 9 species (11%) which are represented by Anthozoa, Turbellaria, Nemertea, Halacarida (Annex 1).

Analyzing the faunistic composition according to the specificity of the algal substrate, several differences were observed in terms of specific diversity but also from the quantitative point of view.

In the infralittoral sand habitats with marine phanerogame, namely, meadows with Zostera noltei and mixed meadows of Stuckenia pectinata and Zannichellia palustris from sheltered areas with anthropogenic influence, 45 macrozoobenthic species with a slightly different ecology were identified.

Some of the identified species are phytophiles located in the thicket of Zostera leaves (the small gastropods Rissoa splendida, Tricolia pullus, polychaetes Platynereis dumerilii, Syllis gracilis, amphipods Echinogammarus olivii, Gammarus insensibilis, isopods Idotea balthica, bryozoans) others are sedimentophiles (bivalves Macomangulus tenuis, Abra segmentum, Cerastoderma glaucum). In this area,

phytophilous crustaceans and gastropods species dominated, followed by polychaetes and sedimentophilic mollusks (Fig. 2).

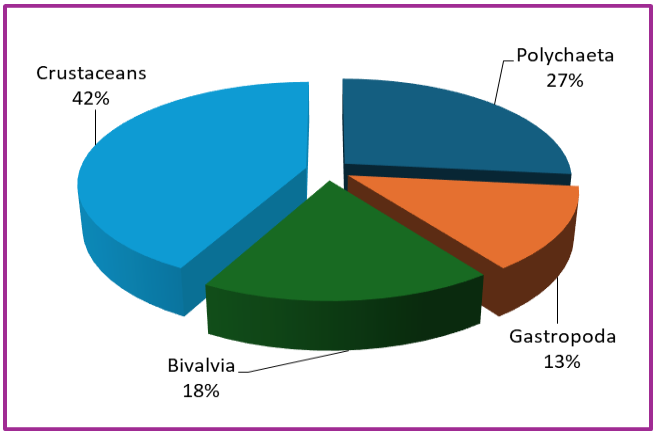

Fig. 2. The distribution (%) of the main groups of benthic invertebrates associated with marine phanerogames, at Năvodari and Mangalia area - 1m depth

The gastropod *T. pullus* mentioned in the Red List of endangered marine species from the Romanian coast (Ord. 488/2020) as an endengered species (EN) had a constant presence in almost all the analyzed stations. In the Năvodari station, at 1 m depth, a species from the bivalvia group was also identified in the analyzed sediment, belonging to Mytilides family, namely, *Arcuatula senhousia*, known as the Asian mussel, an opportunistic, non-indigenous species that can be found in habitats occupied by marine phanerogame, in our case with the phytobenthic species *Zannichellia palustris*, in the port area (Fig.3). The first reporting of this species on the Romanian coast was in 2002 (Micu, 2004). The species is included in the list of non- indigenous species from the Romanian coast (Skolka, 2010, Băncilă, 2022).

Fig. 3. *Arcuatula senhousia* W.H.Benson, 1842 (original photo, 2023)

The bivalve has the qualities of an opportunistic species. The length of the adult shell is about 30mm, with a short life cycle of about 2 years. It is very fertile with a long larval stage, during which the bivalve spreads over considerable distances. In addition,

it has a rapid growth forming numerous agglomerations, building dense and extensive "carpets" of shells that are caught between them.

These properties help *A. senhousia* to occupy new habitats by competing quickly and successfully with native species.

With all these characteristic features of an invasive species, *A. senhousia* failed to form stable populations, being still in the stage of adaptation to the new conditions of the Black Sea, even if the species was reported at the beginning of the 21st century (Mistri, 2004, Varigin, 2021).

From a quantitative point of view, in the phytobenthic community formed by marine phanerogame, a total macrozoobenthic average density values of 2,783 ind/m2 were recorded. The gastropod *Rissoa splendida* dominated the benthic fauna with an average of 691 ind/m2 out of the total of 1,783 ind/m2, recorded by the group of the present mollusks (Fig.4).

