

BIODIVERSITY OF ŠASKO LAKE

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1. Lake position and main parameters

Šasko lake is located in the Mediterranean zone of Montenegro in the southeast part of country, 10 km distance from seashore and from city of Ulcinj (Picture 1.). The surface of the lake is 3,5 km² and the maximum depth in rainy season is about 8 m and the yearly average depth is 3.5 m (Mandić at ell, 2004). The length of the lake shore is about 8 500 m (Bojbaša M., 1974). The lake belong to Skadar lake water system in Adriatic drainage surface. Water of Šasko lake is originally from the river Bojana and several wells. Communication with Bojana river is stopped during summer month (July and August) because of lowest water level. The biggest and the most important well is “Begovo oko” on the southwest part of lake. Because of strong variation of water level in lake, the northeast lake shore is not clearly defined and it is slightly aslope and gradually changing from meadow to lake. The southwest lake shore is sharp and rocky and almost vertical.

Picture 1: Šasko Lake



Water in lake is fresh, but in some parts (near by Begovo oko) water becomes partly loaded with salt in summer part of year (Bojbaša M., 1974). The quantity of chloride ion in pelagic part of lake is in range of 100-195 mg/l but on “Begovo oko” locality range is 417-725 mg/l (Bojbaša M., 1974).

In Šasko lake there is no chemical or temperature vertical gradient, but there are strong variation in water temperature and in amount of dissolved oxygen during one year period

(Bojbaša, 1974). The amount of dissolved oxygen falls on 7 mg/l (July) during the summer and rise on 12,46 mg/l during the winter (January) while water temperature is on highest level in July (28,0 °C) and on lowest level in January (5,3 °C) (Bojbaša M., 1974).

Because of some specific in zooplankton assemblage component and some water quality parameters, Šasko Lake is ranked in Mediterranean brackish lake type (Petković, Sm., 1971; Petković St., 1978)

2. Biodiversity

Plants of Šasko Lake

In the region of Šasko lake, the flood terrain vegetation is well developed (Petrović & Vuksanović, 2003). In this vegetation we can distinguish two zone.

The first vegetation zone is composed of herbs which are near by lake shore. This zone is characterized by poor floristic compound. Species *Phragmites communis* Trin. and *Typha angustifolia* L. are edificatory species of this zone (Petrović & Vuksanović). Among this zone lives species: *Scirpus lacustris*, *Scirpus maritimus*, *Butomus umbelatus*, *Eleocharis palustris*. In this zone the species *Hydrocotyle vulgaris* L. is also registered and this species is found only on few locality in Montenegro (Petrović & Vuksanović, 2003) .

The next is zone of the hydrophilic forests and scrubs. This zone is composed of heterogeneous plants and contains several plants communities which are laying mosaic like. The communities which are built of species *Tamarix africana* and *Juncus acutus* are well developed on few localities. The species *Tamarix africana* also built mono-dominant communities which are on the margin of flood meadows (Petrović & Vuksanović, 2003)

The most divers plant have communities which tree floor is built of species: *Populus alba* L., *Populus nigra* L., *Quercus robur* ssp. *scutariensis*, *Alnus glutinosa* (L.) Gärtn., *Fraxinus angustifolia*, *Fraxinus oxycarpa*. The bush floor of this communitie is built of: *Salix alba* L., *Salix purpurea* L., *Cornus sanguinea* L., *Ligustrum vulgare* L., *Crataegus monogyna* Jacq., *Amorpha fruticosa*, *Punica granatum* L. In herb plant of this community the following species were recorded: *Teucrium polium* L., *Hypericum perforatum* L., *Euphorbia amygdaloides* L., *Aristolochia rotunda* L., *Helichrysum italicum* (Petrović & Vuksanović, 2003)

In background of Šasko lake the hydrophilic scrub is dominant and the edificatory species is *Vitex agnus castus* L. Beside this species there are although present: *Salix alba* L., *Salix purpurea* L., *Amorpha fruticosa*, *Juncus acutus* (Petrović & Vuksanović, 2003).

