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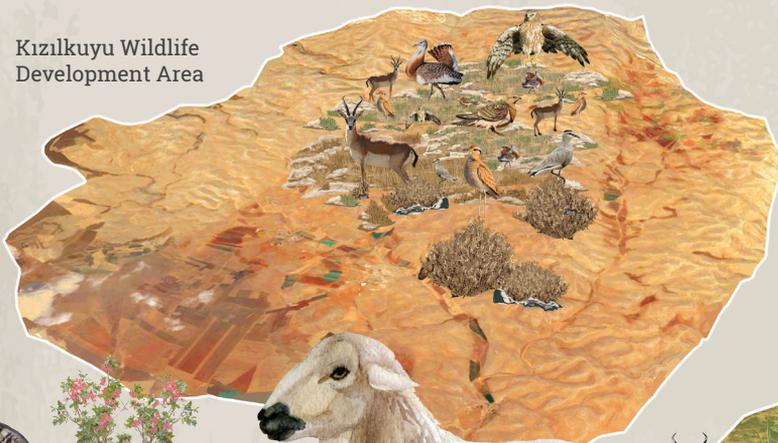


Highlights
of the Project
2019

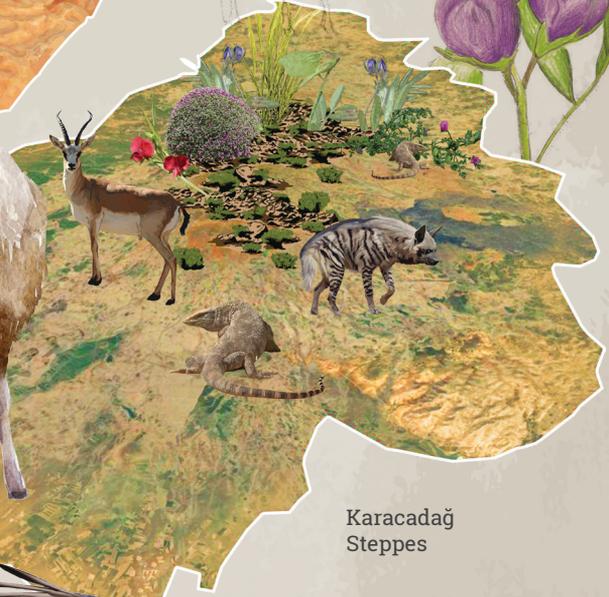


**CONSERVATION AND SUSTAINABLE MANAGEMENT OF TURKEY'S
STEPPE ECOSYSTEMS PROJECT
(GCP/TUR/061/GFF)**

Kızilkuyu Wildlife
Development Area



Tektek
Mountains



Karacadağ
Steppes



KIZILKUYU WILDLIFE DEVELOPMENT AREA SURVEYS AND ASSESSMENTS ON BIODIVERSITY, SOCIO-ECONOMIC AND SOCIO-CULTURAL ASPECTS, ONGOING GRAZING ACTIVITIES AND LIVESTOCK SITUATION

FAO is implementing this project with support from the Global Environmental Facility (GEF), the Turkish Ministry of Agriculture and Forestry's (MAF) General Directorate of Nature Conservation and National Parks (GDNCNP), the General Directorate of Plant Production (GDPP), and the General Directorate of Forestry (GDF)

The project includes surveys and assessments on:

- General landscape features
- Biodiversity
- Socio-cultural and socio-economic aspects
- Ongoing grazing activities
- Livestock situation
- Core areas, buffer zones and ecological corridors.



Kizilkuyu Wildlife Development Area



Photo: ©FAO

Aegilops, Triticum ve Hordeum

General landscape features

Main Features

- The size of the area is 20 504 ha with four structural plateaus: highlands, medium-elevated lands, lowlands and lower lands.
- The geological structure consists mainly of limestones.
- A continental climate is dominant in the area. Settlements belonging to the Early Byzantine period in rural areas and towers dating to the Roman and Byzantine periods have been identified in the Kizilkuyu region.
- The area has four different Landscape Character Types and six different Landscape Character Areas.



