



REPUBLIC OF TURKEY
MINISTRY OF FORESTRY
GENERAL DIRECTORATE OF
NATIONAL PARKS AND GAME-WILDLIFE



Game and Wildlife in Turkey

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A WORD BY THE MINISTER

Together with the forests of our country, Ministry of Forestry is also responsible for the management of game and wildlife which is one of the most important natural resources. While forest areas alone cover 27% of the total land surface of the country, together with the forest areas, wildlife areas accounts for 90% of the country, totalling to 70 million hectares of land.

Forests, rangelands, wetlands, and similar wilderness areas are the natural areas where wildlife feeds, breeds, and shelters. These areas contain renewable natural resources. However, perpetuity of these resources is only possible with the establishment of conservation and exploitation balance.

Rapid population increase particularly in developing countries in the last century created more demand for food and for agricultural areas. Transformation of wilderness areas into agricultural land, industrialization, agricultural mechanization, excessive use of pesticides in agriculture, and unregulated excessive hunting had a negative impact on wildlife habitats. For these reasons, the magnitude of degradation in wildlife habitats has reached to dangerous levels and, thus, the populations of many plant and animal species were lost or endangered.

Human beings finally realised that depletion of natural resources puts the survival of mankind in jeopardy. Consequently, new terms and concepts such as sustainable natural resource management, participatory management, world's natural heritage, globalisation were created and international conventions have been prepared and signed for conservation and improvement of world's natural resources as well as for strengthening the roots of society at national, regional, and international level through public awareness campaigns on these issues. Turkey has ratified and became a party to many of these conventions.

As the Ministry of Forestry, conservation, improvement, and sustainable management of our forests as well as our wildlife resources are our essential responsibilities not only to our nation but also to the entire world.

In this context, conservation has an important role in sustainable management of natural resources. The basic principle of conservation is to bring necessary restrictions to the exploitation of natural resources. However, I do not believe that the restriction measures alone will be a solution for successful conservation. For successful implementation of conservation measures, social and economic measures such as reduction of rural poverty, participation, organizational development, education and public awareness programs have to be taken simultaneously. The work in Ministry of Forestry is planned and implemented with this policy.

The rich biodiversity of Turkey provides us a lot of ecological, economical, cultural, and spiritual opportunities. The global decline of biodiversity is now recognized as one of the most serious environmental issue facing humanity. This brochure which outlines the present situation in wildlife and gives information on our work and policies for conservation and improvement of wildlife resources as part of biodiversity conservation is expected to fill an important gap.

I would like to thank all who contributed to this work.



Prof. Dr. Nami ÇAĞAN
Forest Minister



Preface

Turkey has a very rich biodiversity because of its geographical location on the world and also because of its geological and morphological structure. This diversity is also valid for game and wildlife. More than 80% of plant and animal species of the European Continent are represented in Turkey.

It is not possible to measure the real economical value of the natural resources. A species which do not have a value today may be the raw material of a medicine in the future. Breeding stocks of domesticated plants and animals are essentially provided from the wild species. Because of this reason, the natural resources are the common heritage of not only the country also of the entire world.

The game and wildlife in Turkey is being managed by General Directorate of National Parks and Game-Wildlife under the Ministry of Forestry. Sustainability is our essential principle for the management of game and wildlife. Sustainable management, therefore, is only possible with the establishment of protection and exploitation balance.

Wildlife is a dynamic co-existence with its own rules. The competition between the species of flora and fauna establishes the natural balance in this co-existence. Mankind creates unfair competition and upsets this natural balance. Thus, wildlife management plans aim to reduce human influence to a minimum in a wildlife habitat to sustain wildness and remove the surplus animals above the ecosystem carrying capacity for exploitation purposes.

Moving towards this goal, the basic issue which we definitely insist on is the protection concept. Protection work should be based on the establishment of protected areas for the populations of rare or endangered species. It is obvious that the protection status are definitely needed but they are not sufficient alone. In order to be able to put the protection status into practice, an efficient inspection and control mechanism has to be developed and these measures have to be supported by relevant social and economic measures.

This brochure has been prepared for providing information on the present state of wildlife in Turkey and aims to summarize our work progress on wildlife management according to the policies and approaches mentioned above.

I would like to thank all who contributed to the preparation of this Brochure.



A. Hüsrev ÖZKARA
Director General



Physical Map of Turkey

Game and Wildlife in Turkey

THE COUNTRY

Turkey, which is located in an area where the Asian, European, and African continents come very close to each other, is surrounded by Georgia, Armenia, Azerbaijan, and Iran to the east, Bulgaria and Greece to the west and Syria and Iraq to the south. Turkey's coastlines, which encompass her on three sides with the Mediterranean Sea to the south, the Black Sea to the north and the Aegean Sea to the west, make the country not only a neighbour to the nearby regions, but to entire world as well.

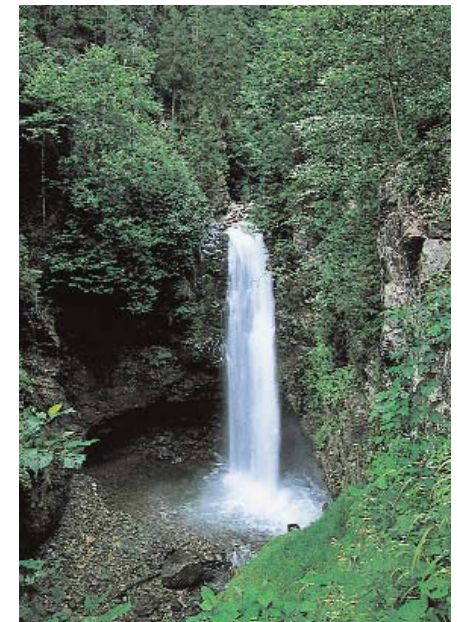
The area of the Turkey is 814 578 square kilometre. A total of 3% of the country area is located in Thrace on the European continent. The remaining 97%, which is located on the Asian continent, is called Anatolia. The population of Turkey is approximately 65 million of which 65.1% live in urban areas according to the 1997 Population Census.

GEOGRAPHY AND CLIMATE

Turkey is divided into seven major geographical regions by taking into consideration the factors such as climate, topography and natural plant cover: the Mediterranean Region, Aegean Region, Marmara Region, Black Sea Region, Central Anatolia Region, Eastern Anatolia Region and Southeastern Anatolia Region.

The mountain ranges in Turkey generally extend parallel to the coast to the north and to the south. The mountains to the north are the North Anatolia Mountains and to the south are the Taurus Mountains. These mountain ranges are separated from each other by large plains in the central sections of Anatolia. The mountain ranges are concentrated in the eastern sections of Turkey and form high peaks.

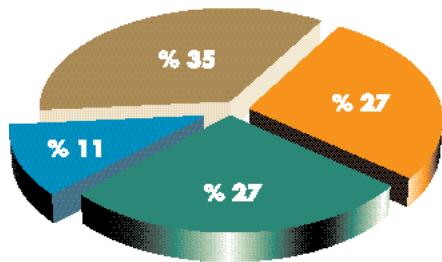
In spite of Turkey being located in a moderate climate belt, due to the fact that the mountains are parallel to the coast and diversification of the surface morphology, significant differences in climate are observed among the regions. The coastal regions have moderate maritime climate, while the internal regions surrounded by the mountains have a continental climate. The Mediterranean Region which is under the influence of the Mediterranean climate, has hot and arid summers and mild and rainy winters.





Land Use and Major Ecosystems of Turkey

35% of Turkey's total surface area is arable land. Forests cover about 27% of the total surface area of which almost 50% are degraded. The pasture and rangeland areas account for 27% of the total area. The remaining 11% of the total area is for settlements.



Turkey consists of three different bio-geographic regions, each with its own endemic species and natural ecosystems. The Black Sea Region is characterized by temperate deciduous forest and alpine meadow ecosystems, Central and Eastern Anatolia Region is dominated by steppe grasslands and the Mediterranean Region is characterized by its specific flora cover.

FORESTS :

A Spectacular Union of Landscape, Culture, and Biodiversity

Mixed temperate rain forest and high alpine meadows of North East Black Sea region at Artvin Province have some of the spectacular old-growth forests. The Taurus Mountains in the Mediterranean Region, which includes the world's largest remaining Cypress (*Cupressus sempervirens*) and Lebanon Cedar (*Cedrus libani*) forests bear very high endemism ratio. Two of the globally threatened species in Europe, Black Vulture and Imperial Eagle breed in Turkish forests. Many fresh and cold water resources in the forests harbour valuable native fish species.

