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## Management and Wildlife Problems in Kazdagi „Ida Mountain“ National Park/Turkey

Key words: Turkey, National Parks, Wildlife Management, Biodiversity

### Introduction

National parks are kinds of sanctuaries which protect animals and plants within their boundaries. The first sanctuaries in the US and Canada were established in 1872 and 1887, respectively (GILBERT & DODDS 1992). In North America, which leads in conservation, the current objective of wildlife management is to maintain persistent and well-distributed natural populations of wild vertebrates and their associated ecosystems in accordance with human goals (MESLOW 1993). According to OWEN & CHIRAS (1995) wildlife management may be defined as the planned use, protection and control of wildlife by the application of ecological principles, and the major function of wildlife management is to protect endangered species. In this connection, Turkey, which is located in the north-eastern Mediterranean basin, comprises a total of 779 450 km<sup>2</sup> with 775 000 km<sup>2</sup> in Asia and 4450 km<sup>2</sup> in Europe (Turkish Thrace). Up to now, more than 900 vertebrate animals (fresh water fishes, amphibia, reptilia, birds and mammals) have been recorded in Turkey. The activities of wildlife conservation are mainly focused on the national parks which mostly contain the forested areas with panoramic views. However there is no national park or protected area for

natural steppes which are known to have a higher level of biodiversity than the forests, especially pine forests. Even though the protection activities are getting intensive in the natural parks, the biodiversity of these areas is not exactly known. There is also no habitat classification; habitat – dependent distribution of fauna is not established in the national parks in Turkey. The interest of authorities in these areas are mostly for commercial purposes; they try to count wild mammals such as *Lynx lynx*, *Sus scrofa*, *Cervus elaphus*, *Capreolus capreolus*, *Capra aegagrus* in order to give hunting permission. They usually invent imaginary numbers for these animals. Apart from these the local people are not aware of the importance of such protected areas. According to local people, a national park restricts their land-use, hunting and other activities. Thus local people and some politicians put pressure on authorities to open national parks for agricultural and hunting uses.

With their richness of biodiversity, national parks were recently reached 36 in Turkey. Of them, one is Kazdagi National Park which was founded in 1993 and located in Balikesir and Canakkale provinces in north-western Anatolia (Figs. 1, 2). DEMIRSOY (2002) stated that Kazdagi National Park also has regional importance as a refuge for wild fauna that escaped from the

Table 1 National parks in Turkey with their provinces, PV = panoramic view, SR = Speciesrich habitats

Nr	Name	Province	Peculiarities
1	Gökceada TUDAV sualtı parkı	Canakkale	Monk seal
2	Truva MP	Canakkale	History and geomorphology
3	Gelibolu Yarımadası tarihi MP	Çanakkale	History and geomorphology
4	Kazdagi MP	Balıkesir, Canakkale	SR, PV
5	Dilek Yarımadası MP	Aydın	Bush vegetation,
6	Spil Dagi MP	Manisa	PV, bush vegetation
7	Marmaris MP	Mugla	Excursion spot, bush vegetation
8	Kus Cenneti MP	Balıkesir	Bird and flora
9	Saklikent MP	Mugla	Geomorphology, SR
10	Honaz Dagi MP	Denizli	PV, mountain flora and fauna
11	Uludag MP	Bursa	PV, mountain flora and fauna
12	Beydagları Sahil MP	Antalya	PV mountain flora and fauna
13	Gulluk Dagi MP	Antalya	Archaeology, mountain flora and fauna
14	Baskomutan Tarihi MP	Afyon	History and steppe flora
15	Kovada Golu MP	Isparta	PV, aquatic habitat
16	Koprulu Kanyon MP	Antalya	PV and river
17	Kizildag MP	Isparta	PV, mountain flora and fauna
18	Beysehir MP	Konya	Lake and bird
19	Altınbesik Magarası MP	Antalya	Cave
20	Yedigoller MP	Duzce	Lake system and forest
21	Soguksu MP	Ankara	Forest and SR, PV.
22	Ilgaz Dagi MP	Kastamonu	Forest and SR
23	Kure daglari MP	Kastamonu Bartın	Forest and SR
24	Bogazkoy – Alacahoyuk MP	Corum	Archaeology
25	Yozgat Camlıgi MP	Yozgat	Forest
26	Goreme tarihi MP	Nevsehir	Geomorphology
27	Aladaglar MP	Nigde, Adana, Kayseri	PV, mountain flora and fauna
28	Karatepe Aslantas MP	Osmaniye	Archaeology, Mediterranean fauna and flora
29	Adiyaman-Nemrut MP	Adiyaman	Archaeology and PV
30	Munzur Vadisi MP	Tunceli	PV and SR
31	Macka-Altindere Vadisi MP	Trabzon	Forest and history
32	Kackar Daglari MP	Rize	PV and SR
33	Hatilla Vadisi MP	Artvin	PV and SR
34	Karagol-Sahara Yaylasi MP	Artvin	PV and SR
35	Allahuekber Daglari tarihi MP	Kars	Mountain and SR
36	Agri Dagi MP	Igdir, Agri	Mountain and RB

