

Ramsar Information Sheet

Published on 7 May 2021

North Macedonia Lake Ohrid



Designation date 15 February 2021 Site number

Area 25 205,00 ha

2449 Coordinates 41°03'32"N 20°43'54"E

Color codes

Fields back-shaded in light blue relate to data and information required only for RIS updates.

Note that some fields concerning aspects of Part 3, the Ecological Character Description of the RIS (tinted in purple), are not expected to be completed as part of a standard RIS, but are included for completeness so as to provide the requested consistency between the RIS and the format of a 'full' Ecological Character Description, as adopted in Resolution X.15 (2008). If a Contracting Party does have information available that is relevant to these fields (for example from a national format Ecological Character Description) it may, if it wishes to, include information in these additional fields.

1 - Summary

Summary

Lake Ohrid is an ancient oligotrophic inland freshwater lake that has continuously existed since about 1.3 to 1.9 million years. It is the oldest and deepest lake by average depth in Europe and a World Heritage Site since 1979. Hosting 1,200 species, over 200 of them endemic, it displays one of the highest rates of biodiversity of any inland water on Earth when measured by surface area. While some of its globally-unique species are relicts whose relatives exist only as fossils in other locations, many have evolved in-lake over its long, isolated natural history. One reason for Lake Ohrid's exceptional flora and fauna is the fact that underground karst channels supply over 50% of its water via subaquatic and terrestrial springs. These springs are chemically distinct, creating specific micro-habitats that contain globally singular species within tight natural boundaries. Beyond the springs, oxygen-rich conditions and a wide photic zone furnish vertical habitats to depths of 150 m, supporting endemic taxa throughout the food web from phytoplankton to predatory fish.

Banked east and west by the Galichica and Jablanica/Mokra Mountains, Lake Ohrid moderates the climate, allowing refugium habitats in the local region, which support high floral diversity matched by variety in many species categories. With a single outflow, the River Black Drim ultimately flowing to the Adriatic Sea, Lake Ohrid is a major component of the species-rich Drim Basin. Studenchishte Marsh, a remnant of previously extensive shoreline wetlands, adds on to Lake Ohrid's biological diversity. Studenchishte contains wet meadows, alkaline marshes and fens; the largest lowland peat histosol range in Macedonia; and relict plant associations with nationally protected fauna. It supports water clarity and quality of the wider lake area through nutrient-filtering, thereby contributing to the maintenance of Ohrid's once-in-a-world ecosystems. Both Lake Ohrid and Studenchishte provide important paleoenvironmental archives within peat layers and sediment. The latter has already produced extensive sediment cores that, combined with the lake's peculiar flora and fauna, are providing insight into climate history and the relationship between biological and geological evolution. People have been living around Lake Ohrid for 8,000 years. The region contains numerous archaeological sites, some underwater, and constitutes an important resource for understanding human - wetland coexistence over several millennia

2 - Data & location

2.1 - Formal data

2.1.1 - Name and address of the compiler of this RIS

Responsible compiler

Institution/agency | Ministry of Environment and Physical Planning Square "Presveta Bogorodica" No 3

1000 Skopje Postal address

Republic of North Macedonia

National Ramsar Administrative Authority

Institution/agency | Ministry of Environment and Physical Planning

Square "Presveta Bogorodica" No 3 1000 Skopie

Postal address

Republic of North Macedonia

2.1.2 - Period of collection of data and information used to compile the RIS

From year 2002

To year 2020

2.1.3 - Name of the Ramsar Site

Official name (in English, French or Lake Ohrid Spanish)

2.2 - Site location

2.2.1 - Defining the Site boundaries

b) Digital map/image

<1 file(s) uploaded>

Former maps 0

Boundaries description

The boundary of Ramsar Site - Ohrid Lake follows the shore line of the lake, including the area of Studenchishte Marsh, the locality Sveti Naum and parts of wetlands near the Lake. The Ramsar Site - Ohrid lake is within both the UNESCO World Heritage Site designated as Natural and Cultural Heritage of the Ohrid Region and the UNESCO Transboundary Biosphere Reserve Ohrid-Prespa, and overlaps with parts of National Park Galichica, The biodiversity hot spots localities identified in the boundaries of UNESCO World Heritage Site designated as Natural and Cultural Heritage of the Ohrid Region are also included in the boundaries of Ramsar Site-Ohrid Lake.

2.2.2 - General location

a) In which large administrative region does Ohrid Municipality, Struga Municipality and Debarca Municipality the site lie?

b) What is the nearest town or population Ohrid and Struga centre?

2.2.3 - For wetlands on national boundaries only

a) Does the wetland extend onto the territory of one or more other Yes

No O countries?

b) Is the site adjacent to another designated Ramsar Site on the Yes O No (9) territory of another Contracting Party?

2.2.4 - Area of the Site

Official area, in hectares (ha): 25205

Area, in hectares (ha) as calculated from

GIS boundaries

25209.65

2.2.5 - Biogeography

Biogeographic regions

Regionalisation scheme(s)	Biogeographic region
EU biogeographic regionalization	Apine

3 - Why is the Site important?

3.1 - Ramsar Criteria and their justification

☑ Criterion 1: Representative, rare or unique natural or near-natural wetland types

Source of the River Black Drim, ancient, oligotrophic Lake Ohrid is a major component of the Drim Basin, supplying freshwater to hundreds of thousands of regional residents and visitors for recreational, agricultural and every-day purposes alike. By average depth, it is the deepest lake in Europe. It is also the oldest continuously existing inland water on the continent (Wagner et al, 2017).

Hydrological services provided

Around 50% of Lake Ohrid's water enters via underground karst channels in the Mount Galichica massif from both sibling Lake Prespa and atmospheric precipitation that has been absorbed into the ground (Jordanoska, 2012). These channels filter and stabilize water conditions to produce varied micro-habitats at sublacustrine and surface feeder springs (Matzinger et al, 2006; Jordanoska et al, 2010; Matter et al 2010), supporting exceptionally clear, high-oxygen conditions in the lake proper, which has protected and evolved endemic species at every layer of the food chain (Albrecht & Wilke, 2008).

Studenchishte Marsh, a coastal wetland with alkaline marshes and fens, supplies water through groundwater discharge and regulates for the ecosystem services of the wider Lake Ohrid region by retaining nutrients, thereby buffering water clarity and quality against eutrophication pressures (Apostolova et al, 2016; Society of Wetland Scientists, 2018). This contributes to maintenance of both water for human needs and Lake Ohrid's world-unique freshwater ecosystems such as by helping to secure the deep photic zone required by native phytoplankton.

With some of the oldest human settlements in Europe upon its shore, Lake Ohrid has furnished humanity with food, water and shelter during climate extremes for approximately 8,000 years. Even the characteristic local architecture has developed under the influence of the way light reflects from the water's surface (Jovanovic-Popovic et al, 2012), and archaeological sites indicate pre-Christian water-worship. It is therefore significant for the study of human interaction with wetlands over several millennia.

Derived from its unique ecosystem and sediment records stretching hundreds of thousands of years, Lake Ohrid is a key site for paleoenvironmental, paleoclimate and speciation research as well as the study of interplay between biological and geological evolution (Wagner, 2017). Its specific characteristics as a relatively small, accessible ancient lake with exceptional species richness make it almost uniquely suited to the function of a natural laboratory (Hauffe et al, 2011). Beyond the capital Skopje, the Lake Ohrid region is the major attraction of the growing Macedonian tourism industry that contributes 6.6% to national GDP (World Travel and Tourism Council, 2018). The lake's exceptionally clear waters with Secchi depths of 7-15m in the pelagic zone (Wagner et al, 2017) support diverse recreation with significant combined contribution to the local economy including general beach activities, swimming, scuba-diving, sailing, fishing, canoeing, paddleboarding and at least one professional sport event: the Ohrid Swimming Marathon, part of the FINA UltraMarathon Swim Series.

Other ecosystem services provided

Fisheries, most notably for carp and Ohrid trout, continue to contribute both to residents' sustenance and the regional economy (GiZ. 20017).

Studenchishte Marsh, the final fully functioning remains of previously extensive coastal wetlands at Lake Ohrid, offers a paleoenvironmental archive of its own right through its stratified peat layers; constitutes a blueprint from which other regional wetlands can be rehabilitated; functions as a spawning ground for three commercially important fish taxa; and contributes to carbon capture via 300cm histosol peatlands, which are the largest remaining lowland peat histosols in the Republic of North Macedonia (Apostolova et al, 2016; Society of Wetland Scientists, 2018).

Lake Ohrid buffers temperature and dryness extremes in the wider region and interplays with the surrounding mountain relief to produce a microclimate that has served as a refugium for plants including the continual presence of trees across hundreds of thousands of years of glacial advances and contractions, a contributory reason for regional floral diversity of continental significance in the present day (Sadori et al, 2016). As the most long-lived lake in Europe, it provides this climate mitigation on timescales that cannot be approached by the vast majority of inland waters worldwide.

Other reasons

Lake Ohrid's moderating influence upon climate additionally enabled glacial remnant coastal wetlands to survive in the Ohrid region when warming temperatures and drying conditions in the post-glacial era caused Balkan valleys to desiccate and pushed such habitats northwards (Spirovska et al, 2012). With several similar wetland refugiums drained in the past century, Studenchishte Marsh on Lake Ohrid's north-east coast is therefore rare and representative in its own right, holding 50% of the marsh associations known for North Macedonia (Apostolova et al, 2016), including unusual floral combinations established during the glacial retreat (Spirovska et al, 2012). Indeed, Studenchishte now displays one of the few remaining examples of a lowland peatland in the Republic of North Macedonia (Spirovska et al, 2012).

- Criterion 2 : Rare species and threatened ecological communities
- Criterion 3 : Biological diversity

Lake Ohrid has been identified as one of two hotspots of aquatic biodiversity in Europe (Neubauer et al (2015). As the deepest (average) and oldest continuously existing European inland water, its comparatively stable conditions over hundreds of thousands of years have enabled both the preservation of relict species and the evolution of entirely new taxa, resulting in probably the highest ratio of endemism to surface area of any lake on Earth (Albrecht and Wilke, 2008), with at least 212 endemic species (182 animals) among 1,200 native taxa. These natives have adapted to Lake Ohrid's oligotrophic conditions, which are supported both by karst springs and the Studenchishte Marsh wetland (Apostolova et al, 2016).

Lake Ohrid is a major contributor to biodiversity in the Southeast Adriatic Drainages, one of the leading ecoregions globally for freshwater fish species density with >8 taxa for every 104 km2 (Hales, 2015), Predominantly balanced between cyprinid and salmonid fish, Lake Ohrid ichthyofauna is represented by 21 native species, 15 of which are characteristic for the Western Balkans, 13 for the Southeast Adriatic Drainages, and 8 endemic to Lake Ohrid.

To date, the adjusted rate of endemicity for Lake Ohrid stands at 36% for all species and 34% for animals. Noteworthy are 72 gastropod species of which 78% cannot be found anywhere else on the planet. Other taxa demonstrate impressive endemism too: ciliophora (91% endemism among Justification 34 native species overall), amphipoda (90% among 10), porifera (80% among 5), isopoda (75% among 4), tricladida (79% among 29), ostracoda (63% among 52) and hirudinea (54% among 26) (Albrecht and Wilke, 2008), 88 species of birds related to the lake's ecosystem have been formally recorded, a number expected to rise with improved monitoring.

Recent studies of microflora have unveiled 789 diatom taxa for Lake Ohrid (Levkov and Williams, 2012), which will boost species totals even further. 117 are thought to be endemic and 15 relict. The lake is known as a hotspot of charophyte biodiversity (Albrecht & Wilke, 2008) with threatened species including Chara ohridana and Chara kokeilli, the former of which is known only for a small number of Balkan lakes.

The flora and fauna of Studenchishte Marsh is distinct from that of Lake Ohrid and therefore contributes substantially to the overall biodiversity of the site. Approximately 350 species are recorded for the marsh. 125 of which are rare and/or endemic (Spirovska et al. 2012). This is far from exhaustive as several important species groups (such as mammals) have not been thoroughly investigated but includes 79 bird species, 9 amphibian (Sterijovski & Arsovski 2019), 15 reptile (Sterijovski & Arsovski 2019), 15 fishes species, 46 beetle, 34 odonata and 9 Ohridendemic planarian taxa. From diatoms. 11 Ohrid-endemics from a total of 89 species have so far been identified (Spirovska et al. 2012).