THE ANATOLIAN STEPPE : Source for Endemic Wild Species

The steppe ecosystems are of crucial importance because they are the sources of wild species of plants and animals. Wild species and the genetic variation within them make substantial contributions to the development of agriculture, medicine and the industry. It is difficult to determine the real economic value contributions of the wild species. For example, the contribution of a wild wheat plant of Turkey to the development of disease resistance in commercial wheat varieties in the United States is estimated to worth \$50 million annually. Therefore, these wild species are the common heritage of not only our country but also of the whole world.



W e t l a n d s :

Home For Many Breeding and Migratory Birds

Wetlands of Turkey covers an area of 1 851 000 ha. including dam lakes and provides food, habitat, and shelter for large number of water birds and other aquatic species. There are around 250 wetlands, of which 81 have international significance and 18 of these are “A” class wetlands.

Turkey’s wetlands are important for many breeding species of water birds, including a significant proportion of the global populations of some species. Dalmatian pelican (*Pelecanus crispus*), a globally threatened bird species, breeds in Manyas Lake. Approximately 70% of the world population of another globally threatened species, White-headed duck (*Oxyura leucocephala*) winters in Turkish wetlands particularly at Burdur Lake. Tuz Lake is the most important incubation site of flamingos (*Phoenicopterus ruber*) with more than 10 000 nests. Turkey’s Mediterranean and Aegean coasts provide refuge for the endangered Mediterranean Monk Seal (*Monachus monachus*), and for the sea turtles (*Caretta caretta* and *Chelonia mydas*).



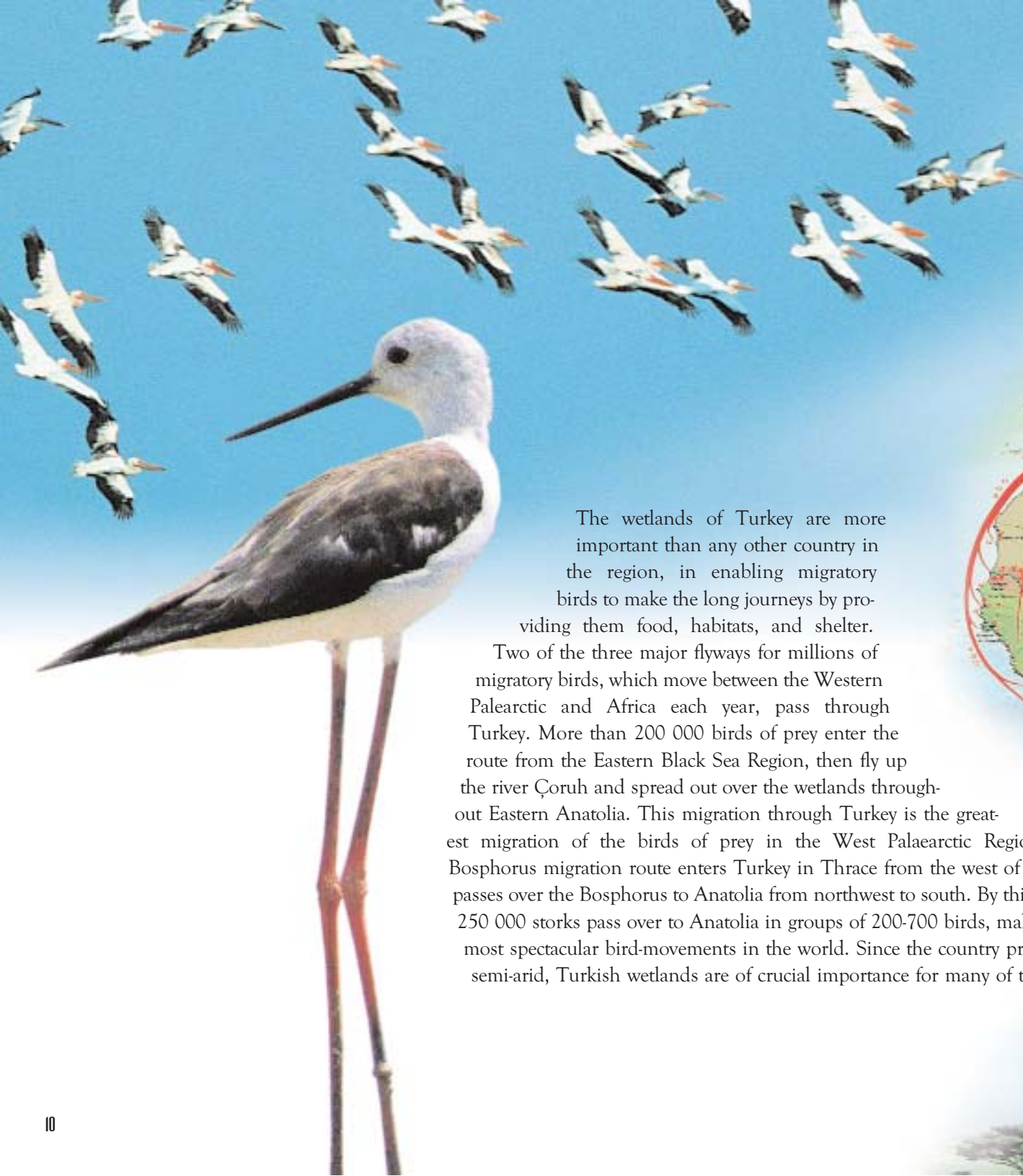


Important Wetlands and Water Basins in Turkey

▲ ACCORDING TO THE INTERNATIONAL CRITERIA (A) CLASS WETLANDS
 ■ ACCORDING TO THE INTERNATIONAL CRITERIA (B) CLASS WETLANDS

