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Mammals of Gala Lake National Park

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ASTRACT: Gala Lake National Park (GLNP) consists of terrestrial and aquatic ecosystems covering 6.087 hectares of area in Enez and İpsala district boundaries of Edirne province. Extensive field studies were performed on mammals within the boundaries of GLNP for 26 days from 29 July to 07 November 2016. A total of 44 mammalian species from 16 families within 6 orders were determined in the studied area and an up-to-date inventory of mammals was prepared. *Myocastor coypus* (coypu) were detected as an invasive species in the region.

Keywords: Gala lake national park, mammalia, Enez, İpsala, Edirne, Thracia

Gala Gölü Milli Parkı Memelileri

ÖZET: Gala Gölü Milli Parkı Edirne iline bağlı Enez ve İpsala ilçe sınırları içerisinde yer alan, 6.087 ha alanı kaplayan karasal ve sulak ekosistemlerden oluşmaktadır. Gala Gölü Milli Parkı sınırları içerisinde memeli hayvanlar üzerine 29 Temmuz – 07 Kasım 2016 tarihleri arasında 26 günlük kapsamlı arazi çalışması gerçekleştirilmiştir. Bu çalışma sonunda memeli hayvanların güncel envanteri yapılarak Gala Gölü Milli Parkı sınırları içerisinde 6 takım, 16 familyaya ait toplam 44 memeli türünün bulunduğu tespit edilmiştir. Bölgede istilacı tür olarak *Myocastor coypus* (su maymunu) tespit edilmiştir.

Anahtar Kelimeler: Gala gölü milli parkı, memeli, Enez, İpsala, Edirne, Trakya

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INTRODUCTION

Gala Lake National Park (GLNP) is located in district borders of Enez and İpsala in Edirne and covers an area of 6.087ha including aquatic (stagnant water bodies and marshes) and terrestrial (forest and agricultural areas and meadows) ecosystems (Figure 1). The mammalian species living in and around GLNP have been determined with a numerous studies performed in the region (Spitzenberger, 1968; Kurtonur, 1972; Doğramacı, 1974; Ağşa, 1975; Kumerloeve, 1975; Kurtonur 1975; Kurtonur 1982; Turan, 1984; Özkan, 1987; Albayrak, 1988; Kıvanç, 1988; Kurtonur and Özkan, 1990; Kurtonur and Özkan, 1991; Kurtonur et al., 1994; Özkan and Kurtonur, 1994; Civitelli et al., 1995; Filippucci et al., 1995; Özkan, 1995; Kurtonur et al, 1996; Kryštufek et al., 1997; Benda and Horacek, 1998; Albayrak, 1999; Mitchell-Jones et al., 1999; Özkan, 1999; Özkan and Kryštufek, 1999; Çolak et al., 2000; Buruldağ and Kurtonur 2001; Kryštufek and Vohralik, 2001; Özkan et al., 2003; Yiğit et al., 2003; Çolak et al., 2005; Kryštufek and Vohralik, 2005; Özkan, 2006a; Özkan, 2006b; Yiğit et al., 2006; Paksuz et al., 2007; Paksuz and Özkan, 2008; İlker et al., 2009; Kryštufek and Vohralik, 2009; Kryštufek et al., 2009; Anonim, 2010a; Anonim, 2010b; Doğan, 2010; Paksuz and Özkan, 2011; Gruychev, 2012; Paksuz and Özkan, 2012; Anonim, 2014; Özkan and Paksuz, 2015; Anonim, 2016; Gruychev, 2017; Chloe and Legakis, 2016). However, a through investigation of some of these studies revealed that some mammals were lacking in the species lists reported and that some species which are hard to be present in the region were reported to occur here, showing the necessity of a detailed and updated inventory of mammals of the region.

The present study was performed in order to determine the current status of mammalian species present in aquatic and terrestrial ecosystems of GLNP. Field studies were performed in the region and the findings of these studies, in addition to the data obtained from previous literature, were used in preparation of an inventory to obtain an updated list of mammalian species living in the region.

