



## Terrestrial Vertebrate Fauna of Beytepe Campus, Hacettepe University

### Hacettepe Üniversitesi Beytepe Yerleşkesinin Karasal Omurgalı Faunası

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#### ABSTRACT

Beytepe Campus (Hacettepe University) is one of the few isolated areas with large scale for wildlife within Ankara metropolis (Turkey). However, there is no checklist regarding to the terrestrial vertebrate (amphibian, reptile, avian and mammalian) fauna of this campus has ever been published so far. Therefore, field studies and literature surveys were conducted towards Beytepe Campus from 2005 to 2019. According to the results, a total of 3 amphibians, 11 reptilians, 93 avian and 14 mammalian species were identified in the study area. Due to increasing urbanization trends in this metropolitan city, this study will provide us a useful guide for further surveys and conservation activities in similar areas.

#### Key Words

Ankara, urbanization, amphibians, reptiles, birds, mammals.

#### Öz

Beytepe Yerleşkesi (Hacettepe Üniversitesi), Ankara'daki (Türkiye) kentsel yaşamda yaban hayatı için birkaç büyük izole alandan birisidir. Bununla birlikte, şimdiye kadar bu yerleşkenin karasal omurgalı (amfibi, sürüngen, kuş ve memeli) faunasına ilişkin genel bir tür listesi bulunmamaktadır. Bu amaçla 2005 – 2019 yılları arasında Beytepe Yerleşkesi'nde yapılan çalışmalar sonucunda toplam 3 amfibi, 11 sürüngen, 93 kuş ve 14 memeli türü tespit edilmiştir. Kentselleşmenin büyükşehirlerde giderek artan trendi nedeniyle, bu çalışma bize benzer alanlarda yapılacak araştırmalar ve koruma faaliyetleri için faydalı bir rehber olacaktır.

#### Anahtar Kelimeler

Ankara, kentselleşme, amfibiler, sürüngenler, kuşlar, memeliler.

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## INTRODUCTION

Urbanization is a key component of land-use changes due to extremely modified and intricate landscapes urban regions, within which green or open areas are seen as valuable for human welfare as well as wildlife [1,2]. The biological processes of dispersal interact with the landscape structure in influencing the distribution of populations of species present [3]. During the last decade, many researches, related to urban biodiversity, embed this issue under conservation perspective [4–7]. Urbanization phenomenon has been an important component of land use and land cover change, and its significance will certainly continue to increase in Turkey's metropolitans, like many others in the world [8]. In addition to that, while focusing on urbanization in Turkey, it cannot be neglected that rapid inhabitant increase, immigration from rural areas to urban places, and industrial progress after 1960s' has an important role to change the dynamics for people and natural habitats. The other major case for the land and biological resources around the cities is that they have tended to be consumed. Therefore, some restoration areas, like city parks, school campuses, which were built on such areas, need to be evaluated under the terms of biodiversity [9].

Here, we would like to introduce the actual terrestrial vertebrate fauna of Hacettepe University Beytepe Campus as an official record for a guideline about forthcoming studies on human – wildlife interactions in urban zones.

## MATERIALS and METHODS

### Study area

The field studies have been carried out from 2005 to 2019 to identify each species of terrestrial vertebrate class (amphibians, reptiles, birds and mammals) in Beytepe Campus, Ankara, which is transformed from rural to urban area year after year. Beytepe Campus comprises about 1500 ha and this region is about 918 m asl (Figure 1). It was established in 1967 on the western side of Ankara. There are two artificial wetlands in (Beytepe pond) and around Beytepe Campus (Ministry of Agriculture and Forest Work Campus pond) that contribute to maintain water sources for related terrestrial vertebrate groups. In addition to these wetlands, the study area covers coniferous forests, steppe vegetation, urbanized areas with the constructions of educational buildings

and dormitories. Average annual precipitation of 413 mm falls, and relative humidity is  $45.61 \pm 18.36$  in recent years. The average annual temperature is  $10.1^{\circ}\text{C}$  [10,11].

### Methodologies for detecting species

Amphibia surveys were carried out by visual search [12]. The survey has been done between March and October irregularly once a month in studied years. However, we focused on spring and early summer months particularly for reproduction activities. During the daytime, visual searches were made by simply walking around the pond edge and the surrounding of terrestrial habitat to look for amphibians and clusters of their spawn in the water. And also amphibians under refugia such as logs and large stones were also searched.

