

ESTIMATING POPULATION SIZE OF BROWN HARE (*LEPUS EUROPAEUS* PALLAS, 1778) IN TURKEY

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ABSTRACT: This study is based on data related to population size and certain morphological characteristics of brown hare which is common in Turkey. Records of fieldwork conducted in all Turkey between 2008 and 2010 and camera trap records obtained from Kırıkkale Province between 2015 and 2016 were analysed in this study. Brown hare is main food source of carnivores such as wolf, jackal, fox, marten and lynx. Camera trap results are the first research data on population size of Turkish brown hares. Populations size of brown hare vary in hunting and non-hunting areas. The number of brown hares in hunting areas are less than the other areas.

KEY WORDS: Brown hare, *Lepus europeus*, population size, camera trap, Turkey

According to recent literature, there are 5416 mammal species in the world and 171 mammal species were recorded in Turkey (Wilson & Reeder, 2005). *Lepus europaeus* belongs to family Leporidae of order Lagomorpha. *Lepus europeus* which is one of the gnawing animals except rodents, lives in mountains, steppes, woodlands, wetlands, open fields, edge of swamp and agricultural areas. Biological, ecological, taxonomical, caryological and distributional studies were conducted about brown hare in Turkey (Demirbaş & Albayrak, 2013, 2014, 2015; Albayrak, 2016). Some external characteristics of Turkish brown hare were recorded as oval head, long ears, big eyes, short tail and longer hind legs. It mates 3-4 times between February and December, and gives 3-6 leverets after 6 week pregnancy (Turan, 1984). Brown hares usually live solitary but they come together in estrus period. Brown hare suckles its leverets about three weeks and then leaves them free. Brown hare lives 7-8 years. It is keen on fruits and vegetables (Turan, 1984). Nevertheless, there is no information on population size of Turkish brown hare.

The aim of this study is to determine some biological features and population size of brown hare in Turkey.

MATERIALS AND METHODS

This study is based on brown hare specimens from Turkey. Most of specimens were obtained during hunting season and also some from traffic accidents. Additionally, camera traps were set for daily activities in Kırıkkale Provice. Some camera traps were established for photos and some were for video. The ones established for taking photos were set to be off for 15 seconds after taking 3 photos and the ones established for recording videos were set to be off for 60 seconds after recording for 10 seconds. Camera traps took records from Hisarköy, İkiztepe fire lookout tower local between 24.3.2016 and 9.4.2016 and from Mountain Denek between 26.5.2016 and 18.8.2016.

Feces of brown hare in the field were recorded (Fig. 1). Brown hare footprints were also used for detection in winter (Fig. 1).

RESULTS

The ordo Lagomorpha is represented by two species in Turkey: One of them is European hare or brown hare (*Lepus europeus*) and the other is island rabbit, *Orytalagus cuniculus*, which is brought from Europe and let out to Gökçeada near Çanakkale Province, and now is not feral animal.

Lepus europeus Pallas, 1778

1778. *Lepus europeus* Pallas 1778. Nova Spec. Quad. Glir. Ord., p.30.

Type locality: Poland

Diagnostic characters: Total length, 500-670 mm; condylobasal length, 79.5-93 mm; zygomatic breadth, 33.6-40.5 mm; length of C-M³, 11.8-17.0 mm; length of C-M₃, 14.0-18.9 mm; mandibul length, 64.7-75.0 mm.

General characteristics: General coloration varies from yellowish light brown to yellowish brown. Brown hare generally stays in the shallow pit called as «form» on the ground in day time and is very active at nights. Feces is odorless and 0.5-1.5 cm in diameter. Of some characteristics, hindfoot length is 135-160 mm and weight is 2.3-4 kg. Brown hare has not baculum but the phallus is very obvious during reproduction period (Fig. 2).

Habitat features: Brown hares live in plains with vegetation, open fields, plateau, woodlands and highlands. It also lives in croplands and grasslands near streams and reed fields and, in vineyards, orchards and fields in vicinity of residential areas. In rural areas, it is fed with plants like couch grass and wild clovers. It fondly gnaws astragalus root. It gnaws barks of soft trees like apple and prefers vegetables such as carrots, lettuce and parsley. Lentile, sunflower and sprouting chickpea are among its diet.

Lepus europeus as a hunting animal: Brown hare is an animal which is hunted constantly by both carnivores and human. Within the framework of the decisions of Central Hunting Commission, hunting of brown hare has been released for approximately three months (15.10.2016-08.01.2017) in 2016. Brown hare is located in LC category according to IUCN criteria (Fig. 3).