MATERIAL AND METHOD

Different field study techniques depending on the type of the ecosystem monitored were used. Live traps were used for small sized mammals and photo traps (Bushnell Trophy Cam HD Aggressor Brown Model 119776) for used for medium and large sized mammals. Nets were used as the primary source of equipment for bats but a bioacoustics recording device (Wildlife Song Meter SM4BAT FS Bioaccustics Recorder) was also used for bats in the region for the first time. Species and their habitats were photographed and monitored using binoculars when possible. Individuals accidentally and/or naturally died along roads and/or in the field, nests, shelters, feces and any type of clues, e.g. hair, residues of eaten vegetation, left behind by travelling individuals were also considered. Previous studies and questionnaires with local people in the region were evaluated (see Figure 1).

The different ecosystem types in GLNP were visited during daytime and night to trap alive mammalian specimens with relevant techniques. The identifications of each individual were determined on site, their body size measurements were taken, biological and ecological notes were taken in detail and all were released in the field. The GPS data of sampling sites were also noted and determined species were evaluated considering their international and national conservation statuses.

RESULTS AND DISCUSSION

The field studies in GLNP and evaluation of available literature revealed presence of 44 mammalian species within 29 genera, 16 families in 6 orders (Tables 1 and 2). The distribution of the species with respect to families and orders were given in Tables 1 and 2.

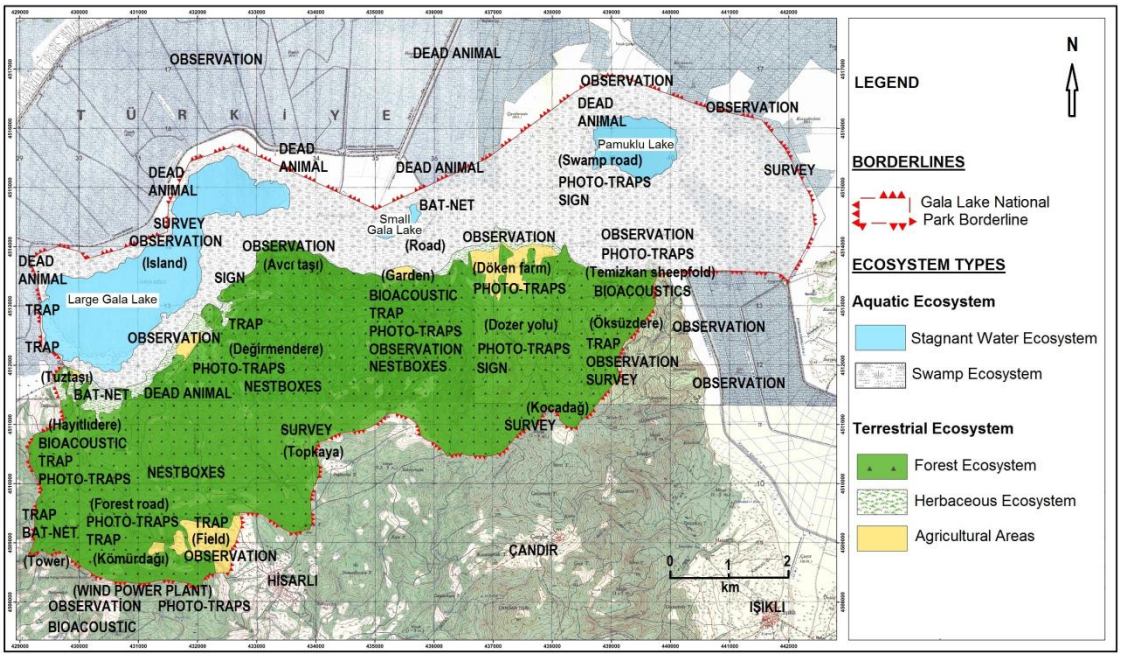

Figure 1. The localities visited in GLNP during the field studies. The techniques used to trap mammalian specimens were shown on the map (Modified from Anonymous (2016).

Table1. Mammals of GLNP and their international and national conservation statuses [MFWA= Ministry of Forestry and Water Affairs (App II = Specified Hunting Animals by the Ministry of Forestry and Water World, App III = Wild Animals Protected by the Ministry of Forestry and Water World)].

