



PRELIMINARY RESULTS FROM THE STUDY OF FLORA AND VEGETATION OF OHRID LAKE

Alma IMERI¹, Alfred MULLAJ², Ermelinda GJETA³, Alkeda KALAJNXHIU¹, Lirika KUPE¹, Julian SHEHU¹ and Erta DODONA¹

1 Agricultural University of Tirana e-mail:bioalma_79@yahoo.com

2 University of Tirana, Faculty of Natural Sciences

3 University of Elbasan, Faculty of Natural Sciences

SYNOPSIS

Key words:

floristic composition, aquatic vegetation, Ohrid Lake.

The vegetation of the Ohrid lake consists in a variety of aquatic vegetation communities, out of which, the wet meadow vegetation is of great importance, especially because they are periodically floated, according to the variations of depth. This study is focused mostly in the identification of actual floristic composition and vegetation types. A check-list of the most important vascular plants and vegetation types, (emergent helophytic vegetation, emergent benthic hydrophytes, floating leaved macrophytes, submersed hydrophytes vegetation, free floating vegetation) is given. Identification and assessment of vegetation types along the shores of the lake is a first important step towards the implementation of traditional and new management practices aiming at increasing of wet meadows area and the sustainable use of the habitats.

INTRODUCTION

Ohrid Lake is a cross border lake, shared between Albania and Macedonia. Lake vegetation provides critical habitat and diversity of the plant community influences diversity in these other taxonomic groups. Macrophytic vegetation is perhaps the most conspicuous feature of lake ecosystems and has been used extensively as an indicator of the presence of lakes themselves, their boundaries, and as a basis for many lake classification schemes. Macrophytes are commonly defined as those "growing in water or on a substrate that is at least periodically deficient in oxygen as a result of excessive water content". Macrophytes plants may be floating, floating-leaved, submerged, or emergent and may complete their life

cycle in still or flowing water, or on inundated or non inundated hydro soils (Cronk & Fennessy 2001).

MATERIAL AND METHODS

In the period 2009-2010, a special emphasis was put on the inventory and distribution of macrophytic flora and vegetation, (Stanković, 1960). Investigation has been provided on 6 profiles (Lin, Buqezë, Hudënisht, Mëmëlisht, Pogradec, Drilon) in the littoral and along shoreline zones of Lake Ohrid (Albanian side). Investigations were carried out by the method of transects (at various depths and distances from the shoreline) (Lind, 1979).

Field investigations of the flora and vegetation was conducted by means of observation from the shore and from a light boat by the method of transects and transverse profiles. Plant components were identified during the field visit from a dense network of transects "covering" vegetation of the littoral aimed to get a full picture of the floristic diversity of vegetation.

Plant inventory was made due to the literature references and own investigations. Identification of vascular plants was performed on the basis of the following literature: PAPANISTO et al. (1984 - 2000) and TUTIN et al. (1964 - 1980). Nomenclature of taxa is synchronized with TUTIN et. al. (1964 - 1980). The relieve approach has been adapted from MUELLER-DOMBOIS and ELLENBERG (1974). Prior to sampling, lake is evaluated briefly for overall community structure. A 100 m² plot is established in a typical or "representative" location. Plants in the plot are inventoried and the cover class (abundance) of each plant taxon is estimated using cover classes (Almendinger, 1987).

Transect sampling in herbaceous, shrub-scrub wetland or wooded formation is done using a randomly way. The required equipment includes one 50-m measuring tape, four corner markers or posts, a clipboard with data forms, and plant collecting materials (Eckman facilities). For herbaceous plants, quadrants of 1 m² or 10 m x 10 m have most commonly been used. For woody plants, plots of at least 10 m x 10 m are used.

RESULTS

Even with a small surface, the Albanian part of Ohrid Lake is characterized by a considerable richness of flora and vegetation. The results show a relatively rich flora and vegetation. A number of 124 plant species (vascular plants) are registered till now. Most of them belong to hydrophylic or hygrophilic plant species (Dring et al., 2002). The richest zones, from the floristically point of view are Buqezë and

Driloni zones. More distributed or common species are *Phragmites australis*, *Potamogeton* spp., *Chara* spp., *Ceratophyllum* spp., *Myriophyllum* spp., etc.