General observations on the reptile fauna of the region were irregularly made by visual encounter surveys from spring to fall seasons while intensive activity of specimens was clearly seen [13]. Surveys were conducted both daytime and nighttime. Flashlights were used at night patrols. All habitats including water bodies, under rocks, logs and decaying vegetation, and woodlands and bushes up to 5 m were thoroughly searched for the presence of reptiles. All collected specimens were examined carefully and recorded prior to being released back to their original point of capture.

Both amphibian and reptile species were identified by nation-wide guides [14] and websites which provide the latest articles with identification of new species about herpetofauna [15,16]. However, the species former common synonym names were also given in related fauna lists (Table 1,2).

Bird watching was done from 6:30 to 10:00 irregularly per month when weather conditions were suitable. Bird species were identified by naked eyes or professional binocular and documented immediately after observation. Several local, regional and international avian guidebooks were used in the identification process of bird species [17,18]. For nocturnal birds, such as owls, night surveys were carried out.

Mammal surveys were undertaken during different seasons of the year (2005–2019) and the report was compiled. Occasional field surveys were conducted to cover several habitats, like forests, steppe vegetation in Beytepe Campus and surroundings. The most favorable time for observation was between March and July. All



Figure 1. Study area: Beytepe Campus and near environment.

mammal sightings and signs were recorded and identified according to the trustful guide [19]. Active ground searches were undertaken throughout the study site. The survey was principally opportunistic and based on observations by using different techniques. Noninvasive methods such as capturing with camera traps, counting scats, footprints and other remains were used to determine medium and large size mammals like foxes. In the detection of small mammals, Sherman live capture traps were used. Individuals were released after identification of the species. Ultrasonic bat sound recorders (Pettersson D500X), BatSound and BatExplorer computer software were used to identify bat species.

## RESULTS and DISCUSSION

The climate regime in the study area is affected by steppe conditions, and the plantation of coniferous trees might have an influence on local climatic conditions. That might provide suitable conditions for several terrestrial vertebrate groups. The results from each class given respectively in below:

A total of 3 amphibian and 11 reptile species were recorded in different areas of the campus (Table 1, 2). According to the recent publishing data, number of amphibian species have been reported from Ankara and entire Turkey are 9 and 33 respectively [20,21] so far. The situation of reptiles in province and country based is 30 and 132 respectively. Therefore, the records from a limited area (Beytepe Campus) is remarkable, compared to the entire country [20,21]. Although herpetile species studies are undervalued in urbanized areas of developing countries, like Turkey, there are serious issues that should be focused immediately and efficiently. Because Turkey is about to be in a crisis from a biodiversity perspective [22]. Here, we recommend some crucial take-action plans to monitor amphibian habitat sustainability. For example, focusing on *Pelophylax ridibundus* population level might contribute to assessing aquatic life dynamics in an urban area. On the other hand, there are several studies which are still going on to understand the ecosystem services of reptiles; such as *Ablepharus kitaibelii* habitat preferences, *Emys orbicularis-Trachemys scripta* competition in terms of these action plans. Therefore, this checklist is beneficial for continuous and further studies to understand the urban wildlife in Beytepe Campus scale.

**Table 1.** The list of amphibians of Beytepe Campus.

| ORDO  | Scientific Name              | Former Synonym                  | Common name         | IUCN | BERN    | CITES |
|-------|------------------------------|---------------------------------|---------------------|------|---------|-------|
|       | <i>Bufotes variabilis</i>    | <i>Pseudepidalea variabilis</i> | Varying toad        | DD   | APP-III | -     |
| ANURA | <i>Pelophylax ridibundus</i> | <i>Rana ridibunda</i>           | Eurasian marsh frog | LC   | APP-III | -     |
|       | <i>Hyla orientalis</i>       | <i>Hyla arborea orientalis</i>  | Oriental tree frog  | LC   | APP-II  | -     |

