

Biodiversity in Urban environments of Ordu City and Nearby Areas: Mammals, Birds, Reptiles and Amphibians

Ordu Şehri ve Yakın Çevresinde Biyoçeşitlik: Memeliler, Kuşlar, Sürüngenler ve İkiyaşamlılar

Research Article

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ABSTRACT

The present paper provides the first species list of the fauna of terrestrial vertebrates of Ordu, Turkey. A survey for determination of the fauna was conducted between 2011 and 2015 in Ordu and the immediate vicinity. The field studies were made using several different techniques including; visual, wildlife photography and passive infrared camera traps. Previous records and wildlife observations around Ordu city published by professional wildlife photographers were also included. Overall, we determined 219 terrestrial vertebrate species (168 birds, 40 mammals, 7 reptiles, and 4 amphibians), some of them being low conservation concern. Among the most remarkable species from the conservation point of view, *Emys orbicularis* (Reptilia), *Aythya nyroca*, *Puffinus yelkouan*, *Pelecanus crispus*, *Saxicola maurus*, *Tetrax tetrax* (Aves), *Rhinolophus euryale*, *Miniopterus schreibersii*, *Lutra lutra* (Mammalia) come into prominence. The third record of the Rustic Bunting (*Emberiza rustica*) for Turkey is made in this study. In the Blacksea region of Turkey, although the most records of Roe Deer (*Capreolus capreolus*) is largely confined to mountainous regions, it was captured by the photo-traps in the urban areas. Our results suggest that biodiversity of terrestrial vertebrates in Ordu and immediate vicinity is still rich, and adjacent environments between urban and wild habitats are important in terms of conservation of the urban biodiversity.

Key Words

Terrestrial Fauna, mammals, birds, herptiles, Ordu province, Turkey.

ÖZET

Bu çalışmada Ordu ilinin karasal omurgalı türleri ilk kez listelenmiştir. Arazi çalışması Ordu şehri ve yakın çevresinde 2011-2015 yılları arasında gerçekleştirilmiştir. Arazi çalışmaları doğrudan gözlem, fotoğrafçılık, fotokapan ve video kullanılarak farklı yöntemlerle gerçekleştirilmiştir. Tür listesi Ordu şehri ve civarında yapılmış çalışmalardan elde edilen kayıtlar ve profesyonel doğa fotoğrafçıların gözlemlerini de yansıtmaktadır. Genel olarak, toplamda 219 adet karasal omurgalı türü (168 kuş, 40 memeli, 7 sürüngen, 4 kurbağa) tespit edilmiş ve bunların çok az bir kısmının tehlike altında olduğu anlaşılmaktadır. Koruma statüleri bakımından dikkat çeken türler olarak; *Emys orbicularis*, *Aythya nyroca*, *Puffinus yelkouan*, *Pelecanus crispus*, *Saxicola maurus*, *Tetrax tetrax*, *Rhinolophus euryale*, *Miniopterus schreibersii*, *Lutra lutra* verilebilir. Akkaşlı Kirazkuşunun (*Emberiza rustica*), Türkiye'den 3. kaydı bu çalışma ile verilmektedir. Karadeniz bölgesinde Karaca (*Capreolus capreolus*)'nın birçok kaydının daha çok dağlık bölgelerle sınırlı kalmasına rağmen, bu çalışmada şehirleşen alanda da fotokapan ile tespit edilmiştir. Bu çalışmadan elde edilen sonuçlar, Ordu şehri ve yakın civarının karasal omurgalı çeşitliliğinin hala yüksek olduğu ve şehir ile doğal yaşam habitatları arasındaki çevrelerin şehir biyoçeşitliliğinin korunmasında önemli olduğuna işaret etmektedir.

Anahtar Kelimeler

Karasal Fauna, Memeli, Kuş, Herptil, Ordu şehri, Türkiye.

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INTRODUCTION

As of 2014, it is estimated that 54% of the world population live in cities, and this rate will rise up to 66% by 2050 [1]. According to the address-based population registration system data, 23% of the population of Turkey lives in rural areas, whereas the remaining 77% lives in urban areas [2]. A modification of the natural distribution areas of organisms into farmlands, urbanization and growth of the human population have a strong impact on biodiversity [3,4]. The migration from the countryside to city engenders an utilization of new lands for housing, resulting in a separation of the present habitats into a fragmented structure or a complete eradication of the ecosystem. There are three main aspects of biodiversity: species diversity, genetic diversity and ecosystem diversity. A devastation of the habitats is considered as "habitat loss" for many species, which results in a pollution, infestation of invasive species and other adversities. In conclusion, of the increase in the urbanization rate, and exploitation of land for agriculture appear to be the main threats of continuity of local species [5,6].