FLORA

The flora of Ohrid Lake consists of 124 wild plant species (Tab 1.). The flora is distributed into 41 families (Fig.3). The chorological spectrum of Ohrid Lake flora shows that, the Sub cosmopolite species occupy the highest sum (28%). They are followed by Euro-Asiatic and Circum-boreal chorological elements (respectively 20% and 17%). Other chorological groups (Fig.2) of this floristic richness are almost equally represented.

In the life forms spectrum made according to Raunkiaer's system, seems to dominate in a great degree the Hemicryptophytes (H) against the other life forms, with percentage (39%). These are followed by the comparatively to satisfactory presence of Helophyte (He) with 25% and Geophytes (G) 23%. Lower percentage participation corresponds to Phanerophyte (Ph) and Therophytes (Th), with 6%.

Table 1: Species richness of the Ohrid Lake area.

Biological Spectrum Hemicryptophytes (H), Helophyte (He), Geophytes (G), Phanerophyte (Ph), Therophytes (Th).

Chorological Spectrum Sub-cosmopolite (Subcosm), Eurasiatic (Euras), Circumboreal (Circumbor), Paleotemporan (Paleotemp), Eurimediterran (EuMed), Eurosiberian (EuSib), European (Eu), Cosmopolite (Cosm), Nord America (NordAmer), Adventive (Adv), Balkanic (Balk), Eur-Caucasian (Eur-Caucas), Adventive (Adv).

No	Species	Family	Biological Form	Chorological Form
1	<i>Agrostis stolonifera</i> L.	Gramineae	H	Circumbor.
2	<i>Alisma gramineum</i> Lej	Alismataceae	He	Euras.
3	<i>Alisma lanceolatum</i> With	Alismataceae	He	Subcosm.
4	<i>Alisma plantago-aquatica</i> L.	Alismataceae	He	Subcosm.
5	<i>Alnus glutinosa</i> (L.) Geartner .	Betulaceae	Ph	Paleotemp.
6	<i>Apium nodiflorum</i> (L.) Lag.	Umbellifereae	H	EuMed.
7	<i>Asteriscus aquaticus</i> (L.) Less.	Compositae	Th	EuMed.
8	<i>Baldellia ranunculoides</i> (L.) Parl.	Alismataceae	G	EuMed.
9	<i>Beckmania eruciformis</i> (L.) Host	Gramineae	G	EuSib.
10	<i>Berula erecta</i> (Hudson) Coville	Umbellifereae	G	Circumbor.
11	<i>Butomus umbellatus</i> L.	Alismataceae	He	Euras.

12	<i>Alamagrostis pseudophragmites</i> Koeler	Gramineae	H	EuSib.
13	<i>Callitriche cophocarpa</i> Sendtner	Calitrichaceae	He	Euras.
14	<i>Callitriche stagnalis</i> Scop.	Calitrichaceae	He	Euras.
15	<i>Calystegia sepium</i> (L.) R.Br.	Convolvulaceae	H	Paleotemp.
16	<i>Carex acutiformis</i> Ehrh.	Cyperaceae	G	Euras.
17	<i>Carex brizoides</i> L.	Cyperaceae	G	Eur.
18	<i>Carex echinata</i> Murray	Cyperaceae	H	Euras.
19	<i>Carex paniculata</i> L.	Cyperaceae	H	Eur-Caucas.
20	<i>Carex pendula</i> Hudson	Cyperaceae	He	Euras.
21	<i>Carex pseudocyperus</i> L.	Cyperaceae	G	Subcosm.
22	<i>Catabrosa aquatica</i> (L.) Beauv.	Gramineae	G	Circumbor.
23	<i>Centaurium pulchellum</i> (Swartz) Druce.	Gentaniaceae	Th	Paleotemp.
24	<i>Ceratophyllum demersum</i> L.	Ceratophyllaceae	He	Subcosm.
25	<i>Ceratophyllum submersum</i> L.	Ceratophyllaceae	He	Subcosm.
26	<i>Cirsium palustre</i> (L.) Willd.	Compositae	H	Paleotemp.
27	<i>Cladium mariscus</i> (L.) Pohl.	Cyperaceae	G	Subcosm.
28	<i>Crypsis schoenoides</i> (L.) Lam.	Gramineae	Th	Paleotemp.
29	<i>Cyperus flavescens</i> L.	Cyperaceae	Th	Subcosm
30	<i>Cyperus fuscus</i> L.	Cyperaceae	Th	Paleotemp
31	<i>Cyperus longus</i> L.	Cyperaceae	G	Paleotemp
32	<i>Damasonium alisma</i> Miller I.	Alismataceae	He	EuMed.
33	<i>Eleocharis acicularis</i> (L.) Roemer et Schultes	Cyperaceae	G	Subcosm.
34	<i>Elodea canadensis</i> Michx	Hydrocharitaceae	He	Nord America
35	<i>Epilobium hirsutum</i> L.	Oenotheraceae	H	Euras.
36	<i>Epilobium obscurum</i> Schreber	Oenotheraceae	H	Eur.
37	<i>Epilobium palustre</i> L.	Onagraceae	H	Circumbor.
38	<i>Epilobium parviflorum</i> Schreber.	Onagraceae	H	Paleotemp.
39	<i>Epilobium roseum</i> Schreber.	Onagraceae	H	Circumbor.
40	<i>Eriophorum latifolium</i> Hoppe.	Cyperaceae	H	Euras.
41	<i>Fimbristylis bisumbellata</i> (Forsk.) Bub	Cyperaceae	Th	Subcosm.

