

The grasslands and steppes covering 40% of the world (except for Antarctica and Greenland) are among the most important ecosystems for the continuation of life:

- Basic food sources such as wheat, barley and oats that feed the world grow in steppes.
- Animal husbandry is largely dependent on steppes. Approximately 1 billion people living under the poverty line earn a livelihood from ovine and bovine breeding. Moreover, 27% of milk production and 23% of meat production come solely from steppes.



- Thirty-three percent of the carbon on earth is sequestered in steppes.
- Steppes account for the most important ecosystems for herbivorous mammals, butterflies, and plants.

Gazella marica
(Arabian sand gazelle)

Erinaceus concolor
(Southern White-breasted hedgehog)

Achillea formosa
subsp. *amanica*
(Yarrow)

Conservation and Sustainable Management of Turkey's Steppe Ecosystems Project

Conservation and Sustainable Management of Turkey's Steppe Ecosystems Project is implemented by the United Nations Food and Agriculture Organization (FAO), Ministry of Agriculture and Forestry General Directorate of Nature Conservation and National Parks (GDNCNP), General Directorate of Plant Production (GDPP), and General Directorate of Forestry (GDF) with the financial support of Global Environment Facility (GEF). The works within the scope of enabling environment established for the effective conservation of steppe biodiversity across large landscapes are carried out by the Nature Conservation Centre (DKM).



"Conservation and Sustainable Management of Turkey's Steppe Ecosystems Project"

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TURKEY'S UNIQUE ECOSYSTEM STEPPES



This brochure was prepared within the scope of Conservation and Sustainable Management of Turkey's Steppe Ecosystems Project by Nature Conservation Centre.

For the details

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General Directorate of Nature Conservation and National Parks
www.tarimorman.gov.tr/DKMP

General Directorate of Plant Production
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Steppes of the World

Steppes are classified under grasslands, one of the main biogeographical groups in the world. Grasslands are divided into the following two sub-groups according to their region: Tropical grasslands and temperate grasslands. Tropical grasslands are hot all year round, and there is no winter cold. They have two distinct seasons, namely arid and rainy. Savannahs in Africa, which we know from documentaries, where golden grass shines, are examples of this group.



Ammoperdix griseogularis
(See-see partridge)

Sedum sp.

Another less known feature of the steppes is that they host rare plant species more than other ecosystems. The ecosystems with highest plant species richness in Turkey, including those with the highest number of plant species that are not found anywhere else in the world (namely the endemics), are steppe ecosystems. Although the widespread belief is that forests and wetlands are richer, almost 80% of the endemic plant species in our country are distributed in steppes. Contrary to the popular opinion, steppes are actually unique ecosystems that host species of diverse colors.

Karacadağ Steppes

Steppes are natural areas dominated by herbaceous plants. Trees may also be seen in the steppes, but they are either old remnant trees or small drought-resistant shrubs. The main feature of the endless steppes that extend from one end of Europe to the east of China is the low rainfall.

Steppes represent ecosystems that are rich in biodiversity and rare species.