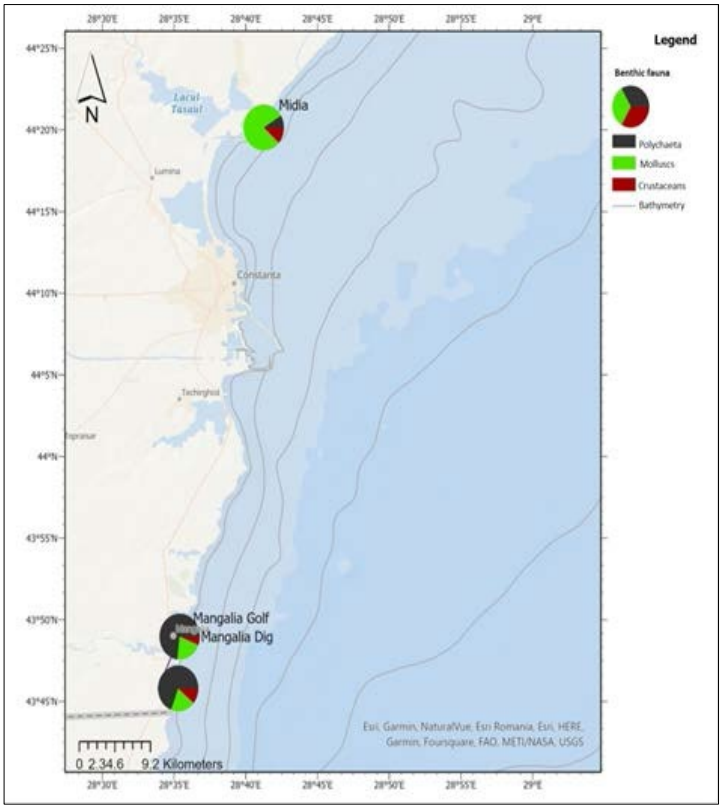

Fig. 4. Density distribution of macrozoobenthic groups in *Infralittoral sand habitats* with marine phanerogame (*Zannichellia palustris, Zostera noltei*), 1-2 m depths, 2023

Here, the non-indigenous species *A. senhousia* was also present, registering a density of 675 ind/m2, but only in the Navodari site, at 1m depth. From the polychaetes group, three species registered a higher abundance, *Mysta picta* and the opportunistic

species *Capitella capitata*, *Alitta succinea*, the latter being related to the amounts increased of fine, silty and detritic sediments.

The recorded average biomass was only 137 g/m2 due to the contribution of mollusks and crustaceans. Polychaetes group had a biomass below 1 g/m2 without having a significant contribution even though the diversity of species was quite high (12 species). Among the mollusks species that increased the biomass value were *Cerastoderma glaucum*, *Abra segmentum*, *Rissoa splendida, Tricolia pullus,* the association being composed of both sedimentophilic and phytophilic species. Also, the non-indigenous bivalve *A. senhousia* recorded a biomass of 48.36 g/m2 (Navodari-1m depth).

The photophilic associations formed predominantly by variable annual green and red macroalgae habitat defined by *Ulva – Cladophora – Ceramium,* which are part of the broad habitat type *Upper infralittoral roc*k and *biogenic reefs*, form a type of vegetable substrate with an interstitial structure, sheltering a qualitatively rich fauna, mainly composed of crustaceans and polychaetes (Fig.5).

A number of 59 macrozoobenthic species were identified and among the crustaceans, the amphipods *Stenothoe monoculoides* and *Ampithoe ramondi* had a constant presence in the six analyzed locations (Agigea, Eforie North, Eforie South, Tuzla, Costineşti, Vama Veche).

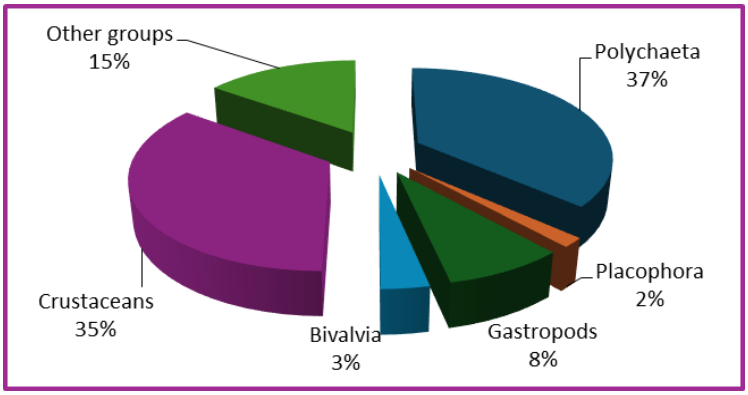

Fig. 5. The distribution (%) of the main groups of benthic invertebrates associated with photophilic algae *Ceramium virgatum – Ulva spp- Cladophora spp.*