42	<i>Galium palustre</i> L.	Rubiaceae	H	Euras.
43	<i>Glechoma hederacea</i> L.	Labiatae	H	Circumbor.
44	<i>Glyceria flutians</i> (L.) Br.	Gramineae	He	Subcosm.
45	<i>Glyceria plicata</i> (Fries) Fries	Gramineae	G	Subcosm.
46	<i>Gratiola officinalis</i> L.	Schrophulariaceae	H	Circumbor.
47	<i>Groenlandia densa</i> (L.) Fourrr.	Potamogetonaceae	He	EuSib.
48	<i>Hippuris vulgaris</i> L.	Hipuridaceae	He	Cosm.
49	<i>Hydrocharis morsus-ranae</i> L.	Hydrocharitaceae	He	Euras.
50	<i>Iris pseudacorus</i> L.	Juncaceae	G	Euras.
51	<i>Juncus compressus</i> Jacq.	Juncaceae	G	Euras.
52	<i>Juncus effuses</i> L.	Juncaceae	H	Cosm.
53	<i>Juncus inflexus</i> L.	Juncaceae	G	Paleotemp.
54	<i>Lemna minor</i> L.	Lemnaceae	He	Subcosm.
55	<i>Lemna trisulca</i> L.	Lemnaceae	He	Cosm.
56	<i>Leucojum aestivum</i> L.	Amaryllidaceae	G	Eu-Caucas
57	<i>Lycopus europaeus</i> L.	Labiatae	H	Circumbor
58	<i>Lysimachia vulgaris</i> L.	Primulaceae	H	Euras.
59	<i>Lythrum hysoopifolia</i> L.	Lythraceae	Th	Subcosm.
60	<i>Lythrum junceum</i> Banks et Solander.	Lythraceae	H	EuMed.
61	<i>Lythrum portula</i> (L.) D.A.Webb.	Lythraceae	Th	EuSib.
62	<i>Lythrum salicaria</i> L.	Lythraceae	H	Subcosm.
63	<i>Lythrum virgatum</i> L.	Lythraceae	H	EuSib.
64	<i>Mentha aquatica</i> L.	Labiatae	H	Subcosm.
65	<i>Mentha pulegium</i> L.	Labiatae	H	Subcosm.
66	<i>Myosotis scorpioides</i> L.	Boraginaceae	G	Eur.
67	<i>Myriophyllum spicatum</i> L.	Haloragaceae	H	EuSib.
68	<i>Myriophyllum verticillatum</i> L.	Haloragaceae	H	Circumbor.
69	<i>Najas marina</i> L.	Najadaceae	He	Cosm.
70	<i>Najas minor</i> All.	Najadaceae	He	Paleotemp.
71	<i>Nasturtium officinale</i> R. Br.	Cruciferae	H	Cosm.
72	<i>Nymphoides peltata</i> (S.G.Gmel.) O.Kuntze.	Nymphaceae	He	Euras.
73	<i>Oenanthe aquatica</i> (L.) Poiret.	Umbelliferae	Th	Euras.