This study aimed to determine the terrestrial vertebrates observed in Ordu and the immediate vicinity. Ordu city was established in 400 BC by the name Kotyora [7]. Residential life quickly formed after the establishment of the Republic of Turkey. Means of livelihood include traditional fishing and, hazelnut cultivation that has been recently popularized [8]. In mid 1960s, 15% of the population had lived in cities while this rate increased to 45% in 2012.

As known, the East and the West Black Sea geographical regions are separated by the river Melet. Until recent years, the river basins; Durugöl, Melet, and Turnasuyu have been intact habitats, as understood from the records. The geological formation of the River Basin, Melet, indicates the presence of these natural habitats [9]. According to Gürgen [9], powerful streams such as Melet, Civil, and Turnasuyu generated the delta formed from the vast Pleistocene and Holocene alluvial fillings on the coasts in the west of Boztepe. However, after 1950 these basins and wetlands were opened for settlement, dried to

create agricultural fields in particular, habitats of birds and other terrestrial vertebrates were rapidly devastated. In addition to increasing urbanization, the usage of the estuary of Melet as garbage dump for many years remarkably polluted the area. In addition, the bird species visiting the area had significantly dropped. Our observations in a small wetland which has been able to still survive, but partly-impaired and polluted in Durugöl, which is totally occupied by the buildings today showed that the water bird species (Anatidae, water hens, herons etc.), hinting that the species richness of the area in the period which the wetland was not polluted. As it can be seen in the study results, an observation of mammals like Roe Deer (*Capreolus capreolus*) near urban areas, supports this thesis.

Turkey, when compared to other Palearctic geographical regions, has a richer habitat variety. The fact that endemic taxa in a proportional sense is higher in comparison with other countries indicates that terrestrial, nautical, and freshwater biodiversity is greater [6]. Turkey's avifauna like mammal and reptile faunas have been thoroughly studied, and a precise list is mostly established. It is also known that Turkey's avifauna mostly have been photographed in the web sources created by professional and amateur photographers [10, 11]. Kirwan et al. [12] have compiled and listed numerous studies concerning with Turkey's bird fauna, and reported 453 species. It has been determined that most of these bird species is commonly found throughout the year and very few of them (approximately 56) are migratory birds [13]. Later studies [14] also confirmed that approximately 460 species were reported from Turkey. The list of birds in Turkey have been updated, and with the recent records, the list contains 483 species [10,15].

The Kızılırmak Delta (Samsun), which is the closest habitat to the presently studied area as well as the best preserved and biggest wetland in the Blacksea Region, contains more than 340 determined bird species [16]. In a study done in Artvin, situated on a bird migration route, a total of 216 bird species including 87 local species was determined [17]. Except for a few records, there is no avifauna studies in Ordu and

immediate vicinity. However, in a report prepared by the Provincial Directorate of Environment of Ordu, a list of mammal, bird and reptile species determined in Ordu is provided [18]. According to this list, 62 birds, 19 reptiles and 31 mammals species were listed in Ordu. Interestingly, the same list was repeated in 2013.

A study listing Turkey and Cyprus's mammal fauna reviewed the studies on mammal fauna in Turkey and listed over 140 species [19]. According to the list, a significant amount of mammal species in Turkey consists of rodents with 43%, while 24% consists of bats, 13,5% carnivores, and 12% insectivores. Devastation of habitats and the rapid urbanization negatively effects not only bird faunas, but also mammal faunas [20,21]. In the present study, since large mammal observations rather than small mammals were made around the university campus with photo-trap method, potential small mammals, and bats were not determined.

As noted above, Turkey also has a herpetofauna that is quite diverse in terms of reptile (Reptilia) and amphibian (Amphibia) groups due to different geographic areas and an intercontinental bridge. Numerous studies have reported a rapid decrease in the distribution and abundance of reptiles and amphibians after the second half of the 20th century [22,23]. Despite the fact that a consensus on taxa have not been reached in terms of species status, there are 21 species of amphibians, 8 of them are salamanders (urodela), and 13 of them are frogs (Anura) in Turkey [24]. In the same book, a total of 108 reptile species including 9 tortoises, 58 lizards, and 41 serpentes were listed. In our country, reptile observation and photography and relevant science-based internet sources have recently started to become common. According to the data of Anonymous [25], one of the most important of the sources, a total of 34 amphibian species including 17 salamanders (Urodela), and 17 frogs (Anura), and a total of 132 reptile species including 11 tortoises and 65 lizards, 56 serpentes have been listed. The reasons of different number of species from the Baran's list [24] are the addition of new taxa in the list or other taxonomic changes. Except for some local faunistic studies related to the Black

Sea region [e.g.26], a complete herpetofauna list has not been established yet. According to the results of the only herpetofaunistic study to include Ordu and Giresun provinces in the study area, with 3 salamanders (Urodela), 6 frogs (Anura), and 4 lizards, 4 serpentes, a total of 17 species were determined (Kumlutaş et al., 1998). A study in Middle and East Black Sea regions reported 7 amphibians, 2 tortoises, 12 lizards, and 5 serpentes species [27,28].