Photo: ©FAO



Photo: ©FAO



RECOMMENDATIONS

- The Şanlıurfa Organized Industrial Zone covers the area from the north to the south with natural streams of wastewater discharged from an industrial wastewater treatment plant
- There is a discrepancy between the data in the Kizilkuyu Wildlife Development Area (WDA) Management and Development Plan, prepared in 2010 and revised in 2015, and the CORINE data of 2012. Thus, the current management plan should be updated and revised in accordance with the latest research developments.

Biodiversity

- The vascular plants of Kizilkuyu represent 44 families, 160 genera and 252 taxa, 5 of which are endemic.
- 29 of these taxa (one is endemic) were identified as new local records.
- There are nearly 54 taxa and 38 genera belonging to 26 families of the Cryptogamae group. All Cryptogam taxa have been observed for the first time in the WDA.
- There are 109 species belonging to 12 orders and 58 families of insect groups in Kizilkuyu.
- In terms of Herpetofauna, there are 15 species including 3 species of amphibians, 7 species of lizards, 4 species of snakes and 1 species of turtle.
- There are nine species belonging to the Rodentia (Rodents), Chiroptera (Bats) and Eulipotyphla (Insectivorous) order identified as small mammals, and six species belonging to Rabbits, Predators and Gazella marica (Gazelle) of Cetartiodactyla identified as large mammals.
- Three wild relatives of Barley (*Hordeum spontaneum*, *H. bulbosum*, *H. murinum*) and two wild relatives of wheat (*Aegilops geniculata*, *A. triuncialis*) were identified in the WDA.
- The only ancestor of barley culture is *Hordeum spontaneum* (Wild barley) and is commonly found in locations around Kizilkuyu. Five species of wild relatives of Fabaceae (Legumes) family were collected.
- In terms of avifauna, there are 96 bird species belonging to 38 families, 16 species of which were newly recorded in this area.

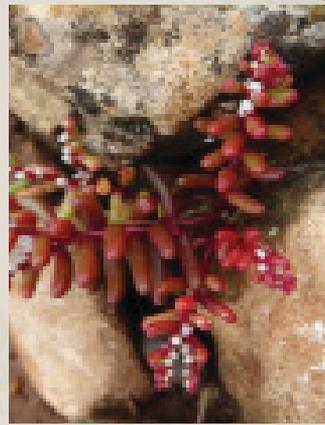


Photo: ©FAO

Sedum microcarpum



Photo: ©FAO

Achillea formosa subsp. *amanica* – New record for the field-An endemic taxa *Sedum microcarpum*



Socio-cultural and socio-economic aspects



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- Family and kinship ties in the region are still important. The economy in the Kizilkuyu WDA and its vicinity is generally based on agriculture and animal husbandry, with little trade. Animal production and animal husbandry are the main source of livelihood for many families in the Kizilkuyu WDA. The main livelihoods of families in the area may vary according to the existence of agricultural land, livestock activities, the amount of labour, seasonal agricultural labour and recycling activities in Istanbul. Livestock is not a primary source of livelihood in any residential area.
- The Kizilkuyu WDA offers potential for nature and cultural tourism due to the presence of numerous cultural heritage sites in and around the area, as well as the possibility of nature-based activities. While the food culture maintains its relative originality, the ready-made food culture is increasing due to the increase of transportation facilities and technology especially in collective events. (weddings, condolences, etc.).

- While the food culture maintains its originality, ready-made food culture is increasing due to an increase in transportation facilities and technology especially around specific events (weddings, funerals, etc.).
- Traditional activities and handicrafts remain important in Kizilkuyu. These include: stone-working, felting, saddlery, wood-carving, blacksmithing, milling, dyeing, horse-riding, etc.



Ongoing grazing activities



There are 17 524 ruminants, and 5 167 cattle and 175 culture breeds in the Kizilkuyu WDA. As of the end of 2018, a total of 350 gazelles had been observed.