74	<i>Oenanthe fistulosa</i> L.	Umbelliferae	H	Euras.
75	<i>Oenanthe peucedanifolia</i> Pollich.	Umbelliferae	H	EuMed.
76	<i>Oenanthe pimpinelloides</i> L.	Umbelliferae	H	EuMed.
77	<i>Oenanthe silaifolia</i> Bieb.	Umbelliferae	H	EuMed.
78	<i>Paspalumj paspalodes</i> (Michx) Scribner.	Gramineae	G	Adv.
79	<i>Phalaris arundinacea</i> L.	Gramineae	H	Circumbor.
80	<i>Phragmites australis</i> (Cav.) Trin&St.	Gramineae	G	Subcosm.
81	<i>Plantago major</i> L.	Plantaginaceae	H	Euras.
82	<i>Plantago lanceolata</i> L.	Plantaginaceae	H	Euras.
83	<i>Platanus orientalis</i> L.	Plantaginaceae	Ph	Subcosm.
84	<i>Polygonum amphibium</i> L.	Polygonaceae	G	Subcosm.
85	<i>Polygonum hidropiper</i> L.	Polygonaceae	Th	Circumbor.
86	<i>Populus alba</i> L.	Salicaceae	Ph	Paleotemp.
87	<i>Potamogeton berchtoldi</i> Fieber.	Potamogetonaceae	He	Subcosm.
88	<i>Potamogeton crispus</i> L.	Potamogetonaceae	He	Subcosm.
89	<i>Potamogeton gramineus</i> L.	Potamogetonaceae	He	Circumbor.
90	<i>Potamogeton lucens</i> L.	Potamogetonaceae	He	Circumbor.
91	<i>Potamogeton natans</i> L.	Potamogetonaceae	He	Subcosm.
92	<i>Potamogeton nodosus</i> Poiret	Potamogetonaceae	He	Subcosm.
93	<i>Potamogeton natans</i> L.	Potamogetonaceae	H	Subcosm.
94	<i>Potamogeton pectinatus</i> L.	Potamogetonaceae	H	Subcosm.
95	<i>Potamogeton perfoliatus</i> L.	Potamogetonaceae	H	Subcosm.
96	<i>Potamogeton pusillus</i> L.	Potamogetonaceae	H	Subcosm
97	<i>Potentilla reptans</i> L.	Rosaceae	H	Subcosm.
98	<i>Ranunculus aquatilis</i> L.	Ranunculaceae	H	Subcosm.
99	<i>Ranunculus trichophyllus</i> Chaix	Ranunculaceae	H	Eur.
100	<i>Roripa amphibia</i> Scop.	Cruciferae	H	EuSib.
101	<i>Rumex hydrolapathum</i> Hudson	Chenopodiaceae	H	Eur.
102	<i>Salix amplexicaulis</i> Bory.	Salicaceae	Ph	Balk.
103	<i>Salix elaeagnus</i> Scop.	Salicaceae	Ph	Eur.
104	<i>Schoenus nigricans</i> L..	Cyperaceae	H	Subcosm.
105	<i>Scirpus cernnus</i> Vahl	Cyperaceae	Th	Subcosm.

106	<i>Scirpus lacustris</i> L.	Cyperaceae	G	Subcosm.
107	<i>Scirpus sylvaticus</i> L.	Cyperaceae	G	Euras.
108	<i>Scutellaria galericulata</i> L.	Labiatae	G	Circumbor.
109	<i>Scutellaria hastifolia</i> L.	Labiatae	G	Eur.
110	<i>Senecio paludosus</i> L.	Compositae	G	EuSib.
111	<i>Sium latifolium</i> L.	Umbellifereae	G	EuMed.
112	<i>Solanum dulcamara</i> L.	Solanaceae	Ph	Paleotemp.
113	<i>Sparganium emersum</i> Rehmann	Sparganiaceae	He	Euras.
114	<i>Sparganium erectum</i> L.	Sparganiaceae	He	Euras.
115	<i>Tamarix parviflora</i> DC.	Tamaricaceae	Ph	EuMed.
116	<i>Triglochin palustris</i> L.	Juncaginaceae	G	Circumbor.
117	<i>Typha angustifolia</i> L.	Typhaceae	G	Circumbor.
118	<i>Typha latifolia</i> L.	Typhaceae	G	Cosm.
119	<i>Utricularia minor</i> L.	Lentibulariaceae	He	Eur.
120	<i>Utricularia vulgaris</i> L.	Lentibulariaceae	He	Circumbor.
121	<i>Veronica anagallis-aquatica</i> L.	Schrophulariaceae	H	Cosm.
122	<i>Veronica beccabunga</i> L.	Schrophulariaceae	H	Euras.
123	<i>Veronica scutellata</i> L.	Schrophulariaceae	H	Circumbor.
124	<i>Zannichellia palustris</i> L.	Zannicheliaceae	He	Cosm.