**Table 2.** The list of reptiles of Beytepe Campus.

| ORDO       | Scientific Name                  | Former Synonym                                 | Common name                  | IUCN | BERN    | CITES  |
|------------|----------------------------------|--|------------------------------|------|---------|--------|
| TESTUDINES | <i>Testudo graeca</i>            |  | Spur-thighed tortoise        | VU   | APP-II  | APP-II |
|            | <i>Emys orbicularis</i>          |  | European pond turtle         | NT   | APP-II  | -      |
|            | <i>Trachemys scripta</i>         |  | Yellow-bellied slider turtle | LC   | APP-II  | -      |
| SQUAMATA   | <i>Mediodactylus danilewskii</i> | <i>Cyrtopodion kotschyi</i>                    | Thin-toed gecko              | LC   | APP-II  | -      |
|            | <i>Lacerta diplochondrodes</i>   | <i>Lacerta trilineata ssp. diplochondrodes</i> | Green lizard                 | -    | -       |        |
|            | <i>Ophisops elegans</i>          |  | Snake-eyed lizard            | LC   | APP-II  |        |
|            | <i>Ablepharus kitaibellii</i>    |  | Juniper skink                | LC   | APP-II  |        |
|            | <i>Xerotyphlops vermicularis</i> | <i>Typhlops vermicularis</i>                   | Eurasian blind snake         | LC   | APP-III |        |
|            | <i>Natrix natrix</i>             |  | Grass snake                  | LC   | APP-II  |        |
|            | <i>Elaphe sauromates</i>         | <i>Elaphe quatuorlineata sauromates</i>        | Eastern four-lined ratsnake  | LC   | APP-II  |        |
|            | <i>Dolichophis caspius</i>       | <i>Coluber caspius</i>                         | Large Whip Snake             | LC   | APP-III |        |

**Table 3.** The list of birds of Beytepe Campus.

| ORDO                  | Scientific Name               | Common name               | IUCN        | BERN    | CITES  | STATUS* |   |
|-----------------------|-------------------------------|---------------------------|-------------|---------|--------|---------|---|
| PODICIPEDIFOR-<br>MES | <i>Tachybaptus ruficollis</i> | Little grebe              | LC          | APP-II  | -      | R       |   |
|                       | <i>Podiceps cristatus</i>     | Great crested grebe       | LC          | APP-III | -      | R       |   |
|                       | <i>Podiceps nigricollis</i>   | Black-necked grebe        | LC          | APP-II  | -      | W       |   |
| PELECANIFOR-<br>MES   | <i>Phalacrocorax carbo</i>    | Great cormorant           | LC          | APP-III | -      | R       |   |
|                       | <i>Ixobrychus minutus</i>     | Little bittern            | LC          | APP-II  | -      | R       |   |
|                       | <i>Nycticorax nycticorax</i>  | Black-crowned night heron | LC          | APP-II  | -      | R       |   |
|                       | <i>Ardeola ralloides</i>      | Squacco heron             | LC          | APP-II  | -      | W       |   |
|                       | <i>Casmerodius albus</i>      | Great white egret         | LC          | APP-II  | -      | W       |   |
|                       | <i>Egretta garzetta</i>       | Little egret              | LC          | APP-II  | -      | R       |   |
|                       | <i>Ardea cinerea</i>          | Grey heron                | LC          | APP-III | -      | W       |   |
|                       | <i>Ardea purpurea</i>         | Purple heron              | LC          | APP-II  | -      | W       |   |
|                       | CICONIIFORMES                 | <i>Ciconia nigra</i>      | Black stork | LC      | APP-II | APP-II  | M |
|                       |                               | <i>Ciconia ciconia</i>    | White stork | LC      | APP-II | -       | M |
| ANSERIFORMES          | <i>Alopochen aegyptiacus</i>  | Egyptian goose            | LC          | APP-III | -      | V       |   |
|                       | <i>Tadorna ferruginea</i>     | Ruddy shelduck            | LC          | APP-II  | -      | R       |   |
|                       | <i>Anas crecca</i>            | Common teal               | LC          | APP-III | -      | W       |   |
|                       | <i>Anas platyrhynchos</i>     | Mallard                   | LC          | APP-III | -      | W       |   |
|                       | <i>Anas querquedula</i>       | Garganey                  | LC          | APP-III | -      | W       |   |
|                       | <i>Aythya ferina</i>          | Common pochard            | LC          | APP-II  | -      | W       |   |