MATERIAL AND METHOD

This study includes data collected irregularly between 2011-2015. The bird species in the list were determined in Cumhuriyet campus and the immediate vicinity of Ordu University, Melet River estuary, inner-city, coastal region, and Turnasuyu estuary. The birds were determined in all seasons by photography and observations irregular done in irregular intervals. Photography was done using Canon EOS-1D Mark IV, 50D and 7D Mark II cameras and Canon EF 400 mm f5.6 and Canon 600 f/4 lenses. While determining some species, binoculars were also used (Bushnell Powerview 12x50 mm). Especially while observing and photographing on riversides, camouflage was used.

Reptile and amphibian determination was made in the university campus and the immediate vicinity. Samples were caught by hand, and then identified.

Photo-traps (Bushnell Trophy Cam HD Max) were used in order to identify mammal species. This study does not include the determination of small mammal fauna with the use of photo-traps. Mammal species captured by photo-traps were identified using the videos and photographs acquired by the traps. Photo-traps were mounted around the campus. The photo trap data were examined every two weeks. Extensive sources [11,19,29-37] were utilized for the listing of the mammal species.

Visual Encounter Survey (VES) was used to determine the species in the Herpetofauna [38]. The VES is based on the systematic observation of animals at a specified time in the field study. This

observation method is appropriate for assembling inventory and observation studies of the species in an aquatic or terrestrial habitat. The VES is used to determine species richness in a region, create a species list, and estimate the relative abundance of the species in a habitat. In the implementation of this method, observing species themselves by advancing in random transects in a particular field, or indirect observations such as slough and left traces are carried out. In this study, species lists were created by making direct observations in Ordu University campus and the immediate vicinity, in 2011 and in 2015 in fall and spring.

Species conservation status were organized according to the IUCN, BERN, and CITES [39,40] criterias.

RESULTS AND DISCUSSION

A total of 168 bird species belonging to 50 families and 20 orders were listed from the city center and adjacent parts of Ordu (Table 1). Although two species from Columbidae (COLUMBIFORMES) family have been known to distribute in neighbor areas through Giresun, they were not able to be recorded in the study area. These are: *Streptopelia turtur* (European Turtle Dove) and *S. decaocto* (Collared Dove). *Apus apus* (Swift) and *Tachymarptis melba* (Alpine Swift) from Apodidae (APODIFORMES) family were registered in KuşBank [41] and recorded from Ordu, but were not included in the list since they cannot be verified. Similarly *Cisticola juncidis* (Fan-tailed Warbler) from Cisticolidae (PASSERIFORMES), mostly seen in our Mediterranean and Aegean coasts, was also excluded from the list.

Table 1. The list of birds of Ordu city.

ORDO Family Species	Names of taxa	2014 Feb IUCN	2014 Feb BERN	2013 June CITES	2013-2014 MAK
GALLIFORMES	Turkeys, grouse, chickens, pheasants				
Phasianidae	Pheasants and partridges				
<i>Coturnix coturnix</i>	Common quail	LC	III		III
ANSERIFORMES	Screamers, ducks, geese, swans				
Anatidae	Ducks, Geese				
<i>Anser albifrons</i>	Greater white- fronted goose	LC	III		III
<i>Cygnus olor</i>	Mute swan	LC	III		I
<i>Cygnus cygnus</i>	Whooper swan	LC	II		I
<i>Tadorna ferruginea</i>	Ruddy shelduck	LC	II		I
<i>Tadorna tadorna</i>	Common shelduck	LC	II		I
<i>Anas penelope</i>	Eurasian Wigeon	LC	III		III
<i>Anas platyrhynchos</i>	Mallard	LC	III		III
<i>Anas clypeata</i>	Northern shoveler	LC	III		II
<i>Anas acuta</i>	Northern pintail	LC	III		III

Table 1. The list of birds of Ordu city (Continue).