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Photo: ©FAO



Photo: ©FAO

The Kizilkuyu WDA steppe pastures are poor in yield and quality. However, animals are grazed well above the carrying capacity, indicating that the pastures cannot provide adequate nourishment for ruminants, cattle and gazelles.

Grazing capacity is 1 819 BBHB, however the current level is 4 561 grazing livestock units (BBHB), indicating a level of over-grazing 2.5 times above carrying capacity.

The daily forage requirement of an animal (dry grass/hay) is estimated as 12.5 kg x 365 days x 4 561 BBHB = 20 809 tonnes.

Table 1. Pasture area needed by animals in the Kizilkuyu WDA (da)

Kizilkuyu WDA pasture area	94 583 da
Kizilkuyu WDA pasture areas needed by animals (52 da x 4561 BBHB)	237 172 da
Required pasture area	142 589 da



Livestock situation

Şanlıurfa province accounts for a significant share of the animal presence in Turkey with 2 million sheep and goats and 300 000 cattle. Between 2007 and 2017, the number of bovine animals increased approximately 2.25 times and the number of ruminants increased 1.2 times.



Photo: ©FAO



Photo: ©FAO

Ruminant and cattle breeding in the region is carried out through traditional methods based on pasture management. The animals are grazed in the pasture from spring to late autumn, and in winter they are fed with rations consisting mostly of barley and straw. Cattle breeding in the field is divided into three methods: fattening cattle for meat production, dairy cattle breeding for milk production and traditional cattle breeding to meet their own needs.



It is a common practice to rent pastures as wintering areas or barracks in the region. There are currently 46 pastures rented out as wintering areas in Şanlıurfa province.

When livestock activities in the Kizilkuyu WDA are evaluated in terms of gazelles, which have a significant resource value for the WDA, sheep breeding based on pasture represents significant competition for grazing, while cattle breeding does not.



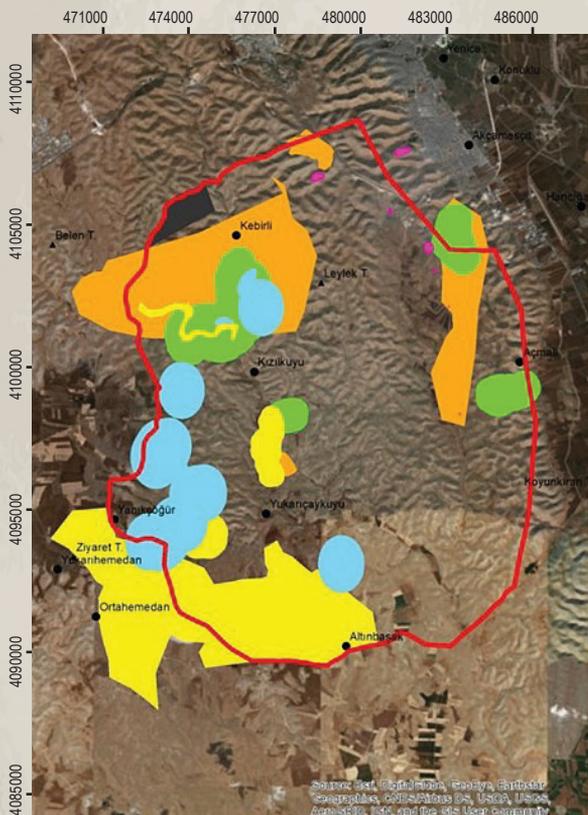
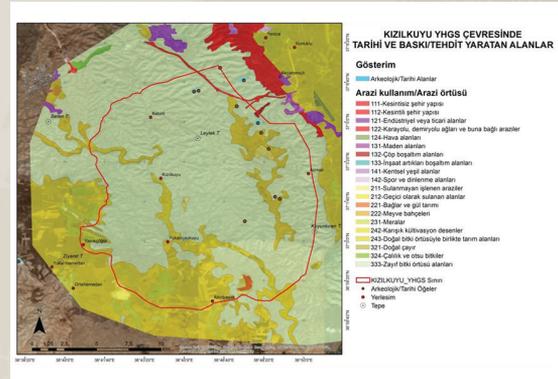
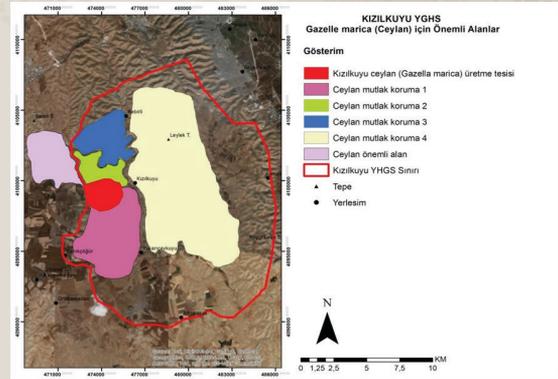
Core areas, buffer zones and ecological corridors