- Criterion 4 : Support during critical life cycle stage or in adverse conditions
- ☑ Criterion 5 : >20.000 waterbirds

Overall waterbird numbers 21,319

Start year 2010

Source of data: International Waterbird Census, Lake Ohrid Macedonia, performed by Macedonian Ecological Society

- ☑ Criterion 6 : >1% waterbird population
- Criterion 7 : Significant and representative fish

According to Talevski et al (2009), the rate of endemism among the Lake Ohrid ichthyofauna is 33.3%, calculated on the basis of 21 native fish taxa, 7 of which are endemic to Lake Ohrid: Salmo ohridanus Steindachner 1892, Salmo aphelios, Kottelat,1997, Salmo balcanicus Karaman, 1928, Salmo letnica Karaman, 1924, Salmo lumi Poljakov, Filip & Basho 1958, Barbatula sturanyi (Steindachner, 1892), and Gobio ohridanus, Karaman, 1924. However, since then a genotypic and phenotypic evaluation has indicated Rutilus ohridanus as endemic to the lake (Milosevic et al, 2011) as well, which raises the overall number of world unique species to 8 and the endemism rate to 38%.

Justification

Lake Ohrid's salmonid fish demonstrate high genetic diversity. The lake has been identified as the probable epicentre for brown trout (Salmo trutta) diversity (Duquid, R.A., 2002).

Criterion 8 : Fish spawning grounds, etc.

Lake Ohrid contains the only spawning grounds for its 8 endemic fish taxa: Salmo ohridanus Steindachner 1892, Salmo aphelios, Kottelat,1997, Salmo balcanicus Karaman, 1928, Salmo letnica Karaman, 1924, Salmo lumi Poljakov, Filip & Basho 1958, Barbatula sturanyi (Steindachner, 1892), Rutilus ohridanus and Gobio ohridanus, Karaman, 1924. Studenchishte Marsh is also a spawning area (Society of Wetland Scientists, 2018). Spawning sites for Lake Ohrid's endemic salmonids vary by species, but are generally located in rocky, sandy or gravel-based habitats in the littoral and sublittoral zones (Spirkovski, 2004), with the exception of Salmo lumi, which prefers sheltered tributaries (Crivelli, 2006), and Salmo ohridana, which will also spawn in Lake Ohrid's shell zone. High-water quality is an important precondition for spawning success. The endemic cyprinid fish Gobio ohridanus prefers fine sand between reed belts and the shore (Talevska and Talevski, 2015).

Justification

☑ Criterion 9 : >1% non-avian animal population

3.2 - Plant species whose presence relates to the international importance of the site

Phylum	Scientific name	Criterion 2	Criterion 3	Criterion 4	IUCN Red List	CITES Appendix I	Other status	Justification
antae								
TRACHEOPHYTA/ LILIOPSIDA	Carex elata	Ø		Ø	LC		VU (Balkans)	Close to extinction in the Republic of North Macedonia, Carex elata is a protected species at national level, whose importance is heightened by its context in the relict plant community Caricetum elatae (Spirovska et al, 2012), present in Macedonia only at Studenchishte Marsh. The population still holds genetic potential for preservation of the species (Ministry of Environment and Physica Planning, 2014).
TRACHEOPHYTA/ MAGNOLIOPSIDA	Ceratophyllum submersum			✓	LC			Close to extinction in Studenchiste swamp.
CHAROPHYTA/ CHAROPHYCEAE	Chara imperfecta			V				Present at Studenchishte Marsh.
CHAROPHYTA/ CHAROPHYCEAE	Chara tomentosa	\checkmark					VU (Balkans)	Assessed as VU by Red Data List of Charophytes in the Balkans (2006).
TRACHEOPHYTA/ LILIOPSIDA	Cyperus rotundus			✓	LC			Present at Studenchishte Marsh.
CHAROPHYTA/ CHAROPHYCEAE	Nitellopsis obtusa	Ø					VU (Balkans)	Assessed as VU by Red Data List of Charophytes in the Balkans (2006).
TRACHEOPHYTA/ MAGNOLIOPSIDA	Nuphar lutea	2			LC		1	Identified as a strongly threatened species in the Republic of North Macedonia, according to the National Strategy for Biological Diversit (2018-2023)
TRACHEOPHYTA/ MAGNOLIOPSIDA	Nymphaea alba	v			LC		I .	Present at Studenchishte Marsh and identified as a strongly threatened species in the Republic of North Macedonia, according to the National Strategy for Biological Diversit (2018-2023). Protected species at national level.
TRACHEOPHYTA/ MAGNOLIOPSIDA	Nymphoides peltata				LC		1	Identified as a peltata seriously threatened species in the Republic of North Macedonia, according to the National Strategy for Biological Diversity (2018-2023)

3.3 - Animal species whose presence relates to the international importance of the site

Phylum	Scientific name	Species qualifies under criterion	Species contributes under criterion 3 5 7 8	Pop. Size	Period of pop. Est.	% occurrence	IUCN e Red List	CITES Appendix I	CMS Appendix I	Other Status	Justification
Others											
CHORDATA/ REPTILIA	Anguis fragilis	0000	Ø000								Justification for criteria 3: As a result of National Red List Assessments of amphibians and reptiles, Ohrid Lake Region is recognized with high diversity species richenss regarding the reptile class.

		Specie			ecies			0.4					
Phylum	Scientific name	qualifie under			ribute nder	P	Period of pop.	% Est. occurrence	IUCN Red	CITES	CMS	Other Status	Justification
		criterio			terion	1	ze Teriod or pop.	1)	List	Appendix I	Appendix I		
CHORDATA/ AVPHIBIA	Bombina variegata	2 4 6							LC			On the National Red List of Amphibians this species is recognized as LC; According the National List of Strictly Protected and Protected Wild Species this pecies is PROTECT ED. On EU Habitat directive this species is listed in Annex II and IV	Justification for criteria 3 and 4: Studencisko marsh is recognized as a amphibian HOTSPOT that provides shelter for all amphibian species refered in this list that enriches Ohrid Lake amphibian diversity. The last is justified due to the fact that the total number of present amphibian species on National level is 14 which means that 9 species in this region are 64.2% of all species of this class. Justufication for criteria 4: The parts of the shore line with reeds and Studencisko Marsh are vital for the amphibian life cycle due to the fact that this part of the lake is playing a role of reproductive center for amphibian class.
ARTHROPODA/ HEXANAUPLIA	Bryocamptus mirus	\mathbf{A}		/)	100				Protected species (Republic of North Macedonia)	Lake Ohrid endemic
CHORDATA/ AMPHIBIA	Bufo bufo			2 C					LC			On the National Red List of Amphibians this species is recognized as LC	Justification for criteria 3 and 4: Studencisko marsh is recognized as a amphibian HOTSPOT that provides shelter for all amphibian species refered in this list that enriches Ohrid Lake amphibian diversity. The last is justified due to the fact that the total number of present amphibian species on National level is 14 which means that 9 species in this region are 64.2% of all species of this class. Justufication for criteria 4: The parts of the shore line with reeds and Studencisko Marsh are vital for the amphibian life cycle due to a the fact that this part of the lake is playing a role of reproductive center for amphibian class.
ARTHROPODA/ OSTRACODA	Candona alta		.	/)	100				Protected species (Republic of North Macedonia)	Lake Ohrid endemic
ARTHROPODA/ OSTRACODA	Candona dedelica			Z)	100				Protected species (Republic of North Macedonia)	Lake Ohrid endemic
ARTHROPODA/ OSTRACODA	Candona depressa			2)	100				Protected species (Republic of North Macedonia)	Lake Ohrid endemic
ARTHROPODA/ OSTRACODA	Candona hartmanni			2)	100				Protected species (Republic of North Macedonia)	Lake Ohrid endemic
ARTHROPODA/ OSTRACODA	Candona holmesi			2)	100				Protected species (Republic of North Macedonia)	Lake Ohrid endemic
ARTHROPODA/ OSTRACODA	Candona lychnitis			2)	100				Protected species (Republic of North Macedonia)	Lake Ohrid endemic
ARTHROPODA/ OSTRACODA	Candona marginata			2)	100				Protected species (Republic of North Macedonia)	Lake Ohrid endemic
ARTHROPODA/ OSTRACODA	Candona marginatoides			/								Protected species (Republic of North Macedonia)	Endemic to Lakes Ohrid and Prespa
ARTHROPODA/ OSTRACODA	Candona media			2)	100				Protected species (Republic of North Macedonia)	Lake Ohrid endemic
ARTHROPODA/ OSTRACODA	Candona ohrida			2)	100				Protected species (Republic of North Macedonia)	Lake Ohrid endemic
ARTHROPODA/ OSTRACODA	Candona trapeziformis		V	2)	100				Protected species (Republic of North Macedonia)	Lake Ohrid endemic
ARTHROPODA/ OSTRACODA	Candona triangulata			/)	100				Protected species (Republic of North Macedonia)	Lake Ohrid endemic
ARTHROPODA/ OSTRACODA	Candona vidua			Z)	100				Protected species (Republic of North Macedonia)	Lake Ohrid endemic
PLATYHELMINTHES /	Castrada ochridense		.	Z)	100					Lake Ohrid endemic
PLATYHELMINTHES /	Castradella unidentata		7	2)	100					Lake Ohrid endemic

Phylum	Scientific name	q	Specio Jualifi unde	es r	C	ontri un			Pop. Size	Period of pop. Est.	% occurrence		CITES Appendix I	CMS Appendix	Other Status	Justification
			riteri 4 6		_		rion 7	_			'')	List				
ARTHROPODA/ ARACHNIDA	Copidognathus tectiporus profundus		2						0		100					Lake Ohrid endemic
CHORDATA/ REPTILIA	Coronella austriaca			00	V							LC			On the National Red List of Reptiles this species is recognized as LC; On EU Habitat directive this species is listed in Annex IV	Justification for criteria 3: As a result of National Red List Assessments of amphibians and reptiles, Ohrid Lake Region is recognized with high diversity species richenss regarding the reptile class.
ANNELIDA/ CLITELLATA	Criodrilus lacuum		2		1				0		100				Protected species (Republic of North Macedonia)	Lake Ohrid endemic
ARTHROPODA/ HEXANAUPLIA	Cyclops ochridanus		2] [1				0		100				Protected species (Republic of North Macedonia)	Lake Ohrid endemic
ARTHROPODA/ OSTRACODA	Cypria obliqua		V		1				0		100				Protected species (Republic of North Macedonia)	Lake Ohrid endemic
ANNELIDA/ CLITELLATA	Cystobranchus pawlowskii		2		1				0		100					Lake Ohrid endemic
NEMATODA/ ADENOPHOREA	Daptonema setosum		Ø (1				0		100					Lake Ohrid endemic
PLATYHELMINTHES / RHABDITOPHORA	Dendrocoelum adenodactylosum															Endemic species found only in Lakes Ohrid & Prespa
PLATYHELMINTHES /	Dendrocoelum albidum		V		1				0		100					Lake Ohrid endemic
PLATYHELMINTHES /	Dendrocoelum cruciferum		V		1				0		100					Lake Ohrid endemic
PLATYHELMINTHES /	Dendrocoelum decoratum		2		1				0		100					Lake Ohrid endemic
PLATYHELMINTHES /	Dendrocoelum dorsivittatum		Ø (1				0		100					Lake Ohrid endemic
PLATYHELMINTHES /	Dendrocoelum komareki		2		1				0		100					Lake Ohrid endemic
PLATYHELMINTHES /	Dendrocoelum lacustre		2		1				0		100					Lake Ohrid endemic
PLATYHELMINTHES /	Dendrocoelum lychnidicum		Ø (1				0		100					Lake Ohrid endemic
PLATYHELMINTHES /	maculatum		V] [1				0		100					Lake Ohrid endemic
PLATYHELMINTHES /	magnum		2		1				0		100					Lake Ohrid endemic
PLATYHELMINTHES /	minimum		V		1				0		100					Lake Ohrid endemic
PLATYHELMINTHES /	Dendrocoelum ochridense		2][1				0		100					Lake Ohrid endemic
PLATYHELMINTHES /	Dendrocoelum sanctinaumae		2	G	1				0		100					Lake Ohrid endemic
PLATYHELMINTHES /	Dendrocoelum sinisai		2		1				0		100					Lake Ohrid endemic
PLATYHELMINTHES /	Dendrocoelum translucidum		2		1				0		100					Lake Ohrid endemic
	Diacyclops ichnusoides		V		1				0		100				Protected species (Republic of North Macedonia)	Lake Ohrid endemic