**Table 3.** The list of birds of Beytepe Campus. (Continue)

| ORDO            | Scientific Name              | Common name            | IUCN | BERN    | CITES  | STATUS* |
|-----------------|------------------------------|------------------------|------|---------|--------|---------|
| ACCIPITRIFORMES | <i>Pernis apivorus</i>       | European honey buzzard | LC   | APP-III | APP-II | M       |
|                 | <i>Milvus migrans</i>        | Black kite             | LC   | APP-III | APP-II | M       |
|                 | <i>Neophron percnopterus</i> | Egyptian vulture       | EN   | APP-III | APP-II | M       |
|                 | <i>Circaetus gallicus</i>    | Short-toed snake eagle | LC   | APP-III | APP-II | M       |
|                 | <i>Circus aeruginosus</i>    | Western marsh harrier  | LC   | APP-III | APP-II | R       |
|                 | <i>Circus cyaneus</i>        | Northern harrier       | LC   | APP-III | APP-II | W       |
|                 | <i>Accipiter gentilis</i>    | Northern goshawk       | LC   | APP-III | APP-II | M       |
|                 | <i>Accipiter nisus</i>       | Sparrowhawk            | LC   | APP-III | APP-II | R       |
|                 | <i>Buteo buteo</i>           | Buzzard                | LC   | APP-III | APP-II | R       |
|                 | <i>Buteo rufinus</i>         | Long-legged buzzard    | LC   | APP-III | APP-II | R       |
| FALCONIFORMES   | <i>Falco tinnunculus</i>     | Common kestrel         | LC   | APP-II  | APP-II | R       |
|                 | <i>Falco peregrinus</i>      | Peregrine falcon       | LC   | APP-II  | APP-I  | R       |
| GALLIFORMES     | <i>Alectoris chukar</i>      | Chukar partridge       | LC   | APP-III | -      | R       |
|                 | <i>Perdix perdix</i>         | Grey partridge         | LC   | APP-III | -      | R       |
| GRUIFORMES      | <i>Gallinula chloropus</i>   | Moorhen                | LC   | APP-III | -      | R       |
|                 | <i>Fulica atra</i>           | Coot                   | LC   | APP-III | -      | W       |
| CHARADRIIFORMES | <i>Charadrius dubius</i>     | Little ringed plover   | LC   | APP-II  | -      | W       |
|                 | <i>Actitis hypoleucos</i>    | Common sandpiper       | LC   | APP-II  | -      | R       |
| COLUMBIFORMES   | <i>Columba livia</i>         | Rock pigeon            | LC   | APP-III | -      | R       |
|                 | <i>Columba palumbus</i>      | Woodpigeon             | LC   | -       | -      | W       |
|                 | <i>Streptopelia decaocto</i> | Collared dove          | LC   | APP-III | -      | R       |

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| ORDO                 | Scientific Name             | Common name                    | IUCN                | BERN    | CITES  | STATUS* |   |
|----------------------|-----------------------------|--------------------------------|---------------------|---------|--------|---------|---|
| STRIGIFORMES         | <i>Athene noctua</i>        | Little owl                     | LC                  | APP-II  | APP-II | R       |   |
|                      | <i>Asio otus</i>            | Long-eared owl                 | LC                  | APP-II  | -      | R       |   |
| CORACIIFORMES        | <i>Alcedo atthis</i>        | Kingfisher                     | LC                  | APP-II  | -      | R       |   |
|                      | <i>Merops apiaster</i>      | Bee-eater                      | LC                  | APP-III | -      | M       |   |
| BUCEROTIFORMES       | <i>Upupa epops</i>          | Hoope                          | LC                  | APP-II  | -      | N       |   |
| PICIFORMES           | <i>Dendrocopos syriacus</i> | Syrian woodpecker              | LC                  | APP-II  | -      | R       |   |
|                      | <i>Hirundo rustica</i>      | Barn swallow                   | LC                  | APP-II  | -      | N       |   |
|                      | <i>Delichon urbicum</i>     | House martin                   | LC                  | APP-II  | -      | N       |   |
|                      | <i>Anthus campestris</i>    | Twany pipit                    | LC                  | APP-II  | -      | W       |   |
|                      | <i>Anthus trivialis</i>     | Tree pipit                     | LC                  | APP-II  | -      | M       |   |
|                      | <i>Anthus pratensis</i>     | Meadow pipit                   | LC                  | APP-II  | -      | W       |   |
|                      | <i>Motacilla flava</i>      | Western yellow wagtail         | LC                  | APP-II  | -      | W       |   |
|                      | <i>Motacilla cinerea</i>    | Gray wagtail                   | LC                  | APP-II  | -      | W       |   |
|                      | <i>Motacilla alba</i>       | White wagtail                  | LC                  | APP-II  | -      | R       |   |
|                      | PASSERIFORMES               | <i>Erithacus rubecula</i>      | European robin      | LC      | APP-II | -       | R |
|                      |                             | <i>Luscinia megarynchos</i>    | Nightingale         | LC      | APP-II | -       | N |
|                      |                             | <i>Phoenicurus ochruros</i>    | Black redstart      | LC      | APP-II | -       | W |
|                      |                             | <i>Phoenicurus phoenicurus</i> | Redstart            | LC      | APP-II | -       | M |
|                      |                             | <i>Saxicola rubetra</i>        | Whinchat            | LC      | APP-II | -       | N |
|                      |                             | <i>Oenanthe isabellina</i>     | Isabelline wheather | LC      | APP-II | -       | N |
| <i>Turdus merula</i> |                             | Blackbird                      | LC                  | APP-II  | -      | R       |   |
| <i>Cettia cetti</i>  |                             | Cetti's warbler                | LC                  | APP-II  | -      | R       |   |