Land uses beyond the boundaries of the project sites that are important in terms of biodiversity, ecosystem representation, archaeological/historical elements, and which are the source of pressure or threats, are taken into consideration.

The buffer zones were then created by overlying all the data in the ArcGIS environment. The Şanlıurfa Organized Industrial Zone, which is located to the northwest of the Kizilkuyu WDA, has expanded approximately 2.5 km² within the WDA border.

No buffer zone has therefore been established in the area where the Organized Industrial Zone is located. It would thus be appropriate to revise the boundaries of the Kizilkuyu WDA again taking into consideration the future situation of the Organized Industrial Zone.

After revising the borders of the WDA, the buffer zone study should be performed again, if deemed necessary.



KIZILKUYU WDA IMPORTANT BIODIVERSITY and HISTORICAL SITES (I)

- Herpetofauna Sites
- Bird Sites
- Plant sites
- Bugs Sites
- Archaeological / Historical Sites
- OSB
- Kizilkuyu WDA Border
- Hill
- Settlement



KARACADAĞ MOUNTAINS NATIONAL PARK SURVEYS AND ASSESSMENTS ON BIODIVERSITY, SOCIO- ECONOMIC AND SOCIO-CULTURAL ASPECTS, ONGOING GRAZING ACTIVITIES AND LIVESTOCK SITUATION

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General landscape features

Main Results

- Karacadag is an extinct volcanic mountain spread across an oval-shaped area measuring 120 km in diameter and approximately 2000 m thick.
- The landscape consists mainly of poor vegetation cover area.
- A continental climate is dominant in the area, which is generally consists of Basaltic Soil Group with a few rocky outcrops.
- The region has been inhabited since the Chalcolithic Age (7000 BC).
- The area has four different Landscape Character Types and six different Landscape Character Areas.



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Photo: ©FAO



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RECOMMENDATIONS

- The vegetative process is unable to complete its lifecycle due to early grazing and overgrazing in the area.
- For the maintenance of plant diversity, certain regions should be protected and overgrazing should not be permitted in these regions.



Photo: ©FAO



Biodiversity

- In terms of vegetation, Karacadag is located in the Iran-Turanian phytogeographical region. The Iran-Turanian steppes are classified as low mountain steppes depending on the elevation and as malacophile and tragantic steppes in terms of physiological features.
- According to the EUNIS habitat types classification, Karacadag falls within the Iran-Anatolian steppe habitat class, classified as an E1.2E habitat.
- The vascular plants of Karacadag represent 44 families, 199 genera and 332 taxa, 15 of which are endemic. 41 taxa (including 1 endemic) were identified as new local records.
- There are nearly 55 taxa and 34 genera belonging to 55 families of the Cryptogamae group. All Cryptogam taxa have been observed for the first time in the Karacadag Steppes.
- There are 99 species belonging to 15 orders and 53 families of insect groups in the Karacadag.