In this region there are also present the remains of the hydrophilic forest which inhabit the endemic Montenegrin species *Quercus robur* ssp. *scutariensis*. Beside this species in those communities also lives the species: *Populus alba*, *Fraxinus angustifolia*, *Alnus glutinosa*, *Ulmus minor* Mill., *Carpinus orientalis* Mill., *Cornus sanguinea*, *Rubus ulmifolius* (Petrović & Vuksanović, 2003).

The surrounding of Šasko lake poses good conditions for growth of the flooded meadows. Between those meadows there are “septum” which are built of hydrophilic forests and scrubs elements: *Vitex agnus-castus*, *Tamarix africana*, *Salix alba*, *Salix fragilis*, *Fraxinus oxycarpa*. Following species are dominant on flooded meadows: *Lythrum salicaria* L., *Oenanthe silaifolia* M.B., *Scirpus maritimus*, *Scirpus lacustris*, *Potentilla reptans* L., *Iris pseudacorus* L.

In the Šasko lake, itself, there are submerged, emerged and floating plants: *Najas marina* L., *Najas minor* All., *Nuphar luteum* (L.) Sm., *Nymphaea alba* L., *Nymphoides peltata* (S.G. Gmel) O. Ktze., *Potamogeton perfoliatus* L., *Potamogeton crispus* L., *Potamogeton pectinatus* L., *Potamogeton lucens* L., *Potamogeton natans* L., *Polygonum amphibium – erectum* L., *Myriophyllum spicatum* L., *Myriophyllum verticillatum* L., *Mentha aquatica* L., *Valisneria spiralis* L., *Ludwigia palustris* (L.) Ell., *Ceratophyllum submersum* L., *Ceratophyllum demersum* L., *Cyperus longus* L., *Butomus umbellatus* L., ssp. *scutarensis* Lak., *Trapa natans* L., *Alisma plantago-aquatica* L., *Gratiola officinalis* L., *Schenoplectum lacustris* (L.) Palla., *Ranunculus fluitans* Lam., *Ranunculus circinatus* Sibth., *Eleocharis palustris* (L.) R. et Sch., *Sparganium erectum* L., *Roripa silvestris* (L.) Pess. (Lakušić & Pavlović, 1981).

2.1.1. List of plants of the Šasko lake

1. *Phragmites communis* Trin.
2. *Typha angustifolia* L.
3. *Scirpus lacustris*
4. *Scirpus maritimus*
5. *Butomus umbellatus*
6. *Eleocharis palustris*
7. *Hydrocotyle vulgaris* L.
8. *Tamarix Africana*
9. *Tamarix Africana*
10. *Populus alba* L.
11. *Populus nigra* L.
12. *Quercus robur* ssp. *scutariensis*
13. *Alnus glutinosa* (L.) Gärtn.
14. *Fraxinus angustifolia*
15. *Fraxinus oxycarpa*
16. *Salix alba* L.
17. *Salix purpurea* L.
18. *Cornus sanguinea* L.
19. *Ligustrum vulgare* L.