**Table 3.** The list of birds of Beytepe Campus. (Continue)

| ORDO                     | Scientific Name               | Common name             | IUCN    | BERN    | CITES | STATUS* |
|--------------------------|-------------------------------|-------------------------|---------|---------|-------|---------|
| PASSERIFORMES            | <i>Hippolais pallida</i>      | Olivaceous warbler      | LC      | APP-II  | -     | N       |
|                          | <i>Phylloscopus collybita</i> | Chiffchaff              | LC      | APP-II  | -     | R       |
|                          | <i>Muscicapa striata</i>      | Spotted flycatcher      | LC      | APP-II  | -     | N       |
|                          | <i>Ficedula parva</i>         | Red-breasted flycatcher | LC      | APP-II  | -     | M       |
|                          | <i>Aegithalos caudatus</i>    | Long-tailed tit         | LC      | APP-II  | -     | W       |
|                          | <i>Parus ater</i>             | Coal tit                | LC      | APP-II  | -     | R       |
|                          | <i>Parus caeruleus</i>        | Blue tit                | LC      | APP-II  | -     | R       |
|                          | <i>Parus major</i>            | Great tit               | LC      | APP-II  | -     | R       |
|                          | <i>Certhia brachydactyla</i>  | Short-toed treecreeper  | LC      | APP-II  | -     | R       |
|                          | <i>Lanius collurio</i>        | Red-backed shrike       | LC      | APP-III | -     | N       |
|                          | <i>Lanius minor</i>           | Lesser gray shrike      | LC      | APP-III | -     | M       |
|                          | <i>Lanius nubicus</i>         | Masked shrike           | LC      | APP-III | -     | M       |
|                          | <i>Garrulus glandarius</i>    | Jay                     | LC      | -       | -     | R       |
|                          | <i>Pica pica</i>              | Magpie                  | LC      | -       | -     | R       |
|                          | <i>Corvus monedula</i>        | Jackdaw                 | LC      | -       | -     | R       |
|                          | <i>Corvus frugilegus</i>      | Rook                    | LC      | -       | -     | W       |
|                          | <i>Corvus cornix</i>          | Carrion crow            | -       | -       | -     | R       |
|                          | <i>Corvus corax</i>           | Raven                   | LC      | APP-III | -     | R       |
|                          | <i>Sturnus vulgaris</i>       | Starling                | LC      | -       | -     | R       |
|                          | <i>Passer domesticus</i>      | House sparrow           | LC      | -       | -     | R       |
| <i>Passer montanus</i>   | Tree sparrow                  | LC                      | APP-III | -       | R     |         |
| <i>Fringilla coelebs</i> | Chaffinch                     | LC                      | APP-III | -       | R     |         |

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| ORDO          | Scientific Name                      | Common name           | IUCN | BERN    | CITES | STATUS* |
|---------------|--------------------------------------|-----------------------|------|---------|-------|---------|
|               | <i>Carduelis chloris</i>             | Greenfinch            | LC   | APP-II  | -     | W       |
|               | <i>Carduelis carduelis</i>           | Goldfinch             | LC   | APP-II  | -     | R       |
|               | <i>Carduelis cannabina</i>           | Linnet                | LC   | APP-II  | -     | W       |
|               | <i>Coccothraustes coccothraustes</i> | Hawfinch              | LC   | APP-II  | -     | W       |
| PASSERIFORMES | <i>Emberiza cirtrinella</i>          | Yellow hummer bunting | LC   | APP-II  | -     | W       |
|               | <i>Emberiza hortulana</i>            | Ortolan bunting       | LC   | APP-III | -     | W       |
|               | <i>Emberiza schoeniclus</i>          | Reed bunting          | LC   | APP-II  | -     | R       |
|               | <i>Emberiza melanocephala</i>        | Black-headed bunting  | LC   | APP-II  | -     | N       |
|               | <i>Miliaria calandra</i>             | Corn bunting          | LC   | APP-III | -     | N       |

\*Status N: nesting, V: vagrant, W: wintering, M: migratory/stopover

The results pointed out that a total number of 93 bird species, belonging to 15 orders. Passeriformes is the largest order and comprised 47 (50%) of the recorded bird species. The rest 47 species (50%) represented the non-passerines, which form the other bird orders (Table 3). According to recent reports, while 324 species were recorded in Ankara, the species number increased up to 478 (364 of them are resident) in Turkey [20,23]. Therefore, avifauna records from Beytepe Campus are remarkable and that's why this area can be identified as an isolated refuge within this metropolis.

