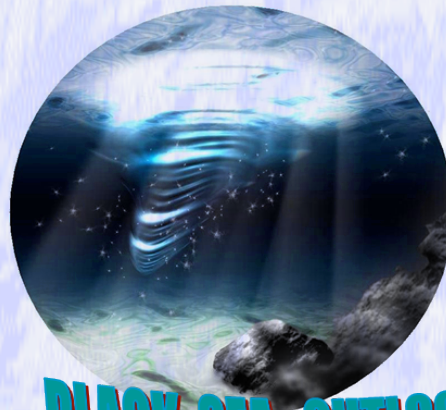




## 3rd Bi-annual BS Scientific Conference and UP-GRADE BS-SCENE Project Joint Conference

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# BLACK SEA OUTLOOK

Drivers, pressures, state, impacts, response and recovery indications  
towards better governance of Black Sea environmental protection.

JOINTLY ORGANIZED BY

THE COMMISSION ON THE PROTECTION OF THE BLACK SEA AGAINST POLLUTION (Black Sea Commission)

&

MINISTRY OF ENVIRONMENT AND NATURAL RESOURCES OF UKRAINE

&

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account effect of environment factors. Validation of the models showed high accuracy of them. The analysis of last ten years dynamics of the parameters simulated by the models have shown the peculiarities in spatial distribution, seasonal and long-term dynamics and key factors determined their variability.

The models could be used in operative mode, because of the regular availability of satellite data, which are input parameters of the models. The application of recent advance of remote sensing allows express estimations of the relevant indicators on different spatial and temporal scales with high resolution, to reveal “hot spots”, to make prognostic analysis. The model results, which include variability on different scales, could be used for assessment of reference level of indicators.

## Species Diversity of Phytoplankton within the Coastal Waters of Zmiinyi Island (2003-2010)

Dereziuk Nataliia

Odessa National I. I. Mechnikov University, 7 Mayakovskogo lane, Odessa, 65082, Ukraine

[n.derezyuk@onu.edu.ua](mailto:n.derezyuk@onu.edu.ua)

**Keywords:** phytoplankton, species diversity, Zmiinyi Island, Black Sea

The study of species composition is regarded as a section in a complex assessment of the state of the marine ecosystem of the shelf. While the evidence of the anthropogenic factor is the common case for the near-shore area in the North-West Black Sea shelf, the ecosystem near Zmiinyi island can be held as a unique one in that there is no such an impact observed, unless occasional short-duration influence of the Danube river run-off might be expected [1].

The study sought to analyze the structure of phytoplankton communities (abundance and number of species). The findings of the complex monitoring project form the basis of the study, which has been accomplished by the team of the Zmiinyi island scientific research lab being a structural division of Odessa national I.I. Mechnikov University. The study covered spring through autumn periods of 2003 – 2010 and was conducted at a permanently fixed station with two sampling layers (0 m and 8 m) and other near-shore stations around the island where samples were taken from 3 to 6 layers (0 m through 30 m). Over 1200 samples of phytoplankton were collected and handled altogether. Formalin was employed as a fixative, condensing of samples being carried out by means of sedimentation (through decantation) after three-week settling period. Phytoplankton samples were taken regularly each 5 days (2003 – 2008) and each 10 days (2009 – 2010). Taxonomic identification of phytoplankton was aided by national and international handbooks.

The detailed analysis of the results of the phytoplankton species composition is presented. Over 400 microalgae species were observed in the coastal waters of the island belonging to the following phylums and classes: *Bacillariophyta* (126 species), *Dinoflagellata* (108), *Chlorophyta* (77), *Cyanophyceae* (*Cyanobacteria*) (43), *Cryptophyta* (8), *Haptophyta* (22), *Dictyochophyceae* (6), *Chrysophyceae* (6), *Euglenophyceae* (9), *Ebriophyceae* (2), *Craspedophyceae* (2).

It was established that depending on the season of the year the samples contained 5 to 45 algae species with Shannon index ranging from 0.1 to 3.46.

Description of the vegetation periods is presented for abundant species of phytoplankton. The occurrences of algae species detected that are scarce for Ukrainian North-West Black Sea shelf are reported. Contemporary (2003 – 2010) to retrospective data (1993 – 2001) comparative analysis has been introduced [2].

Consideration towards possible increase in biodiversity of phytoplankton in the region of Zmiinyi island is presented. Danube run-off is shown as one of the major factors to influence the phytoplankton species composition by doubling the number of species in the community.

*References* :1. Zmiinyi Island. Ecosystem of Coastal Waters: monograph / Execut. Ed.. Medinets V.; Odesa National Mechnikov University. Odesa: Asroprint, 2008. - XII, 228 p.

2. Condition of the Black Sea environment. National Report of Ukraine. 1996–2000. - Odesa: Asroprint, 2002. – p. 55–57.

## Species Diversity of the Black Sea Fungi

Irina A. Dudka<sup>1,a</sup>, Nadezhda I. Kopytina<sup>2</sup>

<sup>1</sup>M.G. Kholodny Institute of Botany NASU

<sup>2</sup>Odesa Branch O.O Kivalevsky Institute of Biology of the Southern Seas

<sup>a</sup>i\_dudka@mail.ru

**Keywords:** marine fungi, species diversity, Shannon-Weaver's diversity index

According to the published data and information of own researches for the first time a list of fungi of the Black sea was compiled. As on modern taxonomy (Index Fungorum <http://www.indexfungorum.org/>) 444 species of fungi referred to 7 divisions, 16 classes, 34 orders, 62 families, 168 genera are existing in the marine environment. Micromycetes are presented by two ecological groups: 121 species of obligate water fungi (51 species of lower fungi, and 70 species of filamentous fungi (higher)), 323 species of facultative water micromycetes (terrestrial fungi, which are able to function in marine water). In the coastal waters of Ukraine 340 species of fungi are found, Romania - 109, Russia - 61 species, Turkey - 12, and Bulgaria - 34 (not published data, kindly given by E. Smolyanyuk), authors don't dispose data on the mycobiota's specific composition of the Georgia's coastal waters. In the sea-way 72 species are isolated, 45 of them - in water and bottom sediments of the hydrogen sulfide area. Mycobiota of some regions of Ukraine and Romania is the most researched. In the coastal waters of Crimea (cape Khersones) 173 species of micromycetes are found out, 137 species are isolated from the Odessa bay and estuaries of the north-western Black Sea, 166 species are exposed in the Danube's delta and offing, 109 species are mentioned for Romania. Similarity of the micromycetes' specific composition of the referred above regions on the coefficient of Bray-Curtis is small and hesitates from 23,6 % (Romania ↔ Odessa Gulf and estuaries) to 36,0% (Danube's delta and offing ↔ Crimea). The simple count of taxons does not characterize the specific diversity of ecosystem. Complexity of the systematic structure of biota is treated as a function of floristic resources (number of taxons of the different grade) and uniformity of the lower grade taxons' distributing on the higher grade taxons, Shannon - Weaver index of variety ( $H'$ ) is used for this purpose. The minimum value of index is marked in the coastal waters of Romania - 6.77, that specifies on the contrasting distributing of fungi' species via families (31 families are exposed, 18 from which are presented by 1