Phylum	Scientific name		qua u cri	ecie alifie nder terio	es on		ui cri	ribi nde teri	utes r	Pop Size	Period of pop. Est.	% occurrence 1)	IUCN Red List	CHES	CMS Appendix	Other Status	Justification
ANNELIDA/ CLITELLATA	Dina eturpshem		V	9		/	9	00		0		100					Lake Ohrid endemic
ANNELIDA/ CLITELLATA	Dina krilata		V	7		1	7	00		0		100					Lake Ohrid endemic
ANNELIDA/ CLITELLATA	Dina kuzmani		G	7] [3	/	7	00		0		100					Lake Ohrid endemic
ANNELIDA/ CLITELLATA	Dina lepinja		G	9] [5	/	9	00		0		100				Protected species (Republic of Macedonia)	Lake Ohrid endemic
ANNELIDA/ CLITELLATA	Dina lyhnida		Ģ	9		/	9	0		0		100					Lake Ohrid endemic
ANNELIDA/ CLITELLATA	Dina ohridana		G	0		/	0	00		0		100					Lake Ohrid endemic
ANNELIDA/ CLITELLATA	Dina profunda		Ģ	9		/	9	0		0		100					Lake Ohrid endemic
ANNELIDA/ CLITELLATA	Dina svilesta		G	0] [5	/	0	00		0		100					Lake Ohrid endemic
CHORDATA/ REPTILIA	Dolichophis caspius		ם כ		םכ		0	00					LC			On the National Red List of Reptiles this species is recognized as LC; On EU Habitat directive this species is listed in Annex IV	Justification for criteria 3: As a result of National Red List Assessments of amphibians and reptiles, Ohrid Lake Region is recognized with high diversity species richenss regarding the reptile class.
ANNELIDA/ CLITELLATA	Eiseniella ochridana ochridana	7	V	9		/	9	00		0		100				Protected species (Republic of North Macedonia)	Lake Ohrid endemic
ANNELIDA/ CLITELLATA	Eiseniella ochridana profunda	7	V	9	9	/	9	0		0		100				Protected species (Republic of North Macedonia)	Lake Ohrid endemic
CHORDATA/ REPTILIA	Elaphe quatuorlineata	V		םכ	םכ		9	00					NT			On the National Red List of Reptiles this species is recognized as NT; On EU Habitat directive this species is listed in Annex II and IV	Justification for criteria 3: As a result of National Red List Assessments of amphibians and reptiles, Ohrid Lake Region is recognized with high diversity species richenss regarding the reptile class.
ANNELIDA/ CLITELLATA	Embolocephalus cernosvitovi		[7		/	7	00		0		100				Protected species (Republic of North Macedonia)	Lake Ohrid endemic
PLATYHELMINTHES	Fonticola maculata		G	90		1	90	0		0		100					Lake Ohrid endemic
PLATYHELMINTHES	Fonticola ochridana		G	90] [/	90	00		0		100					Lake Ohrid endemic
PLATYHELMINTHES /	S Fonticola stankovici		G	90] [3	/	90	00		0		100					Lake Ohrid endemic
PLATYHELMINTHES	Fonticola undulata		G	9] [3	7	9	00		0		100					Lake Ohrid endemic
PLATYHELMINTHES /	Gieysztoria pavimentata		Ū	7] [3	/	7	00		0		100					Lake Ohrid endemic
ANNELIDA/ CLITELLATA	Glossiphonia complanata maculosa			9		/	9	00		0		100					Lake Ohrid endemic
ANNELIDA/ CLITELLATA	Glossiphonia pulchella		V	7		1	7	0		0		100				Protected species (Republic of North Macedonia)	Lake Ohrid endemic
ANNELIDA/ CLITELLATA	Haplotaxis gordioides		V	7		/	7][0		100				Protected species (Republic of North Macedonia)	Lake Ohrid endemic

Phylum	Scientific name	qu u cri	ecies alifies nder terio	s n	COI	und riter	utes er	Pop. Size	% occurrence 1)	IUCN Red List	CITES Appendix I	CMS Appendix I	Other Status	Justification
CHORDATA/ REPTILIA	Hierophis gemonensis	Z C			☑ (LC			On the National Red List of Reptiles this species is recognized as EN;	Justification for criteria 2: This species distribution is restricted to Prespa region, Ohrid Lake region and River Drim valley. Therefore throughout the National Red List assessment it is recognized as ENDANGERED. Justufication for criteria 3: As a result of National Red List Assesments of amphibians and reptiles, Ohrid Lake Region is recognized with high diversity species richenss regarding the reptile class.
CHORDATA/ AWPHIBIA	Hyla arborea	V	20		☑ (LC			On the National Red List of Amphibians this species is recognized as NT; Accoriding the National List of Strictly Protected and Protected Wild Species this pecies is PROTECT ED. On EU Habitat directive this species is listed in Annex IV	Justification for criteria 3 and 4: Studencisko marsh is recognized as a amphibian HOTSPOT that provides shelter for all amphibian species refered in this list that enriches Ohrid Lake amphibian diversity. The last is justified due to the fact that the total number of present amphibian species on National level is 14 which means that 9 species in this region are 64.2% of all species of this class. Justufication for criteria 4: The parts of the shore line with reeds and Studencisko Marsh are vital for the amphibian life cycle due toa the fact that this part of the lake is playing a role of reproductive center for amphibian class.
PLATYHELMINTHES /	Jovanella balcanica			V	V)			0	100					Lake Ohrid endemic
CHORDATA/ REPTILIA	Lacerta trilineata	2			2					LC			On the National Red List of Reptiles this species is recognized as LC; On EU Habitat directive this species is listed in Annex IV	Justification for criteria 3: As a result of National Red List Assessments of amphibians and reptiles, Ohrid Lake Region is recognized with high diversity species richenss regarding the reptile class.
CHORDATA/ REPTILIA	Lacerta viridis	2			V					LC			On the National Red List of Reptiles this species is recognized as LC; On EU Habitat directive this species is listed in Annex IV	Justufication for criteria 3: As a result of National Red List Assesments of amphibians and reptiles, Ohrid Lake Region is recognized with high diversity species richenss regarding the reptile class.
ANNELIDA/ CLITELLATA	Lamprodrilus pygmaeus intermedia			¥)	2			0	100				Protected species (Republic of North Macedonia)	Lake Ohrid endemic
ANNELIDA/ CLITELLATA	Lamprodrilus pygmaeus ochridana			I)	1			0	100				Protected species (Republic of North Macedonia)	Lake Ohrid endemic
ARTHROPODA/ OSTRACODA	Leptocythere prespensis				V								Protected species (Republic of North Macedonia)	Endemic to Lakes Ohrid and Prespa
ARTHROPODA/ OSTRACODA	Leptocythere proboscidea			1	V			0	100				Protected species (Republic of North Macedonia)	Lake Ohrid endemic
CHORDATA/ AMPHIBIA	Lissotriton vulgaris	V V	7 🗆		☑ (LC			On the National Red List of Amphibians this species is recognized as VU	Justification for criteria 3 and 4: Studencisko marsh is recognized as a amphibian HOTSPOT that provides shelter for all amphibian species refered in this list that enriches Ohrid Lake amphibian diversity. The last is justified due to the fact that the total number of present amphibian species on National level is 14 which means that 9 species in this region are 64.2% of all species of this class. Justufication for criteria 4: The parts of the shore line with reeds and Studencisko Marsh are vital for the amphibian life cycle due toa the fact that this part of the lake is playing a role of reproductive center for amphibian class.
CHORDATA/ MAWIWALIA	Lutra lutra	2								NT	V		Annex II and IVEU Habitats Directive	Strictly protected species (Republic of North Macedonia). Population in decline due to loss of wetland habitats. Present at Studenchishte Marsh

Phylum	Scientific name	c	pecie ualifie under riterio 4 6	es r on	CO	unc	butes	Pop Size	% occurrence 1)	IUCN Red List	CITES Appendix	CMS I Appendix	Other Status	Justification
PLATYHELMINTHES /	Macrostomum leptos		1	V	V			0	100					Lake Ohrid endemic
PLATYHELMINTHES /	Microdalyellia minima		V	J	V			0	100					Lake Ohrid endemic
CHORDATA/ REPTILIA	Natrix tessellata	√) 2 ()		LC			On the National Red List of Reptiles this species is recognized as NT; On EU Habitat directive this species is listed in Annex IV	Justification for criteria 3: As a result of National Red List Assessments of amphibians and reptiles, Ohrid Lake Region is recognized with high diversity species richenss regarding the reptile class.
NEMATODA/ ADENOPHOREA	Neochromadora trilineata		2	J	Ø			0	100					Lake Ohrid endemic
ARTHROPODA/ HEXANAUPLIA	Ochridacyclops arndti arndti		2	J				0	100				Protected species (Republic of North Macedonia)	Lake Ohrid endemic
PORIFERA/ DEMOSPONGIAE	Ochridospongilla stankovici		2	J				0	100				Protected species (Republic of North Macedoni a)	Lake Ohrid endemic
PLATYHELMINTHES /	Opistomum mazedonicum		2	J				0	100					Lake Ohrid endemic
ARTHROPODA/ OSTRACODA	Paralimnocythere alata		2	J				0	100				Protected species (Republic of North Macedonia)	Lake Ohrid endemic
ARTHROPODA/ OSTRACODA	Paralimnocythere georgevitschi		2	J				0	100				Protected species (Republic of North Macedonia)	Lake Ohrid endemic
ARTHROPODA/ OSTRACODA	Paralimnocythere karamani		2	J	Ø			0	100				Protected species (Republic of North Macedonia)	Lake Ohrid endemic
ARTHROPODA/ OSTRACODA	Paralimnocythere ochridense		/	J	Ø.			0	100				Protected species (Republic of North Macedonia)	Lake Ohrid endemic
ARTHROPODA/ OSTRACODA	Paralimnocythere slavei		2	J				0	100				Protected species (Republic of North Macedonia)	Lake Ohrid endemic
ARTHROPODA/ OSTRACODA	Paralimnocythere umbonata		2	J				0	100				Protected species (Republic of North Macedonia)	Lake Ohrid endemic
CHORDATA/ AMPHIBIA	Pelophylax ridlibundus		2]]		LC			On the National Red List of Amphibians this species is recognized as LC; On EU Habitat directive this species is listed in Annex V	Justification for criteria 3 and 4: Studencisko marsh is recognized as a amphibian HOTSPOT that provides shelter for all amphibian species refered in this list that enriches Ohrid Lake amphibian diversity. The last is justified due to the fact that the total number of present amphibian species on National level is 14 which means that 9 species in this region are 64.2% of all species of this class. Justufication for criteria 4: The parts of the shore line with reeds and Studencisko Marsh are vital for the amphibian life cycle due to the fact that this part of the lake is playing a role of reproductive center for amphibian class.
ANNELIDA/ CLITELLATA	Peloscolex stankovici litoralis		7	V				0	100				Protected species (Republic of North Macedonia)	Lake Ohrid endemic
ANNELIDA/ CLITELLATA	Peloscolex stankovici stankovici		2		3			0	100				Protected species (Republic of North Macedonia)	Lake Ohrid endemic
CHORDATA/ REPTILIA	Podarcis erhardii	√			V)		LC			On the National Red List of Reptiles this species is recognized as LC; On EU Habitat directive this species is listed in Annex IV	Justification for criteria 3: As a result of National Red List Assessments of amphibians and reptiles, Ohrid Lake Region is recognized with high diversity species richness regarding the reptile class.

Phylum	Scientific name	c	Specie ualific unde riteric 4 6	es r on	con	ınde iteri	utes r on	Pop. Size	Period of pop. Est.	% occurrence 1)	IUCN Red List	CHES	CMS I Appendix	Other Status	Justification
CHORDATA/ REPTILIA	Podarcis muralis	V			V		00				LC			On the National Red List of Reptiles this species is recognized as LC; On EU Habitat directive this species is listed in Annex IV	Justification for criteria 3: As a result of National Red List Assessments of amphibians and reptiles, Ohrid Lake Region is recognized with high diversity species richness regarding the reptile class.
ANNELIDA/ CLITELLATA	Potamothrix isochaetus		2 C	V	2			0		100				Protected species (Republic of North Macedonia)	Lake Ohrid endemic
ANNELIDA/ CLITELLATA	Potamothrix ochridanus		V	V	2			0		100				Protected species (Republic of North Macedonia)	Lake Ohrid endemic
PLATYHELMINTHES /	Proamphibolella simplex		V	V	2			0		100					Lake Ohrid endemic
PLATYHELMINTHES /	Promacrostomum paradoxum		2	V	2			0		100					Lake Ohrid endemic
ANNELIDA/ CLITELLATA	Psammoryctes ochridanus ochridanus			ø	2			0		0				Protected species (Republic of North Macedonia)	Endemic to Lakes Ohrid and Prespa
ANNELIDA/ CLITELLATA	Psammoryctes ochridanus variabilis				2			0		0				Protected species (Republic of North Macedonia)	Endemic to Lakes Ohrid and Prespa
CHORDATA/ AMPHIBIA	Pseudepidalea viridis	V	2											On the National Red List of Amphibians this species is recognized as LC; According the National List of Strictly Protected and Protected Wild Species this pecies is PROTECT ED. On EU Habitat directive this species is listed in Annex IV	Justification for criteria 3 and 4: Studencisko marsh is recognized as a amphibian HOTSPOT that provides shelter for all amphibian species referred in this list that enriches Ohrid Lake amphibian diversity. The last is justified due to the fact that the total number of present amphibian species on National level is 14 which means that 9 species in this region are 64.2% of all species of this class. Justufication for criteria 4: The parts of the shore line with reeds and Studencisko Marsh are vital for the amphibian life cycle due to the fact that this part of the lake is playing a role of reproductive center for amphibian class.
ARTHROPODA/ OSTRACODA	Pseudocandona slavei		2	J	2			0		100					Lake Ohrid endemic
NEMATODA/ ADENOPHOREA	Punctodora ohridensis		V	V	2			0		100					Lake Ohrid endemic
CHORDATA/ AMPHIBIA	Rana graeca	V	2								LC			On the National Red List of Amphibians this species is recognized as NT; According the National List of Strictly Protected and Protected Wild Species this pecies is PROTECTED on EU Habitat directive this species is listed in Annex IV	Justification for criteria 3 and 4: Studencisko marsh is recognized as a amphibian HOTSPOT that provides shelter for all amphibian species referred in this list that enriches Ohrid Lake amphibian diversity. The last is justified due to the fact that the total number of present amphibian species on National level is 14 which means that 9 species in this region are 64.2% of all species of this class. Justufication for criteria 4: The parts of the shore line with reeds and Studencisko Marsh are vital for the amphibian life cycle due to a the fact that this part of the lake is playing a role of reproductive center for amphibian class.
ANNELIDA/ CLITELLATA	Rhynchelmis komareki brevirostra		2 C		2	0		0		100				Protected species (Republic of North Macedonia)	Lake Ohrid endemic