Order	Family	Genus	Species	CITES	IUCN	BERN	MFWA
1- **EULIPOTYPHLA (Insectivorous)**	3	3	4	-	LC=4	APP-II =1 APP-III=1	AppIII=4
2- **CHIROPTERA (Bats)**	2	6	14	-	LC=11 VU=3	APP-II = 13 APP-III = 1	AppIII=14
3- **LAGOMORPHA (Rabbit and Hares)**	1	1	1	-	LC=1	APP- III = 1	-
4- **RODENTIA (Rodents)**	6	10	14	-	LC=11 VU=1 NT=1 DD=1	APP-III = 3	AppIII=5
5- **CARNIVORA (Carnivores)**	3	9	10	APP-1=1 APP-2=2	LC=8 VU=1 NT=1	APP–II=4 APP-III=4	App II=4 AppIII=6
6- **ARTIODACTYLA (Even-toed ungulate)**	1	1	1	-	LC=1	APP-III=1	App II=1
Total	**16**	**30**	**44**	**APP-1=1 APP-2=2**	**LC=36 VU=5 NT=2 DD=1**	**APP–II=18 APP-III=11**	**App II=5 AppIII=27**

Table 2. The mammalian species determined in GLNP and their international and national conservation statuses [OT = Observation Types (1 – Direct observation (direct observation of itself), 2 – Indirect observation (Trace, evidence etc.), 3 – Verified survey + literature), T = Trap, BN = Bat-Net, BR = Bioacoustic Record, PT = Photo-Traps. MFWA= Ministry of Forestry and Water Affairs (App II = Specified Hunting Animals by the Ministry of Forestry and Water World, App III = Wild Animals Protected by the Ministry of Forestry and Water World)].

Order	Family	Common name in Turkish	Common name in English	Scientific name	Density	Endemic	CITES	IUCN	BERN	MFWA	*OT
EULIPOTYPHLA (Insectivorous)	Erinaceidae (Hedgehogs)	Kirpi	Northern white breasted hedgehog	*Erinaceus roumanicus* Barret-Hamilton, 1900	Rare	-	-	LC	-	App III	1
	Talpidae (Moles)	Köstebek	Common mole	*Talpa europaea* Linnaeus, 1758	Unknown	-	-	LC	-	App III	1; 2
	Soricidae (Shrews)	Beyazdişli Küçük Böçekcil	Lesser white toothed shrew	*Crocidura suaveolens* (Pallas, 1811)	Unknown	-	-	LC	APP II	App III	1 (T)
		Beyazdişli Böçekcil	Bi-coloured white-toothed shrew	*Crocidura leucodon* (Hermann, 1780)	Unknown	-	-	LC	APP III	App III	1 (T)
CHIROPTERA (Bats)	Rhinolophidae (Horseshoe bats)	Nalburunlu Büyük yarasa	Greater horseshoe bat	*Rhinolophus ferrumequinum* (Schreber, 1774)	Unknown	-	-	LC	APP III	App III	1, 3 (BN)
		Mehely Yarasası	Mehely'shorseshoe bat	*Rhinolophus mehelyi* Matschie, 1901	Unknown	-	-	VU	APP II	App III	1; 3 (BN)
	Vespertilionidae (Vesper bats)	Uzunayaklı Yarasa	Long-fingered bat	*Myotis capacciniii* (Bonaparte, 1837)	Unknown	-	-	VU	APP II	App III	1; 2 (BN)
		Su Yarasası	Dabenton's bat	*Myotis daubentoni* (Kuhl, 1817)	Unknown	-	-	LC	APP II	App III	1; 2 (BR)
		Beyazyakalı Yarasa	Kuhl's pipistrelle	*Pipistrellus kuhlii* (Kuhl, 1819)	Unknown	-	-	LC	APP II	App III	1; 2 (BR)
		Pürtüklü Cüce Yarasa	Nathusius' pipistrelle	*Pipistrellus nathusii* (Kayserling & Blasius, 1839)	Unknown	-	-	LC	APP II	App III	1; 2 (BR)
		Bayağı Cüce Yarasası	Common pipistrelle	*Pipistrellus pipistrellus* (Scheber, 1774)	Unknown	-	-	LC	APP II	App III	1; 2 (BR)
		Akdeniz Cüce Yarasa	Soprano pipistrelle	*Pipistrellus pygmaeus* (Leach, 1825)	Unknown	-	-	LC	APP II	App III	1; 2 (BR)