20. *Crataegus monogyna* Jacq.
21. *Amorpha fruticosa*
22. *Punica granatum* L.
23. *Teucrium polium* L.
24. *Hypericum perforatum* L.
25. *Euphorbia amygdaloides* L.
26. *Aristolochia rotunda* L.
27. *Helichrysum italicum* L.
28. *Vitex agnus castus* L.
29. *Juncus acutus*
30. *Alnus glutinosa*
31. *Ulmus minor* Mill.
32. *Carpinus orientalis* Mill.
33. *Rubus ulmifolius*
34. *Salix fragilis*
35. *Lythrum salicaria* L.
36. *Oenanthe silaifolia* M.B.
37. *Potentilla reptans* L.
38. *Iris pseudacorus* L.
39. *Najas marina* L.
40. *Najas minor* All.
41. *Nuphar luteum* (L.) Sm.
42. *Nymphaea alba* L.
43. *Nymphoides pelatata* (S.G. Gmel) O. Ktze.
44. *Potamogeton perfoliatus* L.
45. *Potamogeton crispus* L.
46. *Potamogeton pectinatus* L.
47. *Potamogeton lucens* L.
48. *Potamogeton natans* L.
49. *Polygonum amphibium – erectum* L.
50. *Myriophyllum spicatum* L.
51. *Myriophyllum verticillatum* L.
52. *Mentha aquatica* L.
53. *Valisneria spiralis* L.
54. *Ludwigia palustris* (L.) Ell.
55. *Ceratophyllum submersum* L.
56. *Ceratophyllum demersum* L.
57. *Cyperus longus* L.
58. *Butomus umbellatus* L., ssp. *scutarensis* Lak.
59. *Trapa natans* L.
60. *Alisma plantago-aquatica* L.
61. *Gratiola officinalis* L.
62. *Schenoplectum lacustris* (L.) Palla.
63. *Ranunculus fluitans* Lam.
64. *Ranunculus circinathus* Sibth.
65. *Eleocharis palustris* (L.) R. et Sch.

66. *Sparganium erectum* L.
67. *Roripa silvestris* (L.) Pess.

Invertebrates of Šasko lake

This group of animals is very heterogeneous and numerous but, for the Šasko lake area again, there is no complete data. The investigations of this group were random and strictly individual without any synthesis. The only available data, which are also related to Šasko lake, are related to the invertebrates of Skadar lake region (Pešić & Dhora, 2001). They report 257 species of invertebrates in Skadar lake, although this number is much greater. For example, they report only eleven species of Insect but the other group of researcher (In: Regional Touristic Masterplan Ulcinj, Supplement 2 - Environmental Assessment, 2003) report 57 insect species based on one day investigation in wider area of Šasko lake.

It is for sure that this area is characterized by high invertebrates diversity (worm and humid biotope), but because of little bit confusing data we didn't give any tabular survey of invertebrates species of Šasko lake area.

Fishes of Šasko lake

The complete fish fauna of Šasko lake is determinate by fish fauna of Skadar lake and Bojana river. No matter if are they migrating species (marine species), or slat water species, all of them depends on "water-bridge" between Šasko lake and Bojana river.

The fish species which lives in Šasko lake we can divide in few categories. If we take in consideration ecological parameters, we can separate it in two groups: The immigrating fish (migrating from Sea to Lake, e.g. *Dicentrarchus labrax*) and stationary fish species (which lives in Lake, e.g. *Leuciscus cephalus albus*). By their origin, we can separate it in autochthon fish species (which lives in whole Skadar lake drainage system or which lives in Adriatic sea, e.g. *Alburnus alburnus alborella*) and alien fish species (which are from the other drainage system and which are stocked in Skadar lake drainage system by the humans, e.g. *Perca fluviatilis*).

Šasko lake is one natural spawning place for the most of the immigrant fish species and what is more important, this lake is also nursery region for their youths (e.g. *Alosa fallax nilotica*, *Mugil cephalus*, *Liza ramada*, *Anguilla anguilla*) (Kenžević, 1984).

Picture 2: *Acipenser sturio*



Photo by Giuseppe Mazza

The total number of fish species which lives in Šasko lake is 23, from the 11 fish families (Knezević, 1984). The most abundant are *Leuciscus cephalus albus*, *Rutilus rubilio* and *Scardinius erithrophthalmus scardafa* (Knezević, 1984). In almost all populations of all fish species of Šasko lake, the youths were dominant (Knezević, 1984).

