

NOTEWORTHY RECORD OF *PANTHERA PARDUS* IN TURKEY (CARNIVORA: FELIDAE)

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ABSTRACT

Acinonyx jubatus, *Caracal caracal*, *Felis chaus*, *Felis silvestris*, *Lynx lynx*, *Panthera leo*, *Panthera pardus*, and *Panthera tigris* were felidae in fauna of Anatolia. It is supposed that *Panthera tigris* was last completely exhausted in fauna of Turkey because of habitat loss and poaching. Populations of other species have become gradually poor and endangered. The present study is based on observations during field studies conducted in Bitlis Province and interviews with local people between 2011 and 2016. *Panthera pardus* which has been considered extinct was reported in Bitlis Province owing to this study. Some biological and ecological characteristics were also recorded as well as the distribution of species.

KEYWORDS:

Panthera pardus, distribution, bioecological notes, Bitlis, Turkey.

INTRODUCTION

Pars (*Panthera pardus*), known as leopard, is one of four big cat species of the genus *Panthera* in the family Felidae [1]. *Panthera pardus* with the widest range of distribution area among the wild cat species is distributed from South Africa to Sub-Saharan Africa Countries, from Middle East to southeastern Asia and Java, to far eastern Russia in the north [2]. Wide range of food and high adaptation ability of pars plays an important role in distribution and having a great variety of habitats [3]. Because pars have a substantially wide geographical distribution, 27 subspecies have been identified around the world [4]. However, taxonomic classification of these subspecies is controversial [5]. Miththapala et al. [5] re-revised the number of subspecies as eight after their molecular study.

Pars is generally named as Anatolian pars in Turkey and it is attributed to the subspecies *Panthera pardus tulliana* [6]. Records with and without sample about pars (*Panthera pardus*) which is known to become extinct in Turkey have been given by various researchers from different regions of Anatolia [7,

8, 9, 10, 11, 12, 13]. The aim of the present study is to determine the presence of *Panthera pardus* in Bitlis Province.

MATERIALS AND METHODS

The present study was based on observations during field studies conducted in Bitlis province between 2011 and 2016 and interviews with local people. In the present study, some habitat and location information of a male individual shot in 2008 in Bitlis Province were recorded. The localities where the individual, which was also photographed, was seen by local people were marked on the map. In addition, records of species' distribution were indicated by updating on the table.

RESULTS

Records with and without sample about pars (*Panthera pardus*) which is known to become extinct in Turkey have been given by various researchers from different regions of Anatolia (Table 1). However, various findings have been found recently about the presence of this species in southeastern region of Turkey [13]. By means of the present study, record of pars given from Bitlis Province located in Eastern Anatolian region of Turkey will provide significant data indicating that presence of the species has been continuing in Anatolia.

Photograph of pars (adult male) addressed in the present study was taken in February 2008 in Cumhuriyet village of Central district in Bitlis province (Figure 1). Statements of four people as well as the person who took the photograph were utilized in the study. Two of these people were village guards and had quite comprehensive knowledge of the region.

The fact that areas where pars may have distribution in Eastern and Southeastern Anatolian Regions both have harsh geographical characteristics and sheltering for security reasons was observed to have a positive effect in terms of presence of pars.

TABLE 1
Distribution records of pars in Turkey

Location	Record Type	Reference
İzmir	With sample	[14]
Aegean Region, Euphrates Region, South of the Lake Van, Adana	Without sample	[15, 16, 17, 18]
İzmir, Bitlis, Hakkâri, Turkey-Syria frontier zones	Without sample	[7]
Karakale village near Kars, Ararat Mountain near Ağrı	With sample	[8]
Abant near Bolu, Çatacık near Eskişehir, Beypazarı near Ankara	With sample	[9]
Çatalhöyük near Konya	Without sample	[8, 10]
İzmir	With sample	[10, 11, 19]
Southwestern Anatolia	Without sample	[12]
Western Anatolia	Without sample	[20]
Eastern Black Sea Mountains	Without sample	[21]
Eastern Anatolia	Without sample	[22]
Yazıoymak village near Şırnak, Çınar near Diyarbakır	With sample	[13]
Cumhuriyet village near Bitlis	Without sample	[13]
Cumhuriyet village near Bitlis	With sample	This study



FIGURE 1

General appearance (a) and mouth structure (b) of pars identified (adult, ♂♂)

Pars preferring mountainous areas as the habitat was identified in a steep and mountainous area having an altitude of approximately 1710 m in Cumhuriyet village of Bitlis Province (Figure 2). The region has sparse vegetation and is oak barren. Relatively large caves that can be used as shelter by pars were also determined in the region. Geographical structure of the region is suitable for existence of the species and intensive populations of mammals such as hedgehog (*Erinaceus concolor*), Caucasian squirrel (*Sciurus anomalus*), Indian porcupine (*Hystrix indica*), brown hare (*Lepus europaeus*), wild goat (*Capra aegagrus*), and wild boar (*Sus scrofa*) provides an important advantage for pars having a wide range of diet. In addition, carnivorous mammal species such as grey wolf (*Canis lupus*), red fox (*Vulpes vulpes*), beech marten (*Martes foina*), European badger (*Meles meles*), wildcat (*Felis silvestris*), and lynx (*Lynx lynx*) were also identified in the region. Population of partridge

(*Alectoris chukar*) from birds was observed to be intensive. According to statements of local people, pars attacked to sheep herds in the region and hunted an animal from the herd, and residues of an eaten fox were found in a cave that it used as shelter. Pars was stated to be considerably sensitive during eating, to eat the prey after removing its skin completely, and not to eat hairs and skin. A single male individual was reported to be seen in the region especially during February and March which are reproduction season. It was estimated that the male individual was seeking for a female one to mate.