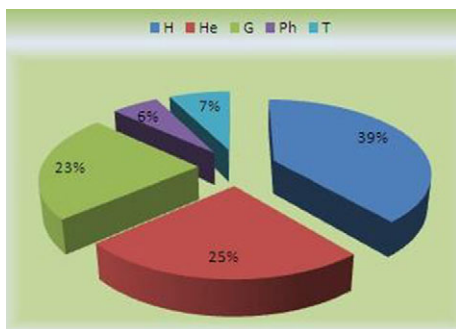


Figure 1: Biological spectrum.

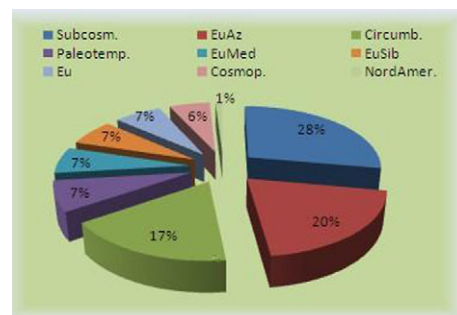


Figure 2: Chorological spectrum.

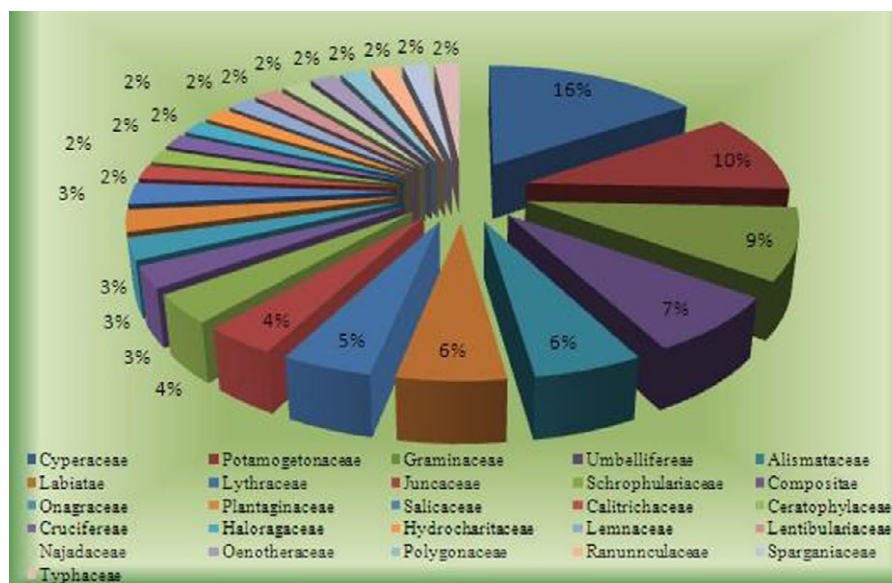


Figure 3: Family richness.

PHYTOSOCIOLOGICAL CLASSIFICATION OF MACHROPHYTIC VEGETATION IN OHRID LAKE

Vegetation of Ohrid Lake is represented by 12 associations belonging to six classes, 5 orders and 7 alliances.

1. Class Charetea (Fukarek, 1961) Krausch, 1964

Vegetation of this class is the final area of the lake and is represented by different dominant species of the genus *Nitella* and *Chara*.

2. Class Potametea Tx. & Preising, 1942.

This class is represented by the rooted submersed plants. It is dominated by Order **Potametalia** W. Koch 1926, and alliance **Potamion** W. Koch 1926.

2.1. Ass. *Myriophyllo-Potametum* Pop. 1962 (Buqezë, Drilon)

Main species of these association are *Potamogeton perfoliatus*, *Potamogeton gramineus*, *Potamogeton lucens*, *Myriophyllum spicatum* etc.

2.2. Ass. *Potameto-Najadetum* H-ić et Micev 1964 (everywere)

Main species: *Najas marina*, *Potamogeton pectinatus*, *Potamogeton perfoliatus* etc.

2.3. Ass. *Ceratophyllo-Potametum crispum* H-ić et Micev 1960 (Drilon)

Main Species *Potamogeton crispus*, *Potamogeton pusillus*, *Ceratophyllum demersum* etc.