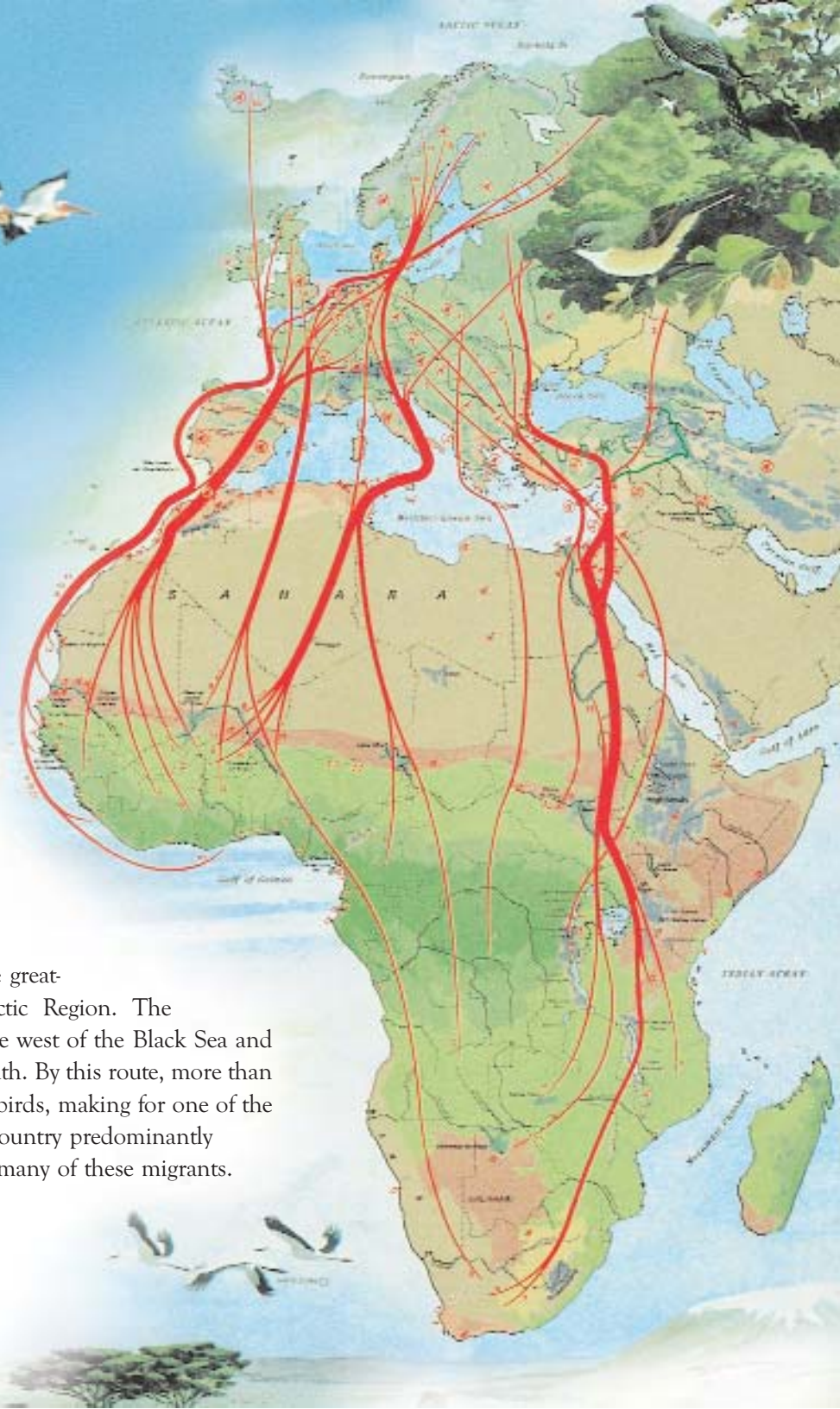
WATER BASINS

- | | | |
|--------------------|----------------------|---------------------|
| 1 - MERİÇ-ERGENE | 9 - BURDUR | 18 - YEŞİLIRMAK |
| 2 - MARMARA | 10 - BATI AKDENİZ | 19 - DOĞU KARADENİZ |
| 3 - KUZEY EGE | 11 - ANTALYA | 20 - ÇORUH |
| 4 - SUSURLUK | 12 - AKARÇAY | 21 - ARAS |
| 5 - GEDİZ | 13 - KONYA | 22 - FIRAT |
| 6 - KÜÇÜK MENDERES | 14 - DOĞU AKDENİZ | 23 - ASİ |
| 7 - BÜYÜK MENDERES | 15 - SEYHAN & CEYHAN | 24 - DİCLE |
| 8 - SAKARYA | 16 - KIZILIRMAK | 25 - VAN |
| | 17 - BATI KARADENİZ | |



The wetlands of Turkey are more important than any other country in the region, in enabling migratory birds to make the long journeys by providing them food, habitats, and shelter.

Two of the three major flyways for millions of migratory birds, which move between the Western Palearctic and Africa each year, pass through Turkey. More than 200 000 birds of prey enter the route from the Eastern Black Sea Region, then fly up the river Çoruh and spread out over the wetlands throughout Eastern Anatolia. This migration through Turkey is the greatest migration of the birds of prey in the West Palearctic Region. The Bosphorus migration route enters Turkey in Thrace from the west of the Black Sea and passes over the Bosphorus to Anatolia from northwest to south. By this route, more than 250 000 storks pass over to Anatolia in groups of 200-700 birds, making for one of the most spectacular bird-movements in the world. Since the country predominantly semi-arid, Turkish wetlands are of crucial importance for many of these migrants.





Water Birds of Turkey

Ref: Turkish Society for the Conservation of Nature

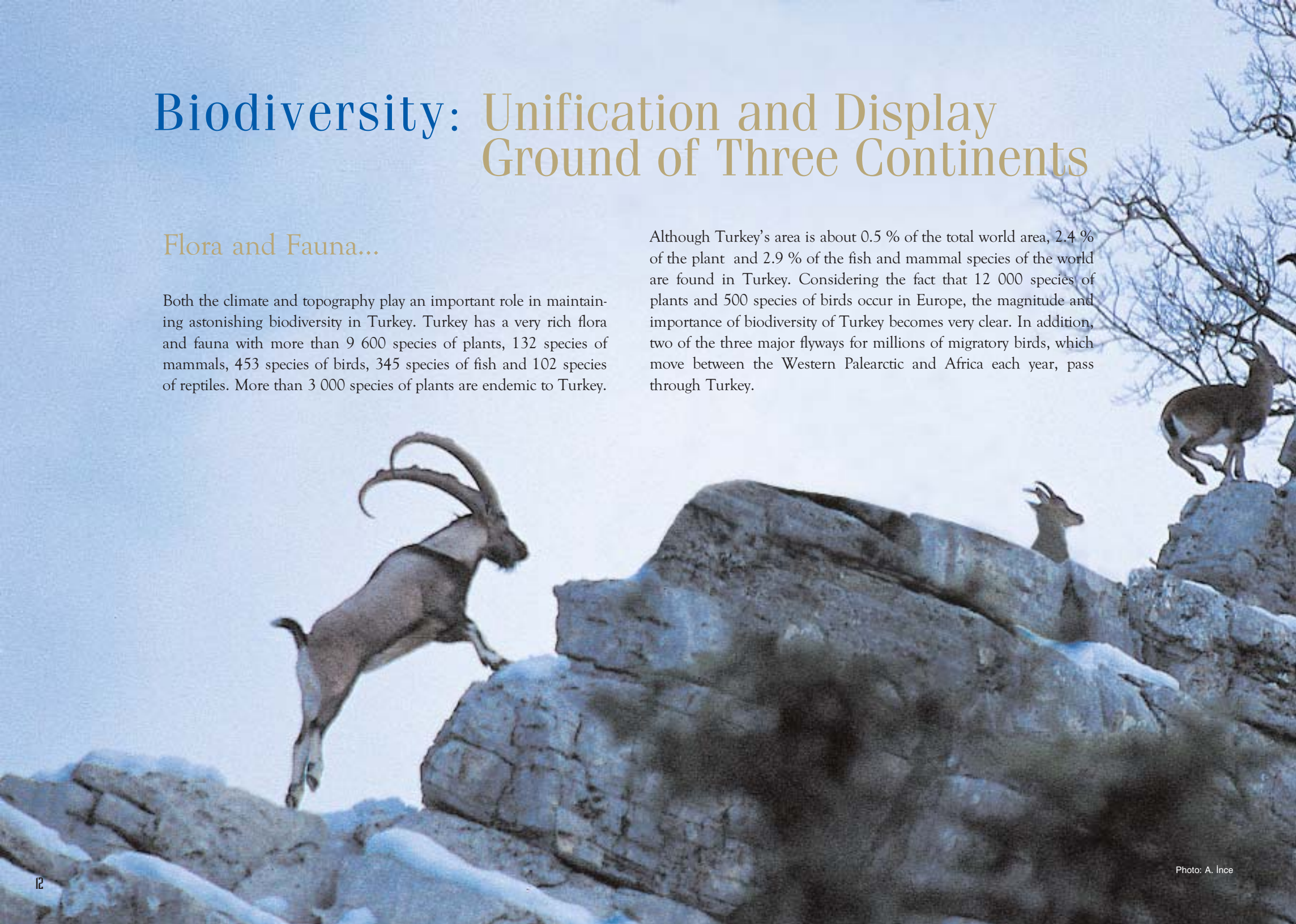
- | | | | |
|---|--|---|--|
| <p>VM - VAN LAKE GULL
(<i>Larus armenicus</i>) ❖</p> <p>TU - CRANE
(<i>Grus grus</i>) ☀ ❖</p> <p>GS - GULL-BILLED TERN
(<i>Gelocheilidon nilotica</i>) ☀</p> <p>AN - RUDDY SHELDUCK
(<i>Tadorna ferruginea</i>) ❖</p> <p>TP - DALMATIAN PELICAN
(<i>Pelecanus crispus</i>) ❖</p> <p>KK - PYGMY CORMORANT
(<i>Phalacrocorax pygmeus</i>) ☀</p> | <p>FL - GREATER FLAMINGO
(<i>Phoenicopterus ruber</i>) ☀ ☀ ☀ ☀</p> <p>EB - PURPLE HERON
(<i>Ardea purpurea</i>) ☀</p> <p>KL - BLACK STORK
(<i>Ciconia nigra</i>) ☀</p> <p>AB - SQUACCD HERON
(<i>Ardeola ralloides</i>) ☀</p> <p>SH - PURPLE GALLINULE
(<i>Porphyro porphyro</i>) ❖</p> <p>YO - MARBLED TEAL
(<i>Marmaronetta angustirostris</i>) ☀</p> <p>AD - AUDOUIN'S GULL
(<i>Larus audonii</i>) ☀</p> <p>KG - AVOCET
(<i>Recurvirostra avosetta</i>) ❖</p> | <p>MK - SPUR-WINGED PLOVER
(<i>Hoplopterus spinosus</i>) ☀</p> <p>DK - WHITE-HEADED DUCK
(<i>Oxyura leucocephala</i>) ☀ ☀ ☀ ☀</p> <p>HS - CASPIAN TERN
(<i>Sterna caspia</i>) ☀ ☀ ☀ ☀</p> <p>PP - FERRUGINOUS DUCK
(<i>Aythya nyroca</i>) ❖</p> <p>KS - LITTLE TERN
(<i>Sterna albifrons</i>) ☀</p> <p>KM - LITTLE STINT
(<i>Calidris minuta</i>) → ☀ ☀ ☀ ☀</p> <p>KR - SANDWICH TERN
(<i>Sterna sandvicensis</i>) → ☀ ☀ ☀ ☀</p> <p>KA - LITTLE EGRET
(<i>Egretta garzetta</i>) ☀ ☀ ☀ ☀</p> | <p>GB - NIGHT NEVON
(<i>Nycticorax nycticorax</i>) ☀</p> <p>KC - SPOONBILL
(<i>Platalea leucorodia</i>) ☀</p> <p>SM - COOT
(<i>Fulica atra</i>) ❖</p> <p>CL - LITTLE RINGED PLOVER
(<i>Charatrius dubius</i>) ☀</p> <p>UB - BLACK WINGED STILL
(<i>Himantopus himantopus</i>) ☀</p> <p>BK - SNIPE
(<i>Gallinago gallinago</i>) ☀ ☀ ☀ ☀</p> <p>SL - GRITE SNIPE
(<i>Gallinago media</i>) →</p> <p>KZ - LAPWING
(<i>Vanellus vanellus</i>) ❖</p> |
|---|--|---|--|