Order	Family	Common name in Turkish	Common name in English	Scientific name	Density	Endemic	CITES	IUCN	BERN	MFWA	*OT
		Büyük Akşamcı Yarasa	Greater noctula	*Nyctalus lasiopterus* (Schreber, 1780)	Unknown	-	-	VU	APP II	App III	2 (BR)
		Küçük Akşamcı Yarasa	Leisler's bat	*Nyctalus leisleri* (Kuhl, 1817)	Unknown	-	-	LC	APP II	App III	2 (BR)
		Akşamcı Yarasa	Noctula	*Nyctalus noctula* (Schreberi 1774)	Unknown	-	-	LC	APP II	App III	2 (BR)
		Genişkanatlı Yarasa	Serotina	*Eptecicus serotinus* Schreber, 1774	Unknown	-	-	LC	APP II	App III	2 (BR)
		Kahverengi Uzunkulaklı Yarasa	Brown long-eared bat	*Plecotus auritus* (Linnaeus, 1758)	Unknown	-	-	LC	APP II	App III	2 (BR)
		Kahverengi Uzunkulaklı Yarasa	Grey long-eared bat	*Plecotusa austriacus* (Linnaeus, 1758)	Unknown	-	-	LC	APP II	App III	3
LAGOMORPHA (Rabbits and Hares)	Leporidae (Hares)	Kır Tavşanı, Yabani Tavşan	Brown hare	*Lepus europaeus* (Pallas, 1778)	Middle	-	-	LC	APP III	App II	1; 2 (PT)
RODENTIA (Rodents)	Sciuridae (Squirrels)	Avrupa Sincabı	Red squirrel	*Sciurus vulgaris* Linnaeus, 1758	Rare	--	-	LC	APP III	App III	1; 3
		Gelengi, Kazıksıçanı	European souslik	*Spermophilus citellus* (Linnaeus, 1766)	Middle	--	-	VU	APP III	App III	1
	Cricetidae (Voles)	Uzunkuyruklu Çayır Faresi	Sibling vole	*Microtus levis* Ognev, 1924	Unknown	-	-	LC		-	2
		Tarla Faresi	Guenther's vole	*Microtus guentheri* (Danford and Alston, 1880)	Unknown	-	-	LC		-	2
	Spalacidae (Mole rat)	Körfare	Lesser mole rat	*Nannospalax leucodon* (Nordmann, 1840)	Common	-	-	DD		-	1; 3
	Muridae (Rats and mice)	Hasat Faresi	Harvest mouse	*Micromys minutus* (Pallas, 1771)	Unknown	-	-	NT		App III	1; 3
		Orman Faresi	Yellow-necked mouse	*Apodemus flavicollis* (Melchior, 1834)	Common	-	-	LC		-	1; 2 (T)
		Tarla faresi	Wood mouse	*Apodemus sylvaticus* (Linnaeus, 1758)	Common	-	-	LC		-	1 (T)
		Ev Sıçanı	Black rat	*Rattus rattus* (Linnaeus, 1758)	Rare	-	-	LC	-	-	1; 3
		Göçmen Sıçan	Brown rat	*Rattus norvegicus* (Berkenhout, 1769)	Rare	--	-	LC	-	--	1; 3 (T)

