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***Pseudolichus solutocurtus* Dubinin, 1956 (Acarina, Pterolichoidea) and *Harpyrhynchus* sp. (Acarina, Harpyrhynchidae Dubinin, 1957) Species Recorded for the First Time on Wild Partridges in Turkey**

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Abstract: This study was performed to determine the presence of mite species on wild partridges in Elazığ district. For this purpose, a total of 68 partridges were caught in the 1996-2000 hunting seasons and inspected for the presence of mite species. At the end of the examinations 8 partridges were found to be infested by mites. Two different mite species were found on the infested partridges. These species were identified as *Pseudolichus solutocurtus* (Dubinin, 1956) and *Harpyrhynchus* sp. (Harpyrhynchidae Dubinin, 1957). In conclusion, 2 species of mites not reported before in the mite fauna of Turkey were found.

Key Words: Acari, wild partridge, pterolichoidea, *Pseudolichus solutocurtus*, harpyrhynchidae, harpyrhynchus sp., Turkey

Türkiye’de Yabani Keklikler Üzerinde İlk Defa Bulunan *Pseudolichus solutocurtus* Dubinin, 1956 (Acarina, Pterolichoidea) ve *Harpyrhynchus* sp. (Acarina, Harpyrhynchidae Dubinin, 1957) Türleri

Özet: Bu araştırma, Elazığ yöresinde yabani kekliklerde bulunan akar türlerinin belirlenmesi amacıyla yapılmıştır. Bu amaçla, 1996-2000 avlanma mevsimlerinde 68 yabani keklik yakalanmış ve bunlar akar enfestasyonları yönünden muayene edilmişlerdir. Muayeneler sonucunda 8 keklikde akar enfestasyonu olduğu saptanmıştır. Enfeste kekliklerde 2 akar türü bulunmuştur. Bu türler; *Pseudolichus solutocurtus* (Dubinin, 1956) ve *Harpyrhynchus* sp. (Harpyrhynchidae Dubinin, 1957) olarak teşhis edilmişlerdir. Sonuç olarak bu çalışmayla, daha önce Türkiye akar faunası içinde bildirilmeyen 2 akar türünün varlığı ilk kez ortaya konmuştur.

Anahtar Sözcükler: Akar, yabani keklik, pterolichoidea, *Pseudolichus solutocurtus*, harpyrhynchidae, harpyrhynchus sp., Türkiye

Introduction

Mites have an important place among the ectoparasites of birds. *Pseudolichus solutocurtus*, which is a member of the feather mite group, feeds on feather fragments, lipids, scaly skin debris and fungal spores, while *Harpyrhynchus* sp., which is in the skin mite group, feeds on skin debris, keratin and tissue fluid (1,2). Some authors (3,4) reported that *P. solutocurtus* was found particularly on partridges. *Harpyrhynchus* sp. was reported to be found on an eagle by Schulz (5) and on an owl by Philips (2). Fain et al. (6) reported that *Harpyrhynchus kirgizorum*, *H. parazumti* and *H. rubeculinus* were found on songbirds and *H. capellae* was found on coast birds. Fain (7) reported that *Harpyrhynchus alectoris* was found on partridges. Atyeo

and Gaud (3) described the morphology of *P. solutocurtus* as follows: the hysterosomal shields cover 2/3 of the body in females, whereas they extend to the terminus in males; legs IV are thicker than I, II and III in males, a pair of paranal apodemes with a subapical hook in tarsus IV is found in males and the females have no pygidial shield. According to the description of the species in the family Harpyrhynchidae reported by some authors (6-8), the palpal tarsus was very small, the palpal tibia was relatively well developed and was bearing at its inner side either a spine with a forked apex or a spine carrying blunt teeth. Palpal genu and palpal femur fused, forming a very large segment. According to these authors (6-8), anterior legs I and II were either well developed and ended in a pair of claws or the pulvillus was absent. Legs

III and IV were always reduced, with only 1 or 2 free segments, and lacking ambulacra. No studies could be found about the presence of mite species on domestic and wild partridges in Turkey. To the authors' knowledge, information about mite species living on birds in Turkey is limited.

Therefore, this study aimed to determine the morphological characteristics of *Pseudolichus solutocurtus* and *Harpyrhynchus* sp. found on wild partridges and to present their microphotographic pictures in order to contribute to the mite fauna of birds in Turkey.