Photo: ©FAO



Photo: ©FAO



- In terms of Herpetofauna, there are 16 species including 3 species of amphibians, 8 species of lizards, 3 species of snakes and 2 species of turtle.
- In terms of Avifauna, there are 84 bird species belonging to 38 families, 21 of which are included newly recorded in this area.
- There are 8 species belonging to the Rodentia (Rodents) order identified as small mammals and 6 species belonging to Rabbits, Predators and Ungulates identified as large mammals in the Karacadag steppes.
- The Karacadag Steppe is a particularly important area in terms of Karacadag rice, with its related traditional knowledge.
- The Karacadag Steppe accommodates populations of wild siyez (*Triticum diccoccoides*) and wild gernik (*Triticum boeoticum*) species, which are recognized as the ancestors of wheat and genitor in the emergence of modern wheat.



Socio-cultural and socio-economic aspects



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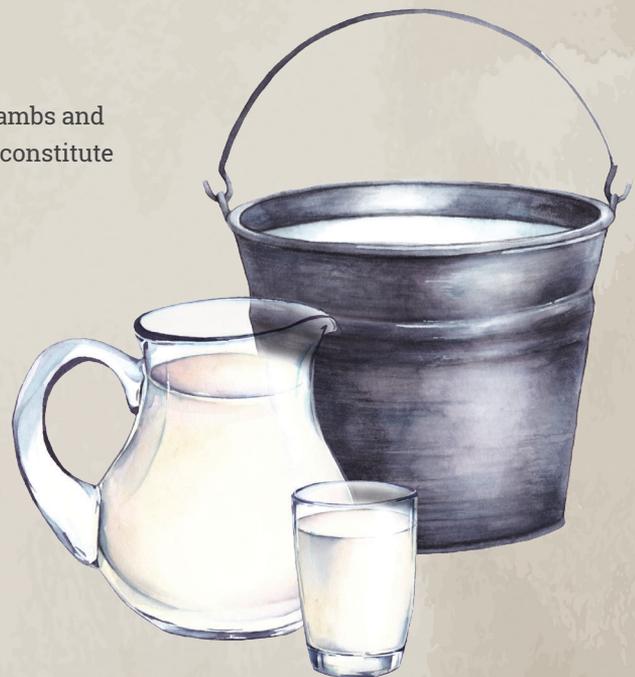
The villages maintain tribal relations with many linkages between them. Local education comprises primary and secondary schools. The culinary culture in the region consists mainly of meat and grain. Nomadic animal husbandry is decreasing along with the number of nomads. However, Karacadag remains an important area for nomadic livestock breeding, with the highlands among the few areas used by nomadic tribes as pastures.

Local village economies are mostly based on agriculture and animal husbandry. However, animal husbandry is decreasing gradually in some villages due to the increase in forage prices. In settlements in the Karacadag region, wheat and barley are the most cultivated products followed by lentils. The proportion of irrigated farming in the area is very small. However, paddy rice is cultivated in the Karacadag region.

The livelihoods of nomads depend mainly on the sale of live lambs and sheep, and the wool, milk, cheese and fat obtained from them constitute an important source of income.

Potential types of tourism prominent in the project area include:

- rural ecotourism (bird watching, wildlife monitoring, nature hiking, photo safari)
- cultural tourism
- agro-tourism
- youth and sports tourism.



Ongoing grazing activities

According to 2019 data from the Şanlıurfa Provincial Directorate of Agriculture and Forestry, there are 255 676 ruminants, 30 569 cattle and 195 culture breeds in 27 settlements within the Karacadag pilot study area.



Photo: ©FAO



Photo: ©FAO



Photo: ©FAO

Rangeland in the area covers 446 961 ha. Karacadag steppe pastures are grazed seven to eight times above grazing capacity in terms of animals, and the steppes are poor in terms of yield and quality. Animals are thus unable to acquire sufficient good quality feed at the project site.

The steppe pastures provide a total of 43 754 tonnes of roughage. The forage requirement of existing animals in the project area is calculated to be 187 276 tonnes.



Livestock situation

There are 255 676 ruminants, 30 569 cattle and 195 culture breeds in the villages within the Karacadag pilot study area.