Phylum	Scientific name	Specie qualifie under criterio 2 4 6	es On	con L cr	ınde iteri	utes er on	Pop. Size	Period of pop. Est.	% occurrence 1)	IUCN Red List	CITES Appendix I	CMS Appendix I	Other Status	Justification
CHORDATA/ AMPHIBIA	Salamandra salamandra			2						LC			On the National Red List of Amphibians this species is recognized as LC;	Justification for criteria 3 and 4: Studencisko marsh is recognized as a amphibian HOTSPOT that provides shelter for all amphibian species referred in this list that enriches Ohrid Lake amphibian diversity. The last is justified due to the fact that the total number of present amphibian species on National level is 14 which means that 9 species in this region are 64.2% of all species of this class. Justufication for criteria 4: The parts of the shore line with reeds and Studencisko Marsh are vital for the amphibian life cycle due to a the fact that this part of the lake is playing a role of reproductive center for amphibian class.
ANNELIDA/ CLITELLATA	Spirosperma tenuis		/	2			0		0				Protected species (Republic of North Macedonia)	Endemic to Lakes Ohrid and Prespa
PORIFERA/ DEMOSPONGIAE	Spongilla stankovici		Ø	2			0		100				Protected species (Republic of North Macedonia)	Lake Ohrid endemic
ANNELIDA/ CLITELLATA	Stylodrilus leucocephalus		Ø	2			0		100				Protected species (Republic of North Macedonia)	Lake Ohrid endemic
CHORDATA/ REPTILIA	Testudo hermanni	2 00		V						NT			On the National Red List of Reptiles this species is recognized as VU; On EU Habitat directive this species is listed in Annex II and IV	Justification for criteria 3: As a result of National Red List Assessments of amphibians and reptiles, Ohrid Lake Region is recognized with high diversity species richenss regarding the reptile class.
CHORDATA/ AVPHIBIA	Triturus macedonicus			2									On the National Red List of Amphibians this species is recognized as VU; Accoriding the National List of Strictly Protected and Protected Wild Species this pecies is PROTECT ED. On EU Habitat directive this species is listed in Annex IV	Justification for criteria 3 and 4: Studencisko marsh is recognized as a amphibian HOTSPOT that provides shelter for all amphibian species refered in this list that enriches Ohrid Lake amphibian diversity. The last is justified due to the fact that the total number of present amphibian species on National level is 14 which means that 9 species in this region are 64.2% of all species of this class. Justufication for criteria 4: The parts of the shore line with reeds and Studencisko Marsh are vital for the amphibian life cycle due to a the fact that this part of the lake is playing a role of reproductive center for amphibian class.
CHORDATA/ REPTILIA	Vipera ammodytes			V						LC			On the National Red List of Reptiles this species is recognized as LC; On EU Habitat directive this species is listed in Annex IV	Justification for criteria 3: As a result of National Red List Assessments of amphibians and reptiles, Ohrid Lake Region is recognized with high diversity species richenss regarding the reptile class.
CHORDATA/ REPTILIA	Zamenis longissimus			V						LC			On the National Red List of Reptiles this species is recognized as LC; On EU Habitat directive this species is listed in Annex IV	Justification for criteria 3: As a result of National Red List Assessments of amphibians and reptiles, Ohrid Lake Region is recognized with high diversity species richenss regarding the reptile class.
Fish, Mollusc and	d Crustacea													
MOLLUSCA/ GASTROPODA	Acroloxus improvisus	9	V	1			0		100	W			Protected species (Republic of North Macedonia)	Lake Ohrid endemic
MOLLUSCA/ GASTROPODA	Acroloxus macedonicus	9		V			0		100	CR			Protected species (Republic of North Macedonia)	Lake Ohrid endemic
CHORDATA/ ACTINOPTERYGII	Alburnoides ohridanus			2		7 2			100	W			Protected species (Republic of North Macedonia)	Alburnoides ohridanus is a protected species endemic of Drim Basen
CHORDATA/ ACTINOPTERYGII	Albumus scoranza			2	-	20				LC				Endemic to the Drim basin lakes of Ohrid and Skadar, this species would likely trigger criterion 8 too, but population data is lacking.

Phylum	Scientific name	qı t cı	pecie ualifie under iterio 4 6	es on	co	unc crite	butes	Pop	Period of pop. Est.	% occurrence 1)	IUCN Red List	CITES Appendix	CMS Appendix I	Other Status	Justification
MOLLUSCA/ GASTROPODA	Ancylus lapicidus	V	2	J	V			0		100	EN			Protected species (Republic of North Macedonia)	Lake Ohrid endemic
MOLLUSCA/ GASTROPODA	Ancylus scalariformis	V	2)			W			Protected species (Republic of North Macedonia)	Lake Ohrid endemic
MOLLUSCA/ GASTROPODA	Ancylus tapirulus	V	7 C	V				0		100	EN			Protected species (Republic of North Macedonia)	Lake Ohrid endemic
CHORDATA/ ACTINOPTERYGII	Anguilla anguilla	2)			CR			Strictly protected species Republic of North Macedonia); Appendix II; CMS Appendix II	Lake Ohrid populations are currently artificially restocked due to dam interruptions on the River Drim.
ARTHROPODA/ MALACOSTRACA	Astacus astacus	V]			VU			Protected species (Republic of North Macedonia)	
CHORDATA/ ACTINOPTERYGII	Barbatula sturanyi		7 C				V	1		100	LC				Endemic to Lake Ohrid (Talevski et al, 2009).
CHORDATA/ ACTINOPTERYGII	Barbus rebeli)			LC			Protected species (Republic of North Macedonia)	The Western Balkan Barbel is found only in a handful of West Balkan rivers, including the Drim Basin.
MOLLUSCA/ GASTROPODA	Chilopyrgula sturanyi		2	(J				0		100	NT			Protected species (Republic of North Macedonia)	Lake Ohrid endemic
CHORDATA/ ACTINOPTERYGII	Cobitis ohridana				Ø)			LC				Representative species of the Southeast Adriatic Drainages biogeographic region.
MOLLUSCA/ BIVALVIA	Euglesa edlaueri		2 C	V				0		100				Protected species (Republic of North Macedonia)	Lake Ohrid endemic
ARTHROPODA/ MALACOSTRACA	Gammarus ochridensis		2	V	V			0		100				Protected species (Republic of North Macedonia)	Lake Ohrid endemic
MOLLUSCA/ GASTROPODA	Ginaia munda	Ø.	2 C	(J				0		100	W			Protected species (Republic of North Macedonia)	Lake Ohrid endemic
MOLLUSCA/ GASTROPODA	Ginaia munda sublitoralis		2	V				0		100				Protected species (Republic of North Macedonia)	Lake Ohrid endemic
CHORDATA/ ACTINOPTERYGII	Gobio ohridanus	V.	7 [V	1		100	W			Protected species (Republic of North Macedonia)	Lake Ohrid endemic
MOLLUSCA/ GASTROPODA	Gocea ohridana	Ø.	2 C	Į.				0		100	CR			Protected species (Republic of North Macedonia)	Lake Ohrid endemic
MOLLUSCA/ GASTROPODA	Gyraulus crenophilus	Ø.	2 C	Į.				0		100	EN			Protected species (Republic of North Macedonia)	Lake Ohrid endemic
MOLLUSCA/ GASTROPODA	Gyraulus fontinalis	V.	2	V	Ø			0		100	EN			Protected species (Republic of North Macedonia)	Lake Ohrid endemic
MOLLUSCA/ GASTROPODA	Gyraulus Iychnidicus		2 C	(V				0		100	NT			Protected species (Republic of North Macedonia)	Lake Ohrid endemic
MOLLUSCA/ GASTROPODA	Gyraulus trapezoides	Ø.	2 C	V	Ø			0		100	EN			Protected species (Republic of North Macedonia)	Lake Ohrid endemic
CHORDATA/ ACTINOPTERYGII	Leucos basak		2 C				1	9						Protected species (Republic of North Macedonia)	Endemic to Lake Ohrid (Milosevic et al, 2011)
MOLLUSCA/ GASTROPODA	Lyhnidia gjorgjevici	V.	2	J.				0		100	EN			Protected species (Republic of North Macedonia)	Lake Ohrid endemic
MOLLUSCA/ GASTROPODA	Lyhnidia hadzii	V	2 C	J	V			0		100	CR			Protected species (Republic of North Macedonia)	Lake Ohrid endemic
MOLLUSCA/ GASTROPODA	Lyhnidia karamani	V	2	V				0		100	CR			Protected species (Republic of North Macedonia)	Lake Ohrid endemic
MOLLUSCA/ GASTROPODA	Lyhnidia stankovici	Ø.	2	J.				0		100	CR			Protected species (Republic of North Macedonia)	Lake Ohrid endemic

		Species qualifies	Species contributes	_	%	IUCN				
Phylum	Scientific name	under criterion	under criterion	Pop. Size	od of pop. Est. occurrence	Dod	CITES Appendix I	CMS Appendix I	Other Status	Justification
MOLLUSCA/ GASTROPODA	Lyhnidia sublitoralis		3 5 7 8	0	100	DD			Protected species (Republic of North Macedonia)	Lake Ohrid endemic
MOLLUSCA/ GASTROPODA	Micropyrgula stankovici		72000	0	100	VU			Protected species (Republic of North Macedonia)	Lake Ohrid endemic
MOLLUSCA/ GASTROPODA	Neofossarulus stankovici		22000	0	100	W			Protected species (Republic of North Macedonia)	Lake Ohrid endemic
MOLLUSCA/ GASTROPODA	Ohridohauffenia depressa			0	100	EN			Protected species (Republic of North Macedonia)	Lake Ohrid endemic
MOLLUSCA/ GASTROPODA	Ohridohauffenia minuta			0	100	CR			Protected species (Republic of North Macedonia)	Lake Ohrid endemic
MOLLUSCA/ GASTROPODA	Ohridohauffenia rotonda			0	100	EN			Protected species (Republic of North Macedonia)	Lake Ohrid endemic
MOLLUSCA/ GASTROPODA	Ohridohauffenia sanctinaumi			0	100	EN			Protected species (Republic of North Macedonia)	Lake Ohrid endemic
MOLLUSCA/ GASTROPODA	Ohridohauffenia sublitoralis			0	100	DD			Protected species (Republic of North Macedonia)	Lake Ohrid endemic
MOLLUSCA/ GASTROPODA	Ohridohoratia polinskii			0	100	W			Protected species (Republic of North Macedonia)	Lake Ohrid endemic
MOLLUSCA/ GASTROPODA	Ohridohoratia pygmaea			0	100	NT			Protected species (Republic of North Macedonia)	Lake Ohrid endemic
MOLLUSCA/ GASTROPODA	Ohridohoratia sturanyi			0	100	NT			Protected species (Republic of North Macedonia)	Lake Ohrid endemic
MOLLUSCA/ GASTROPODA	Ohridopyrgula macedonica			0	100				Protected species (Republic of North Macedonia)	Lake Ohrid endemic
MOLLUSCA/ GASTROPODA	Ohrigocea karevi			0	100	EN			Protected species (Republic of North Macedonia)	Lake Ohrid endemic
MOLLUSCA/ GASTROPODA	Ohrigocea miladinovorum			0	100	EN			Protected species (Republic of North Macedonia)	Lake Ohrid endemic
MOLLUSCA/ GASTROPODA	Ohrigocea samuili			0	100	EN			Protected species (Republic of North Macedonia)	Lake Ohrid endemic
MOLLUSCA/ GASTROPODA	Ohrigocea stankovici			0	100	EN			Protected species (Republic of North Macedonia)	Lake Ohrid endemic
CHORDATA/ ACTINOPTERYGII	Pachychilon pictum	0000				LC				The native range of Pachychilon pictum is restricted to the Western Balkans
ARTHROPODA/ BRANCHIOPODA	Phreatalona smirnovi			0	100				Protected species (Republic of North Macedonia)	Lake Ohrid endemic
MOLLUSCA/ BIVALVIA	Pisidium subtruncatum			0	100	LC			Protected species (Republic of North Macedonia)	Lake Ohrid endemic
MOLLUSCA/ GASTROPODA	Planorbis macedonicus			0	100	EN			Protected species (Republic of North Macedonia)	Lake Ohrid endemic
ARTHROPODA/ MALACOSTRACA	Proasellus arnautovici			0	100					Lake Ohrid endemic
ARTHROPODA/ MALACOSTRACA	Proasellus amautovici elongatus			0	100					Lake Ohrid endemic
ARTHROPODA/ MALACOSTRACA	Proasellus gjorgjevici			0	100					Lake Ohrid endemic
ARTHROPODA/ MALACOSTRACA	Proasellus remyi			0	100					Lake Ohrid endemic
MOLLUSCA/ GASTROPODA	Pseudohoratia brusinae			0	100	W			Protected species (Republic of North Macedonia)	Lake Ohrid endemic