<i>Anas querquedula</i>	Garganey	LC	III	III	
<i>Anas crecca</i>	Eurasian teal	LC	III	III	
<i>Netta rufina</i>	Red-crested pochard	LC	III	III	
<i>Aythya ferina</i>	Common pochard	LC	III	III	
<i>Aythya nyroca</i>	Ferruginous duck	NT	III	I	
<i>Aythya fuligula</i>	Tufted duck	LC	III	III	
<i>Bucephala clangula</i>	Common goldeneye	LC	II	III	
<i>Mergellus albellus</i>	Smew	LC	II	I	
<i>Mergus serrator</i>	Red-breasted merganser	LC	III	II	
GAVIIFORMES	Loons				
Gaviidae	Loons				
<i>Gavia arctica</i>	Black-throated loon	LC	II	II	
PROCELLARIIFORMES	Seabirds (Petrels, shearwaters,...)				
Procellariidae	Shearwaters				
<i>Puffinus yelkouan</i>	Yelkouan shearwater	VU	II	I	
PODICIPEDIFORMES	Grebe				
Podicipedidae	Grebes				
<i>Tachybaptus ruficollis</i>	Little grebe	LC	II	I	
<i>Podiceps cristatus</i>	Great crested grebe	LC	III	I	
<i>Podiceps nigricollis</i>	Black-necked grebe	LC	II	I	
CICONIIFORMES	Storks				
Ciconiidae	Storks				
<i>Ciconia nigra</i>	Black stork	LC	II	II	I
<i>Ciconia ciconia</i>	White stork	LC	II	I	
PELECANIFORMES	Ibises, Spoonbills				
Threskiornithidae	Ibises, Spoonbills				
<i>Plegadis falcinellus</i>	Glossy ibis	LC	II	I	
<i>Platalea leucorodia</i>	Eurasian spoonbill	LC	II	II	I

Table 1. The list of birds of Ordu city (Continue).

Ardeidae	Herons, Bitterns				
<i>Botaurus stellaris</i>	Eurasian bittern	LC	II		I
<i>Ixobrychus minutus</i>	Little bittern	LC	II		I
<i>Nycticorax nycticorax</i>	Black-crowned night heron	LC	II		I
<i>Ardeola ralloides</i>	Squacco heron	LC	II		I
<i>Bubulcus ibis</i>	Cattle egret	LC	II		I
<i>Ardea cinerea</i>	Grey heron	LC	III		II
<i>Ardea purpurea</i>	Purple heron	LC	II		I
<i>Casmerodius albus</i>	Great white egret	LC	II		I
<i>Egretta garzetta</i>	Little egret	LC	II		I
Pelecanidae	Pelicans				
<i>Pelecanus onocrotalus</i>	Great white pelican	LC	II		I
<i>Pelecanus crispus</i>	Dalmatian pelican	VU	II	I	I
SULIFORMES	Cormorants, Shags				
Phalacrocoracidae	Cormorants				
<i>Phalacrocorax pygmeus</i>	Pygmy cormorant	LC	II		I
<i>Phalacrocorax carbo</i>	Karabatak	LC	III		II
<i>Phalacrocorax aristotelis</i>	European shag	LC	II		I
FALCONIFORMES	Falcons				
Falconidae	Falcons				
<i>Falco tinnunculus</i>	Common kestrel	LC	II	II	I
<i>Falco subbuteo</i>	Eurasian hobby	LC	II	II	I
<i>Falco peregrinus</i>	Peregrine falcon	LC	II	I	I
ACCIPITRIFORMES	Hawks, Ospreys, Eagles, Buzzards				
Pandionidae	Ospreys				
<i>Pandion haliaetus</i>	Osprey	LC	II	II	I
Accipitridae	Hawks				
<i>Pernis apivorus</i>	European honey-buzzard	LC	II	II	I
<i>Circaetus gallicus</i>	Short-toed snake eagle	LC	II	II	I

Table 1. The list of birds of Ordu city (Continue).