The mammalian diversity recorded in the campus till 2019 is represented by 5 orders and 14 species (Table 4). Compared to Turkey (165-168 species) [24], Beytepe Campus and its near environment host 14 species that consist of 8.48% of the entire country's fauna. While 51 mammal species were recorded from Ankara Province, the records from Beytepe Campus shows us that, this

isolated refuge does not only provide suitable habitats for other vertebrate groups, but also hosts several mammal species. Most species belong to the Rodentia and Carnivora order followed by Chiroptera.

It is clear that human values, perceptions, and limited city budgets often cause many dilemmas for urban conservation biology. In addition to that, sometimes it is difficult for the general public to comprehend why this biotic diversity should be protected. People directly affect urban vegetation, and as a result urban habitat quality and quantity, due to habitats, defined by vegetation [25]. The rest of the biological community is mostly

**Table 4.** The list of mammals of Beytepe Campus.

| ORDO          | Scientific Name                  | Common name               | IUCN | BERN    | CITES   |
|---------------|----------------------------------|---------------------------|------|---------|---------|
| EULIPOTYPHILA | <i>Erinaceus concolor</i>        | Hedgehog                  | LC   | -       | -       |
|               | <i>Crocidura suaveolens</i>      | Lesser shrew              | LC   | APP-II  | -       |
| CHIROPTERA    | <i>Hypsigo savii</i>             | Savi's pipistrelle        | LC   | -       | -       |
|               | <i>Pipistrellus pipistrellus</i> | Common pipistrelle        | LC   | -       | -       |
| LAGOMORPHA    | <i>Lepus europaeus</i>           | European hare             | LC   | -       | -       |
| RODENTIA      | <i>Microtus guentheri</i>        | Mediterranean vole        | LC   | -       | -       |
|               | <i>Apodemus witherbyi</i>        | Steppe field mouse        | LC   | -       | -       |
|               | <i>Apodemus flavicollis</i>      | Yellow-necked field mouse | LC   | -       | -       |
|               | <i>Mus macedonicus</i>           | Macedonian mouse          | LC   | -       | -       |
|               | <i>Mus domesticus</i>            | House mouse               | LC   | -       | -       |
|               | <i>Rattus rattus</i>             | Black rat                 | LC   | -       | -       |
| CARNIVORA     | <i>Vulpes vulpes</i>             | Red fox                   | LC   | -       | APP-III |
|               | <i>Mustela nivalis</i>           | Least weasel              | LC   | APP-III | -       |
|               | <i>Martes foina</i>              | Stone marten              | LC   | APP-III | APP-III |

determined by this vegetation template and interactions with other species and its environment [25]. Moreover, fragmentation via constructions is also inherent in cities and might be one of the causes of biodiversity loss. Except for a few exceptional examples, terrestrial vertebrate species feel the pressure of urbanization in their life cycles via several factors, such as habitat loss or fragmentation, destruction to their nests, distanced by ecological corridors, and etc [26-28]. However, campus areas maintain relatively better sites to focus on many kinds of anthropogenic risks on terrestrial or aquatic wildlife sustainability. As a result, Beytepe Campus hosts 8.64% of Turkish herpetofauna, 19.45% of avifauna and 8.48% of mammal fauna elements. We can conc-

lude that isolated areas such as campuses are essential to maintain urban biodiversity [26].

Here, conservation status of recorded species were organized according to the IUCN, BERN, and CITES criteria in related tables (Table 1-4) [29-31]. Species that represent the class were given in Appendix:

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APPENDIX: Representative species from Beytepe Campus fauna



a *Pelophylax ridibundus*



b *Hyla orientalis*



c *Testudo graeca*



d *Ophisops elegans*



e *Phylloscopus collybita*



f *Asio otus*



g *Crocidura suaveolens*



h *Vulpes vulpes*

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