Pars was also reported to be seen by local people in Karınca and Sarikonak villages in this region, and to be captured by thermal cameras in military base in Buzlupınar location and gendarmerie station of Karınca village. However, these footages were not obtained because of security (Figure 3).



FIGURE 2
 Habitat where pars was identified (Coordinate: 37S 0757141E 4237778N)



FIGURE 3
 Distribution areas of pars in Bitlis Province
 (1: Buzlupınar location, 2: Karınca village, 3: Sarıkönak village, 4: Cumhuriyet village)

DISCUSSION

27 subspecies of pars were identified because it has a considerable wide area of distribution all around the world [4, 5]. Miththapala et al. [5] revised the number of subspecies of pars which were identified by considering phenotypic and geographical variations as 8 as a result of their molecular study. The subspecies *P. pardus tulliana* distributed in Turkey was included in to the subspecies *P. pardus saxicolor* distributed in Iran [5]. Mountain range of Zagros in northwestern Iran stretches in northwest-southeast direction from Northern Iraq and eastern border of Turkey to the Strait of Hormuz and a great majority of this mountain range is included within borders of Iran. Total length is about 1600 km and its width is approximately 240 km [23]. Gavashelishvili and Lukarevskiy [24] indicated that Zagros Mountains provided a corridor of habitat convenient for pars. Avgan et al. [13] stated that Zagros Mountains stretching within borders of Northern Iraq and Southeastern Turkey had a wide potential for habitat of pars. Records of pars which have been recently provided from especially eastern and southeastern Anatolia in Turkey support hypotheses suggested for Zagros Mountains progressing as the continuation of Southeastern Taurus. Therefore, it is possible for the subspecies *P. p. saxicolor* distributed in Iran to move into the farthest points of Anatolia through the corridor created by this mountain ranges.

Avgan et al. [13] gave 12 records of pars from Northern Iraq and Southeastern Turkey in their study and 10 of these records were verified and two were unverified. Two of these records were verified and one was unverified from southeastern Turkey. One of the verified records was the individual shot in Yazıoymak village of Şırnak in 2010 and the other one was the individual killed by shepherds in Çınar district of Diyarbakır in 2013. Unverified record was the one given from Bitlis-Cumhuriyet village based on statements of local people in 2001. The unverified record given by Avgan et al. [13] from Bitlis Province was verified by the photo of pars in the present study.

Population of pars has dramatically decreased in recent years because of habitat loss and negligently kills with the purpose of protecting people and their farm animals [25]. Even if it is in limited number, records of pars considered as extinct species in Turkey have been found in recent years [13]. However, all of these records belong to dead animals identified. The reasons of their deaths were generally the same, their attacks to sheep herds and shepherds were given as justification.

Density of pars population is directly associated with the density of prey species in the region inhabited [26, 27]. Bitlis province is known to be quite rich in species hunted by pars. Pars rather hunt brown hare (*Lepus europaeus*), wild boar (*Sus scrofa*), and wild goat (*Capra aegagrus*). Domestic

animals occupy an important place in diet of pars. Goats and cattle are a significant part of diet [28, 29]. Dogs are also an important prey for pars [28, 30, 31]. In interviews with local people, pars was stated to attack farm animals and even dogs. Dogs were expressed to become nervous when they smelled the scent of pars and also to hide.

Numerous photo traps were established on possible places by the Office of Nature Conservation and National Parks in order to identify existence of pars in Bitlis Province, but no record was taken because these photo traps were destroyed by terrorists.

We could talk about existence of pars in Turkey 50 years ago. However, while pars is considered as “Vulnerable” based on IUCN [32] criteria today in the world, it is accepted as extinct in Turkey. The fact that this species is evaluated within status of harmful animal and its hunting is free during the year according to Land Hunting Law of Turkey till a recent date needs to be considered as the most crucial factor for extinction of pars. The only photo in which pars was viewed alive in Turkey was taken by German Biologist Kosswig [11]. Pars was recorded as dead in all photos except for this one. Similar justifications were given in all of these records as the reason behind why the animal was killed. It is a considerable loss not to have a photograph of this species, which has a wide distribution in territories of Anatolia from past to the present day, in its habitat. It is required to take important steps about pars observed especially in Eastern and Southeastern Anatolia recently and to ensure preparation of an action plan about the species, and to start studies on current condition of pars. Necessary studies also should be conducted to raise awareness of local people.

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Received: 22.01.2018
Accepted: 02.08.2018

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