From the crustaceans, Decapoda order (crabs), three species were identified, respectively, *Pilumnus hirtellus, Brachynotus sexdentatus* and *Pisidia longicorni*s. Besides these, the polychaetes *Platynereis dumerilii*, *Perinereis cultrifera*, the turbellariates *Leptoplana tremellaris*, *Notoplana alcinoi*, the nemertian *Emplectonema gracile* constituted the dominant elements of this type of vegetable association.

Quantitatively, the values of the average macrozoobenthic density recorded in this floristic assemblage consisting of annual phytofile algae such as, *Ceramium, Ulva spp., Cladophora spp* were 37,891 ind/m2 of which, the mollusks had high average density of 30,270 ind/m2 (Fig. 6). In this case, the sessile bivalves *Mytilaster lineatus*

and *Mytilus galloprovincialis* contributed to the increase of total density due to the presence of their juveniles.

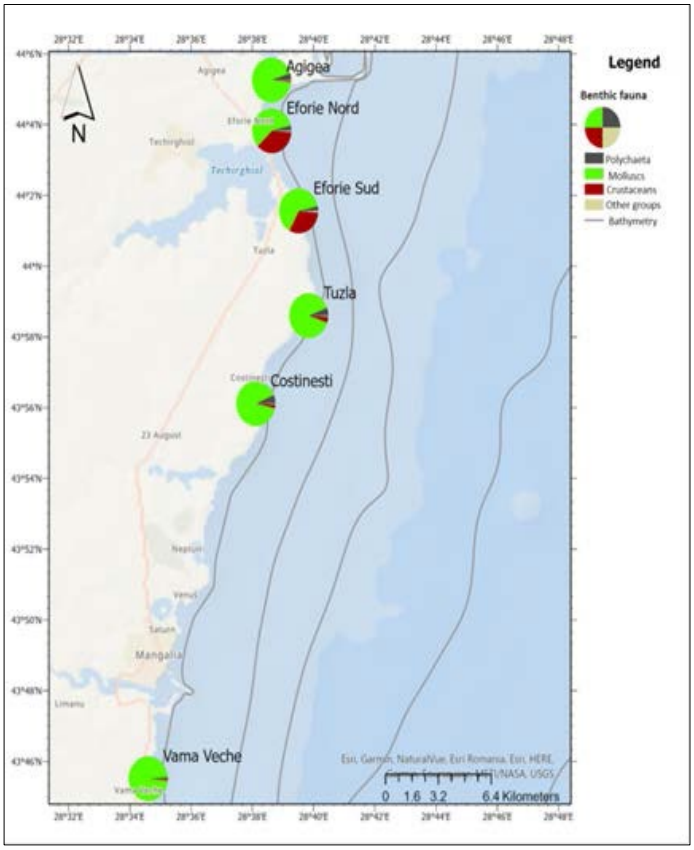

Fig. 6. Density distribution of macrozoobenthic groups in *Upper infralittoral rock* habitats with *Ceramium virgatum- Ulva spp- Cladophora spp.,* 1-2m depths, 2023

The macrozoobenthic biomass reached an average value of 4,094 g/m2, the interstitial structure of this type of substrate allowing to the tubiculous species (*Fabricia stellaris, Corophium* sp.), *Mytilus* and *Mytilaster* juveniles and decapods *Pilumnus hirtellus, Brachinotus sexdentatus* to settle, significantly enriching the amount of associated fauna.

In the vulnerable *Upper-infralittoral rock habitat* dominated by brown algae *Gongolaria barbata (syn. Cystoseira barbata*), 48 species were identified in the stations from Casino Constanţa, Saturn, Jupiter, 2 Mai sites, at 1-2 m depths. The associated vagile fauna was mainly dominated by crustacean species (44%), followed by polychaete worms (34%) (Fig.7). Gastropods were represented by *Tricolia pullus* and *Rissoa splendida*, and sessile bivalves were present by juveniles of *M. lineatus* and

M. galloprovincialis, species considered primarily related to the rocky substrate.

The bivalve *Irus irus,* an infralittoral species mentioned in the Red List of endangered marine species from the Romanian coast (Ord. 488/2020), was found in the

fields with *G. barbata*, on 2 Mai site. In the habitat with thickets formed by *Gongolaria barbata*, the associated benthic fauna recorded a total average density of 17,280 ind/m2 (Fig. 8).