Order	Family	Common name in Turkish	Common name in English	Scientific name	Density	Endemic	CITES	IUCN	BERN	MFWA	*OT
		Makedonya Ev Faresi	Balkan short-tailed mouse	*Mus macedonicus* Petrov & Ruzic, 1983)	Middle	-	-	LC	-	-	1 (T)
		Ev faresi	Western house mouse	*Mus domesticus* Rutty, 1772	Rare	-	-	LC	-	-	1 (T)
	Gliridae (Dormouses)	Ağaç Faresi, Cevizkıran	Forest mouse	*Dryomys nitedula* (Pallas, 1779)	Middle	-	-	LC	APP III	App III	1 (T)
	Myocastoridae (Coypus)	Su Maymunu	Coypu	*Myocastor coypus* (Molina, 1758)	Common	-	-	LC	-	App III	1 (PT)
CARNIVORA (Carnivores)	Canidae (Canids)	Kurt	Wolf	*Canis lupus* Linnaeus, 1758	Unknown	-	APP 2	LC	APP II	App III	3
		Çakal	Golden jackal	*Canis aureus* Linnaeus, 1758	Middle	-	-	LC	-	App II	2; 3 (PT)
		Tilki	Vulpes	*Vulpes vulpes* (Linnaeus, 1758)	Common	-	-	LC	-	App II	1; 2; 3 (PT)
	Mustelidae (Martens)	Kaya Sansarı	Beech marten, Stone marten	*Martes foina* (Erxleben, 1777)	Middle	-	-	LC	APP III	App II	2 (PT)
		Porsuk	Badger	*Meles meles* (Linnaeus, 1758)	Middle	-	-	LC	APP III	App II	2 (PT)
		Su Samuru	Otter	*Lutra lutra* (Linnaeus, 1758)	Rare	-	APP 1	NT	APPII	App III	2 (PT)
		Gelincik	Weasel	*Mustela nivalis* Linnaeus, 1766	Rare	-	-	LC	APP III	App II	3
		Kokarca	Western polecat	*Mustela putorius* Linnaeus, 1758	Rare	-	-	LC	APP III	App II	3
		Alaca Kokarca	Marbled polecat	*Vormela peregusna* (Guldenstaedt, 1770)	Unknown	-	-	VU	APP II	App III	3
	Felidae (Cats)	Yaban Kedisi	Wildcat	*Felis silvestris* Schreber, 1777	Rare	-	APP 2	LC	APP II	App III	1; 2 (PT)
ARTIODACTYLA (Even-toed ungulate)	Suidae (Pigs)	Yaban Domuzu	Wildboar	*Sus scrofa* Linnaeus, 1758	Common	-	-	LC	-	App II	1; 2 (PT)
6	16			30 genera and 44 species	Rare=9 Middle=7 Common=6 Unknown=22	-	APP 1=1 APP 2=2	LC=36 VU=4 NT=3 DD=1	APP II =18 APP III=11	App II=5 App III=29	

CONCLUSION

The mammalian fauna of Turkey is represented with 172 species and 70 of these species (40.1%) lives in Thrace region, 52 (30.2%) in provincial borders of Edirne and 44 (25.5%) in GLNP (Kumerloeve, 1975; Özkan, 1987; Kurtonur et al., 1996; Kryštufek et al., 1997; Mitchell-Jones et al., 1999; Kryštufek and Vohralik, 2001; Kryštufek and Vohralik, 2005; Çolak et al., 2005; Yiğit et al., 2006; Kryštufek and Vohralik, 2009; Kryštufek et al., 2009; Anonim, 2010a; Anonim, 2010b; Anonim, 2014; Anonim, 2016).

The international and national conservation statuses of these 44 species were given in Table 2.

Apodemus flaviollis (yellow-necked mouse) is one of the most common small mammal seen during the field studies in the terrestrial ecosystems (Doğramacı, 1974; Çolaket al., 2005; Anonim, 2014; Anonim, 2016).

Myocastor coypus (coypu) was determined to be an invasive species in GLNP (Özkan, 1999; Anonim, 2016). The population size of this species in Maritza River basin, GLNP and related wetlands such as lakes, ponds, streams, channels etc. was determined to increase leading to economic and ecological losses in agricultural rice fields and wetlands by consuming rice seedlings, reeds and aquatic plants in huge amounts. The harm given to wetland vegetation indirectly and irreversibly affected bird nesting and breeding sites and breeding areas of fish populations in lakes.

A detailed study on impacts of coypu in GLNP is planned to be implemented in near future.

The questionnaires showed that the roe deer *Capreolus capreolus* was completely removed from the region by 1984 as a result of hunting activities and habitat destructions.

Personal observations in the region during the study showed that a huge amount of grazing due to stock farming and sheep and goat farming is taking place.

The region located underside parts of wind power plants established in Hisar Mountain in the southern border of GLNP were monitored for the presence of dead bats but no death individual was encountered during the monitoring leading us to conclude that the wind turbines used had no negative effect on bats of GLNP.

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