<i>Circus aeruginosus</i>	Western marsh-harrier	LC	II	II	I
<i>Circus cyaneus</i>	Hen harrier	LC	II	II	I
<i>Accipiter nisus</i>	Eurasian sparrowhawk	LC	II	II	I
<i>Buteo buteo</i>	Buzzard	LC	II	II	I
<i>Buteo rufinus</i>	Long-legged buzzard	LC	II	II	I
<i>Aquila pomarina</i>	Lesser spotted eagle	LC	II	II	I
<i>Hieraaetus pennatus</i>	Booted eagle	LC	II	II	I
OTIDIFORMES	Bustard				
Otididae	Bustards				
<i>Tetrax tetrax</i>	Little bustard	NT	II	II	I
GRUIFORMES	Crakes, Rails				
Rallidae	Rails and crakes				
<i>Rallus aquaticus</i>	Water rail	LC	III		II
<i>Crex crex</i>	Corn crake	LC	II		I
<i>Porzana parva</i>	Little crake	LC	II		I
<i>Porzana porzana</i>	Spotted crake	LC	II		I
<i>Porphyrio porphyrio</i>	Purple swamphen	LC	II		I
<i>Gallinula chloropus</i>	Common moorhen	LC	III		II
<i>Fulica atra</i>	Eurasian coot	LC	III		III
<i>Grus grus</i>	Common crane	LC	II	II	I
CHARADRIIFORMES	Waders, gulls, auks				
Haematopodidae	Oystercatchers				
<i>Haematopus ostralegus</i>	Eurasian oystercatcher	LC	III		II
Recurvirostridae	Avocets and stilts				
<i>Himantopus himantopus</i>	Black-winged stilt	LC	II		I
Charadriidae	Plovers and lapwings				
<i>Vanellus vanellus</i>	Northern lapwing	LC	III		II
<i>Charadrius dubius</i>	Little ringed plover	LC	II		I

Table 1. The list of birds of Ordu city (Continue).

Scolopacidae	Snipe-like waders			
<i>Gallinago gallinago</i>	Common snipe	LC	III	III
<i>Limosa limosa</i>	Black-tailed Godwit	NT	III	II
<i>Numenius phaeopus</i>	Whimbrel	LC	III	II
<i>Tringa totanus</i>	Common redshank	LC	III	II
<i>Tringa ochropus</i>	Green sandpiper	LC	II	I
<i>Tringa glareola</i>	Wood sandpiper	LC	II	I
<i>Actitis hypoleucos</i>	Common sandpiper	LC	II	I
<i>Calidris alba</i>	Sanderling	LC	II	I
<i>Calidris alpina</i>	Dunlin	LC	II	I
Laridae	Gulls			
<i>Larus canus</i>	Common gull	LC	III	II
<i>Larus cachinnans</i>	Caspian gull	LC	III	
<i>Larus michahellis</i>	Yellow legged gull	LC	III	II
<i>Larus fuscus</i>	Lesser black-backed gull	LC		II
<i>Larus ichthyaetus</i>	Pallas's gull	LC	III	II
<i>Larus ridibundus</i>	Black-headed gull	LC	III	II
<i>Larus genei</i>	Slender-billed gull	LC	II	I
<i>Larus melanocephalus</i>	Mediterranean gull	LC	II	I
<i>Larus minutus</i>	Little gull	LC	II	I
Sternidae	Terns			
<i>Sterna caspia</i>	Caspian tern	LC	II	I
<i>Sterna sandvicensis</i>	Sanwich tern	LC	II	I
<i>Chlidonias hybrida</i>	Whiskered tern	LC	II	I
<i>Chlidonias leucopterus</i>	White-winged tern	LC	II	I
Stercorariidae	Skuas			
<i>Stercorarius parasiticus</i>	Parasitic jaeger	LC	III	II
COLUMBIFORMES	Pigeons			
Columbidae	Pigeons, Doves			
<i>Columba livia</i>	Rock dove	LC	III	III

Table 1. The list of birds of Ordu city (Continue).

<i>Stigmatopelia senegalensis</i>	Laughing dove	LC	III		II
CUCULIFORMES	Cuckoos				
Cuculidae	Cuckoos				
<i>Cuculus canorus</i>	Common cuckoo	LC	III		I
STRIGIFORMES	Owls				
Strigidae	Owls				
<i>Strix aluco</i>	Tawny owl	LC	II	II	I
<i>Athene noctua</i>	Little owl	LC	II	II	I
CORACIIFORMES	Kingfishers, Bee-eaters				
Alcedinidae	Kingfishers				
<i>Alcedo atthis</i>	Common kingfisher	LC	II		I
Meropidae	Bea-eaters				
<i>Merops apiaster</i>	European bee-eater	LC	II		I
BUCEROTIFORMES	Hornbills, Hoopoes				
Upupidae	Hoopoes				
<i>Upupa epops</i>	Common hoopoe	LC	III		I
PICIFORMES	Woodpeckers				
Picidae	Woodpeckers				
<i>Jynx torquilla</i>	Eurasian Wryneck	LC	II		I
<i>Dendrocopos medius</i>	Middle spotted woodpecker	LC	II		I
<i>Dendrocopos syriacus</i>	Syrian woodpecker	LC	II		I
PASSERIFORMES	Songbirds				
Laniidae	Shrikes				
<i>Lanius collurio</i>	Red-backed shrike	LC	II		I
<i>Lanius nubicus</i>	Masked shrike	LC	II		I
Oriolidae	Old World orioles				
<i>Oriolus oriolus</i>	Eurasian golden oriole	LC	II		I
Corvidae	Crows				
<i>Garrulus glandarius</i>	Eurasian jay	LC			III

Table 1. The list of birds of Ordu city (Continue).