Phylum	Scientific name	Spec qualif und criter 2 4	fies ler rion	СО	und riter	outes er rion	Pop. Size	Period of pop. Est.	% occurrence 1)	IUCN Red List	CITES Appendix I	CMS Appendix I	Other Status	Justification
MOLLUSCA/ GASTROPODA	Pseudohoratia lacustris	1		1			0		100	W			Protected species (Republic of North Macedonia)	Lake Ohrid endemic
MOLLUSCA/ GASTROPODA	Pseudohoratia ochridana	V		1			0		100	W			Protected species (Republic of North Macedonia)	Lake Ohrid endemic
MOLLUSCA/ GASTROPODA	Pyrgohydrobia grochmalickii	V					0		100	W			Protected species (Republic of North Macedonia)	Lake Ohrid endemic
MOLLUSCA/ GASTROPODA	Pyrgohydrobia sanctinaumi	V		1			0		100	W			Protected species (Republic of North Macedonia)	Lake Ohrid endemic
CHORDATA/ ACTINOPTERYGII	Salmo aphelios					1			100	DD			Strictly protected species Republic of North Macedonia);	Lake Ohrid endemic
CHORDATA/ ACTINOPTERYGII	Salmo balcanicus					1			100	DD			Protected species (Republic of North Macedonia)	Lake Ohrid endemic
CHORDATA/ ACTINOPTERYGII	Salmo letnica					1			100	DD				Lake Ohrid endemic
CHORDATA/ ACTINOPTERYGII	Salmo lumi					1			100					Lake Ohrid endemic
CHORDATA/ ACTINOPTERYGII	Salmo ohridanus	V				1			100	W			Strictly protected species Republic of North Macedonia);	Lake Ohrid endemic
CHORDATA/ ACTINOPTERYGII	Scardinius knezevici									LC			Protected species (Republic of North Macedonia)	Representative species of the Southeast Adriatic Drainages, present only at Lakes Ohrid/ Skadar worldwide. Rare at Lake Ohrid (Freyhoff, 2013)
MOLLUSCA/ GASTROPODA	Stankovicia baicaliiformis	V		1			0		100	CR			Protected species (Republic of North Macedonia)	Lake Ohrid endemic
MOLLUSCA/ GASTROPODA	Strugia ohridana	2 0								W			Protected species (Republic of North Macedonia)	Restricted to subterranean spring systems in Southeast Adriatic Drainages biogeographic region
ARTHROPODA/ MALACOSTRACA	Synurella longidactylus						0		100				Protected species (Republic of North Macedonia)	Lake Ohrid endemic
MOLLUSCA/ GASTROPODA	Trachyochridia filocincta	V					0		100	CR			Protected species (Republic of North Macedonia)	Lake Ohrid endemic
MOLLUSCA/ GASTROPODA	Valvata hirsutecostata	V		1			0		100	W			Protected species (Republic of North Macedonia)	Lake Ohrid endemic
MOLLUSCA/ GASTROPODA	Valvata relicta	V		1			0		100	W			Protected species (Republic of North Macedonia)	Lake Ohrid endemic
MOLLUSCA/ GASTROPODA	Valvata rhabdota			1			0		100	NT			Protected species (Republic of North Macedonia)	Lake Ohrid endemic
MOLLUSCA/ GASTROPODA	Valvata stenotrema			1			0		100	NT			Protected species (Republic of North Macedonia)	Lake Ohrid endemic
MOLLUSCA/ GASTROPODA	Xestopyrgula dybowskii	V					0		100	W			Protected species (Republic of North Macedonia)	Lake Ohrid endemic
MOLLUSCA/ GASTROPODA	Zaumia kusceri	V					0		100	CR			Protected species (Republic of North Macedonia)	Lake Ohrid endemic
MOLLUSCA/ GASTROPODA	Zaumia sanctizaumi	V		1			0		100	CR			Protected species (Republic of North Macedonia)	Lake Ohrid endemic
Birds														
CHORDATA/ AVES	Alcedo atthis	V								LC			VU (Europe); Bern Convention Appendix II; EU Birds Directive Annex I.	Alcedo atthis is vulnerable in Europe, according to Birdlife International (2015).Passage/ Dispersion 25- 100 individuals for Lakes Ohrid and Prespa combined.

Phylum	Scientific name		crit	lifie der erio	s on		conf u cri	nde ter	utes	Pop. Size	% occurrence 1)	IUCN Red List	CHES	CMS Appendix I	Other Status	Justification
CHORDATA/ AVES	Anas clypeata		V			םכ		0)					Birds Directive Annex IIA, IIIB; Bern Convention Appendix III; CMS Appendix II	Passage/ Dispersion: 10- 100 individuals at Lakes Ohrid & Prespa combined
CHORDATA/ AVES	Anas crecca	V	V			00		0)		LC			Protected species (Republic of North Macedonia); Birds Directive Annex IIA IIB; Bern Convention Appendix III; CMS Appendix II	Wintering 2,500 individuals. Passage/Dispersi on: 100-3000 (Lakes Ohrid and Prespa).
CHORDATA/ AVES	Anas penelope		V					0)					Strictly protected species Republic of North Macedonia);	Passage/Dispersion 10-500 individuals for Lakes Chrid & Prespa
CHORDATA/ AVES	Anas platyrhynchos		V][0)		LC			Protected species (Republic of North Macedonia); Birds Directive Annex IIA IIB; Bern Convention Appendix III; CMS Appendix II	Passage/Dispersion 500-1500 individuals for Lakes Ohrid & Prespa
CHORDATA/ AVES	Anas querquedula		V			00	00	ם)						Passage/Dispersion 1000-2000 individuals for Lakes Ohrid & Prespa
CHORDATA/ AVES	Anas strepera		v			00		0)					Strictly protected species (Republic of North Macedonia) . Birds Directive Annex IIA; Bern Convention Appendix III; CMS Appendix II	Passage/ Dispersion 25- 100 individuals recorded for Lakes Ohrid & Prespa.
CHORDATA/ AVES	Ardea alba					00		0		1		LC				Birds Directive, Annex I; Bern Convention Appendix II; Emerald Network Annex I; CMS Appendix II
CHORDATA/ AVES	Ardea cinerea					00		0		1		LC			Bern Convention Appendix III; CMS Appendix II.	Passage/ Dispersion 50- 200 individuals for Lakes Ohrid & Prespa.
CHORDATA/ AVES	Aythya ferina					00		0		1		W			Protected species (Republic of North Macedonia); Birds Directive Annexes IIA, IIIB; Bern Convention Appendix III; CMS II	VU on both global and European level; Passage/Dispersion 300-600 individuals for Lakes Ohrid and Prespa.
CHORDATA/ AVES	Aythya fuligula		v			00		0)		LC			Protected species (Republic of North Macedonia); Birds Directive Annexes IIA, IIIB; Bern Convention Appendix III; CMS Appendix II	Passage/ Dispersion 1000- 2000 individuals for Lakes Ohrid & Prespa
CHORDATA/ AVES	Aythya nyroca		V)[)		NT		V	Protected species (Republic of North Macedonia)	Passage/ Dispersion Common for Lakes Ohrid & Prespa
CHORDATA/ AVES	Bucephala clangula		1					0		1		LC			Birds Directive Annex IIB; Bern Convention Appendix III; CMS Appendix II	Passage/ Dispersion 1-300 individuals for Lakes Ohrid & Prespa
CHORDATA/ AVES	Chroicocephalus ridibundus					00		0)					Strictly protected species (Republic of North Macedonia) . Birds Directive Annex IIB; Bern Convention Appendix	Passage/ Dispersion 1000-3000 individuals recorded for Lakes Ohrid & Prespa.
CHORDATA/ AVES	Cinclus cinclus					00		0)		LC			Bern Convention Appendix II	Passage/ Dispersion 15-30 individuals for Lakes Ohrid and Prespa combined.
CHORDATA/ AVES	Circus cyaneus	V				00		0	00)		LC			Strictly protected species (Republic of North Macedonia) . Birds Directive, Annex I; Bern Convention Appendix III; Emerald Network Annex I; CMS Appendix II	Passage/Dispersion: Few individuals
CHORDATA/ AVES	Cygnus olor		Z					2		1		LC			Strictly protected species (Republic of North Macedonia). Birds Directive Annex IIB; Bern Convention Appendix III; CMS Appendix II	Passage/ Dispersion few individuals recorded for Lake Ohrid.

Phylum	Scientific name	Species qualifies under criterion	Species contributes under criterion 3 5 7 8	Size Period of pop. Est.	% occurrence 1)	IUCN Red List	CITES Appendix	CMS I Appendix I	Other Status	Justification
CHORDATA/ AVES	Fulica atra								Protected species (Republic of North Macedonia); Birds Directive, Annex III; Bern Convention Appendix III; CMS Appendix II; NT for Europe (Birdlife Europe, 2015);	Large Lake Ohrid population (7,458-19,005 from 2010-2016) uses site for moulting & wintering.
CHORDATA/ AVES	Gallinula chloropus	0000				LC			Strictly protected species (Republic of North Macedonia); Birds Directive, Annex II; Bern Convention Appendix II; CMS Appendix II	Passage/ Dispersion 100-500 individuals for Lakes Ohrid and Prespa combined.
CHORDATA/ AVES	Gavia arctica					LC			Birds Directive Annex I; Bern Convention Appendix II; Emerald Network Annex I; CMS Appendix II	Passage/ Dispersion 0-5 individuals Lakes Ohrid and Prespa combined.
CHORDATA/ AVES	Gavia stellata					LC			Birds Directive Annex I; Bern Convention Appendix II; Emerald Network Annex I; CMS Appendix II	
CHORDATA/ AVES	Ixobrychus minutus					LC			Strictly protected species (Republic of North Macedoni a); CMS Appendix II.	Passage/ Dispersion scarce to numerous at Lake Ohrid. Nesting at Studenchishte Marsh
CHORDATA/ AVES	Larus michahellis					LC			Bern Convention Appendix III;	
CHORDATA/ AVES	Marmaronetta angustirostris	2 000				W		2	CR at EU27 level.	Probable records require verification at Lake Ohrid (Vasic, 2010).
CHORDATA/ AVES	Melanitta fusca	2 000				W			Birds Directive Annex IIB; Bern Convention Appendix III; CMS Appendix II	Recorded for Studenchishte
CHORDATA/ AVES	Mergus merganser			45 2010-2016	45	LC			Birds Directive IIB; Bern Convention Appendix III; CMS Appendix II	Lake Ohrid's Mergus Merganser are part of a small, isolated Balkan population centred in the Ohrid-Prespa region. Lake Ohrid is an increasingly important wintering & moulting site for them. With International Waterbird Census counts up to 114 individuals from 2010-2016, Lake Ohrid passes the 1% criterior for the Balkans (bre) biogeographic area of 1 individual (Wetlands International, 2019) in all years but 1. The average Lake Ohrid population of 45 is 45% of the Balkan biogeographic population.
CHORDATA/ AVES	Mergus serrator	0000				LC			Birds Directive IIA; Bern Convention Appendix III; CMS Appendix II	
CHORDATA/ AVES	Netta rufina			640 2010-2021	2.2	LC				Population: Black Sea & East Mediterranean
CHORDATA/ AVES	Numenius arquata					NT			VJ at European level	Records in wider area, expected at lake shore (Vasic, 2010)
CHORDATA/ AVES	Phalacrocorax carbo	0000				LC			Bern Convention Appendix III	Passage/ Dispersion 1000-4000 individuals Lakes Ohrid & Prespa combined
CHORDATA/ AVES	Phalacrocorax pygmaeus			493 210-2021	1.7					Population: Black Sea & East Mediterranean
CHORDATA/ AVES	Podiceps cristatus					LC			Strictly protected species (Republic of North Macedonia) . Bern Convention Appendix III	Passage/ Dispersion 500- 1200 individuals Lakes Ohrid & Prespa combined.
CHORDATA/ AVES	Podiceps nigricollis					LC			Bern Convention Appendices II, III	Passage/ Dispersion 1000-2000 individuals Lakes Ohrid & Prespa combined
CHORDATA/ AVES	Rallus aquaticus					LC			Strictly protected species (Republic of North Macedonia) . Birds Directive Annex IIB; Bern Convention Appendix III	

Phylum	Scientific name	Species qualifies under criterion	Species contributes under criterion 3 5 7 8	Size	Period of pop. Est.	IUCN Red List	CITES Appendix I	CMS Appendix I	Other Status	Justification
CHORDATA/ AVES	Riparia riparia					LC				Passage/ Dispersion: thousands daily at Lakes Ohrid & Prespa combined
CHORDATA/ AVES	Rissa tridactyla		10000			W			EN at EU27 level	Occasional accidental vagrant (Vasic, 2010).
CHORDATA/ AVES	Tachybaptus ruficollis					LC			Strictly protected species (Republic of North Macedonia) . Bern Convention Appendix II	Passage/ Dispersion: 500- 1000 individuals at Lakes Ohrid and Prespa combined.
CHORDATA/ AVES	Tadorna tadorna					LC				Passage/ Dispersion: 25- 100 individuals, Lakes Ohrid and Prespa combined.
CHORDATA/ AVES	Vanellus vanellus)		NT			VJ (Europe); Strictly protected species (Republic of North Macedonia); Birds Directive IIB; Bern Convention Appendix III. CMS Appendix II	Assessed as vulnerable on European Red List. Recorded at Studenchishte Marsh (Spirovska et al, 2012).