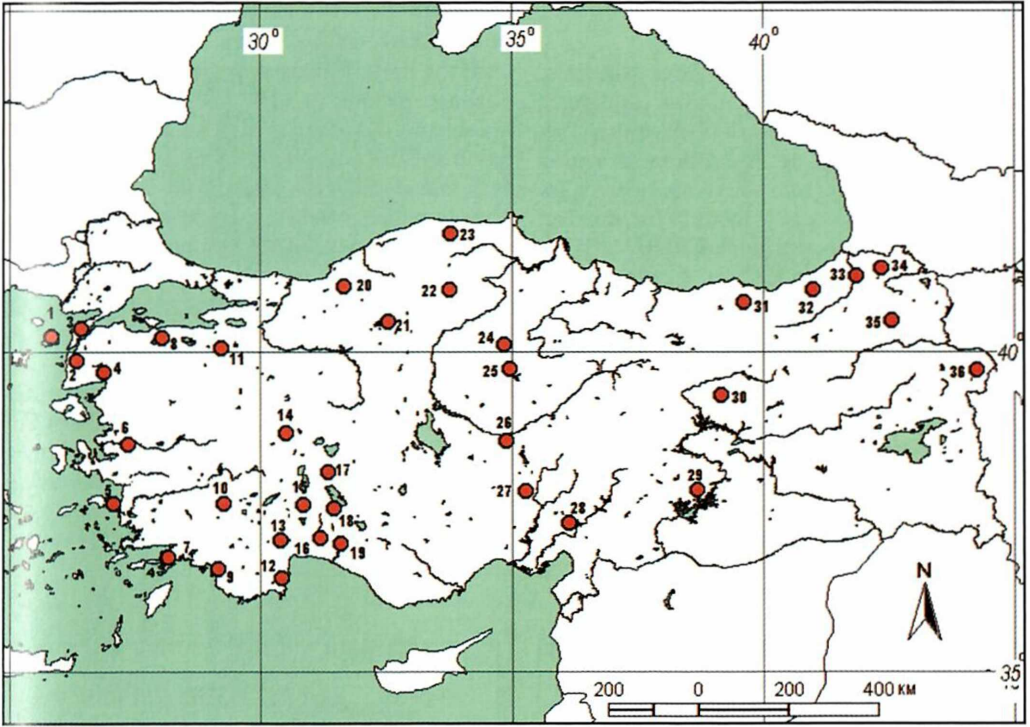


Figure 1 National Parks in Turkey; No. 4 is Kazdagi (Ida Mountain), see Table 1 for the names of National Parks

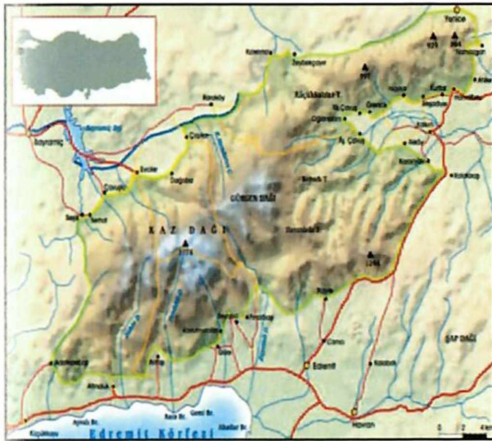


Figure 2 The border and location of Kazdagi National Park

European continent during glacial periods. Thus we discuss here the ecological and management problems of Kazdagi as state to biodiversity for vertebrate animals.