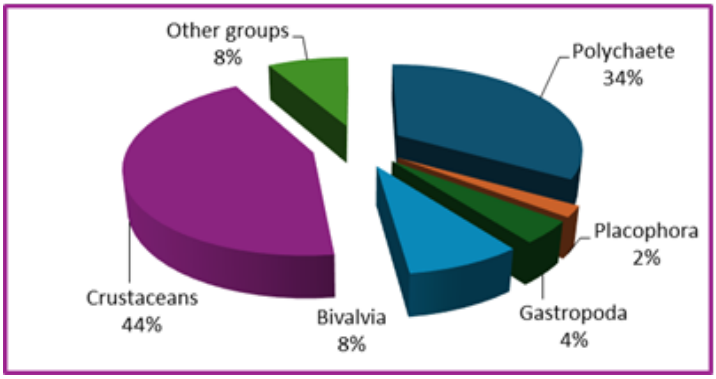

Fig. 7. The distribution (%) of the main groups of benthic invertebrates associated with brown algae *Gongolaria barbata* fields

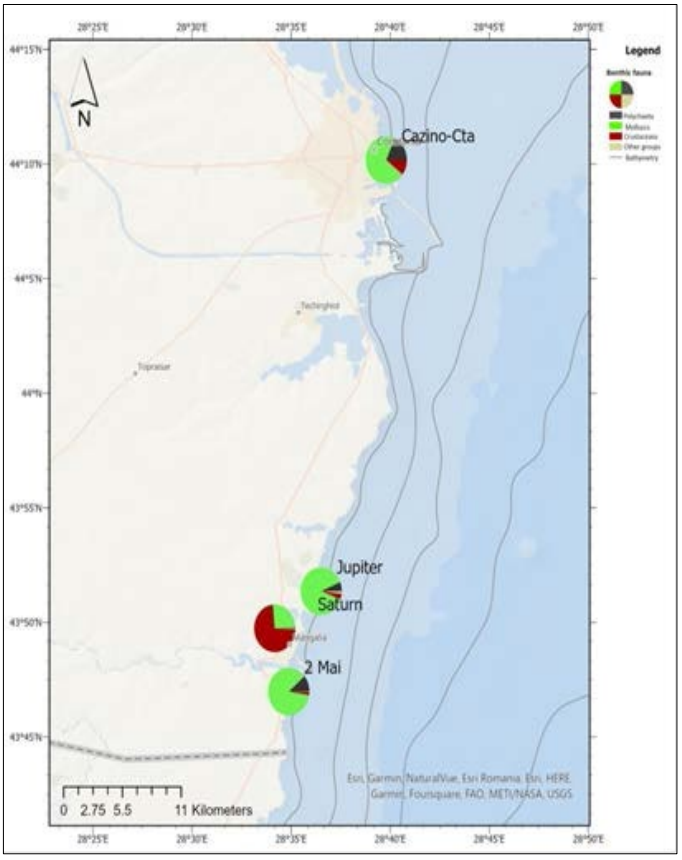

Fig. 8. Density distribution of macrozoobenthic groups in *Upper infralittoral rock* habitats with brown algae *Gongolaria barbata,* 1-2m depths, 2023

The gastropods *Rissoa splendida* and *Tricolia pullus*, mainly phytophilous species, had higher density values, with an average of 2,187 ind/m2. However, the presence of *Mytilaster* and *Mytilus* juveniles raised the value of the total density in this community, as well. Regarding the density recorded by the group of crustaceans, the species of amphipods *Erichtonius difformis, Ampithoe ramondi*, the isopod *Stenosoma capito* were noted for their increased abundance on the macroalgae thalli. The average value of macrozoobenthos biomass was 561 g/m2, juveniles of *Mytilaster* and *Mytilus,* crustacean isopods *S. capito* and *Idotea balthica* associated with *Gongolaria* thalli, contributing substantially to this increase.

In order to determine the species with the most significant contribution in the ecosystem, the species characteristic of a biotope or those that have accidentally arrived in the studied area, analytical ecological indices as dominance (D%), constancy (C%) and the ecological significance index (W, *Dzuba index*) were used.