3.4 - Ecological communities whose presence relates to the international importance of the site

Name of ecological community	Community qualifies under Criterion 2?	Description	Justification
Scirpeto- Phragmitetum			
Sparganio- Glycerietum fluitantis			
Trifolietum nigrescentis-subterranei			
Charophyte- gastropod communities	2		Present at Ohrid lake coastal area
Oenantheto- Roripetum Lohm	Ø		Rare in the Republic of North Macedonia. Present at Studenchishte Marsh.
Caricetum Elatae	2		Rare in the Republic of North Macedonia. Present at Studenchishte Marsh.
Cyperetum longi	2		Rare in the Republic of North Macedonia. Present at Studenchishte Marsh.

Optional text box to provide further information

¹⁾ Percentage of the total biogeographic population at the site

Myriophylletum-Nypharetum community (W. Koch 1926). This community completely covers the surface, with large production, and with a thick layer of watermeal. Characteristic species are Myriophyllum verticillatum, Nympaea alba and Nuphar luteum. Potameto-Najadetum community (H-ci et Micevski, 1960). This community grows in the shallower zones of the Ohrid shore, in place with calm, warm water. The water depth in the places where this community can be found is 20-60 cm. The surface of places is also covered with a thick layer of watermil. Hydrocharideto-Nymhoidetum community. This community is located in marshy areas, near lake, with shallow (40-60 cm), and warm water. In the summer period the water level decreases and the soil becomes exposed. Characteristic plants are Hidrocharis morsus ranae and Utricularia neglecta. Caricetum elatae is a plant community in Studencisko swamp in places where water is retained for the longest time (Micevski, 1963). Charophyte - gastropod communities are present in Ohrid lake in the coastal area (T. Hauffe et al., 2011). The cyperus longus community develops in places that are under water in the spring and winter months, and in the summer months, after mowing, the soil dries up and cracks (Mic. 1957). Oenantheto - Roripetum Lohm grows in places where the surface water level fluctuates a lot during the year, and in the summer months it completely evaporates (Micevski, 1963). Scirpeto - Phragmitetum grows in lakes, swamps, canals and depressions whose bottoms are covered with sludge (Mic. 1957). Sparganio - Glycerietum fluitantis develops along canals with water, which flows slowly, where the soil is constantly moist due to the high level of groundwater (Micevski, 1963). Trifolietum nigrescentis - subterranei forms wet meadows in Macedonia (Mic. 1957).

4 - What is the Site like? (Ecological character description)

4.1 - Ecological character

Lake Ohrid is an oligotrophic freshwater with a continuous existence of approximately 1,300,000 to 1,900,000 years (Wagner, 2017). A combination of comparative isolation; stable conditions; and habitat assortment across vertical and horizontal axes has led to the development of unique ecosystems containing over 1,200 species, including at least 200 endemics, many of which have evolved in-lake (Albrecht and Wilke, 2008). These 1,200 species have adapted to Lake Ohrid's clear, low-nutrient, high-oxygen aquatic environment. Some can only survive in waters of this kind.

Such conditions are maintained by karst underground channels that provide 50% of the lake's inflow while partially removing phosphorous enroute; the buffering function of Studenchishte Marsh, a shoreline wetland with additional nutrient-filtering capacity; and macrophyte meadows, all three of which both directly constitute habitat for various, specific species and indirectly facilitate habitat at other lacustrine locations by limiting eutrophication processes and providing the high-quality water-conditions required by taxa that are key to ecosystem functioning such as salmonid fish, the in-lake apex predators.

The karst underground channels supply water both from Lake Prespa and atmospheric precipitation to surface and sub-lacustrine springs. Due to chemical processes that occur along the way and the array of karst pathways, the water that arrives at the springs is nutrient-limited; differs from that of the lake proper; and varies chemically from source to source, producing a subtle diversity of aquatic habitats (Matzinger et al, 2006; Matter et al, 2010; Jordanoska et al, 2010). As a result, invertebrate fauna diverges both from one spring complex to another and with the lake proper. Each contains endemic taxa.

Moving to the main water body, Lake Ohrid's transparency penetrates endemic phytoplankton species to greater depths where more nutrients are available. The phytoplankton in turn furnish zooplankton communities and the fish that predate upon them. High rates of dissolved oxygen open habitats for benthic fauna up to 150m from the lake surface (Matzinger et al, 2006a). The result is endemicity at every trophic layer. After the profundal zone, the sublittoral and littoral are subdivided into belts known as the sand/silt (35-50m depth), shell (20-35m), Chara (3-20m) and rock/sand (0-3m), varied habitats that support different species compositions. Species distribution (and evolution) is further influenced by heterogeneous sedimentation patterns and horizontal differences in hydrology, ecology and geology, all of which define the ecological arena through niche habitats.

The Chara Belt refers to the several Chara species growing in an almost continuous line around the lake, some of which are Balkan endemics. Aside from providing habitat, these may drive speciation processes by acting as barriers between invertebrate populations (Albrecht & Wilke, 2008). Macrophyte flora is also represented by Potamogeton, Phragmites and Cladophora belts, which provision food, shelter and spawning locations for 8 of 12 cyprinid fish taxa, including 2 endemics (Talevska and Talevski, 205). This is in contrast to the rocky and sandy locations where salmonid fish spawn.

In transition between aquatic and terrestrial habitats, Studenchishte Marsh is one of Lake Ohrid's most important ecotones. Containing alkaline marshes and fens, Studenchishte has been in constant communication with the lake proper for many thousands of years. Although water channels have been interrupted in recent times, connection still occurs by underground water passages. The final remains of onetime extensive shoreline wetlands, Studenchishte has a historical function as a nesting, spawning and wintering ground for birds and fish. Diminished by landuse changes and habitat degradation, it is yet home to relict plants, nationally rare insects, endemic invertebrates, and protected herpetofauna (Spirovska etal, 2016)

4.2 - What wetland type(s) are in the site?

Inland wetlands

Wetland types (code and name)	Local name	Ranking of extent (1: greatest - 4: least)	Area (ha) of wetland type	Justification of Criterion 1
Fresh water > Flowing water >> L: Permanent inland deltas	Lake Ohrid	1	24.732	Unique
Fresh water > Lakes and pools >> O: Permanent freshwater lakes	Lake Ohrid	1		
Fresh water > Marshes on inorganic soils >> Tp: Permanent freshwater marshes/ pools	Studencisko swamp	2	50	
Fresh, saline, brackish or alkaline water > Subterranean >> Zk(b): Karst and other subterranean hydrological systems	Studencisko swamp	2	50	Unique

4.3 - Biological components

4.3.1 - Plant species

Invasive alien plant species

Phylum	Scientific name	Impacts
TRACHEOPHYTA/LILIOPSIDA	Elodea canadensis	Potential

Optional text box to provide further information

Lake Ohrid is considered a hotspot of Charophyte diversity.

4.3.2 - Animal species

Other noteworthy animal species

Phylum	Scientific name	Pop. size	Period of pop. est.	%occurrence	Position in range /endemism/other
CHORDATA/AVES	Acrocephalus palustris				Species only recorded at Studenchishte Marsh for Republic of North Macedonia.
ARTHROPODA/INSECTA	Agonum lugens				Species only recorded at Studenchishte Marsh for Republic of North Macedonia.
ARTHROPODA/INSECTA	Agonum piceum				Species only recorded at Studenchishte Marsh for Republic of North Macedonia.
ARTHROPODAINSECTA	Amara convexiuscula				Species only recorded at Studenchishte Marsh for Republic of North Macedonia.
CHORDATA/AVES	Anas acuta				Species only recorded at Studenchishte Marsh for Republic of North Macedonia.
CHORDATA/AVES	Ardea purpurea				Species only recorded at Studenchishte Marsh for Republic of North Macedonia.
CHORDATA/AVES	Ardeola ralloides				Species only recorded at Studenchishte Marsh for Republic of North Macedonia.
CHORDATA/AVES	Botaurus stellaris				Strictly protected species (Republic of North Macedonia). CMS Appendix II. Recorded for Studenchishte Marsh. Mgratory/dispersion recorded for Lake Ohrid.
ARTHROPODA/INSECTA	Brachinus elegans				Species only recorded at Studenchishte Marsh for Republic of North Macedonia.
CHORDATA/AVES	Calidris minuta				Passage/ Dispersion 0-100.
CHORDATAAVES	Cettia cetti				Passage/ Dispersion: Common for Lakes Ohrid and Prespa. Passage/ Dispersion 10-100 individuals.
CHORDATA/AVES	Ciconia ciconia				Strictly protected species (Republic of North Macedonia). CMS Appendix II. Recorded for Studenchishte Marsh.
CHORDATA/AVES	Circus aeruginosus				Strictly protected species (Republic of North Macedonia). Recorded for Studenchishte Marsh.
CHORDATAAVES	Egretta garzetta				Strictly protected species (Republic of North Macedonia). Recorded for Studenchishte Marsh.
CHORDATA/AVES	Larus minutus				Accidental passage/ dispersion 0-30 individuals.
CHORDATA/AVES	Motacilla alba				Passage/ Dispersion common for Lakes Ohrid & Prespa.

Phylum	Scientific name	Pop. size	Period of pop. est.	%occurrence	Position in range /endemism/other
ARTHROPODA/INSECTA	Oodes gracilis				Species only recorded at Studenchishte Marsh for Republic of North Macedonia.
ARTHROPODA/INSECTA	Oodes helopioides				Species only recorded at Studenchishte Marsh for Republic of North Macedonia.
ARTHROPODA/INSECTA	Pterostichus elongatus				Species only recorded at Studenchishte Marsh for Republic of North Macedonia.
CHORDATA/AMPHIBIA	Rana dalmatina				Species only recorded at Studenchishte Marsh for Republic of North Macedonia.
ARTHROPODA/INSECTA	Stenolophus proximus				Species only recorded at Studenchishte Marsh for Republic of North Macedonia.
ARTHROPODA/INSECTA	Stenolophus skrimshiranus				Species only recorded at Studenchishte Marsh for Republic of North Macedonia.

Phylum	Scientific name	Impacts
CHORDATA/ACTINOPTERYGII	Alosa fallax	Actual (minor impacts)
CHORDATA/ACTINOPTERYGII	Carassius gibelio	Actual (minor impacts)
ARTHROPODA/MALACOSTRACA	Cryptorchestia cavimana	Potential
ARTHROPODA/BRANCHIOPODA	Diaphanosoma brachyurum	Potential
MOLLUSCA/GASTROPODA	Ferrissia californica	Potential
CHORDATA/ACTINOPTERYGII	Gambusia holbrooki	Actual (minor impacts)
CHORDATA/ACTINOPTERYGII	Lepomis gibbosus	Actual (minor impacts)
ARTHROPODA/BRANCHIOPODA	Leptodora kindti	Potential
CHORDATA/ACTINOPTERYGII	Oncorhynchus mykiss	Actual (minor impacts)
MOLLUSCA/GASTROPODA	Physella acuta	Potential
CHORDATA/ACTINOPTERYGII	Pseudorasbora parva	Actual (minor impacts)
CHORDATA/ACTINOPTERYGII	Rhodeus amarus	Actual (minor impacts)

4.4 - Physical components

4.4.1 - Climate

Climatic region	Subregion
C: Moist Mid-Latitude	Csa: Mediterranean (Mild
climate with mild winters	with dry, hot summer)

Ecological changes such as in the zooplankton community (including recent invasions by Diaphanosoma brachiurum and Leptodora kintii) may be linked to warming lake waters (Kostoski et al, 2010). Eutrophication has been predicted to accelerate with climate change (Matzinger et al, 2007) and decreased vertical mixing/complete deep convections in the recent past is also possibly climate-related.