2.4. Ass. *Elodeetum canadensis* (Pign.) Soo 1934.

Association with wide spread especially in Drilon.

3. Class Phragmitetea Tx. et prsg. 1942.

This class includes mainly vegetation that is near or at the edge of the lake. It is represented by **Order Phragmitetalia** W. Koch 1926.

Alliance: Phragmition (W. Koch 1926) Br.-Bl. 1931.

3.1 Ass. *Scirpo-Phragmitetum* Tx. et Prsg. 1942.

The main species are: *Phragmites australis*, *Typha angustifolia*, *Scirpus lacustris*, *Sparganium erectum* etc. It is more prevalent association in the lake edge.

Alliance: Glycerio-Sparganion Br.-Bl. et Siss. 1942.

1. Ass. *Glycerio-Sparganietum neglecti* W.Koch. 1926 em. Phil 1973.

It is characteristic accompaniment to the rear or water flowing slowly and are rich in mineral content. The most common species are: *Glyceria flutians*, *Sparganium neglecti*, *Mentha aquatica*, *Nasturtium officinalis*, *Veronica anagallia-aquatica*, *Epilobium hirsutum*, etc.

2. Ass. *Nasturtietum officinale* Oberd. et alt. 1967

It is characterized by clean waters and flowing slowly.

Alliance: Magnocaricion W. Koch 1962.

This alliance is represented by associations with the large species of the family *Cyperaceae* (*Cyperus* and *Carex*). These associations are characteristic of humid depressions, lake edge wetland sites and facilities that can be somewhat dry during the summer.

The most common associations are:

1. Ass. *Cladietum marisci* Szof. 1962, Alcalin places dominated by species *Cladium mariscus*, often associated by different species of the genus *Carex*.

2. Ass. *Cyperetum longi* Mičev 1957; Wetland sites in the lake and water channels. Dominant species *Cyperus longus* accompanied by *Lysimachia nummularis*, *Ranunculus ophiglossifolius*, *Carex* sp. div., etc.

4. Class Isoeto-Nanojuncetea Br.-Bl. et Tx. 1943.

Order: Isoetalia Br.-Bl. 1931.

Alliance: Nanocyperon flavescens W. Koch 1926; alliance, which represents an intermediate stage in the dynamism of vegetation of Ohrid lake.

4.1. Ass. *Cyperetum flavescens* H-ić 1931. It is presented by annual dwarf species of *Cyperus* and *Juncus*.

5. Class Lemnetea

Order: Lemnetalia W.Koch et Tx. 1954.

Alliance: Lemnion W.Koch et Tx. 1954.

5.1. Ass. *Lemnetum trisulcae* Knap et Staffers 1963. The association is presented in basins that are rich in nutritional substances, especially in Drilon. This is represented by floating plants as *Lemna trisulca*.

6. Class: Alnetea glutinosae Br.-Bl. et Tx. 1942

Order: Alnetalia glutinosae Tx. 1937

Alliance: Alnion glutinosae Meijer-Drees 1926

6.1. Ass. *Alnetum glutinosae (Alno-Fraxinetum orni)*. This association is presented in Drilon. Accompanied by *Platanus orientalis*, *Lythrum salicaria*, *Calamintha grandiflora*, *Veronica anagallis aquatica*, *Leonurus cardiacus* etc.

DISCUSSION

Along the shore of the lake, from the Lin up to Tushemishti village, macrophytic vegetation appears somewhat poor and highly fragmented. The most important centers of macrophytic vegetation of the Ohrid Lake are:

- The custom area of Macedonian Albanian frontier, near Tushemishti village. There, the helophytic formation of reed-beds with typical composition dominates the area.
- The area of Buqeza Bay. There, various marshy and the helophytic formation dominate the area.
- The area of Driloni tourist Center. Various marshy, helophytic and forest formation occur. Driloni tourist Center represents the most important ecosystem of the Ohrid Lake.

Following the succession of this vegetation type depending on the depth of water can clearly distinguish four areas of distribution:

1. The vegetation with floating plants occurs on the water surface of surrounding places of lake and the draining canals with shallow clear waters. The dominant here is mainly the characteristic small size and usually rootless floating plant *Lemna trisulca*.