### Material and methods

This study covers the results of field studies carried out 15 years throughout north-west Anatolia. Sampling was done using hands, mist-nets, snap and Sherman live traps. Some species of birds and mammals were observed, and indirectly recorded from feces, owl pellets and footprints.

Checklists and reference books were used to identify species (BARAN 1976, 1987; CORBET 1978; NIETHAMMER & KRAPP 1978; KURU 1980; HARRISON & BATES 1991; DEMIRSOY 1996, 1997; HEINZEL et al. 1995; SNOW & PERRINS 1998; KRYŠTUFEK & VOHRALÍK 2001).

The climatic data was obtained from the meteorological station of the town of Edremit. We also interviewed villagers to get their expectation of national parks, and discussed with authorities shared use of the area. We also joined the hunting drive for wild boar to evaluate the current applications.

**Results and Discussion**

Kazdagi, which is also known as Ida Mountain, is the highest mountain with an altitude of 1800 m on the Aegean coast of Anatolia. This mountain also separates the Marmara region from the Aegean region. There are many summits, canyons and rocky foothills in Kazdagi National Park with total area of 21300 ha. Precipitation and temperature in Kazdagi show variations depending on the altitude. Here we provide some climatic records for Edremit which is at sea level. In the climatic data from sea level, January (6.2 C°) and August (25.7 C°) are the coldest and the warmest months, respectively (Fig. 3).

While Precipitation is very low during June, July, August and September, therefore Kazdagi suffers from drought during the summer months. Water sources are also restricted in

Kazdagi. This national park is one of 36 totally established national parks throughout Turkey, and the most of these areas have species – rich habitat, panoramic view and forest ecosystem (Table 1). Kazdagi is also mainly covered by pine and oak forest with forest clearings. There are many endemic plants in the national park, one of which is the Kazdagi fir which grows up in the higher parts of the mountain (Fig. 4). According to recent records, the vertebrate fauna of Kazdagi reached 174 species; this number includes almost 1/5 of the total vertebrate species in Turkey (Fig. 5-9).

Kazdagi is also surrounded by many villages; there are olive gardens in the lower parts of the national park. Most of the villages have their own hunting and shooting clubs. Hunters mainly focus on hunting some birds, wild boar, hare and roe deer. They occasionally shoot foxes and other small carnivores.

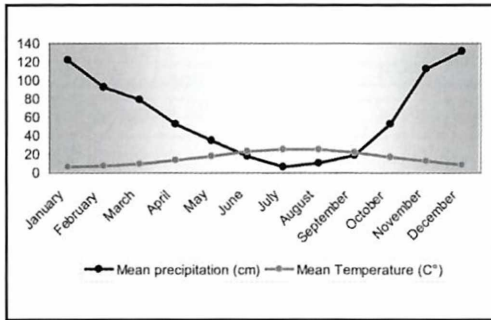


Figure 3 Climatic peculiarities of Edremit, which is located south of Kazdagi National Park

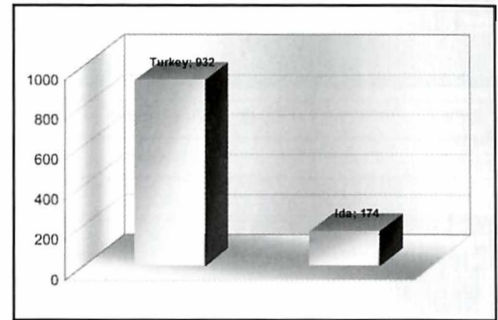


Figure 5 Of 932 vertebrate species distributed in Turkey, 174 species live in Ida Mountain

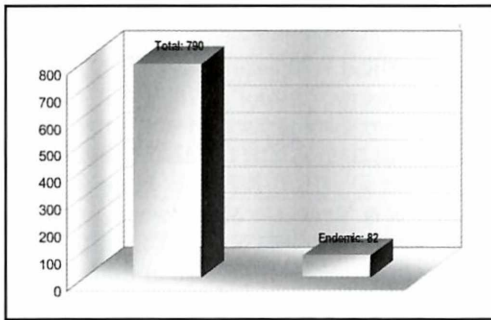


Figure 4 Seed plants are also very abundant in Kazdagi National Park; 790 seed plants are known in the National Park; of these plants, 82 are endemic to Kazdagi

