

First Report of *Ixodes ricinus* and *Rhipicephalus turanicus* Infestation in Persian Leopard (*Panthera Pardus Saxicolor*), Golestan National Park, Iran

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Abstract:

A carcass of a Persian leopard (*Panthera pardus saxicolor*) that was inadvertently killed in a car accident in Golestan National Park, North-Iran, was referred to the laboratory of the Department of Environment in Golestan Province. The carcass was infested with hard ticks. Five ticks were collected and identified as *Ixodes ricinus* (one female) and *Rhipicephalus turanicus* (four males). These hard ticks are major vectors of some important microorganisms of veterinary and medical significance. This is the first detection of *I. ricinus* and *R. turanicus* in the Persian leopard.

Keywords:

Golestan Park, *Ixodes ricinus*, Persian leopard, *Rhipicephalus turanicus*

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Case History

Golestan National Park (37° 31' N; 56° 35' E) in northern Iran is one region that Persian leopards (*Panthera pardus saxicolor*), being at risk of extinction and categorized as Endangered (EN) in IUCN Red List of Threatened Species inhabit and most road kills of Persian leopards in Iran have occurred there (Sanei et al., 2012, <http://www.redlist.org>). The ticks are important ectoparasites that can act as mechanical and/or biological vectors of bacteria, protozoans, and viruses. They can spread a wide variety of infectious diseases and clinical symptoms in their hosts (nearly all domestic animals, wild canids, felids, suids, equids, and bovids) (Walker, 2000).

Clinical Presentation

A car accident in Golestan National Park, North Iran, caused the inadvertent death of a 6-year-old female Persian leopard. The carcass was transported to the laboratory of the Department of Environment in Golestan Province.

Diagnostic Testing

The body surface of the carcass was in-

spected for external parasites. Detected parasites were fixed in 70% ethanol pending further identification using specific keys (Walker, 2004). Five hard ticks were isolated from the body surface. According to the keys, they were one female *Ixodes ricinus* and four *Rhipicephalus turanicus* (fig 1 and 2).

Assessments

In recent years, endoparasites such as *Ancylostoma tubaeforme*, *Toxocara cati*, *Hepatozoon* spp. *Taenia taeniaeformis*, and *Trichinella britovi* have been reported from Persian leopards (Mowlavi et al., 2007; Ghaemi et al., 2011; Yousefi et al., 2010; Khoshnegah et al., 2012). This is the first report of ectoparasite infestation in a Persian leopard. The hard ticks (family Ixodidae) consist of several genera. The two genera, *Ixodes* and *Rhipicephalus*, detected in this study are members of this family (Esteve-Gassent et al., 2014).

Ixodes ricinus which has been detected in ruminants of northern Iran, is a widespread tick that is sensitive to climatic conditions, and occurs in relatively humid, shrubby, or



Figure 1. *Ixodes ricinus*.



Figure 2. *Rhipicephalus turanicus*.

wooded areas. As an infected vector it can lead to ehrlichiosis, lyme disease, spotted fever, and babesiosis in many species of mammals. The adult ticks feed mainly on large mammals such as ruminants and carnivores (Mierzejewska et al., 2015; Nabian, 2007).

The tick has been reported in wild canids such as red foxes (*Vulpes vulpes*) and jackals (*Canis aureus*) in Spain and Iran respectively (Martinez-Carrascoc et al., 2007; Razmjoo et al., 2014). Although *I. ricinus* has been identified in Iberian lynx (*Lynx pardinus*) with a prevalence of 6% in southern Spain, during a 30-year survey (Millán et al., 2007). Horak et al., (2000) identified no Ixodes from more than 2000 Ixodid ticks collected from four leopards (*Panthera pardus*). It appears that ours is the first report of *I. ricinus* infestation of Leopards in the world.

Rhipicephalus turanicus is a widespread three-host tick in Africa and Asia, especially around the Caspian Sea (Tsatsaris et al., 2016).

In Iran, *R. turanicus* has been documented on sheep (Northeast) and hedgehogs (North and Northwest) (Gorgani-Firouzjaee et al., 2013; Rahbari et al., 2008). According to Rahbari et al., *R. turanicus* was frequently found on ruminants in many parts, but especially western Iran from April to May. The current detection of *R. turanicus* in Persian leopards occurred in the same period of time (Rahbari et al., 2008).

Walker and colleagues (2004) also have reported *R. turanicus* infestation in 7 African leopards (*Panthera pardus*).

Because most Iranian wild felids and canids are endangered, knowing whether hemoparasite infestation represents a threat for these animals is important. Comple-

mentary information about ectoparasites of Persian leopards, probable zoonoses, and veterinary diseases is necessary to develop disease prevention strategies.

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Conflicts of interest

The author declared no conflict of interest.

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شناسایی انگل‌های *Rhipicephalus turanicus* و *Ixodes ricinus* برای اولین بار در پلنگ ایرانی، پارک ملی گلستان، ایران

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چکیده

یک پلنگ ایرانی (*Panthera pardus saxicolor*) که به طور ناگهانی در یک تصادف در پارک ملی گلستان، شمال ایران، کشته شد بود، به آزمایشگاه اداره کل محیط زیست استان گلستان منتقل شد. لاشه آلوده به کنه‌های سخت بود. ۵ کنه *Ixodes ricinus* (یک ماده) و *Rhipicephalus turanicus* (۴ نر)، شناسایی و جمع‌آوری شد. این کنه‌های سخت میزبان‌های اصلی برخی از پاتوژن‌ها با اهمیت در علوم دامپزشکی و پزشکی هستند. این اولین گزارش شناسایی کنه‌های *R. turanicus* و *I. ricinus* در پلنگ ایرانی است.

واژه‌های کلیدی:

پارک گلستان، *I. ricinus*، پلنگ ایرانی، *R. turanicus*