Population size: In camera trap studies, a significant difference in number of individuals found in hunting and non-hunting areas of Kırkkale Province. When camera trap system records were examined, a high number of brown hares were recorded in hunting banned areas. In this area maximum number of brown hare is 71 (Fig. 4).

In a period of two and a half months, camera records showed that number of brown hares was lower in hunting area. In this area maximum number of brown hare is 10 (Fig. 5).

DISCUSSION

At the end of 1 year study about determining wildlife species in Kırkkale with camera traps, brown hare population size is found to be bigger in Hisarköy, İkiztepe Fire lookout tower area of 2000 m² than Denek Mountain of 30 hectares. Previously mentioned area is a site of reforestation surrounded by wire mesh and kept under control for a long time. In this way, the area is less visited by hunters. Since Denek Mountain is visited more by hunters, it is poor in terms of wildlife elements.

These results will help to understand some biological characteristics of brown hare better. It must be remembered that protection of brown hare is important for survival of some bird and mammal species.

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Figure 1. Methods for determining the presence of brown hare; camera trap (left), feces (middle) and footprints (right).



Figure 2. Phallus of brown hare.



Figure 3. Brown hare near a river.

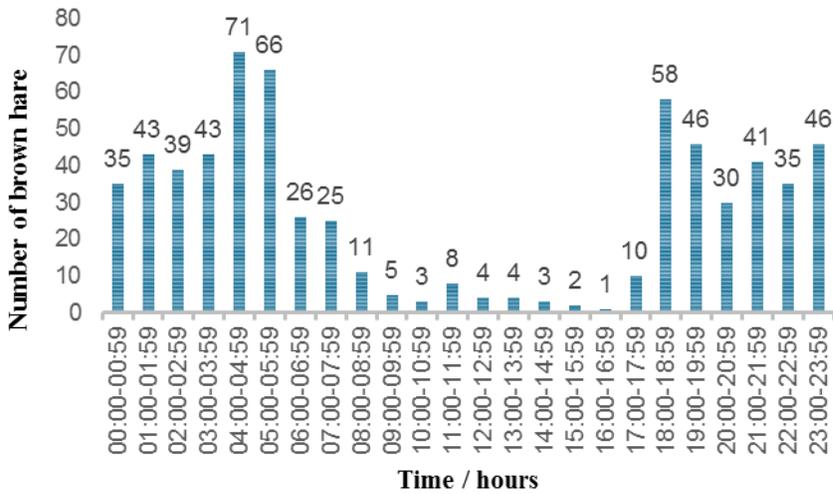


Figure 4. Number of brown hares captured by camera traps in some localities where hunting is forbidden in Kırkkale Province.

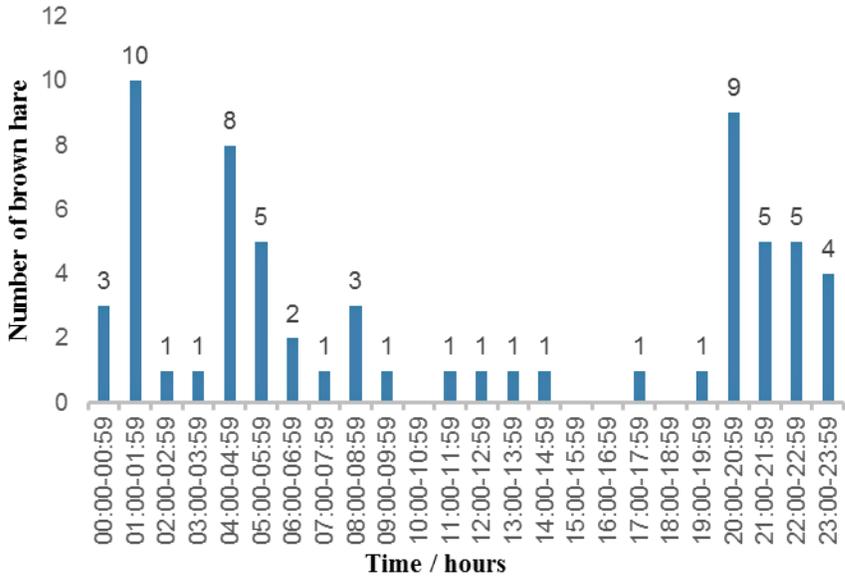


Figure 5. Number of brown hares captured by camera traps in localities where hunting is not forbidden in Kırkkale Province.