<i>Corvus monedula</i>	Western jackdaws	LC		III
<i>Corvus frugilegus</i>	Rook	LC		III
<i>Corvus cornix</i>	Hooded crow	UR		III
<i>Corvus corax</i>	Common raven	LC	III	II
Paridae	Tits			
<i>Parus major</i>	Great tit	LC	II	I
<i>Parus caeruleus</i>	Eurasian blue tit	LC	II	I
Hirundinidae	Swallows			
<i>Hirundo rustica</i>	Barn swallow	LC	II	I
<i>Delichon urbicum</i>	Common house martin	LC	II	I
Aegithalidae	Long-tailed tits			
<i>Aegithalos caudatus</i>	Long-tailed tit	LC	III	II
Alaudidae	Larks			
<i>Galerida cristata</i>	Crested lark	LC	III	II
<i>Alauda arvensis</i>	Eurasian skylark	LC	III	II
Cettiidae	Bush warblers			
<i>Cettia cetti</i>	Cetti's warbler	LC	III	I
Acrocephalidae	Warblers			
<i>Acrocephalus schoenobaenus</i>	Sedge warbler	LC	III	I
<i>Acrocephalus scirpaceus</i>	Eurasian reed warbler	LC	III	I
<i>Acrocephalus palustris</i>	Marsh warbler	LC	III	I
<i>Acrocephalus arundinaceus</i>	Great reed warbler	LC	III	I
Phylloscopidae	Willow warblers			
<i>Phylloscopus trochilus</i>	Willow warbler	LC	III	I
<i>Phylloscopus collybita</i>	Common chiffchaff	LC	III	I
<i>Phylloscopus sibilatrix</i>	Wood warbler	LC	III	I
Sylviidae	True warblers and parrotbills			
<i>Sylvia atricapilla</i>	Eurasian blackcap	LC	II	I
<i>Sylvia borin</i>	Garden warbler	LC	II	I
<i>Sylvia communis</i>	Common whitethroat	LC	II	I
<i>Sylvia curruca</i>	Lesser whitethroat	LC	II	I

Table 1. The list of birds of Ordu city (Continue).

<i>Sylvia nisoria</i>	Barred warbler	LC	II	I
<i>Sylvia melanocephala</i>	Sardinian warbler	LC	II	I
Regulidae	Kinglets, Crests			
<i>Regulus regulus</i>	Goldcrest	LC	II	I
<i>Regulus ignicapilla</i>	Common firecrest	LC	II	I
Troglodytidae	Wrens			
<i>Troglodytes troglodytes</i>	Eurasian wren	LC	II	I
Sturnidae	Starlings			
<i>Sturnus vulgaris</i>	Common starling	LC		II
Turdidae	Thrushes			
<i>Turdus merula</i>	Common blackbird	LC	III	III
<i>Turdus philomelos</i>	Song thrush	LC	III	II
Muscicapidae	Flycatchers			
<i>Erithacus rubecula</i>	European robin	LC	II	I
<i>Luscinia luscinia</i>	Thrush nightingale	LC	II	I
<i>Luscinia svecica</i>	Bluethroat	LC	II	I
<i>Phoenicurus ochruros</i>	Black redstart	LC	II	I
<i>Phoenicurus phoenicurus</i>	Common redstart	LC	II	I
<i>Saxicola rubetra</i>	Whinchat	LC	II	I
<i>Saxicola torquatus</i>	Common stonechat	LC	II	I
<i>Saxicola maurus</i>	Siberian stonechat	NR	III	
<i>Oenanthe oenanthe</i>	Wheatear	LC	II	I
<i>Oenanthe isabellina</i>	Isabelline wheatear	LC	II	I
<i>Muscicapa striata</i>	Spotted flycatcher	LC	II	I
<i>Ficedula parva</i>	Red-breasted flycatcher	LC	II	I
Cinclidae	Dippers			
<i>Cinclus cinclus</i>	White-throated dipper	LC	II	I
Passeridae	Sparrows			
<i>Passer domesticus</i>	House sparrow	LC		III

Table 1. The list of birds of Ordu city (Continue).