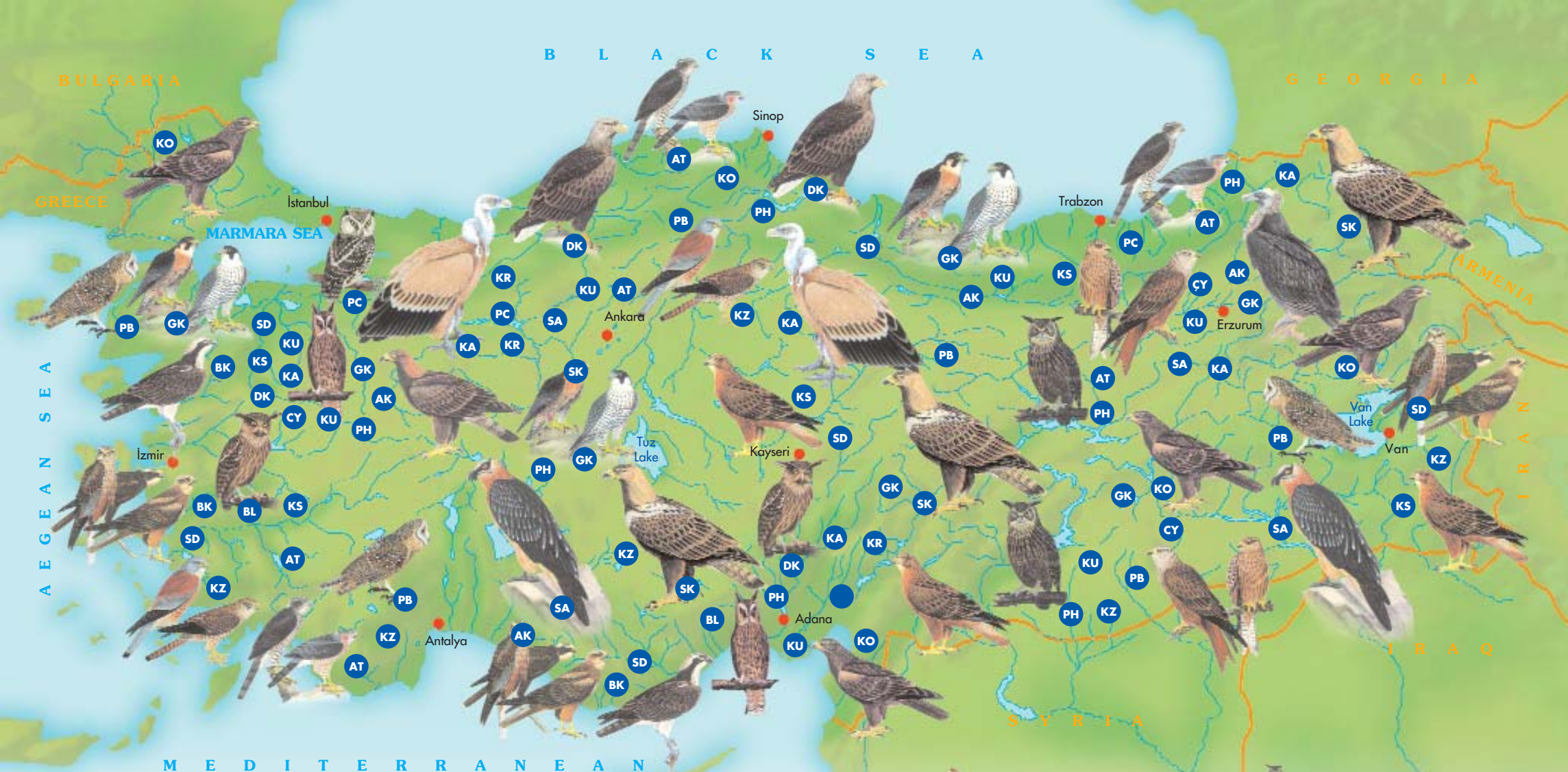
Biodiversity: Unification and Display Ground of Three Continents

Flora and Fauna...

Both the climate and topography play an important role in maintaining astonishing biodiversity in Turkey. Turkey has a very rich flora and fauna with more than 9 600 species of plants, 132 species of mammals, 453 species of birds, 345 species of fish and 102 species of reptiles. More than 3 000 species of plants are endemic to Turkey.

Although Turkey's area is about 0.5 % of the total world area, 2.4 % of the plant and 2.9 % of the fish and mammal species of the world are found in Turkey. Considering the fact that 12 000 species of plants and 500 species of birds occur in Europe, the magnitude and importance of biodiversity of Turkey becomes very clear. In addition, two of the three major flyways for millions of migratory birds, which move between the Western Palearctic and Africa each year, pass through Turkey.





Birds of Prey of Turkey

Ref: C. Bilgin (List of Vertebrates in Turkey)
N. Turan (Kuşlar)

- Winter migrants
- Summer migrants
- Native bird species
- Migration route

- DK** - WHITE TAILED EAGLE (*Haliaeetus albicilla*) ❖
- SA** - LAMMERGEIER (*Gypaetus barbatus*) ❖
- KA** - GRIFFON VULTURE (*Gyps fulvus*) ❖
- KR** - BLACK VULTURE (*Aegypius monachus*) ❖
- SD** - MARSH HARRIER (*Circus aeruginosus*) ❖
- AT** - SPARROWHAWK (*Accipiter nisus*) ❖ →
- KS** - LONG-LEGGED BUZZARD (*Buteo rufinus*) ❖
- KO** - LESSER SPOTTED EAGLE (*Aquila pomorina*) ❖ →
- SK** - IMPERIAL EAGLE (*Aquila heliaca*) ❖
- AK** - GOLDEN EAGLE (*Aquila chrysaetos*) ❖
- BK** - OSPREY (*Pandion heliaetus*) ❖
- KZ** - LESSER KESTREL (*Falco naumanni*) ❖ →
- GK** - GÖKDOĞAN ????? (*Falco peregrinus*) ❖
- PH** - EAGLE OWL (*Bubo bubo*) ❖
- BL** - BROWN FISH OWL (*Ketupa zeylonensis*) ❖
- KU** - LONG-EARED OWL (*Asio otus*) ❖
- PC** - TENGMALM'S OWL (*Aegolius funereus*) ❖
- PB** - BARN OWL (*Tyto alba*) ❖
- CY** - RED KITE (*Milvus milvus*) ❖





Big Mammals of Turkey

-  **UL** - DEER (*Cervus elephus*)
-  **AL** - RED DEER (*Dama dama*)
-  **KR** - ROE DEER (*Capreolus capreolus*)
-  **CY** - GAZELLA (*Gazella subgutturosa*)
-  **CB** - CHAMOIS (*Rubicapra rubicapra*)
-  **YK** - WILD GOAT (*Capra aegagrus*)
-  **AK** - ANATOLIAN MOUFLON (*Ovis gmelinii anatolica*)
-  **DA** - MOUFLON (*Ovis gmelinii gmelinii*)
-  **AY** - BROWN BEAR (*Ursus arctos*)
-  **DM** - WILD BOAR (*Sus scrofa*)

Ref: C. Bilgin - A. Kence (List of Vertebrates in Turkey)
A. Demirsoy (Vertebrates of Turkey, Mammals)

Threats and Pressures on Ecosystems and Wildlife

The biodiversity Turkey represents is indicative of a delicate natural balance in the environment. Recently, however, the rapid developing industry, agricultural mechanization, and rapid population growth are becoming real threats to the natural balance of these ecosystems and to their sustainability. Rapid population increase in the last century created more demand for food and for agricultural areas. Transformation of wilderness areas into agricultural land, industrialization, agricultural mechanization, excessive use of pesticides in agriculture, and unregulated excessive hunting had a negative impact on wildlife habitats. For these reasons, the magnitude of degradation in wildlife habitats has reached to dangerous levels and, thus, the populations of many plant and animal species were lost or endangered.