Picture 3: *Pachychilon pictum*



photo by V. Tachos & D. Bobori

2.3.1. Fishes of Šasko lake, and their international conservational status (according to IUCN)

SPECIES NAME	INTERNATIONAL CONSERVATION STATUS (ACCORDING TO IUCN)
1. <i>Acipenser sturio</i>	CR A2d
2. <i>Acipenser naccarii</i>	VU A1ac
3. <i>Alosa fallax nilotica</i>	DD
4. <i>Rutilus rubilio</i>	NT
5. <i>Pachychilon pictum</i>	LC
6. <i>Leuciscus cephalus albus</i>	LR/lc
7. <i>Scardinius erithrophthalmus scardafa</i>	-
8. <i>Chondrostoma nasus ohridanum</i>	LR/lc
9. <i>Gobio gobio lepidolaemus</i>	LR/lc
10. <i>Alburnus alburnus alborella</i>	LR/lc
11. <i>Rhodeus sericeus ammarus</i>	LR/lc
12. <i>Carassius auratus gibelio</i>	-
13. <i>Cyprinus carpio</i>	DD
14. <i>Pseudorasbora parva</i>	-
15. <i>Anguilla anguilla</i>	-
16. <i>Gambusia affinis holbrooki</i>	-
17. <i>Mugil cephalus</i>	-
18. <i>Liza ramada</i>	-
19. <i>Dicentrarchus labrax</i>	-
20. <i>Padogobius pannizai</i>	-
21. <i>Perca fluviatilis</i>	LR/lc
22. <i>Atherina mochon</i>	-
23. <i>Platichthys flesus italicus</i>	-

2.4. Amphibians of Šasko lake

The Šasko Lake and his surrounding, which is characterized by high level of humidity (eg. Flooded meadows) and Mediterranean climate, gives amphibians almost perfect environmental condition for living. Although the literature data shows that in this region lives 12 species of Amphibians (Đukić, 1995; Ćirović & Haxhiu, 2001.) recent investigation shows only 4 species of this animal group (Ćirović, 2003.). This dramatically differences are due to short investigation period for the last report (only one month of investigation) and due to the fact that investigation month was August, the warmest month in Mediterranean (Ćirović, 2003.).

The Šasko Lake is famous because it is *terra tipica* for the endemic frog species *Rana shqiperica* (Hotz et al., 1987). This lake also inhabits other Balkan endemic species, frog *Rana balcanica* (synonym - *Rana (Pelophylax) kurtmuelleri*) (Schneider & Sinsch, 1992).

Picture 4. *Rana shqiperica*



Photo by Jan Van Der Voort

Because of devastation humid biotopes (swamps, shallow lakes, pools, flooded meadows ect.) in whole Europe almost all Amphibians are endangered and almost every Amphibian species have some conservational status according to the IUCN proposition. The Šasko lake is one of the few Mediterranean shallow lake which is almost intact by humans. This lake and its surrounding represent important living area for the Amphibians, in this part of Europe.

Picture 3. *Rana balcanica*



Photo by Lars Bergendorf

2.4.1. Amphibian species of Šasko lake, and their international conservational status (according to IUCN)

SPECIES NAME	INTERNATIONAL CONSERVATION STATUS (ACCORDING TO IUCN)
1. <i>Triturus vulgaris</i> (Linnaeus, 1758)	LC
2. <i>Triturus carnifex</i> (Laurenti, 1768)	LC
3. <i>Bombina variegata</i> (Linnaeus, 1758)	LC
4. <i>Bufo bufo</i> (Linnaeus, 1758)	LC
5. <i>Bufo viridis</i> (Laurenti, 1768)	LC
6. <i>Hyla arborea</i> (Linnaeus, 1758)	LC
7. <i>Rana dalmatina</i> (Bonaparte, 1839)	LC
8. <i>Rana graeca</i> (Boulenger, 1897)	LC
9. <i>Rana temporaria</i> (Linnaeus, 1758)	LC
10. <i>Rana ridibunda</i> (Pallas, 1771)	LC
11. <i>Rana shqiperic</i> a (Hotz et al., 1987)	EN B1ab(iii)
12. <i>Rana lessonae</i> (Camerano, 1882)	LC
13. <i>Rana balcanica</i> (Schneider, 1992)	LC

2.5. Reptile of Šasko lake

As for the amphibians, this region poses almost optimal condition for the reptiles. The whole wider region of Skadar Lake and Bojana river is marked as one of the Balkan center of reptile biodiversity (Đukić, 1995). The region of Skadar lake, and Šasko lake in it, are one of the most important places on Balkan for the reptiles which lives in water or which are linked to water.