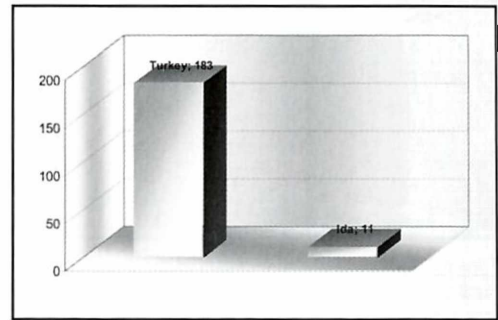


Figure 6 Of almost 183 fish species distributed in Turkey, 11 species, 6 percent of the total species, live in the aquatic systems of Ida Mountain

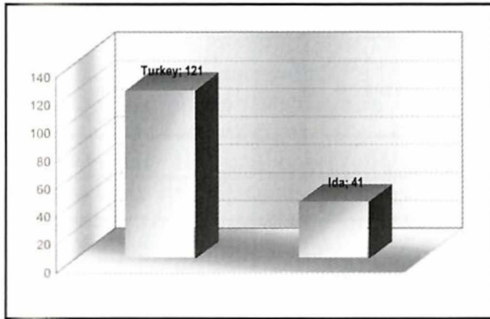


Figure 7 Up to now 21 amphibia and 100 reptilia species were recorded in Turkey, of these species 41 (8 amphibian and 23 reptilian species) occur in Ida Mountain

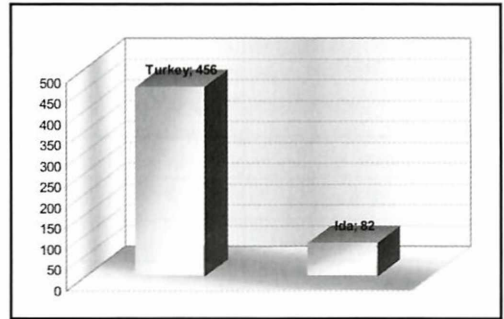


Figure 8 According to recent records, a total of 456 bird species live in Turkey, 82 species live in Ida Mountain as inhabitants or migratory birds

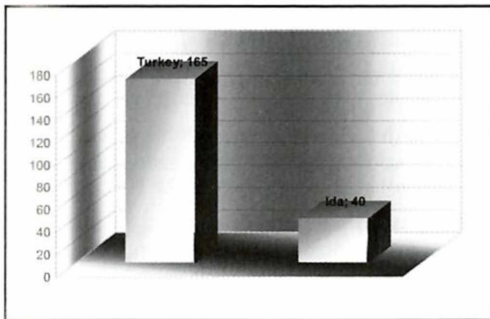


Figure 9 Almost 40 mammalian species were recorded around Ida Mountain. These species comprise 25 percent of Turkish mammals (165 species)

We interviewed hunters and concluded the following:

1. Hunters get gun permits without training
2. Guns are used by the relatives, especially teenagers, of the legal owner
3. Hunters are not aware of wild fauna, and they have only superficial knowledge of some well – known species
4. Hunters are also not informed about the reproduction cycles, and habitat use of game animals

#### The Organisation of Nature Conservation and National Parks in Turkey

National parks in Turkey are under the responsibility of the General Manager of Nature Conservation and National Parks. This unit is one of 8 subdivisions of the Ministry of Environment and Forestry. There are four main departments

under the General Manager of Nature Conservation and National Parks;

- Promenade Areas
- National Parks
- Hunting and Wildlife
- Nature Conservation

In this frame work, the General Manager of Nature Conservation and National Parks is organised as 25 peripheral sections in the different cities. But there are no fauna, flora and ecosystem experts in these peripheral sections. That is why the biodiversity in national parks is less known and the managing activities are also poorly organised and poorly planned for wildlife. When the organisation chart of Nature Conservation and National Parks of Turkey is compared to Canada (Wildlife service of Atlantic region), many specialized biologists take responsibilities for certain issues such as seabirds, migratory birds, shorebirds, habitat, toxic substances, and environmental impact assessments (GILBERT & DODDS 1992). In the peripheral sections of Turkish national parks as well as in Kazdagi, a forester titled an engineer tries to take all the responsibilities of fauna, flora and the ecosystem. The peripheral authorities can also give permission to tourists to camp and trek in the national park. STORCH & LEIDEBBERGER (2003) revealed that mountain huts and other places frequented by humans increased carrying capacity for corvid birds at higher elevation, and mountain tourism may thus conflict with conservation efforts for threatened species. Apart from this, it is also important to express species – rich habitat by using indices such as the Sorensen and Jaccard coefficients given by KREBS (1989) and STILING