4.4.2 - Geomorphic setting

a) Minimum elevation above sea level (in metres)

Organic 🗹

No available information \square

Are soil types subject to change as a result of changing hydrological Yes O No

Yes O No conditions (e.g., increased salinity or acidification)?

4.4.4 - Water regime

Water permanence

Presence?	
Usually permanent water present	No change

Source of water that maintains character of the site

Presence?	Predominant water source	
Water inputs from groundwater	2	No change

Water destination

Presence? To downstream catchment No change

Stability of water regime

Presence? Water levels largely stable No change

Please add any comments on the water regime and its determinants (if relevant). Use this box to explain sites with complex hydrology.

With a comparatively small catchment of 2,600 km2, Lake Ohrid receives approximately 54% of its water from subterranean karst channels, 23% from direct precipitation, and the remaining 23% from overland inflows (Albrecht & Wilke, 2008), including most majorly the River Sateska, which was artificially diverted into the lake in 1961/62, River Koselska, River Cerava, River Pogradec, and River Verdova. Several other smaller streams cease to flow in dry conditions. The aforementioned karst channels run through Mount Galichica on the lake's eastern shore and emerge as surface (51% by water volume) and sublacustrine springs (49%). They are predominantly fed by waters from Lake Prespa on the other side of the mountain, although a significant contribution originates from precipitation that has been absorbed into the highly porous mountain as well (Albrecht and Wilke, 2008). A single outflow, the River Black Drim, accounts for 60% of Lake Ohrid's exiting water (Matzinger et al, 2006a). The remaining 40% is lost to evaporation. Due to artificial regulation for hydroelectric dams, Lake Ohrid water level is (generally) held between 693.10m and 693.75m. This is legally mandated although fluctuations beyond these parameters have been known to occur. Studenchishte Marsh's groundwaters flow northeast to southwest and derive from precipitation that has been filtered through Mount Galichica. An important source of both its water and that of the lake proper is Biljanini Springs. During high-water extremes, Lake Ohrid and Studenchishte Marsh fully merge. To date, the movement of groundwater between Studenchishte and Lake Ohrid has not been sufficiently researched (Spirovska et al, 2012).

(ECD) Stratification and mixing regime

At depths above 150m,Lake Ohrid's water is layered by temperature from March to November. Below 150m, it is stratified by salinity. Complete mixing takes place roughly once per decade during exceptionally cold winters. Water residence time is 70 years.

4.4.5 - Sediment regime

Significant erosion of sediments occurs on the site

Significant accretion or deposition of sediments occurs on the site 🗹

Circlescontinopopolation of a discontinuous	
Significant transportation of sediments occurs on or through the site 🗹	
Sediment regime is highly variable, either seasonally or inter-annually	
Sediment regime unknown □	
archives. Diverse habitats created by the non-uniform distrib Surface sedimentation displays significant heterogeneity due water currents. Coarser grain sizes are proximate to river ou	
elevated nutrient inputs with associated changes to species	
4.4.6 - Water pH	
Acid (pH<5.5)	
Circumneutral (pH: 5.5-7.4)	
Alkaline (pH>7.4) ✓	
Unknown □	
4.4.7 - Water salinity	
Fresh (<0.5 q/l) ✓	
Mixohaline (brackish)/Mixosaline (0.5-30 g/l) □	
Euhaline/Eusaline (30-40 g/l) □	
Hyperhaline/Hypersaline (>40 g/l) □	
Unknown □	
4.4.8 - Dissolved or suspended nutrients in water	
Eutrophic	
Mesotrophic	
Oligotrophic 🗹	
Dystrophic	
Unknown □	
Please provide further information on dissolved or suspended nutrients (opti	ional):
Although Lake Ohrid remains oligotrophic, anthropogenic eu the littoral zone.	trophication is evident, particularly in
4.4.9 - Features of the surrounding area which may affect the	Site
Please describe whether, and if so how, the landscape and ecological characteristics in the area surrounding the Ramsar Site differ from the i) b site itself:	roadly similar ^O ii) significantly different ⊚
Surrounding area has greater urbanisation or development \Box	
Surrounding area has higher human population density \Box	
Surrounding area has more intensive agricultural use \Box	
Surrounding area has significantly different land cover or habitat types $\ensuremath{\overline{\psi}}$	
Please describe other ways in which the surrounding area is different:	
It is not a lake.	
4.5 - Ecosystem services	
•	
4.5.1 - Ecosystem services/benefits	
Provisioning Services	

RIS for Site no. 2449, Lake Ohrid , North Macedonia

Ecosystem service	Examples	Importance/Extent/Significance
Food for humans	Sustenance for humans (e.g., fish, molluscs, grains)	Medium
Fresh water	Drinking water for humans and/or livestock	High
Fresh water	Water for irrigated agriculture	Medium
Fresh water	Water for energy production (hydro-electricity)	Medium
Wetland non-food products	Other	Low

Regulating Services

Ecosystem service	Examples	Importance/Extent/Significance
Maintenance of hydrological regimes	Groundwater recharge and discharge	High
Pollution control and detoxification	Water purification/waste treatment or dilution	High
Climate regulation	Local climate regulation/buffering of change	High
Climate regulation	Regulation of greenhouse gases, temperature, precipitation and other climactic processes	Low

Cultural Services

Cultural Services				
Ecosystem service	Examples	Importance/Extent/Significance		
Recreation and tourism	Picnics, outings, touring	High		
Recreation and tourism	Water sports and activities	High		
Recreation and tourism	Recreational hunting and fishing	Medium		
Recreation and tourism	Nature observation and nature-based tourism	Low		
Spiritual and inspirational	Aesthetic and sense of place values	High		
Spiritual and inspirational	Inspiration	High		
Spiritual and inspirational	Spiritual and religious values	High		
Spiritual and inspirational	Contemporary cultural significance, including for arts and creative inspiration, and including existence values	High		
Scientific and educational	Educational activities and opportunities	High		
Scientific and educational Important knowledge systems, importance for research (scientific reference area or site)		High		
Scientific and educational	Long-term monitoring site	High		
Scientific and educational	Major scientific study site	High		
Scientific and educational	Type location for a taxon	High		

Supporting Services

Ecosystem service	Examples	Importance/Extent/Significance	
Biodiversity	Supports a variety of all life forms including plants, animals and microorganizms, the genes they contain, and the ecosystems of which they form a part		
Nutrient cycling	Storage, recycling, processing and acquisition of nutrients	High	

Other ecosystem service(s) not included above:

RIS for Site no. 2449, Lake Ohrid , North Macedonia
Studenchishte Marsh's groundwaters flow northeast to southwest and derive from precipitation that has been filtered through Mount Galichica. An important source of both its water and that of the lake proper is Biljanini Springs. During high-water extremes, Lake Ohrid and Studenchishte
Marsh
fully merge. To date, the movement of groundwater between Studenchishte and Lake Ohrid has
not been sufficiently researched.
Sublittoral and littoral are subdivided into belts known as the sand/silt with varied habitats
have support existing of different habitats tipes and species diversity. Distribution of
species is further influenced by heterogeneous sedimentation patterns and horizontal
differences in hydrology, ecology and geology, all of which define the ecological arena
through niche habitats.
Lake Obrid and Studenshiphte March are key components of the World Natural and Cultural

Lake Ohrid and Studenchishte Marsh are key components of the World Natural and Cultural Heritage of the Ohrid Region, globally recognized for their Outstanding Universal Value to humankind and one of only 38 sites to receive UNESCO status for both natural and cultural importance.

Present-day biodiversity, particularly invertebrate species which can be fossilized in statistically significant numbers, facilitates paleoecological, paleoenvironmental and paleoclimatic reconstructions over hundreds of thousands of years (Lorenschat et al, 2013; Wagner et al, 2017).

Have studies or assessments been made of the economic valuation of ecosystem services provided by this Ramsar Site?

4.5.2 - Social and cultural values

i) the site provides a model of wetland wise use, demonstrating the application of traditional knowledge and methods of management and use that maintain the ecological character of the wetland

ii) the site has exceptional cultural traditions or records of former civilizations that have influenced the ecological character of the wetland

Description if applicable

Continuous human settlements over eight millennia combined with archaeological and sediment core analyses permit investigations of human history across several distinct societal, cultural and religious frameworks including neolithic communities, and ancient Greek, ancient Roman, Byzantine, and Ottoman empires. Lake Ohrid and Studenchishte Marsh therefore offer a relatively unique opportunity to study the interplay between humans and wetlands in pluralized contexts. Current research based on underwater archaeology and paleoecological techniques is focused on the development of European agriculture and its adjustment to climate change over thousands of years (Universitat Bern, 2018).

Ohrid pearls, derived from the scales of the plasica fish (Alburnus scoranza), are crafted according to a specific and secretive local technique. The resulting jewellery is represented in the collections of European royal families.

Evidence of the spiritual connection between humans and wetlands abounds in the Ohrid region too: Archaeological remains of the Studenchishte Basilica, located immediately above Studenchishte Marsh, are an example of early Christian sacral architecture dating back to the fifth or sixth century. The basilica was erected at the site of an earlier, pre-Christian religious site undoubtedly linked to the worship of water.

The springs of Sveti Naum are associated with the Monastery of Sveti Naum, which is a site of enormous significance to Slavic and Orthodox Christian culture as the former residence of Saint Naum, a religious figure renowned for his learning, whose legacy extends to the development of Slavic literacy. Numerous other sites of religious significance surround the Lake Ohrid Ramsar Site, most notably the Church of Sveti Jovan Kaneo, Sveta Sofija Cathedral and the Monastery of Saint Zaum.

Lake Ohrid is a major location for the annual Vodici ritual. Celebrated in January, Vodici sees hundreds of worshippers dive into the lake waters to retrieve a cross.

	the wetland depends on its interaction all communities or indigenous peoples
,	such as sacred sites are present and with the maintenance of the ecological character of the wetland

4.6 - Ecological processes

<no data available>

5 - How is the Site managed? (Conservation and management)

5.1 - Land tenure and responsibilities (Managers)

5.1.1 - Land tenure/ownership

Pul				

Category	Within the Ramsar Site	In the surrounding area
Local authority, municipality, (sub)district, etc.	V	Ø

Private ownership

Trivate ownership					
	Category	Within the Ramsar Site	In the surrounding area		
	Commercial (company)	✓	✓		
	Other types of private/individual owner(s)	2	✓		
	Religious body/organization	✓			

5.1.2 - Management authority

Please list the local office / offices of any agency or organization responsible for managing the site:

Municipality of Ohrid, Str. Dimitar Vlahov 57, 6000 Ohrid, Municipality of Struga Majka Teresa Square 6.6 Struga Municipality of Debarca Belchishta, Debarca, 6344

Provide the name and/or title of the person or people with responsibility for the wetland:

Mayor of Municipality of Ohrid, Struga and Debarca

Municipality of Ohrid, Str. Dimitar Vlahov 57, 6000 Ohrid, Municipality of Struga Majka Teresa Square 6.6 Struga Municipality of Debarca Belchishta, Debarca, 6344

Postal address:

Municipality of Ohrid, gradonacalnik@ohrid.gov.mk Municipality of Struga n.nexhipi@struga.gov.mk Municipality of Debarca contact@debrca.gov.mk

5.2 - Ecological character threats and responses (Management)

5.2.1 - Factors (actual or likely) adversely affecting the Site's ecological character

Human settlements (non agricultural)

Factors adversely affecting site	Actual threat	Potential threat	Within the site	In the surrounding area
Housing and urban areas	High impact	High impact	✓	✓
Commercial and industrial areas	Low impact	High impact	✓	2
Tourism and recreation areas	High impact	High impact	✓	>
Unspecified development	Low impact	High impact	✓	₽

Water regulation

Factors adversely affecting site	Actual threat	Potential threat	Within the site	In the surrounding area
Drainage	Low impact	High impact	1	✓
Water abstraction	Low impact	High impact		✓
Water releases	Low impact	High impact		✓

Agriculture and aquaculture

Factors adversely affecting site	Actual threat	Potential threat	Within the site	In the surrounding area
Marine and freshwater aquaculture	Medium impact	High impact	2	
Livestock farming and ranching	Medium impact	Medium impact		✓
Annual and perennial non- timber crops	Medium impact	High impact	2	✓
Wood and pulp plantations	Low impact	Medium impact		✓

Energy production and mining

Factors adversely affecting site	Actual threat	Potential threat	Within the site	In the surrounding area
Mining and quarrying	High impact	High impact		✓
Renewable energy	High impact	High impact		✓