Materials and Methods

This study was carried out on 68 wild partridges caught in Elaziğ district between October and January during 1996 to 2000. Each partridge was brought to the laboratory in a transparent bag and their protocols were noted. In the laboratory, the partridges were flayed. Skin samples were spread over petri dishes placed on a hot plate and kept there for 2 days. Petri dishes on the plate were examined under a stereomicroscope and the mites were collected. The mites collected were put separately into petri dishes containing 70% alcohol and each dish was given a protocol number. Then the mites were kept in lactophenol for 7 days for the transparenting procedure. Transparented mites were mounted on slides with Canada balsam (Fisher Scientific) and examined under a microscope. Some of the mites were identified according to methods described previously (3,6-8).

Results

Eight of the 68 (11.8%) wild partridges examined in the study were infested by mites. A total of 55 mites belonging to 2 species were collected from the infested partridges. These 2 species were identified as

Pseudolichus solutocurtus and *Harpyrhynchus* sp., based upon the data in the relevant literature. The mite species and their numbers according to sex are presented in the Table.

The microscopic examination of *Pseudolichus solutocurtus* showed that the females were larger than the males (Figures 1-3). The smallest female of this species is 391 µm in length and 198 µm in width and the largest is 403 µm in length and 209 µm in width (Figure 1). As for males, the smallest is 262 µm in length and 163 µm in width, whereas the largest one is 274 µm long and 175 µm wide (Figure 2). The smallest larva is 249 µm in length and 131 µm in width, while the largest larva is 260 µm in length and 142 µm in width (Figure 3). Hysterosomal shields are wide and extend laterally. These shields can extend as long as 2/3 of the body in females (Figure 1), whereas they extend to the terminus in males (Figure 2). All 4 legs are of equal thickness in females, but leg IV is thicker than I, II and III in males (Figures 1,2). All legs in females and males ended in pretarsi having pulvillus (Figure 4). The females do not have a pygidial shield (Figure 1) and males have a pair of paranal apodemes (Figure 2) and a subapical hook in tarsus IV (Figure 5), which also play a role in the characteristic diagnosis. Immature forms resemble adults in terms of outer appearance (Figure 3). The microscopic examination of *Harpyrhynchus* sp. revealed that it had an oval appearance and was 300 µm in length and 274 µm in width (Figure 6). Palps are well developed with a very small palpal tarsus and a full-fledged palpal tibia. Palpal tibia had 3 long setae (Figure 7). Legs I and II were well developed (Figure 8) and ended in a pair of claws (Figure 9). Legs III and IV, which have an important place in the characteristic diagnosis, were less developed. Leg III consisted of 2 segments with 7 long setae, whereas leg IV was formed from 1 segment with 5 long setae (Figure 10). The genitalia were at the level of leg III (Figure 11).

Table. Species and numbers of mites collected from wild partridges.

Species	Female	Male	Immature	Total
<i>Pseudolichus solutocurtus</i>	27	20	7	54
<i>Harpyrhynchus</i> sp.	1	-	-	1
Total	28	20	7	55

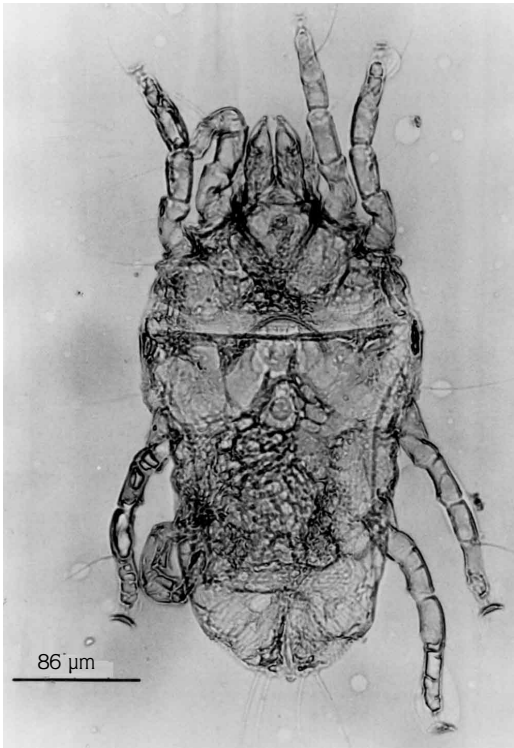


Figure 1. *Pseudolichus solutocurtus* (♀) ventral view.