The exact data related to reptile biodiversity of Šasko are missing. The only relevant data exist for the Skadar lake region (Ćirović & Haxhiu, 2001.) and those data will be given as frame. The species that lives in higher mountains region (e.g. Rumija mountain) are excluded from the following list of reptiles.

Picture 6: *Cyrtodactylus kotschy*



Photo from www.sthlm-herp.net

Šasko lake is almost like small Skadar lake copy, as by living conditions as well as by species which inhabit it (Plants, Amphibians Birds, Fishes...). Those are the reasons why this list is chosen as relevant one for the Šasko lake.

Picture 7: *Natrix natrix*



Photo by C.-A. Vaucher

2.5.1. Reptile species of Šasko lake, and their international conservational status (according to IUCN)

SPECIES NAME	INTERNATIONAL CONSERVATION STATUS (ACCORDING TO IUCN)
1. <i>Testudo hermanni</i> (Gmelin, 1788)	LR/nt
2. <i>Emys orbicularis</i> (Linnaeus, 1758)	LR/nt
3. <i>Mauremys caspica</i> (Velenciennes, 1833)	-
4. <i>Cyrtodactylus kotschy</i> (Steindachner, 1879)	-
5. <i>Hemidactylus turcicus</i> (Linnaeus, 1767)	-
6. <i>Algyroides nigropunctatus</i> (Dumeril et Bibron, 1839)	LC
7. <i>Podarcis muralis</i> (Laurenti, 1768)	LC
8. <i>Podarcis melisellensis</i> (Werner, 1853)	LC
9. <i>Lacerta oxycephala</i> (Dumeril et Bibron, 1839)	LC
10. <i>Lacerta mosorensis</i> (Kolombatović, 1886)	VU B2ab(iii)
11. <i>Lacerta agilis</i> (Linnaeus, 1758)	-
12. <i>Lacerta viridis</i> (Laurenti, 1768)	LC
13. <i>Pseudopus apodus</i> (Pallas, 1775)	-
14. <i>Anguis fragilis</i> (Linnaeus, 1758)	-
15. <i>Typhlops vemicularis</i> (Merrem, 1820)	-
16. <i>Malpolon monspessulanus</i> (Hermann, 1804)	-
17. <i>Telescopus fallax</i> (Fleischmann, 1826)	-
18. <i>Coronella austriaca</i> (Laurenti, 1768)	-
19. <i>Natrix natrix</i> (Linnaeus, 1758)	LR/lc
20. <i>Natrix tessellata</i> (Laurenti, 1768)	-
21. <i>Coluber najadum</i> (Eichwald, 1831)	-
22. <i>Coluber laurenti</i> (Laurenti, 1768)	LC
23. <i>Elaphe longissima</i> (Laurenti, 1768)	-
24. <i>Elaphe quatuorelineta</i> (Lacepede, 1789)	-
25. <i>Vipera berus</i> (Linnaeus, 1758)	-
26. <i>Vipera ursini macrops</i> (Mehely, 1911)	-
27. <i>Vipera ammodytes</i> (Linnaeus, 1758)	-

2.6. Birds of Šasko lake

The area of Šasko lake is most attractive and most famous by their bird fauna. Some of this birds lives constantly in area, some comes there for nesting or breeding, some for wintering or just take a brake of few days or weeks on their migrations.