Endangered Bird Species of Turkey

Ref: The Ministry of Environment
Bird Life (Birds in Europe and Their Conservation Status)

- | | | | |
|---|--|--|--|
|  KK - PYGMY CORMORANT
(Phalacrocorax pygmeus) ☼ |  SK - IMPERIAL EAGLE
(Aquila heliaca) ❖ |  SR - AQUATIC WARBLER
(Acraephalus paludicala) ➔☼ |  BD - LANNER FALCON
(Falco biarmacus) ❖ |
|  TP - DALMATIAN PELICAN
(Pelecanus crispus) ❖☼☐ |  KR - LESSER KESTREL
(Falco naumanni) ☼ |  PP - FERRUGIONUS DUCK
(Aythya nyroca) ❖ |  CZ - STRIATED SCOPS OWL
(Otus brusei) ☼ |
|  KS - LESSER WHITE-FRONTED GOOSE
(Anser erythropus) ☼☐ |  BI - CORNCRAKE
(Crex crex) ☼ |  SH - PURPLE GALLINULE
(Porphyro porphyro) ❖ |  BL - BROWN FISH OWL
(Ketupa zeylonensis) ❖ |
|  SB - RED-BREASTED GOOSE
(Branta ruficollis) ☼☐ |  TY - GREAT BUSTARD
(Otis tarda) ❖ |  AK - WHITE TAILED EAGLE
(Haliaeetus albicilla) ❖ |  PC - TENGMALM'S OWL
(Aegolius funereus) ❖ |
|  YO - MARBLED TEAL
(Marmaronetta angustirostris) ☼☼☐ |  MZ - LITTLE BUSTARD
(Tetrax tetrax) ❖☼ |  BZ - STEPPE EAGLE
(Aquila nipalensis) ☼➔ |  PB - BARN OWL
(Tyto alba) ❖ |
|  DK - WHITE-HEADED DUCK
(Oxyura leucocephala) ❖☼☐ |  IN - SLENDER-BILLED CURLEW
(Numenius tenuirostris) ➔ |  TV - BONELLI'S EAGLE
(Hieraaetus fasciatus) ❖ |  IZ - WHITE-BREASTED KINGFISHER
(Halycon smyrensis) ❖ |
|  KA - BLACK VULTURE
(Aegypius monachus) ❖ |  AD - AUDOIN'S GULL
(Larus audouinii) ☼ |  BK - OSPREY
(Pandion haliaetus) ❖ |  AL - PIED KINGFISHER
(Ceryle rudis) ❖ |
| | |  UL - SAKER FALCON
(Falco cherrug) ❖ | |



Conservation and Management of Ecosystems and Wildlife Resources

Legal Framework

The Turkish Constitution, Laws, Regulations, and International Conventions such as Paris, Ramsar, Bern, Washington (CITES), Barcelona, Combatting Desertification, and Biological Diversity provide the legal framework for nature conservation, sustainable resource use and management. Forest Law (No: 6831) enacted in 1956, National Parks Law (No: 2873) enacted 1983, and Land Hunting Law (No: 3167) enacted 1937 authorizes Ministry of Forestry for conservation, improvement, and sustainable management of forests, wildlife resources, and biodiversity. Culture and Natural Resource Protection Law (No: 2863) authorizes Ministries of Culture for the protection of natural and cultural sites and resources. Environment Law (No: 2872) enacted in 1983 authorizes Ministry of Environment for the protection of environment and prevention of pollution. The Water Products Law (No; 1280) authorizes the Ministry of Agriculture and Rural Affairs in the conservation and sustainable utilization of water products resources.

Protected Areas

The Law of National Parks (No: 2873) defines the status and outlines the legal framework and regulations for designation, and management of protected areas. The following protection status are defined by this law.

- National Parks (33 areas totalling to 678 753 ha),
- Nature Parks (16 areas totalling to 67 172 ha.)
- Nature Protection Areas (35 areas totalling to 85 300 ha.)
- Nature Monuments (59 areas totalling to 334 ha.).

As mentioned above, there are 143 protected areas covering 831 559 hectares of land designated under the National Parks Law. These areas cover approximately 1% of Turkey's total land surface. In addition, there are other protected areas established by the Forest Law (6831), the Cultural and Natural Resources Protection Law (2863), and the Environment Law (2872). Altogether protected areas account for 6.8 % of Turkey's total land surface.

Game and Wildlife Management

Land Hunting Law authorizes the Ministry of Forestry for regulation, organization, and control of hunting in Turkey. Accordingly, the General Directorate of National Parks and Game-Wildlife under the Ministry of Forestry is responsible for the management of the game and wildlife resources in Turkey. The General Directorate of National Parks and Game-Wildlife (GDNPGW) is also responsible for designation and management of protected and recreational areas. Conservation, improvement, and bequeathing of wild life resources and biodiversity to the future generations are essential responsibilities of the General Directorate of National Parks and Game-Wildlife.

Implementation of the Land Hunting Law on the following issues is enforced by the annual regulations and decisions of the Central Hunting Commission which is constituted by the members of the Ministry of Forestry, Ministry of Agriculture and Rural Affairs, and Hunting Associations.

- Protected species
- Prohibited hunting grounds
- The species allowed for hunting and bag limits
- Hunting period and days
- Permitted and prohibited hunting methods
- Principles of game tourism

Under this framework, 39 % (52 species) of the mammals and 93 % (421 species) of the bird species have been protected in Turkey. 123 wildlife protection areas totalling to 1 945 273 hectares of land have been legally put aside for the protection of rare and endangered species. Together with the dam lakes, 60% (1107 000 ha.) of the total wetland areas are being protected under different status.

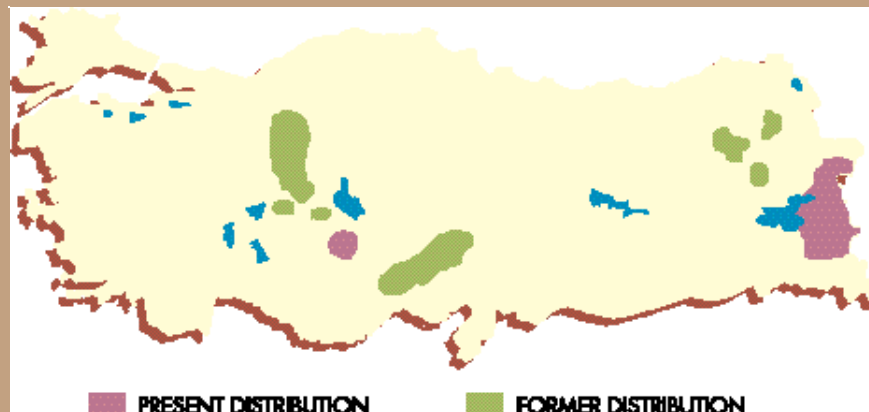


SAVING THE ANATOLIAN WILD SHEEP

(*Ovis gmelinii anatolica*)

The Anatolian Wild Sheep belongs to one of the 5 sheep species in the world. Two sub-species live in Turkey. The Eastern population is classified as *Ovis gmelinii gmelinii* and the Western population as *Ovis gmelinii anatolica* and named as Anatolian Mouflon. There are some morphological differences between these two sub-species and the most striking one is the horns in females. Females of the Eastern population bear horns, whereas females of the Western population lack them.

The Anatolian Wild Sheep was widely distributed in Central and Eastern Anatolia in the beginning of 19th Century. However, their population has extirpated due to overgrazing of rangelands, predator pressure, illegal hunting, harsh winter conditions and other human effects (Map).



Protection in Bozdağ

Although the Anatolian Mouflon was described by Valenciennes in 1856 it was not until 1937 that it was taken under protection. Turkish Land Hunting Law coded 3167 was approved in 1937 and the Anatolian Mouflon was listed as a protected species and hunting has been prohibited all year around since then.

Following the extirpation of the Anatolian Mouflon from most of its distribution in Turkey, Bozdağ Mountains had become the only existing site for this sub-species. In 1966 Ministry of Forestry declared 42 000 hectares of land as a Wildlife Protection Area and this site had been closed for any kind of hunting. In 1989, 3500 hectares was allocated as Breeding Station and fenced. In 1996, an electroshock system was added to the fences.

Following the activation of the electroshock system in the fence, the grey wolf, *Canis lupus*, has been eliminated from Breeding Station by the end of the same year and conditions inside and outside of the breeding station have changed significantly.

At the same time, the Breeding Station was closed to domestic herds and grazing. So, parasite transfer was reduced to minimum. There has been no illegal hunting for the wild sheep and other species and no major disturbance since then. Food is provided by The General Directorate of National Parks and Game-Wildlife in harsh winters, water is abundant throughout the year and salt is provided to animals near the five watering points around.

There has been a guard cottage built next to the Breeding Station. There are four guards assigned for the protection of the Breeding Station and Wildlife Protection Area in order to protect the area from illegal hunting, to maintain the electroshock system and to feed the wild sheep in winter time.