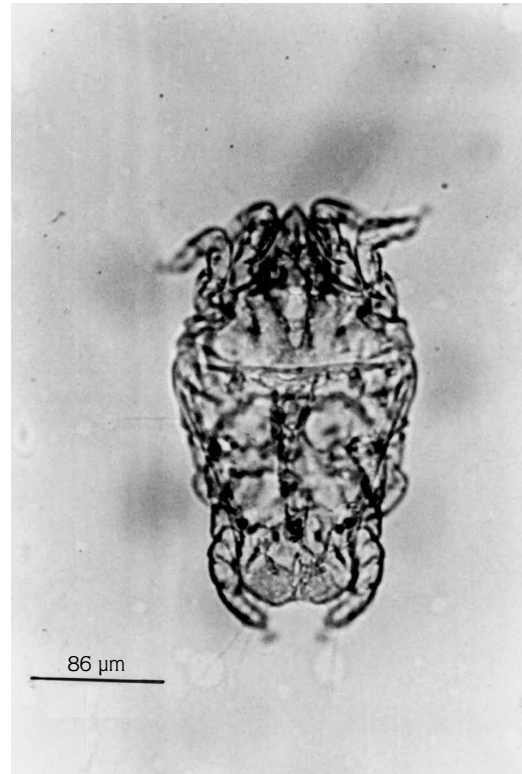


Figure 2. *Pseudolichus solutocurtus* (♂) ventral view.

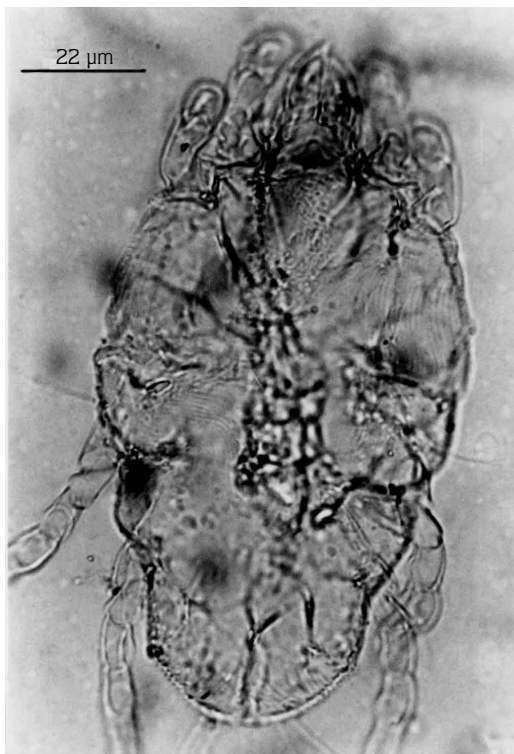


Figure 3. *Pseudolichus solutocurtus* (♀) immature ventral view.



Figure 4. *Pseudolichus solutocurtus* (♀) pretarsus.

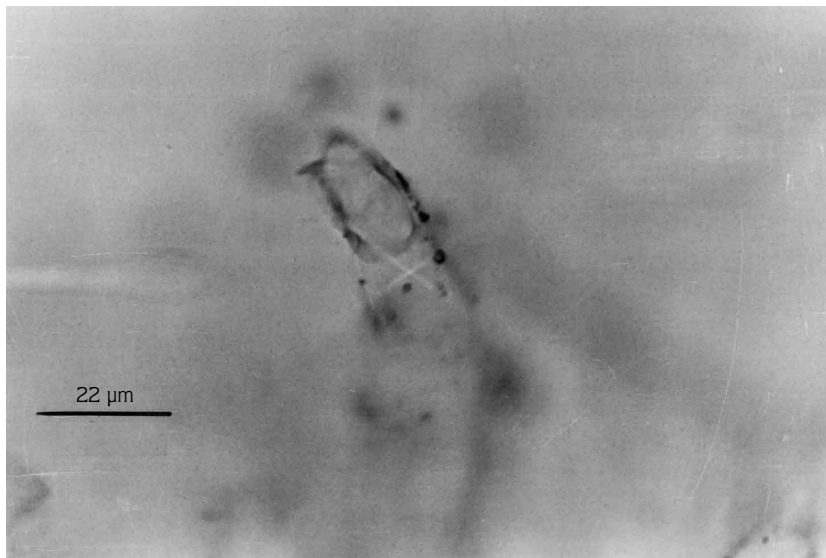


Figure 5. *Pseudolichus soluto curtus* (♂) leg IV hook.