The important of this area is recognized by domestic and international ornithologists and this region have proclaimed in Region of International important for Birds, IBA area code YU 039 (www.birdlife.org) on criteria B1i, B2 and B3. The B2 criterion has been assigned at the site level as the following species of European conservation concern are present during the breeding season, but in largely unknown numbers: *Phalacrocorax pygmeus*, *Botaurus stellaris*, *Ixobrychus minutus*, *Nycticorax nycticorax* (20 pairs), *Ardeola ralloides*, *Ardea purpurea*, *Plegadis falcinellus* (a few pairs), *Anas querquedula*, *Falco tinnunculus*, *Perdix perdix*, *Tringa totanus*, *Chlidonias niger*, *Chlidonias hybridus*, *Bubo bubo*, *Athene noctua*, *Otus scops*, *Picus viridis*, *Galerida cristata*, *Lanius senator* and *Emberiza hortulana* (www.birdlife.org) The B3 criterion has been assigned at the site level as the following species of European conservation concern are present during the breeding season, but in unknown numbers: *Aythya ferina*, *Erithacus rubecula*, *Luscinia megarhynchos*, *Turdus merula*, *Locustella luscinioides*, *Sylvia melanocephala*, *Sylvia communis*, *Parus lugubris*, *Corvus monedula* and *Emberiza citrinella*. The B1i criteria relate on species *Platalea leucorodia* which is noticed on Šasko lake during the breeding season (www.birdlife.org).

Picture 8: *Aythya ferina*



Photo by Lasse Olsson

Picture 9: *Platalea leucorodia*



Photo from www.birding.in

The exact number of bird species vary from 237 to 271 depends on author (Vasić, 1979; Vizi 1981; Saveljić & Bino 2001; Stumberger et al., 2004.). Vizi (1981) report 250 bird species for Skadar lake region while Saveljić and Bino (2001) report 271 bird species for the Skadar lake region. It is important to emphasize that number of birds varies almost every year and that is normal that those numbers are different.

Considering all previous, we decide to give the list of bird species that Saveljić & Bino (2001) published. This list was made for the wider Skadar lake region and this list include all important, rare and endangered birds that other authors also included in their data (Vasić, 1979; Vizi 1981; Stumberger et al., 2004).

2.6.1. List of the birds for the Šasko lake (271 species)

<i>Gavia stellata</i>	<i>Melanitta fusca</i>
<i>Gavia arctica</i>	<i>Bucephala clangula</i>
<i>Gavia immer</i>	<i>Mergus albellus</i>
<i>Tachybaptus ruficollis</i>	<i>Mergus serrator</i>
<i>Podiceps cristatus</i>	<i>Mergus merganser</i>
<i>Podiceps grisegena</i>	<i>Pernis apivorus</i>
<i>Podiceps auritus</i>	<i>Milvus migrans</i>
<i>Podiceps nigricollis</i>	<i>Milvus milvus</i>
<i>Phalacrocorax carbo</i>	<i>Haliaeetus albicilla</i>
<i>Phalacrocorax aristotelis</i>	<i>Neophron percnopterus</i>
<i>Phalacrocorax pygmeus</i>	<i>Gyps fulvus</i>
<i>Pelecanus onocrotalus</i>	<i>Circaetus gallicus</i>
<i>Pelecanus crispus</i>	<i>Circus aeruginosus</i>
<i>Botaurus stellaris</i>	<i>Circus cyaneus</i>
<i>Ixobrychus minutus</i>	<i>Circus macrourus</i>
<i>Nycticorax nycticorax</i>	<i>Circus pygargus</i>
<i>Ardeola ralloides</i>	<i>Accipiter gentilis</i>
<i>Bubulcus ibis</i>	<i>Accipiter nisus</i>
<i>Egretta garzetta</i>	<i>Accipiter brevipes</i>
<i>Egretta alba</i>	<i>Buteo buteo</i>
<i>Egretta gularis</i>	<i>Buteo rufinus</i>
<i>Ardea cinerea</i>	<i>Aquila pomarina</i>
<i>Ardea purpurea</i>	<i>Aquila clanga</i>
<i>Ciconia nigra</i>	<i>Aquila heliaca</i>
<i>Ciconia ciconia</i>	<i>Aquila chrysaetos</i>
<i>Plegadis falcinellus</i>	<i>Hieraaetus pennatus</i>
<i>Platalea leucorodia</i>	<i>Hieraaetus fasciatus</i>
<i>Phoenicopterus ruber</i>	<i>Pandion haliaetus</i>
<i>Cygnus cygnus</i>	<i>Falco naumanni</i>
<i>Anser fabalis</i>	<i>Falco tinnunculus</i>
<i>Anser albifrons</i>	<i>Falco vespertinus</i>
<i>Anser erythropus</i>	<i>Falco columbarius</i>
<i>Anser anser</i>	<i>Falco subbuteo</i>
<i>Tadorna tadorna</i>	<i>Falco eleonorae</i>
<i>Anas penelope</i>	<i>Falco biarmicus</i>
	<i>Falco cherrug</i>
<i>Anas strepera</i>	<i>Falco peregrinus</i>
<i>Anas crecca</i>	<i>Alectoris graeca</i>
<i>Anas platyrhynchos</i>	
<i>Anas acuta</i>	<i>Perdix perdix</i>
<i>Anas querquedula</i>	<i>Coturnix coturnix</i>
<i>Anas clypeata</i>	<i>Phasianus colchicus</i>
<i>Netta rufina</i>	<i>Rallus aquaticus</i>
<i>Aythya ferina</i>	<i>Porzana porzana</i>
<i>Aythya nyroca</i>	<i>Porzana parva</i>
<i>Aythya fuligula</i>	<i>Porzana pusilla</i>
<i>Aythya marila</i>	<i>Crex crex</i>
<i>Clangula hyemalis</i>	<i>Gallinula chloropus</i>
<i>Melanitta nigra</i>	<i>Fulica atra</i>