The synecological analysis performed on the basis of the average densities of the identified species (80 species) indicated the presence of two eudominant species, the bivalves *Mytilaster* and *Mytilus* present through the high abundance of juveniles or veliconce stages, species considered primarily related to rocky substrate, not having a permanent character on the macrophytic substrate. The dominance of subrecedent species reached a percentage of 91% belonging to class D1 (< 1.1%), their participation in the formation of the biocoenosis being very small from the abundance point of view (Fig. 9).

The structural indicator, the frequency or constancy of species indicated the presence of four euconstant species (5%), eight constant species (10%), 17 accessory species (21%) and 51 accidental species (64%), in the investigated locations.

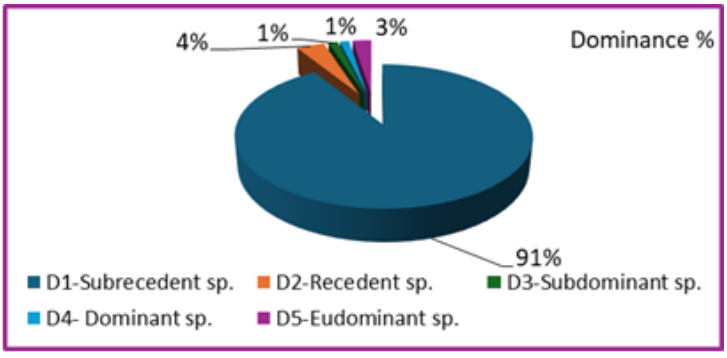

Fig. 9. Distribution of zoobenthic species based on the dominance indicator

Among the accessory species related to the existence of macroalgae associations, we mention the nemertians species that appear on the macrophytic substrate (*Tetrastemma bacescui, Emplectonema gracile*), the isopod *Idotea balthica,* seven species of polychaetes, the placophora *Lepidochitona caprearum*, the crustaceans *Condrochelia savignyi, Melita palmata, Caprella acanthifera.* Among the constant and euconstant species, the gastropods *Rissoa splendida* and *Tricolia pullus* were identified,

their frequency being also related to the local abundance of macrophyte algae vegetation. The polychaetes *Platynereis dumerilii, Perinereis cultrifera* representing the associated vagile fauna completed the faunal picture of the present euconstant species.

The ecological significance index (W) indicated the presence of 62 accidental species, 16 accesory species, and two characteristic species represented by the amphipods *Stenothoe monoculoides, Ampithoe ramondi*. These species had a higher relative abundance and also a constant presence in the analyzed stations (Fig. 10).

The analysis of the structure and distribution of the benthic fauna revealed the importance of macrophyte algae as a living substrate, which is populated by a large number of associated benthic macroinvertebrates that form diverse and productive, well-structured communities. The components of the associated fauna are mostly phytophilic species, but they can also be integrated in an infralittoral rock biocoenosis, such as, for example, in the *Gongolaria barbata-Mytilus* subcoenosis in the southern extremity of the Romanian littoral.

Overall, the faunistic complex associated with the macrophytic substrate is composed in proportion of 34% of sensitive species to the concentrations of organic matter in the sediments, there are also indifferent and/or tolerant species to an increased content of organic matter in proportions of 26%-31%, all having an important role in the productivity of the coastal ecosystem and, of course, in the flow of matter and energy of the ecosystem.

The knowledge obtained based on the information from this study provides a better understanding of the issues analyzed, resulting in an increase in the chances that the decisions taken to maintain a favorable conservation status will be well documented and correct. In addition to practical applications, ecological monitoring of the analyzed habitats has a theoretical significance also, the information obtained having an important role in knowing the laws that determine the structure, functions and dynamics of the ecosystem.