In terms of animal husbandry, the Karacadag region differs significantly from the other two regions. First, unlike Kizilkuyu WDA and TekTek Mountains NP, a large proportion of the cattle raised in Karacadag (about 72%) consists of native and native hybrids.

The second apparent difference is the widespread Zom sheep breed, which contributes significantly to native gene resources. This native breed is highly adapted to regional conditions of the region, and therefore can be considered a breed for protection.



Photo: ©FAO

Core areas, buffer zones and ecological corridors



Photo: ©FAO

Five conservation priority areas were identified in the Karacadağ: KÖA1 (5 891.77 ha), KÖA2 (60 958 ha), KÖA3 (1 722.81 ha), KÖA4 (2 415.10 ha) and KÖA5 (2 196.27 ha). The buffer zones identified for the Karacadağ Steppes were determined based on the evaluations of experts in the field survey and the literature data. Equal weight was given to both criteria. Land uses beyond the boundaries of the project sites that are important in terms of biodiversity, ecosystem representation, archaeological/historical elements, and which are the source of pressure or threats, are taken into consideration.

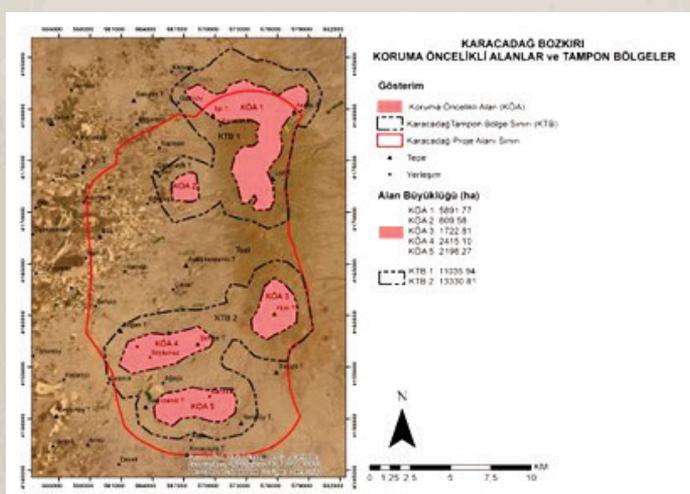


Figure 3. Protection priority and buffer areas in the Karacadağ Steppes and their surroundings

Table 5. Spatial data for conservation priority areas and buffer zones

Name of the Region	Conservation Priority Area (CPA) (ha)					Buffer Zone (ha)		Total Area (ha)		
	CPA-1	CPA-2	CPA-3	CPA-4	CPA-5	TB-1	TB-2	CPA (ha)	Buffer Zone (ha)	Other Area (ha)
Karacadağ Steppes	5 891.77	609.58	1 722.81	2 415.10	2 196.27	11 035.94	13 330.81	12 835.53	24 366.75	23 595.72

TEKTEK MOUNTAINS NATIONAL PARK SURVEYS AND ASSESSMENTS ON BIODIVERSITY, SOCIO- ECONOMIC AND SOCIO-CULTURAL ASPECTS, ONGOING GRAZING ACTIVITIES AND LIVESTOCK SITUATION

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General landscape features

Main Features

- The size of the area is 19 335 ha characterized by a low plateau surrounded by the Harran plains to the west and the Ceylanpınar plains to the east.
- The geological structure consists mainly of limestone.
- Approximately 80% of the TekTek Mountains National Park area is meadow pasture; 13% is agricultural land. The TekTek Mountains Region as well as its surroundings is rich in terms of historical and cultural heritage.
- The discovery of Karahan Hill, which has been dated to the same period and is the same size as Göbekli Hill, has renewed the importance of the region.
- The area has two Landscape Character Types and two Landscape Character Areas



Photo: ©FAO

RECOMMENDATIONS

- The main threat to the area is poor coordination and cooperation among local institutions and organizations related to land management and protection.
- The historical places and assets in the National Park (NP) should be managed through an integrated and collaborative management approach, and the current management plan should be updated and revised according to the latest findings.
- The ancient settlements of Soğmatar and Şuayb City within the borders of the NP should be managed and protected to professional standards.
- The information boards and signage in the NP should be well designed and installed in necessary places for visitors.