<i>Passer montanus</i>	Eurasian tree sparrow	LC	III	II
Prunellidae	Accentors			
<i>Prunella modularis</i>	Dunnock	LC	III	I
Motacillidae	Wagtails, Pipits			
<i>Motacilla alba</i>	White wagtail	LC	III	I
<i>Motacilla citreola</i>	Citrine wagtail	LC	III	I
<i>Motacilla flava</i>	Yellow wagtail	LC	II	I
<i>Motacilla cinerea</i>	Grey wagtail	LC	II	I
<i>Anthus pratensis</i>	Meadow pipit	LC	II	I
<i>Anthus spinoletta</i>	Water pipit	LC	II	I
Fringillidae	Finches			
<i>Fringilla coelebs</i>	Common chaffinch	LC	III	II
<i>Carduelis chloris</i>	European greenfinch	LC	III	I
<i>Carduelis spinus</i>	Eurasian siskin	LC	III	I
<i>Carduelis carduelis</i>	Goldfinch	LC	III	I
<i>Carduelis cannabina</i>	Common linnet	LC	III	I
Emberizidae	Buntings			
<i>Miliaria calandra</i>	Corn bunting	LC	III	II
<i>Emberiza cia</i>	Rock bunting	LC	III	I
<i>Emberiza rustica</i>	Rustic bunting	LC	III	I
<i>Emberiza schoeniclus</i>	Reed bunting	LC	III	I

Table 2. The list of the mammals of Ordu city.

ORDO	Family	Name of taxa	IUCN	BERN	CITES
ERINACEOMORPHA		Hedgehogs			
	Erinaceidae	Hedgehogs			
	<i>Erinaceus concolor</i>	White-chested hedgehog	LC		
SORICOMORPHA		Shrew			
	Soricidae	Shrews			
	<i>Sorex raddei</i>	Radde's shrew	LC	III	
	<i>Neomys teres</i>	Transcaucasian water shrew	LC	III	
	<i>Crocidura gueldenstaedtii</i>	Lesser shrew	NE	III	

Table 2. The list of the mammals of Ordu city (Continue).

<i>Crocidura suaveolens</i>	Lesser white-toothed shrew	LC	III
Talpidae	Moles		
<i>Talpa levantis</i>	Levant mole	LC	
CHIROPTERA	Bats		
Rhinolophidae	Horseshoe bats		
<i>Rhinolophus ferrumequinum</i>	Gretaeer horseshoe bats	LC	II
<i>Rhinolophus hipposideros</i>	Lesser horseshoe bats	LC	II
<i>Rhinolophus euryale</i>	Mediterranean horseshoe bat	NT	II
Vespertilionidae	Vesper bats		
<i>Myotis myotis</i>	Greater mouse-eared bat	LC	II
<i>Myotis blythii</i>	Lesser mouse-eared bat	LC	II
<i>Nyctalus leisleri</i>	Lesser noctule	LC	II
<i>Eptesicus serotinus</i> ¹	Serotine bat	LC	II
<i>Pipistrellus pipistrellus</i>	Common pipistrelle	LC	III
Miniopteridae	Long-winged bats		
<i>Miniopterus schreibersii</i>	Common bent-wing bag	NT	II
LAGOMORPHA	Lagomorphs		
Leporidae	Hares		
<i>Lepus europaeus</i>	Euopean hare/Brown hare	LC	III
RODENTIA	Rodents		
Sciuridae	Squirrels		
<i>Sciurus anomalus</i>	Caucasian squirrel	LC	II
Cricetidae	Voles, hamsters		
<i>Cricetulus migratorius</i>	Gray dwarf hamster	LC	
<i>Myodes glareolus</i>	Bank vole	LC	
<i>Microtus levis</i>	Southern vole	LC	
<i>Microtus subterraneus</i>	Common pine vole	LC	
<i>Microtus majori</i> ²	Major's pine vole	LC	
Muridae	Mouse, Rats		
<i>Apodemus mystacinus</i>	Broad-toothed field mouse	LC	
<i>Apodemus flavicollis</i>	Yellow-necked mouse	LC	
<i>Apodemus witherbyi</i>	Steppe field mouse	LC	
<i>Rattus rattus</i>	Black rat	LC	

Table 2. The list of the mammals of Ordu city (Continue).