Factors adversely	Actual threat	Potential threat	Within the site	In the surrounding are
affecting site				
Roads and railroads	Medium impact	High impact	✓	
Shipping lanes	Low impact	Medium impact		<u> </u>
Aircraft flight paths	unknown impact	unknown impact		₩.
iological resource use				
Factors adversely affecting site	Actual threat	Potential threat	Within the site	In the surrounding are
Logging and wood harvesting	Low impact	Medium impact		\checkmark
Fishing and harvesting aquatic resources	High impact	High impact	2	
luman intrusions and disturba Factors adversely				
affecting site	Actual threat	Potential threat	Within the site	In the surrounding are
Recreational and tourism activities	High impact	High impact	/	\checkmark
(Para)military activities	Low impact	Low impact	₽	✓
latural austana madificationa				
atural system modifications Factors adversely	A - t I thur - t	Potential threat	Within the site	I 4I
affecting site	Actual threat		vvitnin the site	In the surrounding are
Fire and fire suppression	Low impact	Medium impact		₽
Dams and water management/use	Medium impact	High impact		₽
		I		
vasive and other problematic	species and genes			
Factors adversely affecting site	Actual threat	Potential threat	Within the site	In the surrounding are
Invasive non-native/ alien species	unknown impact	High impact	✓	✓
ntroduced genetic material	Medium impact	unknown impact	 ✓	
on e				
follution Factors adversely				
affecting site	Actual threat	Potential threat	Within the site	In the surrounding are
Household sewage, urban waste water	High impact	High impact	✓	\checkmark
Industrial and military effluents	High impact	High impact	✓	\checkmark
Agricultural and forestry effluents	Medium impact	Medium impact	/	\checkmark
Garbage and solid waste	High impact	High impact	₽	 ✓
Air-borne pollutants	Low impact	Low impact		✓
Seological events Factors adversely				
affecting site	Actual threat	Potential threat	Within the site	In the surrounding are
Earthquakes/tsunamis	Low impact	Low impact	✓	✓
limata abanga	athor			
limate change and severe we Factors adversely	Actual threat	Potential threat	Within the site	In the surrounding are
Affecting site Habitat shifting and	High impact	High impact	2	✓
alteration				

Please describe any other threats (optional):

High impact

Medium impact

Low impact

Droughts

Temperature extremes

Storms and flooding

The construction of landfills in the watershed is of concern due to the countrywide experience with their substandard quality by European Union standards. Illegal dumps are a related issue. Legal provisions for wetland conservation are insufficient. Legislation aimed at nature protection is often in conflict with or subordinate to other laws. Even when a robust legal framework is theoretically in place, implementation is inconsistent in part because enforcement responsibilities are poorly defined/understood. Economic, infrastructure and tourism development strategies/policies are weakly aligned with wetland protection aims.

High impact

High impact

Medium impact

 \checkmark

 \checkmark

 \mathbf{J}

 \mathbf{J}

 \mathbf{J}

The research potential of Lake Ohrid's ecosystems is high. However, there is no functional system to ensure sustainable use of resources, leaving a high risk of over-exploitation from discoveries. Strategic Environmental Assessments are under-researched and routinely contain important omissions, particularly of complete plans and full cumulative impacts. The mitigation hierarchy is not meaningfully applied.

Global legal designations

Designation type	Name of area	Online information url	Overlap with Ramsar Site
UNESCO Biosphere Reserve	Ohrid-Prespa Transboundary Biosphere Reserve	http://www.unesco.org/new/en/nat ural- sciences/environment/ecolog ical- sciences/biosphere-reserves /europe- north-america/albaniathe - formeryugoslav- republic-of- macedonia/ohridpresp a	partly
World Heritage site	Natural and Cultural Heritage Ohrid Region	https://whc.unesco.org/en/list/9 9	partly

Regional (international) legal designations

Designation type	Name of area	Online information url	Overlap with Ramsar Site
Other international designation	Lake Ohrid Emerald Site (Nominated, not adopted)	https://www.coe.int/en/web/bern- convention/emerald-network	whole
Other international designation	Mount Galichica Emerald Site (Nominated, not adopted)	https://www.coe.int/en/web/bern- convention/emerald-network	partly

National legal designations

radional legal designations			
Designation type	Name of area	Online information url	Overlap with Ramsar Site
Monument of Nature	Monument of Nature "Ohrid Lake"	http://www.moepp.gov.mk/?page_id =4920⟨=en	whole
National Park	National Park Galichica	http://www.galicica.org.mk/	partly

Non-statutory designations

Designation type	Name of area	Online information url	Overlap with Ramsar Site
Important Bird Area	Lake Ohrid	http://datazone.birdlife.org/sit e/factsheet/lake-ohrid-iba-maced onia- the-formeryugoslavrepublic- of	partly
Important Plant Area	IPA Galichica		partly
Other non-statutory designation	Lake Ohrid Key Biodiversity Area	http://www.keybiodiversityareas. org/kba-data	partly
Other non-statutory designation	Prime Butterfly Area Galichica		partly

la Strict Nature Reserve \square

5.2.3 - IUCN protected areas categories (2008)

Ib Wilderness Area: protected area managed mainly for wilderness protection	
II National Park: protected area managed mainly for ecosystem protection and recreation	¥
III Natural Monument: protected area managed mainly for conservation of specific natural features	1

IV Habitat/Species Management Area: protected area managed mainly $\hfill\Box$ for conservation through management intervention

V Protected Landscape/Seascape: protected area managed mainly for $\hfill\Box$ landscape/seascape conservation and recreation

M Managed Resource Protected Area: protected area managed mainly $\hfill\square$

for the sustainable use of natural ecosystems

5.2.4 - Key conservation measures

Legal protection

Measures	Status
Legal protection	Partially implemented

Habitat

Tabitat	
Measures	Status
Catchment management initiatives/controls	Partially implemented
Improvement of water quality	Partially implemented
Land conversion controls	Partially implemented

Species

Measures	Status
Reintroductions	Implemented

Human Activities

Measures	Status
Management of water abstraction/takes	Partially implemented

Other

The Ramsar Site "Ohrid Lake" is protected at national level as Monument of nature (III category IUCN) and is also proposed as an Emerald Site (Bern convention). According law on Nature protection Ohrid lake should be re-proclaim.

Within the GEF / UNEP Project "Achieving Biodiversity Protection through the Creation and Effective Management of Protected Areas and Biodiversity Maintenance in Land Use Planning" (STAR 5) in coordination with the MoEPP in cooperation with UNEP and IUCN ENCARO and local experts, in 2020 started acitvities for preparation of Study for valorisation and Draft Management Plan for Monument of Nature Ohrid lake.

Also, Study for valorization of Studenchishko Marsh was developed. Pursuant to the Law on Nature Protection, based on the study, the Ministry of Environment in September 2020 initiated a procedure for declaring Studenchishko Marsh as a protected area in category IV - Nature Park. Ohrid Lake is identified as future Natura 2000 site (SPA - Special Protected Area) according to Birds Directive 2009/147/EC and the site is adjacent to the Albanian IBA site "Lake Ohrid" (AL002, Heath & Evans 2000).

5.2.5 - Management planning

Is there a site-specific management plan for the site? Yes

Has a management effectiveness assessment been undertaken for the site?

If the site is a formal transboundary site as indicated in section Data and location > Site location, are there shared management planning Yes O No opposesses with another Contracting Party?

5.2.6 - Planning for restoration

Is there a site-specific restoration plan? No, but restoration is needed

Further information

Studenchishte Marsh on the north east coast requires removal of solid waste, reestablishment of certain connections with the lake proper and rewetting of degraded areas in order both to revitalize its own biodiversity and secure the ecosystem services it provides to the wider lacustrine area.

Rogue dumpsites at other locations, particularly surrounding the city of Struga, also require solid waste removal.

The mouths of inflows, particularly the River Sateska, and their vicinities need measures

to prevent eutrophication, pollution and stem anthropogenic sedimentation.

The littoral zone, especially near the mouths of inflows, and Studenchishte Canal have been

assessed with poor ecological status, based on sampling of macroinvertebrate fauna (Trajanovski et al, 2019). Pressures and disturbances must be reduced to the entire littoral zone both to reverse this decline and secure breeding areas for native fish, especially salmonids.

The springs of Sveti Naum are at risk of degradation from land usurpation, which requires reversal to protect several endemic species.

Maintenance of the water transparency is necessary to conserve endemic phytoplankton and thereby the role they play in the Lake Ohrid food web.

Reed belt loss and deterioration must be addressed and reeds re-established in key areas

to arrest declines in the populations of birds and fish and buffer against eutrophication.

To result in stable populations, restocking efforts for Salmo letnica and Anguilla anguilla require

bolstering from other management actions such as reestablishment of habitat quality, connectivity and suitability, pollution controls, and sustainable harvesting.

5.2.7 - Monitoring implemented or proposed

Monitoring	Status
Water quality	Implemented
Birds	Implemented

Although various monitoring activities have been undertaken, most have either been discontinued or suffer from data gaps. Detailed fish inventories (which were mainly focused on species of commercial interest) have not been undertaken since the nineties, for example.

6 - Additional material

6.1 - Additional reports and documents

6.1.1 - Bibliographical references

- 1. Albrecht, C. & Wilke, T. (2008) Ancient Lake Ohrid: Biodiversity & Evolution. T. Hydrobiologia 615: 103.
- 2. Apostolova, N. et al (2016) Studenchishte Marsh as an Integral Part of Ancient Lake Ohrid: Current Status and Need for Protection. Wetland Science & Practice 33, 2.
- Birdlife International (2015) European Red List of Birds. Luxembourg: Office for Official Publications of the European Community.
- 4. Blaženčić et al (2006) Red Data List of Charophytes in the Balkans. Biodiversity and Conservation 15, 11 pp 3445-3457.
- 5. Crivelli, A.J. 2006. Salmo lumi. The IUCN Red List of Threatened Species 2006
- Catsadorakis et al (2016) The status of an isolated population of Goosander Mergus merganser in the Balkans. Wildfowl 66: 159–175.
- 7. Duguid, R.A. (2002) Population genetics and phylogeography of brown trout (Salmo trutta L.). PhD Thesis, Queen's University Belfast.
- 8. Freyhof, J. 2011. Scardinius knezevici. The IUCN Red List of Threatened Species 2011
- 9. Hales, Jennifer (2013) Southeast Adriatic Drainages. Freshwater Ecoregions of the World, WWF Conservation Science Program.
- 10. GiZ (2017) Fish and Fisheries Lake Ohrid, Implementing the EU Water Framework Directive in South-Eastern Europe. Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, Bonn and Eschborn, Germany.
- 11. Hauffe et al (2011) Spatially explicit analysis of gastropod biodiversity in ancient Lake Ohrid. Biogeosciences, 8, 175–188.
- 12. Jordanoska, B., Kunz, M. J., Stafilov, T., & Wüest, A. (2010). Temporal variability in physicochemical properties of St. Naum karst springs feeding Lake Ohrid. Ekologija i Zaštita na Životnata Sredina, 13(1-2), 3-11
- 13. Jordanoska et al (2012) Assessment on physic-chemical composition of surface karst springs feeding Lake Ohrid. Macedonian Journal of Ecology and Environment, Vol XIV, p. 19-25.
- 14. Jovanovic-Popovic et al (2012) Aesthetics of Vernacular Architecture Comparative analyses of context aesthetics in Balkan region. PLEA2012 28th Conference, Opportunities, Limits & Needs Towards an environmentally responsible architecture Lima, Perú 7-9 November 2012.
- 15. Jovanovska et al (2015) Differential resilience of ancient sister lakes Ohrid and Prespa to environmental disturbances during the Late Pleistocene, Biogeosciences, 13, 1149-1161.
- 16. Kostoski et al (2010) A freshwater biodiversity hotspot under pressure assessing threats and identifying conservation needs for ancient Lake Ohrid, Biogeosciences, 7, 3999–4015.
- 17. Krpac & Darcemont (2012) Red List of Butterflies (Lepidoptera: hesperioidea & papilionoidea) for Republic of Macedonia. Revue d'Ecologie 67(1).
- 18. Levkov & Williams (2012) Checklist of diatom (Bacillariophyta) from Lake Ohrid and Lake Prespa (Macedonia), and their watersheds. Phytotaxa 45: 1-76.
- Lorenschat et al (2013) Autecology of the extant ostracod fauna of Lake Ohrid and adjacent waters - A key to paleoenvironmental reconstruction. Belgian Journal of Zoology, 143(1), 42-68.

6.1.2 - Additional reports and documents

i. taxonomic lists of plant and animal species occurring in the site (see section 4.3)

<no file available>

ii. a detailed Ecological Character Description (ECD) (in a national format)

<no file available>

iii. a description of the site in a national or regional wetland inventory

<no file available>

iv. relevant Article 3.2 reports

<no file available>

v. site management plan

<no file available>

vi. other published literature

<no file available>

<no data available>

6.1.3 - Photograph(s) of the Site

Please provide at least one photograph of the site:



Ohrid lake and Studencisko blato (*MoEPP*, 25-09-



Ohrid lake (*MoEPP*, *01-11*, 2020)



Ohrid lake (*MoEPP*, 05-08-2020)

6.1.4 - Designation letter and related data

Designation letter

<1 file(s) uploaded>

Date of Designation 2021-02-15