Photo: ©FAO

BIODIVERSITY

Main Features

- In terms of vegetation, the TekTek Mountains NP is located in the Iran-Turanian phytogeographical region. The Iran-Turanian steppes are classified as low mountain steppes depending on the elevation and as malacophile and tragantic steppes in terms of physiological features.
- According to the EUNIS habitat types classification, the NP falls within the Iran-Anatolian steppe habitat class, classified as an E1.2E habitat.
- The vascular plants of the NP represent 44 families, 172 genera and 254 taxa, 10 of which were identified as new locational records. There are nearly 70 taxa and 47 genera belonging to 25 families of all Cryptogamae group.
- All Cryptogam taxa have been observed for the first time in the NP. There are 108 species belonging to 13 orders and 44 families of insects groups. In terms of Herpetofauna, there are 14 species including 3 species of amphibians, 7 species of lizards, 3 species of snakes and 1 species of turtle.
- In terms of avifauna, there are 85 bird species belonging to 33 families, 12 of which are newly recorded in this area.
- There are 14 species belonging to the Rodentia (Rodents), Chiroptera (Bats) and Eulipotyphla (Insectivorous) order identified as small mammals and 5 species belonging to Rabbits and Predators identified as large mammals.
- One wild relative of barley and four wild relatives of wheat (*T. diccoccoides*, *A. triuncialis*, *A. biuncialis*, *A. columnaris*) have been identified in the NP. Wild crops recognized as the primary ancestors of chickpea (*Cicer pinnatifidum*), pea (*Pisum sativum*), oriental wild lentil (*Lens culinaris* subsp. *orientalis*) and lentil (*Lathyrus cicero* subsp. *orientalis*) belonging to Fabaceae family have also observed in the TekTek Mountains.



Photo: ©FAO



Photo: ©FAO



Photo: ©FAO



Socio-cultural and socio-economic aspects

The inventory process for socio-economic and socio-cultural values focused on socio-cultural and socio-economic structures, recreation and tourism, alternative/additional income sources and interest groups.



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Photo: ©FAO



Photo: ©FAO



Photo: ©FAO

Family and kinship ties remain important in the region and are rooted in a longstanding tribal system, giving rise to a living traditional culture.

The economy in the region is based on agriculture and livestock, with limited trade. Basic livelihoods of families vary according to the amount of agricultural land assets and labour resources. The main sources of livelihood are crop production (70%) and seasonal agricultural labour (30%).

The northern part of the National Park is renowned for its natural and cultural richness where visitors can participate in activities such as nature walks, photo safaris, painting, landscape viewing, camping, discovering flora and fauna, and visiting cultural, historical and archaeological sites.



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Photo: ©FAO



Photo: ©FAO

Ongoing grazing activities

10 696 tonnes of feed is produced in the TekTek Mountains. The feed requirement of animals in this area is 5 379 tonnes, resulting in an excess of 5 317 tonnes.

There are 10 771 ruminants and 205 cattle across 7 settlements within the park. A pasture area of 105 463 ha is jointly used by cattle, ruminants and wild animals. Current grazing is below the grazing capacity of the NP.

Other pasture plants exist in larger quantities than cereals and legumes in the grazing area. This is not a desirable situation, as animals graze primarily on good quality plants.



Livestock situation



Photo: ©FAO

Ruminant and cattle breeding in the region are carried through traditional methods based on pasture management. The animals are grazed in the pasture from spring to late autumn, and in winter are fed with rations consisting mostly of barley and straw. Cattle breeding in the field is divided into three methods: fattening cattle for meat production, dairy cattle breeding for milk production and traditional cattle breeding to meet their own needs.

It is a common practice to rent pastures as wintering areas or barracks in the region. There are currently 46 pastures rented out as wintering areas in Şanlıurfa province.