Grus grus
Tetrax tetrax
Otis tarda
Haematopus ostralegus
Himantopus himantopus
Recurvirostra avosetta
Burhinus oedicephalus
Glareola pratincola
Charadrius dubius
Charadrius hiaticula
Pluvialis apricaria
Pluvialis squatarola
Vanellus vanellus
Calidris minuta
Calidris ferruginea
Calidris alpina
Limicola falcinellus
Philomachus pugnax
Lymnocypryx minimus
Gallinago gallinago
Gallinago media
Scolopax rusticola
Limosa limosa
Numenius phaeopus
Numenius tenuirostris
Numenius arquata
Tringa erythropus
Tringa totanus
Tringa stagnatilis
Tringa nebularia
Tringa ochropus
Tringa glareola
Actitis hypoleucos
Stercorarius parasiticus
Larus melanocephalus
Larus minutus
Larus ridibundus
Larus canus
Larus fuscus
Larus cachinnans

Sterna hirundo
Sterna albifrons
Sterna caspia
Chlidonias hybridus
Chlidonias niger
Chlidonias leucopterus
Columba livia
Columba oenas
Columba palumbus
Streptopelia decaocto
Streptopelia turtur

Clamator glandarius
Cuculus canorus
Otus scops
Bubo bubo
Athene noctua
Strix aluco
Asio otus
Asio flammeus
Caprimulgus europaeus
Apus apus
Apus melba
Alcedo atthis
Merops apiaster
Coracias garrulus
Upupa epops
Jynx torquilla
Picus viridis
Dendrocopos major
Dendrocopos syriacus
Dendrocopos medius
Dendrocopos minor
Melanocorypha calandra
Calandrella brachydactyla
Galerida cristata
Lullula arborea
Alauda arvensis
Riparia riparia
Hirundo rustica
Hirundo daurica
Delichon urbica
Anthus campestris
Anthus trivialis
Anthus pratensis
Anthus cervinus
Anthus spinoletta
Motacilla flava
Motacilla cinerea
Motacilla alba
Bombycilla garrulus
Cinclus cinclus
Troglodytes troglodytes
Prunella modularis
Erithacus rubecula
Luscinia luscinia
Luscinia megarhynchos
Phoenicurus ochruros
Phoenicurus phoenicurus
Saxicola rubetra
Saxicola torquata
Oenanthe oenanthe
Oenanthe hispanica
Monticola saxatilis