Re-Introduction of Anatolian Wild Sheep

Although the total number of wild sheep was 40 in 1966 in Bozdağ Mountain chain, the number has been recorded as 1041 in 1998 and 1408 in 2001, according to the field surveys in the Breeding Station. According to the observations, male and female ratio is 1,5/1, breeding ratio is 3,5/1, new born wild sheep surviving ratio is 10/6.

It also became evident that the species is also present outside of the Breeding Station. The General Directorate of National Parks and Game-Wildlife has planned re-introduction and release actions since carrying capacity of the area has already been reached.

Under this framework, the General Directorate of National Parks and Game-Wildlife in collaboration with scientist, NGOs and local authorities has determined the re-introduction sites from the areas where the species once lived.

Within the framework of these studies, in October 2002, the first groups of Anatolian Wild Sheep will be transferred to Nallıhan reintroduction sites, 100 kms. west of Ankara where the species used to exist. Re-introduction activities will be continued in light of experience gained.

This will relieve the intensity of the population pressure in the Breeding Area and also will guarantee the species' survival. It is also aimed to restock the population and increase the distribution of the Anatolian Wild Sheep to its original distribution.



SAVING NORTHERN BOLD IBIS

(*Geronticus eremita*)

Northern Bald Ibis, *Geronticus eremita*, is a critically endangered species which suffered from habitat destruction, agricultural mechanisation and excessive use of fertilizers and pesticides in agricultural areas disappeared from most of its former range in Europe, the Middle East and North Africa. The last colony (Birecik colony) in its eastern distribution, was declared as “extinct in the wild” in 1990 after the disappearance of the last wild (migrant) bird from the colony.

Turkish Bald Ibis colony was first documented in 1836 by W.F. Ainsworth. By the early 1900s there were five colonies and one of them were holding over 1000 birds. The birds were using the area as breeding grounds. The migration was occurring in mid-

February and the birds were remaining in the colony until early August. They were considered to winter in Ethiopia/Eritrea. Bald Ibis colony in Birecik, Southeast Turkey had faced a dramatic decline starting from late 1950s and it continued until its extinction in 1990.

Following this rapid decline, General Directorate of National Parks and Game-Wildlife of Ministry of Forestry had started a project to save the existing population and initiate a captive breeding and re-introduction program to increase their numbers. With the cooperation of WWF, the program had started in 1973 and a breeding station was established in 1977 in Birecik.

At the end of the 1989 breeding season there were 58 individuals, including young birds, in the enclosures. Thirty of them were released and according to governmental records nine migrated, with a single bird returning to Birecik in 1990.

Since then no birds are known to have returned to Birecik in spring. Therefore, Birecik population can be considered as “extinct in the wild” since 1990.

After the extinction of the wild Birecik colony, captive breeding program were terminated and currently the population can be considered as semi-wild. Birds are released to nature in late January or early February. They are free flying and breeding outside the cages in the spring and summer times. Breeding occurs on the ledges and mainly in the nest boxes in the breeding station compound. Following the end of the breeding season, birds are taken into cages in late July, sometimes in August. Artificial food is given to the birds but they also forage around the Birecik town. Forest nursery, agricultural fields and riparian zone of Euphrates are regularly used places for feeding.

After occurrence of heavy mortality, although not proven, probably due to the pesticide or fungicide poisoning of chicks between 1998 and 2000 General Directorate of National Parks and Game-Wildlife in co-operation with the Turkish Society for the Conservation of Nature (DHKD) and Royal Society for Protection of Bird (RSPB) started a new project for saving the semi-wild population in Birecik. In 2001, with the addition of 19 chicks, the number of population increased to 60 bird. When the population number increases to over a hundred individuals, a re-introduction program will be initiated and the natural behaviour of the birds for migration will be encouraged.



LIBERTY (BEAR RELEASE) PROJECT

The European brown bear (*Ursus arctos*) is found in many areas of Turkey but very little is known about management of these large carnivores. Increasing environmental-degradation problems, loss of habitats and declining populations continues to pose a threat to successful conservation of brown bears in Turkey. Protection of small isolated populations of bears is important, but their chances for long-term survival are diminished without intrusive management programs.

In 1993 Turkish authorities, assisted by the World Society for the Protection of Animals (WSPA) and the Turkish Animal Protection Society (THKD), banned the practice of using bears for dancing shows in the streets. A bear sanctuary enclosure was built in Karacabey, near Bursa, and all confiscated brown bears were collected in this sanctuary. The sanctuary has since become a repository for many orphaned bear cubs in Turkey and the sanctuary is now home to 52 brown bears. Pro Animale, an NGO based in Germany for protection of animals, is presently providing support for the feeding and maintenance of the sanctuary within the frame of a cooperation protocol with the Ministry of Forestry.



Implementation of Conservation Measures:



Inspection and Control Mechanism

Sustainable management of wildlife resources depends on successful conservation. For the successful implementation of conservation measures, an efficient inspection and control mechanism has to be developed. Within the frame of this policy for the development of an efficient control mechanism, necessary equipment such as field vehicles, radios, binoculars, cameras, sleeping bags, tents, and guns have been provided to all field units as well as in the headquarters of the General Directorate of National Parks and Game-Willife.

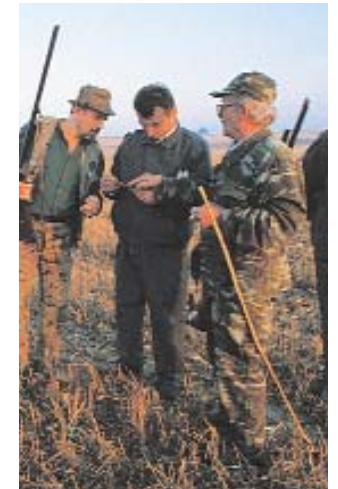


Successful Conservation Depends on the Understanding, Co-operation and Participation

Successful conservation depends on the understanding, co-operation and participation of people. With this policy in mind, participation has become our guiding principle in the management of the game and wildlife. Within the frame of this principle, the decisions concerned with the game and wildlife management are being taken in a participatory manner. Hunter associations and similar civil community organizations provide support to protection efforts by working as voluntary wildlife wardens.



For this purpose, GDNPGW is in the process of establishing a warden network throughout Turkey in order to facilitate inspection of hunters and to control illegal hunting. Wardens are chosen strictly on a voluntary basis from hunters associations and from NGOs working on nature conservation. Wardens have no official status, nor do they receive any remuneration or reimbursement for expences. Their role is principally to cooperate with GDNPGW and other relevant intitutions in fighting illegal hunting and to provide information about the changes in wildlife based on observations in their regions.





The wardens have already proven to provide significant contributions in wildlife conservation in Turkey.

For an efficient protection, a recently developed model for participatory protection is the Protection Through Village Governing Council. Implementation of this model is based on the collaborative work with the villagers in protection and sustaining game species and wildlife areas.

Implementation of this model was started in four pilot region including 21 villages in 2001. Within the framework of this project villagers participate in conservation activities and in return, they are paid for their services according to a protocol signed between the villagers and the GDNPGW. A substantial success has been achieved by this model in conservation activities. This protection model is expected to be much more cost effective, socially acceptable and sustainable as compare to traditional conservation models. This conservation approach will be expanded in the other areas according to the results obtained from pilot implementations.

Legal Amendments

To strengthen the legal national framework for protection, improvement, and sustainable management of wildlife, a draft hunting law which proposes necessary amendments in accordance with the legislation of European Union as well as with the international conventions is prepared and submitted to the Turkish Parliament. The draft proposal includes the following issues:

- Necessary measures for protection of species
- Legal framework for protection and rehabilitation of ecosystems
- Legal framework of permitted hunting methods and control measures
- Re-organization of the Central Hunting Commission in a participatory approach
- Establishment of hunting grounds with appropriate game and wildlife management plans
- Establishment of rescue centers for wild animals
- Priority in management of hunting grounds to local village governing councils, or to local village development cooperatives, or to the local hunting associations
- Introduction of compulsory exam system for obtaining hunting licence
- Creation of financial sources according to the user-pays principle
- Compulsory broadcasting on public awareness programs on wildlife
- Compulsory hunting insurance
- Equality in obtaining hunting licence for foreigners
- Regulations on trade of wild animals and their trophies
- Regulations on captive breeding
- Enforceable and effective penalties, and fines for hunting offenses

Conservation Efforts have to be Supported by Social and Economical Measures

Conservation efforts have to be supported by relevant social and economical measures. In order to reduce the pressure on wildlife resources, economic state of local people who share wildlife habitats has to be improved or, in other words, rural poverty has to be reduced as a first step. Hunting or exploitation of game stock as one of the major income generating activities for rural development does not have a harmful effect on nature as long as sustainable management principles are followed. For this purpose, GDNPGW has developed a program for initiation and development of domestic and international game and hunting tourism in Turkey. Within the framework of this program, various areas were selected and inventory data related to the population sizes and dynamics of game stock in these areas were obtained. Ecosystem carrying capacity for each game species is calculated and the number, age, allowed hunting periods and places for surplus ani-



mals were determined. According to the inventory result some areas were opened as hunting grounds. In the areas selected for game tourism, local village governing councils also participate in the conservation work and they are paid for their effort. Currently, more than half of the income generated from the game tourism is given to the local village governing councils. In addition, villagers are also employed by the tourists as guides and carriers.