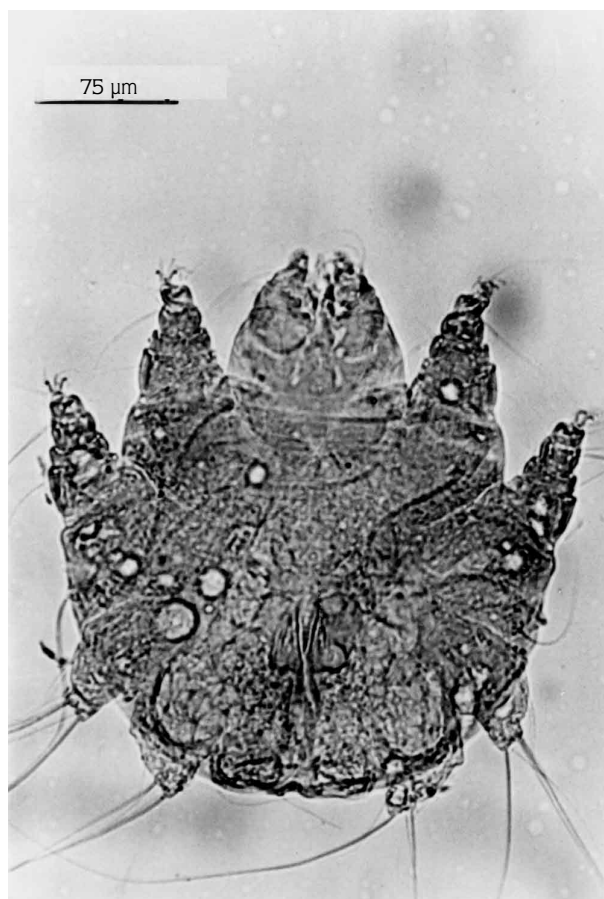


Figure 6. *Harpyrhynchus* sp. (♀) ventral view.

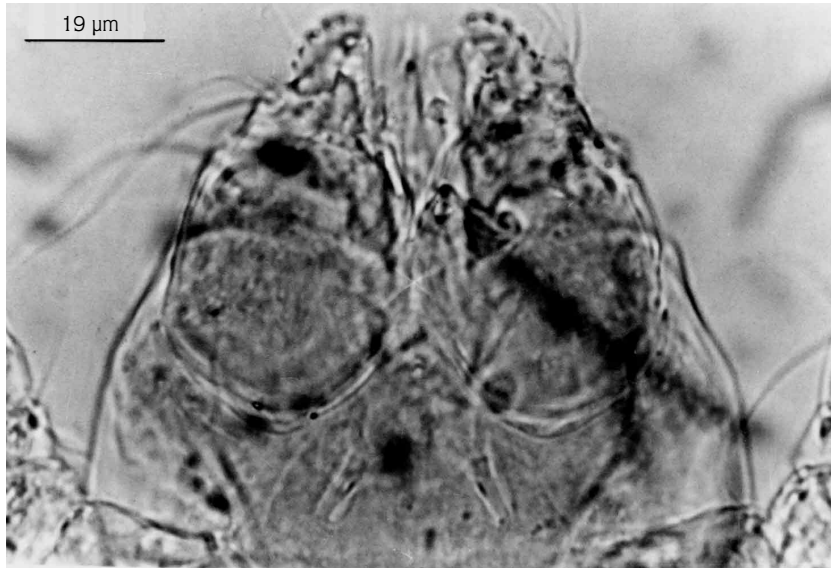


Figure 7. *Harpyrhynchus* sp. (♀) gnathosoma.