There are a total of 11 000 small cattle and 200 cattle in villages located in the TekTek Mountains National Park. Almost all the small ruminants are native breeds, while 75% of the cattle are culture breeds and hybrids.

Core areas, buffer zones and ecological corridors

Ecological and social pressures and threats were taken into consideration during the creation of the buffer zone in the TekTek Mountains NP, bearing in mind limitations on time and access to data.

Table 2. Criteria used in determining buffer zone

Criteria		High Sensitivity	Low Sensitivity
Ecologic	Slope	Steep slope > 10%	Plain or slight steep areas
	Aspect	Southern and western aspects	Northern and eastern aspects
	Available species	Important flora and fauna areas	General species and exotic species
	land use / land cover in vicinities	Steppe vegetation	Open areas
	Surface water	Spring waters, streams	
Cultural/ Social	Historical / archaeological sites	Registered and unregistered archaeological sites	
Pressure/ threats	Structured Areas (Land use / land cover in the vicinity)	Urban Texture, Industry, Trade and Transportation Areas, Mine, Garbage Discharge and Construction Areas	

Table 3. Spatial data for the TekTek Mountains NP and buffer zone

Name	Area (ha)	Buffer zone (ha)
Tek Tek Mountains NP	19 335	13 732

Table 4. Spatial data for the conservation priority areas and buffer zones

Name of the Region	Conservation Priority Area (CPA) (ha)	Buffer Zone (ha)
Tek Tek Mountains NP	National Park Area (ha)	Buffer Zone (ha)
	19 335	13 732

Figure 1. Important biodiversity and historical areas in the TekTek Mountains NP

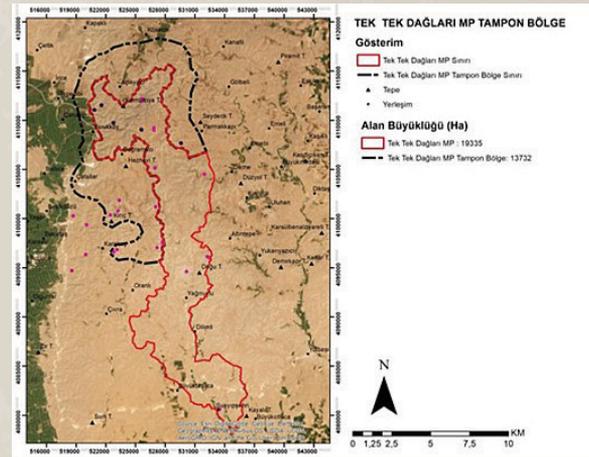
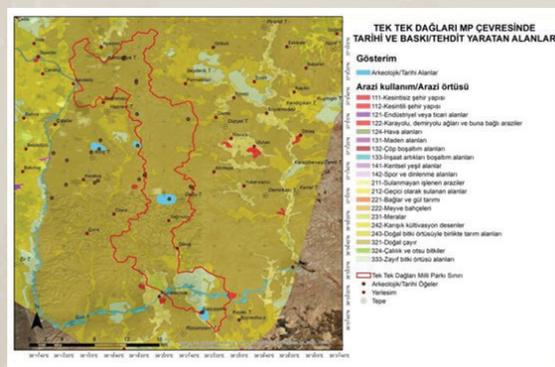
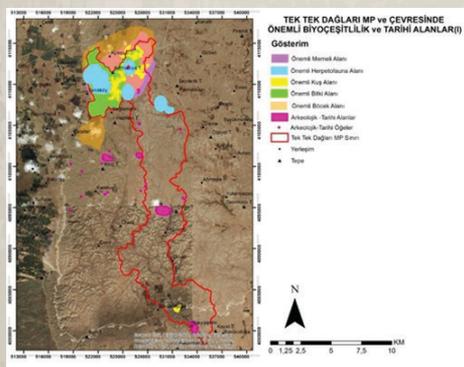


Figure 2. Spatial data for the conservation priority areas and buffer zones





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