When social aspect of conservation is considered, public education and awareness campaigns are important measures for active participation of people to conservation efforts. For sustainable use of wildlife resources including game stock, a protocol was signed on May 1, 2000 between the Ministry of Forestry and Ministry of Education for education of hunters.

Within the framework of this protocol, three documentary films on “Basics of Ecology”, “Game and Wildlife”, and “History and Philosophy of Hunting” have been prepared and used for education of hunters and broadcasted on national television channels for public awareness.

A handbook called “Basic Education Book for Sustainable Hunting” for hunters education has been prepared and distributed to the provincial and regional offices of the GDNPGW to be used in training of hunters.



Within the framework of Hunters Education Programme about 40 000 hunters have been trained with the cooperation of hunters associations and provincial authorities of Ministry of Education, during last one year. Following the training course, hunters were trained on safe handling of guns and target shooting with the assistance of General Directorate of Youth and Sports of Ministry of State.



Game Birds of Turkey

Ref: The Central Hunting Commission

-  **SK** - WHITE FRONTED GOOSE (*Anser albifrons*) 
-  **YB** - MALLARD (*Anas platyrhynchos*) 
-  **BO** - GADWALL (*Anas streperas*) 
-  **FY** - WIGEON (*Anas penelope*)  
-  **CM** - TEAL (*Anas crecca*) 
-  **CK** - GARGANEY (*Anas querquedula*)  
-  **KG** - SHOVELER (*Anas clypeata*)  

-  **MO** - RED-CRESTED POCHARD (*Metta rufina*)  
-  **TP** - TAFTED DUCK (*Aythya fuligula*)  
-  **KP** - SCAUP (*Aythya marila*) 
-  **EB** - POCHARD (*Aythya ferina*)  
-  **KD** - VELVED SCOTER (*Melanitta fusca*) 
-  **KO** - COMMON SCOTER (*Melanitta nigra*) 
-  **AG** - GOLDENEYE (*Bucephala clangula*)  

-  **KK** - PINTAIL (*Anas acuta*)  
-  **BL** - QUALL (*Coturnix coturnix*)  
-  **KN** - CHUKAR (*Alectoris chukar*) 
-  **KM** - SEE-SEE PARTRIDGE (*Ammoperdix griseogularis*) 
-  **KZ** - LAPWING (*Vanellus vanellus*) 
-  **SM** - COOT (*Fulica atra*) 
-  **CL** - WOODCOCK (*Scolopax rusticola*) 

-  **KS** - JACK SNIPE (*Lymnocyptes minimus*) 
-  **BK** - SNIPE (*Gallinago gallinago*)  
-  **SL** - GRITE SNIPE (*Gallinago media*)  
-  **KY** - ROCK DOVE (*Columba livia*) 
-  **TH** - WOODPIGEON (*Columba palumbus*)  
-  **UV** - TORTLE DOVE (*Streptopelia turtur*)  
-  **KT** - BLACKBIRD (*Turdus merula*) 

Wildlife Inventory: The First Step for Sustainable Management



General Directorate of National Parks and Game-wildlife has undertaken a nation-wide survey called “Rapid Wildlife Appraisal of Wild Fauna of Turkey” since November 2000. The work has been completed and a detailed inventory program has been initiated. The information obtained from this inventory program will constitute the basis of our game and wildlife management. However, advances in our work to manage populations and to predict factors that cause population change have to be supported with sound scientific inventory techniques in order to provide reliable information concerning

the size and dynamics of wild animal populations so that management techniques for each species can be appropriately developed. For this purpose, a core inventory team has been developed at the headquarters of GDNPGW. This team conducted wildlife inventory seminars as well as on-job training programs in five different regions of the country. At least one officer from each of the 33 regional offices has been trained in wildlife inventory techniques.

Survey and inventory work has been carried out in 33 regions according to the priorities given to the selected species. Collected inventory information has been processed and stored at the wildlife database of GDNPGW by using GIS system.

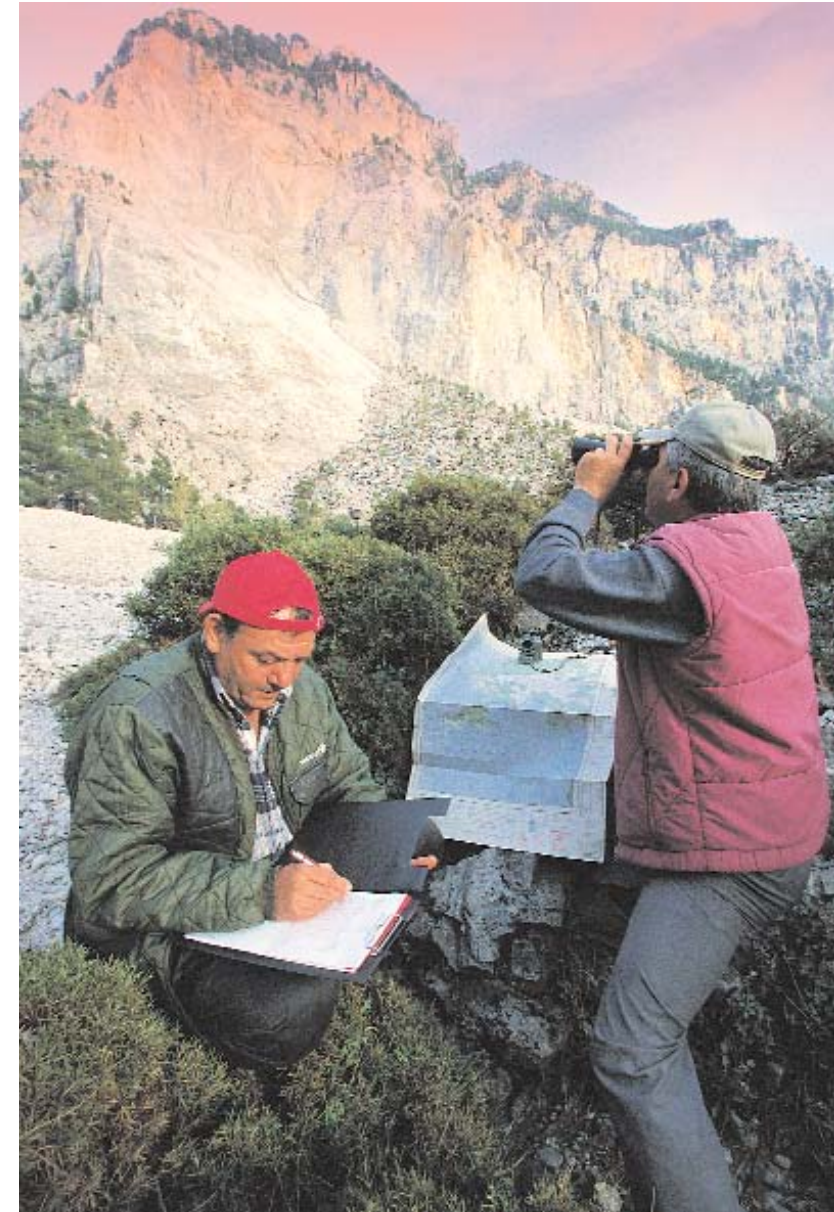
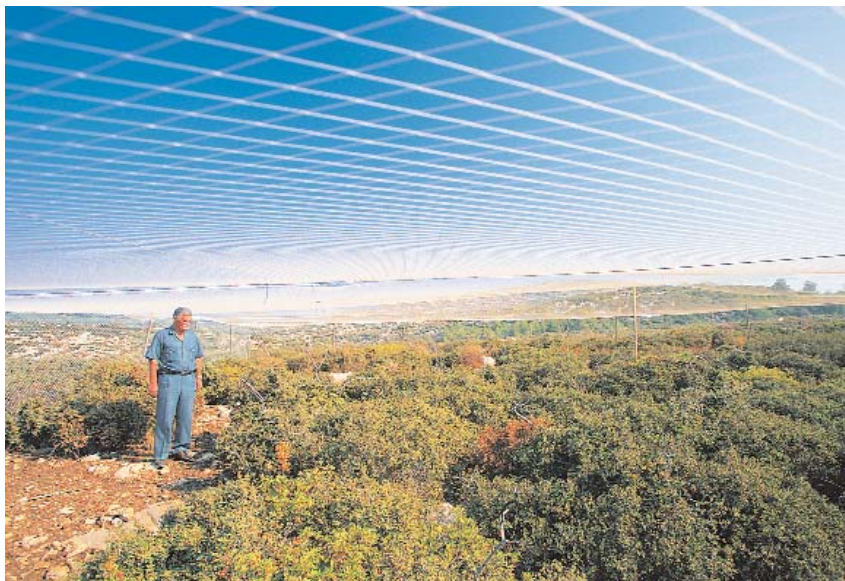


Photo: A. Ince

Improvement of Wildlife Resources: Breeding Wild Animals



Wildlife managers have been working to maintain or restore rare and declining wildlife populations for more than 40 years in Turkey. There are 41 wildlife breeding stations in Turkey. But especially since the adoption of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) more resources and public attention have been focused on species that are legally recognized as endangered or threatened.