Table 2 A brief inventory of vertebrate animals in Kazdagi and its environs

Major class	Richness of species in Kazdagi	Richness of species in Turkey	Percentage of total number of species in Turkey
Osteichthyes	11	186	5.9
Amphibia & Reptilia	41	121	33.8
Aves	82	460	17.8
Mammalia	40	165	24.2
Total	174	932	18.6

(1996). Such a comparison was carried out for habitat and rodent fauna in different locations by YIGIT et al (2003), and the locations were classified in respect to rodent composition, their climatic and geographical peculiarities.

In Kazdagi National Park, there are no habitats – dependent vertebrate inventories, and also no monitoring for wild fauna; it is now impossible to evaluate the pair-wise conflict and species – rich habitat in the ecosystems.

#### *Administrative and ecological problems in Kazdagi*

1. Although Kazdagi is officially under the responsibility of the peripheral section of General Manager of Nature Conservation and National Parks, mayors of Municipalities around Kazdagi interfere with the authorities of the peripheral section of the national park.
2. The numbers of rangers who control entering the national park are insufficient. Therefore the border is not efficiently controlled in Kazdagi National Park,
3. Some parts of the national park are used as summer pastures or promenade places by migratory people as known „Nomads“. These people make fire, noise and occupy unique meadows. That is why there is a conflict between the peripheral authority and „nomads“. These people make fires, noise and occupy unique meadows. That is why there is conflict between the peripheral authority and the nomads.
4. Peripheral authorities are not experts on fauna, flora or ecosystems, so they are usually not aware of either the inventory of wild

fauna and flora or their ecological demands.

5. Even though Kazdagi suffers from drought in the summer months, the water of the one of the most important rivers is taken via water pipe for use as drinking water for the Zeytinlik municipality,
6. The pine trees are also under threat of the Processionary Moth „*Thaumetopea pityocampa*“,
7. Kazdagi is also under risk of forest fires because of aridity or anthropogenic factors,
8. Keystone species are not determined, and there is no monitoring study on wild fauna and flora.

#### *Hunting in Kazdagi; A sample for wild boar*

Hunting activities in national parks normally need specific permission from peripheral authorities. However, it was seen that in order to receive hunting permission the members of hunting clubs and villagers continuously complain of damage caused by wild boar. In our brief inspection in olive and vegetable fields, we did not find damage caused by wild boar. In some fields, we deservd that wild boars rooted in the soil, especially under the olive trees, but without damage to the trees. But wild boars can cause damage to crops in the some parts of the country. However monitoring the population and determining why population levels increased should be an essential part of evaluating wild boar damage. CAHILL et al. (2003) reported that the rooting activity of wild boar was highest in winter and lowest in summer and can cause damage to agricultural areas. In Kazdagi National Park, the peripheral authorities usually give hunting permission by considering

villagers and hunters complaints without monitoring the population of wild boar. Under these circumstances, the hunting clubs in the villages get hunting permission, and hunting drives are carried out by some villagers as well as members of hunting club on the weekends. Hunting is repeated every subsequent weekend around other villages.

In our opinion, hunting permission should be given for the wild boars which come to root the villager's fields. In such a situation, the daily activity of wild boar should be considered for hunting. According to CAHILL et al. (2003), feeding activity takes place mainly during 00:00-05:00, and maximum movement was registered from 20:00-00:00. The dispersal distance of wild boar also depends on their age group, and the maximum dispersal rate was reported at the age of 13 months with 16.6 km dispersal from their natal sites in Sweden (TRUVÉ & LEMEL 2003). In Kazadagi, we joined the hunting drive and determined the following:

1. In hunting drive, big drums were used to drive the wild boars towards more than 30 hunters with guns, who then ambushed them. The drive lasted until afternoon and 8 wild boars from different age groups were shot. Maximum length was recorded as 168 cm for a male their weights vary from 25 to 99 kg (Table 3),
2. There was no control for hunters who participated in the hunting drive. Villagers and relatives of hunters participated and some of hunters had no gun permission,
3. During the hunting drive, only a few forest rangers accompanied the hunters; these rangers have no training for wild fauna and hunting,
4. The hunters shot wild boar without consideration for the age group and sex (juvenile, male and female). Even if the prey is wild boar, the uncontrolled hunting can change the energy flow in the ecosystem and the extinction of the natural population of wild boar, as has happened in England (GOULDING et al. 2003),
5. In a hunting drive carried out in January, pregnant females were shot, and carcasses of the animals were left in the national parks,
6. Apart from wild boar, some hunters aimed to hunt pigeon such as „*Columba livia* and *Columba palumbus*“, roe deer „*Capreolus capreolus*“ and red fox „*Vulpes vulpes*“.

## Conclusion

According to direct and indirect records, as well as previously published references, Kazdagi and its environs consist of many species – rich habitats with at least 174 vertebrate species.

Table 3 External measurements (cm) and weights (kg) of wild boars shot in the hunting drive (the mean values are only for adults ones, No. 1, 2, 3, 4, 5, and 8, SD: standard deviation)

Characteristics	1 (♀)	2 (♀)	3 (♀)	4 (♂)	5 (♀)	6 (♀)	7 (♂)	8 (♀)	Mean - SD
Total length	150	145	161	168	163	108	123	165	158.7 ± 9.1
Body length	132	124	148	143	144	96	110	145	139.3 ± 9.3
Ear length	15	13	13	14.2	15.5	10	10	14	14.1 ± 1.0
Forearm	40	39	46	56	58	34	49	66	50.8 ± 10.9
Hind foot	28	29	30	33	28	24	26	29.5	29.6 ± 1.9
Shoulder height	71	72	78	85.5	81	51	60.5	87	79.1 ± 6.7
Tail without tuft	19	21.5	21.5	23	22	14.5	18.7	22	21.5 ± 1.3
Weight	74	67	86	97	99	25	31	75	83 ± 13.1

Habitat classifications were not carried out in Kazdagi, and species – rich habitats were not expressed by any indices. The local and peripheral authorities are not in consensus as to the use of national parks. There are no fauna, flora or wildlife experts in Kazdagi. Wildlife and human use of the national park are not properly managed and planned. Villagers complain of wild boar damage to their agricultural areas, and peripheral authorities of the national park give permission to villagers for hunting drives without investigating population levels or agricultural damage. Also the keystone species are not known, and there is no monitoring for keystone species and habitat types. Hunting activities and illegal hunting are not exactly controlled for the national park. Therefore habitat loss and population decrease of some species are expected in the near future.

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### Abstract

The number of national parks in Turkey is increasing and has reached 36. However the biodiversity of these areas is poorly known, and is not comparatively expressed by using the some criteria such as the Sorensen and Jaccard coefficients. Kazdagi, which is located in north-west Turkey, contains about 11 freshwater fish, 41 amphibia – reptilia, 82 birds and 40 mammal species, which include some endemic species. Of these species, some have importance as game animals, and some are considered as pests for agriculture. In this context, local farmers and authorities are always in conflict with the wise use of national park. In a hunting drive in the middle of January, eight wild boars, including some young and pregnant ones, were shot including a female weighing 75 kg with 8 embryos. We here propose and discuss the wise use of national parks and the measures for protection wild fauna.

### Zusammenfassung

#### Management und Wildtierprobleme im Kazdagi-„Ida Mountain“-Nationalpark (Türkei)

Gegenwärtig bestehen in der Türkei 36 Nationalparks. Die Biodiversität dieser Großschutzgebiete ist bisher unzureichend untersucht. Der Kazdagi-Nationalpark liegt in der Nordwesttürkei. Bisher sind 11 Arten von Süßwasserfischen, 41 Amphibien/Reptilien, 82 Vogel- und 40 Säugetierspezies gefunden worden, darunter auch endemische Formen. Einige der Arten haben jagdwirtschaftliche Bedeutung, andere werden als Schädlinge der Landwirtschaft erachtet, woraus Konflikte zwischen Farmern und Nationalparkverwaltung entstehen. Aus diesen Gründen wurden 8 Stück Schwarzwild erlegt, darunter auch eine trächtige Bache mit 8 Embryonen. Es werden eine nachhaltige Nutzung (wise use) und der Schutz der Wildtierfauna vertreten.

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