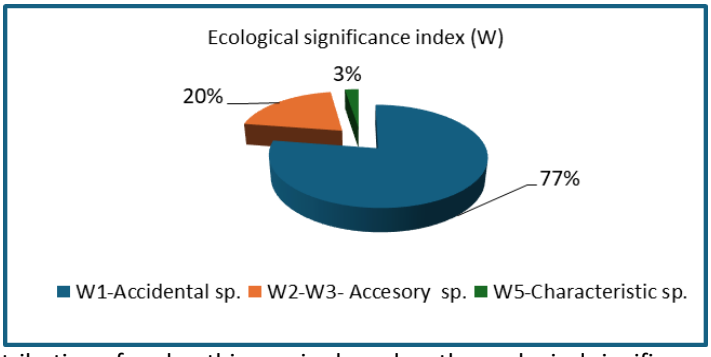

Fig. 10. Distribution of zoobenthic species based on the ecological significance index (W)

If at these complex benthic habitats level, in the shallow areas of the southern coast, with a high floristic and faunal biodiversity, there would be changes due to anthropogenic activities such as coastal development, dredging operations, beach sanding, the negative effects it would be on long-term, taking into account that the

restoring of benthic habitats requires a long time period depending on the particularities of the affected area.

CONCLUSIONS

The broad habitats type *Infralittoral rock and biogenic reef* and *Infralittoral sand*s from the southern part of the Romanian littoral were investigated. The benthic habitats with macrophytic substrate recorded a rich fauna, identifying a number of 80 macrozoobenthic species.

The analysis of the faunistic composition, depending on the specificity of the macrophytic substrate, highlighted that the highest recorded biodiversity was observed in the mixed association of photophilic algae *Ceramium virgatum, Ulva spp, Cladophora spp,* with a number of 59 species. In the habitat type dominanted by the brown alga *Gongolaria barbata*, 48 macrozoobenthic species were identified, the lowest specific diversity was observed at the level of the association composed by marine phanerogames, 45 species.

The non-indigenous species, the bivalve *Arcuatula senhousia*, was also identified in the port area in a single location, with a small number of individuals per sample at Năvodari, 1 m depth. Monitoring would be of interest in order to follow the distribution and the impact it could have on the native species in the future. Two species mentioned in the Red List of endangered marine species from the Romanian coast respectively, the bivalve *Irus irus* and the gastropod *Tricolia pullus* were identified.

Quantitatively, the highest values of the average macrozoobenthic density were recorded in the floristic assemblage constituted by the macroalgae *Ceramium, Ulva, Cladophora,* the presence of juvenile of sessile bivalves *Mytilaster* and *Mytilus* contributing to the increase of the total density.

The small gastropods *Rissoa splendida* and *Tricolia pullus*, predominantly phytophilic species, had higher density values to which were added species from the crustacean group, the amphipods *Erichtonius difformis*, *Ampithoe ramondi*, the isopod *Stenosoma capito* with an increased abundance on the macrophyte thalli, such as on the brown algae *Gongolaria barbata*.

The synecological analysis carried out on the whole of the studied zoobenthic communities highlighted the dominance and constancy of the bivalve species through individuals juvenile of *Mytilus* and *Mytilaster,* gastropods *R. splendida* and *T. pullus*, of polychaetes *Platynereis, Perinereis* as eudominant and euconstant species, and the amphipods *Stenothoe monoculoides, Amphithoe ramondi, Microdeutopus gryllotalpa* as accesory species.

Regarding the proportion of the ecological groups of the species that participated in the composition of the faunal complex associated with the macrophytic substrate, the dominance of the sensitive species to the concentrations of organic matter in sediments was highlighted, followed by the indifferent and/or tolerant species to an increased content of organic matter, all having an important role in the productivity of the coastal ecosystem and, in the flow of matter and energy of the ecosystem.

The benthic habitats from the infralittoral zones of the southern Romanian coast require increased protection against disturbing factors and a sustainable management of the floristic and faunistic biodiversity with high conservation value, here several endangered marine species included in the Red List are still present in the ecosystem.

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https:// (www.marinespecies.org)

Annex 1

List of benthic fauna associated with macroalgae fields in the southern part of the Romanian coast in 2023