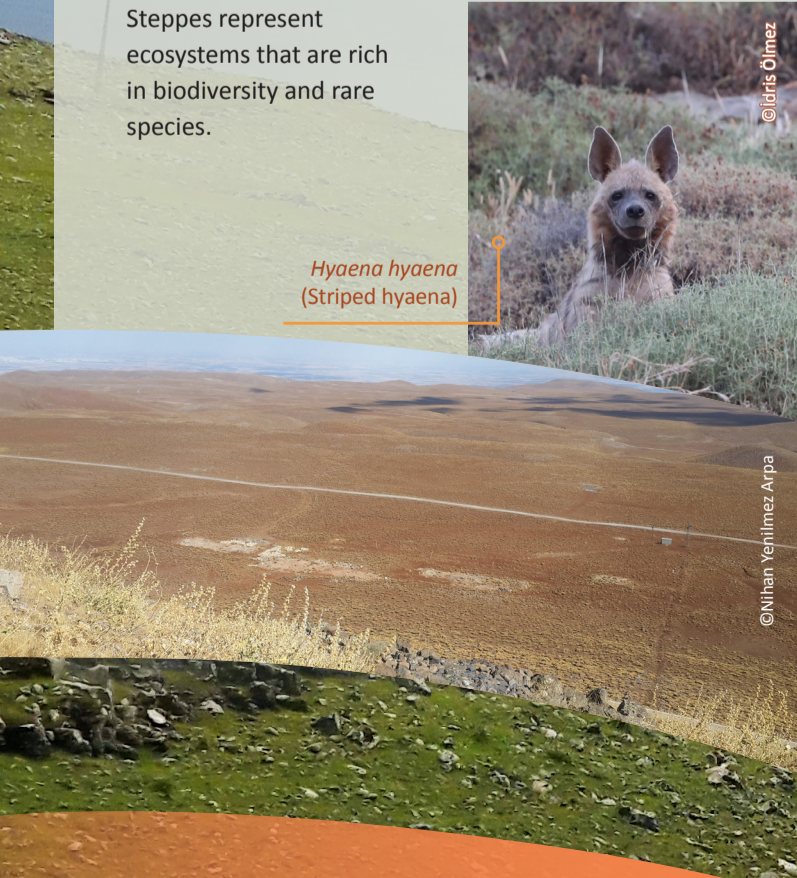


Hyaena hyaena
(Striped hyaena)

Shorter herbaceous plants predominate in temperate grasslands, which receive about 250-600 mm of precipitation annually. Steppes in Central Anatolia and Ankara fall in this group with 400 mm of annual precipitation. In temperate grasslands, there are two different phases, namely dormancy and growth. In dormancy, plant growth stops due to cold.



Tek Tek Mountains National Park





Steppes of Turkey

The steppes of Central Anatolia form the westernmost part of a larger body of steppes which covers a large area in Central Asia. Anatolian steppes are different from Asian steppes, as they are transformed from clearing black pine and oak forests. While grasses (Poaceae) dominate the steppes of Asia, where continental climate prevails, steppes in our country are under the influence of the Mediterranean climate. These steppes are predominated by broad and soft-leaved herbaceous species. These broad-leaved herbaceous plants are thought to have been derived from grassy steppes with deeper topsoil, in relatively more humid conditions and as a result of overgrazing. Grassy steppes are predominated by Poaceae and they are now rare.



Mountainous steppes that encompass Eastern Anatolia and Southeastern Anatolia represent humid grasslands on the slopes where groundwater is not decisive or on softer slopes. Humid grasslands are the most common vegetation type between 1,800-2,700 m of altitude, other than forests and agricultural fields. The main species that characterize the Eastern Anatolian mountainous steppes in addition to grasses (Poaceae) are as follows: Syrian acanthus (*Acanthus dioscoridis* var. *perringii*), alpine aster (*Aster alpinus*), Turkish helichrysum (*Helichrysum plicatum* subsp. *plicatum*), gromwell leaved forgetmenot (*Myosotis lithospermifolia*), Caucasian lady's-mantle (*Alchemilla caucasica*), Mountain chamomile (*Anthemis cretica*), mossy draba (*Draba bruniifolia* subsp. *bruniifolia*), gentian (*Gentiana* spp.), and Anatolian sandwort (*Minuartia anatolica*).



Turkey's steppes, of all natural ecosystems, account for the most threatened ecosystems because of human activities. One of the threats is the destruction and irreversible loss of steppe habitats.



Karacadağ Steppes

Ovis gmelinii anatolica
(Anatolian mouflon)



Karacadağ Steppes

With the increased mechanization in agricultural activities, destruction in the lowland steppes has been facilitated. Additionally, steppes are lost because of investments, mining activities, energy investments, afforestation practices in unsuitable areas and urbanization pressure.



Acantholimon acerosum
subsp. *acerosum* var. *acerosum*

Other steppe types are thorny steppes with dominantly thorny cushion forming species such as milkvetch (*Astragalus* spp.) and halophytic steppes predominated by halophyte species of *Amaranthus* and *Acantholimon* genera.