Personnel at the Headquarters of GDNPGW have been trained on CITES and IUCN guidelines on captive breeding and re-location of wild animal species and on wild animal breeding and establishment of wildlife breeding stations in order to improve game stocks with restocking. Pheasants and partridges have been raised or bought and released into wild according to an annual program.



REHABILITATION CENTER FOR BIRDS OF PREY



Due to the transformation of wilderness areas into agricultural land and consequently loss of wildlife habitats, excessive use of agricultural chemicals, and unregulated excessive hunting, the populations of many predatory bird species were reduced in numbers, became vulnerable or endangered. With the objectives of saving populations of these birds, a rehabilitation center was established at the headquarters of GDNPGW.

The wounded or sick birds found by the people and brought to the rehabilitation center are cured under veterinary supervision and released into the wild after receiving necessary treatments.



Recreational Fishing in Forest Areas

Many fresh and cold water sources in our forests harbour native species of trout and provides excellent opportunities for recreational fishing activities.

Ministry of Forestry is responsible for the management, protection, and improvement of rivers, lakes, and dams in forest areas and controls and regulates recreational fishing activities in these areas.

In order to encourage people and promote aqua-culture, Ministry of Forestry has also established fish farms in forest areas for the species of trout and carp.

Besides inspection and control activities for conservation of native fish species, restocking and reintroduction activities have also been carried out in rivers and lakes where native fish populations have been reduced in numbers or lost.

Within the framework of restocking activities, the fry of Abant Trout (*Salma trutta abanticus*), an endemic species, have been cultured and released into natural habitats. In addition, the work on culturing the fry of *Salma trutta macrostigma*, another native species, is underway.

International Wildlife Management Education Center Established in Istanbul

In recognition of the need for well-educated wildlife managers for the wise-use of natural resources, the General Directorate of National Parks and Game-Wildlife of the Ministry of Forestry has decided to develop cooperation and collaboration with the University of Istanbul.

For this purpose, a joint meeting was held in Istanbul on 22-23 April 2001 with the participation of the representatives from the Ministry of Forestry, CIC, and the University. The sides agreed on cooperation for the establishment of an International Wildlife Management Education Center (IWMEC) at the Faculty of Forestry in Istanbul University and signed a Letter of Intent on planning and implementation of a 4-year bachelor degree and a 2-year college degree programs on game and wildlife management to serve on national as well as regional and international level.



Photo: F. Orbay



Photo: A. Ince

Participation:



The Key To Progress

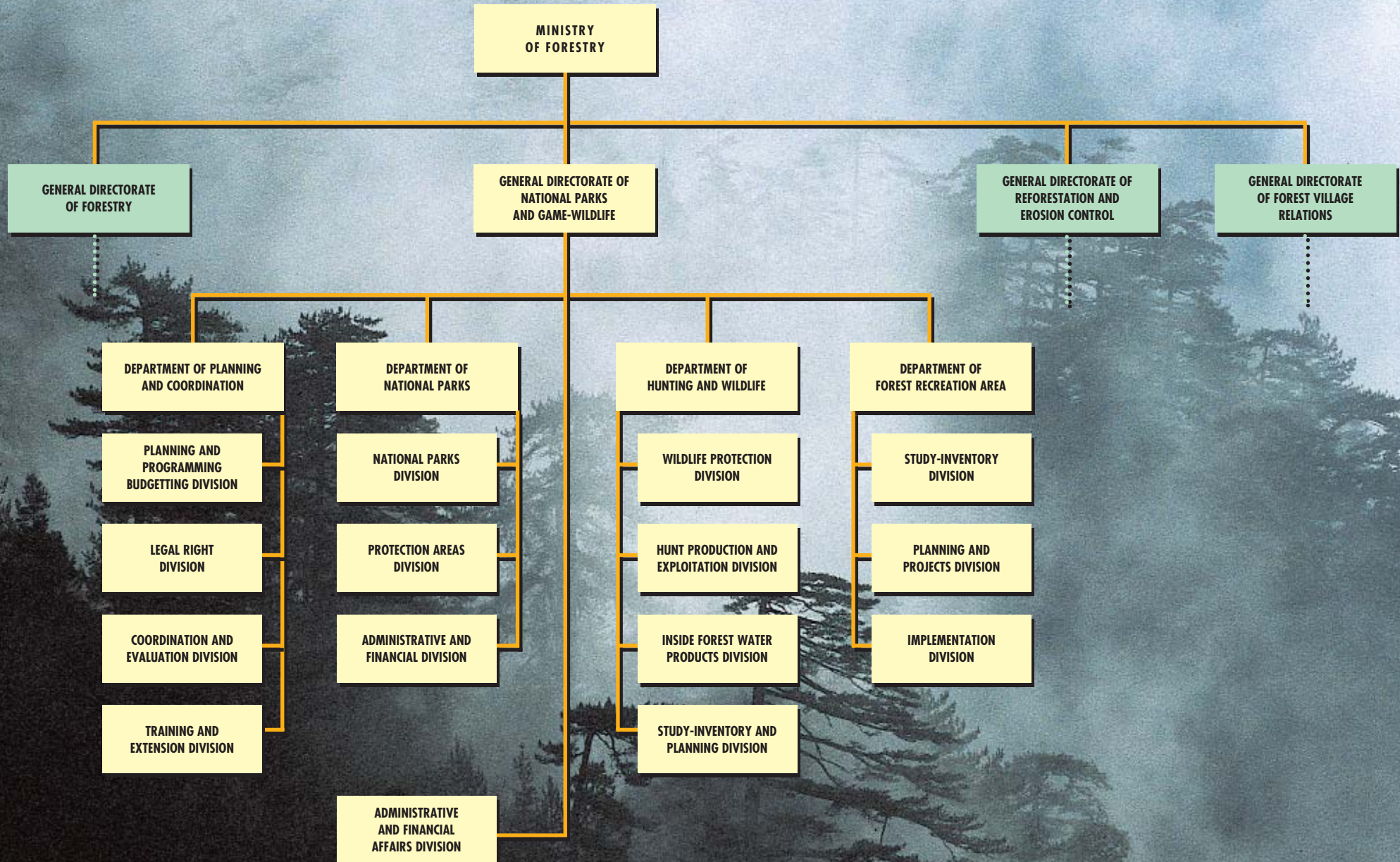
“Time has come when scientific truth must cease to be the property of the few, when it must be woven into the common life of the world; for we have reached the point when the results of science touch the very problem of existence.”

Louis Agassiz

It is perhaps fitting that we remind ourselves from time to time of the elegant and powerful words of Louis Agassiz, the great Swiss zoologist. Too many of us work in isolation and hesitate to share our findings and observations. Indeed, when it comes to the environmental issues, the world can not wait: facts must be made known and questions debated in open and frank discussions. The wildlife problems of Turkey is not an exception.



Participation is one of our guiding and basic principles in the management of the game and wildlife. The decisions concerned with the game and wild life management should be taken in a participatory manner. Within the frame of this principle, the GDNPGW organized a meeting in Ankara on May 20th, 2001 to discuss the issues surrounds the game and wildlife of Turkey, with the active participation of different stakeholders, including hunters, villagers, universities, NGOs, and relevant organizations. Because this was the first attempt to bring the game and wildlife related organisations together, this meeting was called “General Assembly of Game and Wildlife Related Organizations”. This meeting has provided important contributions and guided us in our decisions concerning the conservation, improvement and sustainable management of wildlife resources.



Organization of General Directorate of National Parks and Game-Wildlife is comprised of 4 departments and 15 divisions at the headquarters. In addition, country organization of GDNPGW has 9 regional directorate offices in each geographical regions including 33 headengineering offices, 8 national park directorates, 116 game and wildlife engineering offices, and 16 national park engineering offices.