No.	Macrozoobenthic species
1	*Actinia equina (Linnaeus, 1758)*
2	*Leptoplana tremellaris* (Müller OF, 1773)
3	*Stylochus tauricus* Jakubova, 1909
4	*Notoplana alcinoi* Schmidt, 1862
5	*Emplectonema gracile* (Johnston, 1837)
6	*Amphiporus lactifloreus* (Johnston, 1828)
7	*Tetrastemma bacescui* Müller, 1962
8	*Platynereis dumerilii* (Audouin & M.-Edwards, 1833)
9	*Perinereis cultrifera* (Grube, 1840)
10	*Namanereis littoralis* (Grube, 1872)
11	*Nereis zonata* Malmgren, 1867
12	*Harmothoe imbricata* (Linnaeus, 1767)
13	*Scolelepis squamata (Claparède, 1870)*
14	*Polydora cornuta* Bosc, 1802
15	*Genetyllis tuberculata* (Bobretzky, 1868)
16	*Leiochone leiopygos* (Grube, 1860)
17	*Mysta picta* (Quatrefagues, 1865)
18	*Salvatoria clavata* (Claparède, 1863)
19	*Eulalia viridis* (Linnaeus, 1767)
20	*Eumida sanguinea* (Oersted, 1843)
21	*Alitta succinea* (Leuckart, 1847)
22	*Hediste diversicolor* (O.F. Muller, 1776)
23	*Exogone naidina* Oersted, 1845
24	*Syllis gracilis* Grube, 1840
25	*Nereiphylla rubiginosa* (Saint-Joseph, 1888)
26	*Fabricia stellaris* (Muller, 1774)
27	*Heteromastus filiformis* (Claparede, 1864)
28	*Capitella minima* Langerhans, 1880
29	*Capitella capitata* (Fabricius, 1780)
30	*Polyophthalmus pictus* Dujardin, 1839
31	*Ficopomatus enigmaticus* (Fauvel, 1923)
32	*Janua heterostrofa* (Quatrefages, 1865)
33	*Lepidochitona caprearum* (Scacchi, 1836)
34	*Bittium reticulatum* (da Costa, 1778)
35	*Tricolia pullus pullus* (Linnaeus, 1758)
36	*Brachystomia scalaris* (MacGillivray, 1843)
37	*Tritia neritea (Linnaeus, 1758)*
38	*Rissoa splendida* Eichwald, 1830
39	*Rissoa membranacea* (Adams J., 1800)
40	*Rapana venosa* (Valenciennes, 1846)

41	*Irus irus* (Linnaeus, 1758)
42	*Arcuatula senhousia* W.H.Benson, 1842
43	*Cerastoderma glaucum* (Bruguière, 1789)
44	*Cerastoderma edule* (Bruguière, 1789)
45	*Mytilaster lineatus* (Gmelin, 1791)
46	*Mytilus galloprovincialis* Lamarck, 1819
47	*Abra segmentum (Récluz, 1843)*
48	*Macomangulus tenuis* da Costa, 1778
49	*Mya arenaria* Linnaeus, 1758
50	*Amphibalanus improvisus* (Darwin, 1854)
51	*Gammarus insensibilis Stock, 1966*
52	*Echinogammarus olivii* (M-Edwards, 1830)
53	*Microdeutopus gryllotalpa* A. Costa, 1853
54	*Monocorophium acherusicum* (Costa, 1853)
55	*Crassicorophium bonellii* (M. Edwards, 1830)
56	*Melita palmata* (Montagu, 1804)
57	*Apherusa bispinosa* (Bate, 1857)
58	*Ampithoe ramondi* Audouin, 1826
59	*Hyale pontica* Rathke, 1837
60	*Ericthonius difformis* (M. Edwards, 1830)
61	*Stenothoe monoculoides* (Montagu, 1815)
62	*Dexamine spinosa* (Montagu, 1813)
63	*Idotea balthica* (Pallas, 1772)
64	*Stenosoma capito* (Rathke, 1837)
65	*Tanais dulongii* (Audouin, 1826)
66	*Lekanesphaera hookeri* (Leach, 1814)
67	*Dynamene bidentata* Adams, 1800
68	*Condrochelia savignyi* (Kroyer, 1842
69	*Cumella* (*Cumella*) *limicola* G.O. Sars, 1879
70	*Iphinoe maeotica* (Sowinsky, 1894)
71	*Caprella acanthifera* Leach, 1814
72	*Phtisica marina* Slabber, 1749
73	*Pisidia longicornis* (Linnaeus, 1767)
74	*Diogenes pugilator* (Roux, 1829)
75	*Crangon crangon* (Linnaeus, 1758)
76	*Xantho poressa* (Olivi, 1792)
77	*Pilumnus hirtellus* (Linnaeus, 1761)
78	*Brachynotus sexdentatus* (Risso, 1827)
79	*Rhombognathus magnirostris ponticus*, 1888
80	*Thalassarachna affinis* Trouessart, 1896