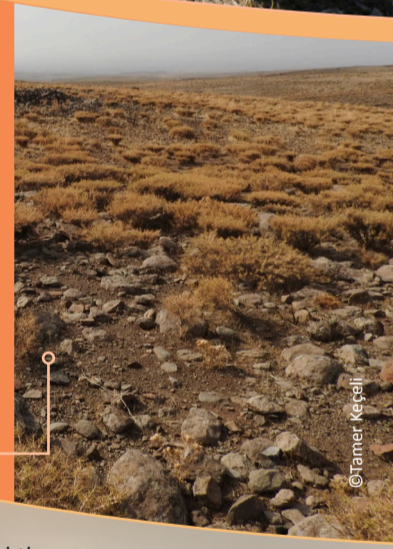
The steppes in our country have a unique animal diversity due to their arid and semi-arid habitats. Important and attractive mammals such as the Arabian sand gazelle (*Gazella marica*), mountain gazelle (*Gazella gazella*), Anatolian mouflon (*Ovis gmelinii anatolica*), striped hyaena (*Hyaena hyaena*), grey wolf (*Canis lupus*), Asia Minor ground squirrel (*Spermophilus xanthoprimum*), and Euphrates jerboa (*Allactaga euphratica*) live in the steppes of our country.



Otis tarda
(Great bustard)

The great bustard (*Otis tarda*), little bustard (*Tetrax tetrax*), cream-colored cursor (*Cursorius cursor*), steppe eagle (*Aquila nipalensis*), lesser kestrel (*Falco naumanni*), eastern imperial eagle (*Aquila heliaca*), sociable lapwing (*Vanellus gregarius*), and black-bellied sandgrouse (*Pterocles orientalis*) are important bird species of the steppes.

One of the important factors destroying the natural vegetation cover of the steppes is overgrazing. Today, the steppes remain in stony or rocky areas as islets that contain the remains of natural vegetation between agricultural fields and grazing areas.



Karacadağ Steppes

Karacadağ Steppes

Steppes of Turkey are found mainly in Central Anatolia, Eastern Anatolia, and Southeastern Anatolia. Although steppes in our country appear to be uniform, they also have scattered trees and bushes. According to ecological characteristics, grasses (Poaceae) and cushion forming species such as milkvetch are dominant in our steppes. Central Anatolia is rich in flora. The amaranth (Amaranthaceae [sin.: Chenopodiaceae]), leadwort (Plumbaginaceae), legume (Fabaceae), mint (Lamiaceae), figwort (Scrophulariaceae), carnation (Caryophyllaceae), mustard (Brassicaceae), borage (Boraginaceae) and rockroses (Cistaceae) are the most abundant families in the region.

Anthemis cretica
(Mountain chamomile)



Stellagama stellio
(Rough-tailed rock agama)

Testudo graeca
(Common tortoise)

The steppes, which are also rich in reptiles, are home to many species of turtles, snakes, and lizards. Among the prominent reptilian species are common tortoise (*Testudo graeca*), rough-tailed rock agama (*Stellagama stellio*), steppe agama (*Trapelus lessonae*), desert monitor (*Varanus griseus*), large whip snake (*Dolichophis jugularis*), and Levantine viper (*Macrovipera lebetina*).

Other factors that threaten the steppe ecosystems and the species that they host include illegal hunting, species trafficking, illegal collection of plants and intensive agricultural activities.



Karacadağ Steppes



The steppes are also important for the butterfly species, as 33 of the 65 Prime Butterfly Areas (PBAs) identified at the national scale exist in steppe ecosystems. The Levantine silver-line (*Cigaritis cilissa*), sooty orange tip (*Zegris eupheme*), Caspian Satyr (*Satyrus parthicus*), false Apollo (*Archon apollinus*), eastern dappled white (*Euchloe ausonia*), Persian skipper (*Spialia phlooidis*) and large salmon Arab (*Colotis fausta*) are some of the butterfly species seen in our country's steppes.



Euchloe ausonia
(Eastern dappled white)

The lack of awareness about the importance of steppe species in our country, and conservation efforts for these species being limited to protected areas are two other factors that negatively affect the biological diversity of the steppes. To mitigate these threats, works on conservation and sustainable management of the steppes are becoming more and more crucial.



Cicer pinnatifidum