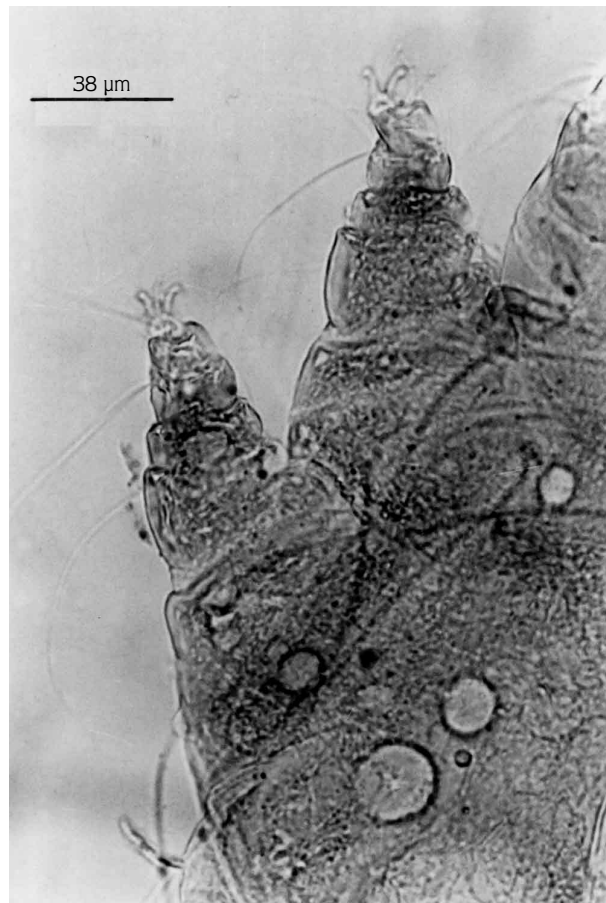


Figure 8. *Harpyrhynchus* sp. (♀) legs I - II.

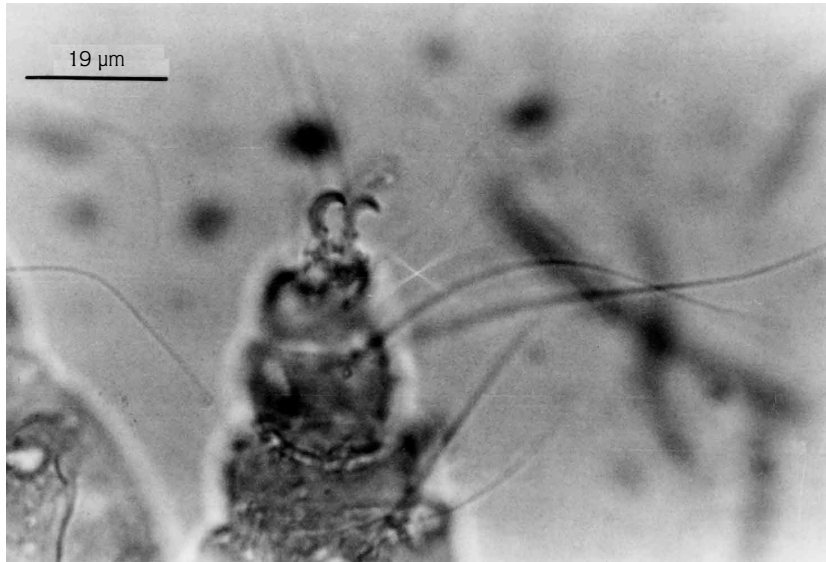


Figure 9. *Harpyrhynchus* sp. (♀) claws.