2. The formation of benthic hydrophytes, which includes plants rooted in the bottom of the lake until the depth of 2.5 m. The more typical of these species are: *Potamogeton perfoliatus*, *P. crispus*, *P. pusillus*, *Ceratophyllum submersum*, *C. demersum*, *Myriophyllum verticillatum*, *M. spicatum*. The participation of *Ranunculus trichophyllus*, *Najas marina*, *Vallisneria spiralis* is more rare. Also species with lanceolate leaves and spike inflorescence as: *Polygonum amphibium*, *Potamogeton natans*, *P. lucens*, *P. gramineus*, are often emerged above water surface. These last are accompanied by the hydrophyte species *Ranunculus aquatilis*, *Utricularia vulgaris* (Alliance *Nymphaeion*, Class *Potametea*). This type of vegetation has a much better

development than others and forms almost a continuous band throughout the shores of the lake.

3. The formation of Helophytes solidly rooted in the bottom of the places which surrounds the lake, as far as 1.5 m depth, as well as in the bottoms of canals and marshes. Their largest part of stems is growing above water's surface. The formation of reed-beds (Alliance *Phragmition*) is more wide spread in the Ohrid Lake of Small Prespa. Helophytes, as: *Phragmites australis*, *Typha angustifolia*, *Scirpus lacustris*, participate in its basal composition. These are more frequently accompanied by the species: *Sparganium erectum*, *Alisma plantago-aquatica*, *Eleocharis palustris*, *Butomus umbellatus* (Ass. *Scirpo-Phragmitetum*).

4. The deepest area of the lake in the lower littoral up to 30 m depth is covered by species of the family Characeae (algae). Family Characeae in the lake of Ohrid is represented by Chara and Nitella species where with greater prevalence are: *Chara dissolute*, *Ch. ceratophylla*, *Ch. aspera*, *Ch. fragilis*, *Ch. hispida*, *Ch. foetida*, *Ch. imperfecta*, etc. Dominant species of this area is *Chara ceratophylla*, which often forms monophytic associations.

The formation of phanerophytes can find along coastal rocky places of the lake dominated by *Platanus orientalis* and along Driloni rivulet with the dominant species *Alnus incana*, *Salix alba*, with their companion species *Populus nigra*, *Populus alba*, *Alnus glutinosa*, *S. fragilis*, etc.

CONCLUSIONS

The Ohrid Lake is mainly mentioned for the reach vegetation and flora. There are four successive zones of vegetation: the zone dominated by the floating leaves species, the *Phragmites australis* zone, the zone dominated by the Potamogeton species and the zone dominated by Chara sp. div. The vegetation of the lake is represented by above 12 associations that belong to 6 classes and 5 orders. The flora consists of above 124 species.

REFERENCES:

- ALMENDINGER J.D. 1987: Regional and local hydrology of calcareous fens in the Minnesota river Basin, USA. - *Wetlands*, 18:184-202.
- DRING J., HODA P., MERSINLLARI, M., PIGNATTI, S., MULLAJ, A. & RODWELL, J. 2002: Vegetation of Albania, Preliminary overview. - *Annali di Botanica*, 11:7-30.
- PAPARISTO, K., QOSJA, XH., DEMIRI, M., MITRUSHI, J., BALZA, E., RUCI, B. & MULLAJ, A. 1984-2000: Flora e Shqipërisë. - *Akademia e Shkencave*, Tiranë. Volume 1-4.

- TUTIN, T.G., HEYWOOD, V.H., BURGESS, N.A., VALENTINE, D.H., WALTERS, S.M. & WEBB, D.A. 1964-1980: *Flora Europea*. - *Cambridge University Press*. Cambridge, Volume 1 – 5.
- LIND, O.T. 1979: *Handbook of common methods in limnology*. - *The C.V. Mosby Company*, St. Luis-Toronto-London, 199 pp.
- STANKOVIĆ, S. 1960: *The Balkan Lake Ohrid and its Living World*. - *Monographia Biologicae*, Vol. IX. Uitgeverij Dr. W. Junk, Den Haag, 357 pp.
- CRONK, J.K. & FENNESSY, M.S. 2001: *Wetland Plants: Biology and Ecology*. - *CRC Press/Lewis Publishers*, Boca Raton, FL(USA), 440 pp.
- MUELLER-DUMBOIS, D. & ELLENBERG, H. 1974: *Aims and methods of vegetation Ecology*. - *John Wiley & Sons*, New York, NY (USA), 547 pp.

Original research article

Received: 15 August 2010.