Monticola solitarius
Turdus torquatus
Turdus merula
Turdus pilaris
Turdus philomelos
Turdus iliacus
Turdus viscivorus
Cettia cetti
Cisticola juncidis
Acrocephalus schoenobaenus
Acrocephalus palustris
Acrocephalus melanopogon
Acrocephalus scirpaceus
Acrocephalus arundinaceus
Hippolais pallida
Hippolais olivetorum
Hippolais icterina
Sylvia cantillans
Sylvia melanocephala
Sylvia hortensis
Sylvia curruca
Sylvia communis
Sylvia borin
Sylvia atricapilla
Phylloscopus sibilatrix
Phylloscopus collybita
Phylloscopus trochilus
Regulus regulus
Regulus ignicapillus
Muscicapa striata
Ficedula albicollis
Ficedula hypoleuca
Panurus biarmicus
Aegithalos caudatus
Parus palustris
Parus lugubris
Parus caeruleus
Parus major
Sitta europaea
Sitta neumayer
Tichodroma muraria
Certhia brachydactyla
Remiz pendulinus
Oriolus oriolus
Lanius collurio
Lanius minor
Lanius excubitor
Lanius senator
Garrulus glandarius
Pica pica
Corvus frugilegus
Corvus corone
Corvus corax

Sturnus vulgaris
Passer domesticus
Passer hispaniolensis
Passer montanus
Petronia petronia
Fringilla coelebs
Fringilla montifringilla
Serinus serinus
Carduelis chloris
Carduelis carduelis
Carduelis spinus
Carduelis cannabina
Coccothraustes coccothraustes
Emberiza citrinella
Emberiza cirrus
Emberiza cia
Emberiza schoeniclus
Emberiza melanocephala
Miliaria calandra

2.7. Mammals of Šasko lake

Unfortunately, the Mammal fauna in whole Montenegro haven't been seriously and continuously investigated yet. The same situation is with mammals of Šasko lake region. Some preliminary list for whole Skadar lake region sows 57 species of mammals (Bušković at all, 2001) which is almost the complete number of mammals for whole Montenegro. The region of Šasko lake has no special importance for mammal fauna and this is probably the main reason why mammals of this region haven't been seriously investigated.

According to data of the public organization Sumsko Gazdinstvo who manages the hunting grounds in Ulcinj (RZZP Gazette 01-505/3) following wildlife mammals can be found in this are: *Lepus europeus*, *Canis aureus*, *Vulpes vulpes*, *Martes martes*, *Erinaceus europeus*, *Lutra lutra* and *Sus scrofa*.

Picture 10: *Canis aureus*



Photo from www.canids.org

Picture 11: *Rhinolophus euryale*



Photo from www.savci.upol.cz

The only group of mammals which were seriously investigated in this area are the Bats (Miric & Paunovic, 1994). They report seven bat species: *Rhinolophus ferrumequinum*, *Rhinolophus euryale*, *Myotis blythii*, *Myotis myotis*, *Myotis capaccinii*, *Miniopterus schreibersii* and *Pipistrellus kuhlii*.

2.4.1 Mammals of Šasko lake, and their international conservational status (according to IUCN)

SPECIES NAME	INTERNATIONAL CONSERVATION STATUS (ACCORDING TO IUCN)
1. <i>Lepus europeus</i>	-
2. <i>Canis aureus</i>	LC
3. <i>Vulpes vulpes</i>	LC
4. <i>Martes martes</i>	LR/lc
5. <i>Erinaceus europeus</i>	-
6. <i>Lutra lutra</i>	NT
7. <i>Sus scrofa</i>	LR/lc
8. <i>Rhinolophus ferrumequinum</i>	LR/nt
9. <i>Rhinolophus euryale</i>	VU A2c
10. <i>Myotis blythii</i>	LR/lc
11. <i>Myotis myotis</i>	LR/nt
12. <i>Myotis capaccinii</i>	VU A2c
13. <i>Miniopterus schreibersii</i>	LC
14. <i>Pipistrellus kuhlii</i>	LC

Data for rats, shrews and moles are missing although it is for sure that those mammals inhabit the area of Šasko lake.

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