<i>Rattus norvegicus</i>	Brown rat	LC		
<i>Mus musculus domesticus</i>	House mouse	LC		
<i>Mus macedonicus</i>	Macedonian mouse	LC		
Gliridae	Dormouses			
<i>Dryomys nitedula</i> ³	Forest dormouse	LC	III	
<i>Muscardinus avellanarius</i>	Hazel dormouse	LC	III	
CARNIVORA	Carnivore			
Canidae	Foxes, Jackals			
<i>Canis aureus</i>	Golden jackal	LC		
<i>Vulpes vulpes</i>	Red fox	LC		
Mustelidae	Martens, Weasels			
<i>Mustela nivalis</i>	Least weasel	LC	III	
<i>Martes martes</i>	European pine marten	LC	III	
<i>Martes foina</i>	Stone marten	LC	III	
<i>Lutra lutra</i> ⁴	Lutra	NT	II	I
Felidae	Kedigiller			
<i>Felis silvestris</i>	Yaban Kedisi	LC	II	II
ARTIODACTYLA	Even-toed ungulate			
Suidae	Pigs, Boars			
<i>Sus scrofa</i>	Wild boar	LC		
Cervidae	Deers			
<i>Capreolus capreolus</i>	Roe deer	LC	III	

¹Recorded from Bulancak (Giresun), very close to Ordu city (A. Karataş, unpublished data), therefore this species is added in to the list.

²Although there is no record from Ordu city, the species is known from Ulubey town, very close to Ordu [43, cf. 44]. Thus, we added the species to the current list of the city.

³It is recorded from Bulancak (Giresun) (A. Karataş, unpublished data).

⁴L. lutra, we did not find from Ordu although it is observed from two different localities in Bulancak (Giresun) (A. Karataş, unpublished data).

Table 3. Species list of the Herpetofauna of Ordu city.

ORDO Family Species	Name of taxa	IUCN	BERN	CITES
SQUAMATA	Scaled reptiles			
Anguidae	Glass lizards			
<i>Anguis fragilis</i>	Slow worm, Blindworm		III	
Lacertidae	Lizards			
<i>Lacerta viridis</i>	Green lizard	LC	II	
<i>Darevskia rudis</i>	Spiny-tailed lizard	LC	III	
SERPENTES	Snakes			

Table 3. Species list of the Herpetofauna of Ordu city (Continue).

Colubridae	Colubrids		
<i>Coronella austriaca</i>	Smooth snake		II
<i>Natrix natrix</i>	Grass snake	LC	III
<i>Elaphe longissima</i>	Aesculapian snake	LC	II
TESTUDINATA	Turtles		
Emydidae	Pond/Mars turtles		
<i>Emys orbicularis</i>	European pond turtle	NT	II
URODELA	Newts and Salamanders		
Salamandridae	Salamanders		
<i>Triturus ivanbureschi</i>	Balkan-Anatolian crested newt	LC	II
ANURA	Frogs		
Hylidae	Tree frogs		
<i>Hyla orientalis</i>	Oriental tree frog, Green frog		III
Ranidae	True frogs		
<i>Rana dalmatina</i>	Agile frog	LC	III
<i>Pelophylax ridibundus</i>	Marsh frog	LC	III

40 species of mammals belonging to 16 families and 7 orders were listed (Table 2). Despite a few of these species were not recorded in the study area, they were included in the list because of their high possibility of existence in the area for distributing in adjacent parts and sharing almost the same habitat type (see footnotes in Table 3). In addition, some species like *Microtus socialis* (Social vole, Doğu Kırfaresi) given from inner parts as from Gököy and Mesudiye were also not included in the list. These districts are located in the Central Anatolia border of Ordu and are different from the study area which shows boreal characteristics in both ecological and zoogeographical terms.

On the other hand, *Monachus monachus* (Mediterranean monk seal) has been regarded as extinct (RE) in all the Black Sea after been observed (N= 1) in the early 1980 [42] in Perşembe. *Ursus arctos* (Brown Bear) and *Cervus elaphus* (Red Deer) records which were given by Kumerloeve [35], has not been verified by the recent observations and were not added to the

list since they are assessed as extinct in Ordu (central district). Similarly, *Rupicapra rupicapra* (Chamois) records given from Ordu by the same author are likely to be misidentification of *Capra aegagrus* (Wild Goat). Indeed, this species is mostly distributed in the high mountains of the Eastern Black Sea.

A total of 17 herptile species, including 3 salamanders (Urodela), 6 frogs (Anura), 4 lizards and 4 snakes were recorded according to the results of the only herpetofaunistic study carried out in Ordu and Giresun which also covers the present study area [27]. However in this study, a total of 11 species were identified, including one salamanders (Urodela), 3 frogs (Anura), one turtle, 3 lizards and 3 snakes (Table 3).

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