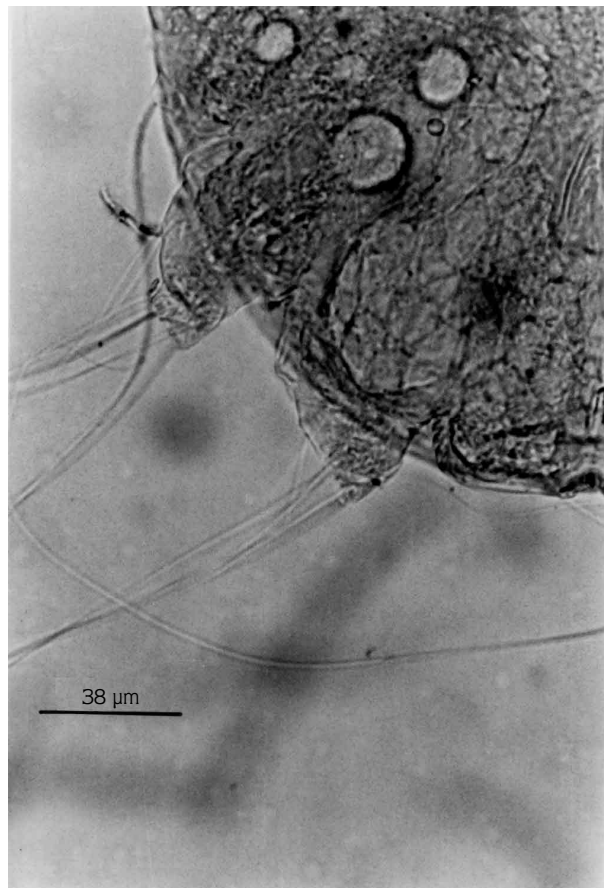


Figure 10. *Harpyrhynchus* sp. (♀) legs III-IV.

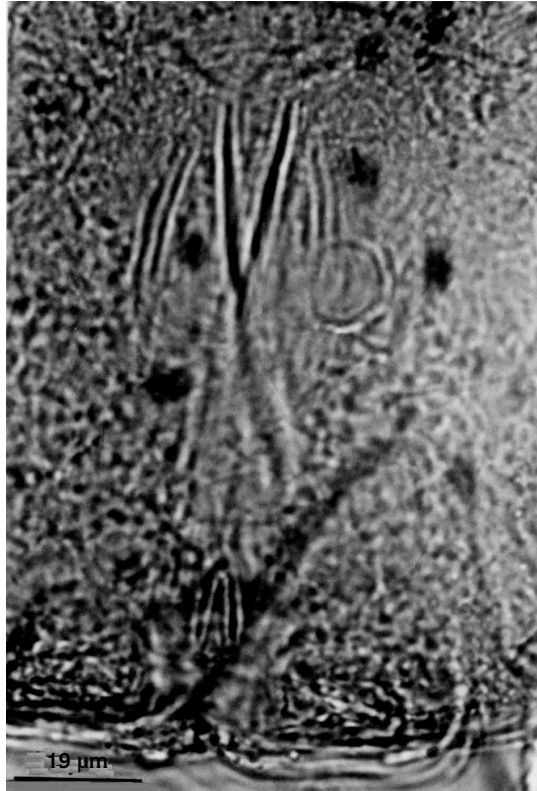


Figure 11. Harpyrhynchus sp. (♀) genitalia.

Discussion

The presence of mite species on wild and domestic partridges was reported in many countries (9,10). However, no study has been conducted about the presence of mite species on domestic and wild partridges in Turkey. Some authors (3,4) reported that *P. solutocurtus* was found particularly on partridges. Fain et al. (6) reported that *H. kirgizorum*, *H. parazumti* and *H. rubeculinus* were found on songbirds and *H. capellae* was found on coast birds. Fain (7) reported that *H. alectoris* was found on partridges. It is seen that the presence of these mite species on partridges is consistent with the findings of the above-mentioned researchers.

Atyeo and Gaud (3) described the morphology of *P. solutocurtus* as follows: the hysterosomal shields cover 2/3 of the body in females, whereas they extend to the terminus in males; legs IV are thicker than I, II and III in males, a pair of paranal apodemes with a subapical hook in tarsus IV is found in males and the females have no pygidial shield. Harpyrhynchus sp. was reported to be found on an eagle by Schulz (5) and on an owl by Philips (2). Fain et al. (6) described the morphology of the species in the family Harpyrhynchidae as follows: the

palpal genu and palpal femur fused, forming a very large segment, anterior legs I and II were well developed and ended in a pair of claws, legs III and IV, which have an important place in the characteristic diagnosis, were always reduced, with only 1 or 2 free segments, and lacking ambulacra. The morphological findings of this study about *P. solutocurtus* and Harpyrhynchus sp. found on wild partridges were in agreement with those reported by the above researchers.

In conclusion, 2 mite species, namely *Pseudolichus solutocurtus* and Harpyrhynchus sp., were identified on wild partridges in this study. Since these species were not encountered in the bird mite fauna in Turkey before, it is thought that the presentation of the microphotographic pictures of these species might contribute to the mite fauna of wild partridges in Turkey.

Acknowledgments

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