# Reproductive ecology of the Persian Leopard, *Panthera pardus saxicolor*, in Sarigol National Park, northeastern Iran

**(Mammalia: Felidae)**

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**Abstract.** According to our surveys carried out between April 2005 and March 2008 in the Sarigol National Park, northeastern Iran, the mating season of the Persian Leopard, *Panthera pardus saxicolor*, extends from mid-January to a peak in mid-February. Males and females associate briefly, and just after the short mating period they separate. We never found the leopards to raise more than two cubs. Most observations on leopard families were made in areas of high prey density. Our data, verified by camera trapping, indicate that track size alone is not reliable for the accurate identification of leopard age/sex categories.

**Key words.** Persian Leopard, *Panthera pardus saxicolor*, reproduction, Sarigol, Iran.

## Introduction

The Persian Leopard, *Panthera pardus saxicolor* Pocock, 1927, is one of the least studied subspecies of the Leopard. It was once abundant across most mountainous and forest habitats in Iran (JOSLIN 1990), but it is now regarded as *endangered* by the IUCN (2008). While Iran is home to more than 65% of the taxon's population (KHOROZYAN et al. 2005), little is known about its biology, which makes development of effective conservation strategies difficult. For this reason, we have studied its reproduction biology at Sarigol National Park in northeastern Iran.

## Study area and methods

With an area of more than 7037 ha, Sarigol National Park is located some 20 km east of the city of Esfarayen, North Khorasan Province. It has been part of the Sarigol Protected Area, which has been protected since 1973 and was separated and upgraded to a national park in 2002. An altitude range of 1400 to 2940 m, a mean annual temperature of 14°C and a mean annual precipitation of 273 mm give the region a temperate semi-arid climate (DARVISHSEFAT 2006). The area is mainly composed of hilly terrain merging into high rolling mountains aligned in a south-north direction. The highest elevations can be found in the north central parts of the National Park.

Leopard surveys were carried out intermittently from April 2005 until March 2008 along trails and routes known to be used by leopards. We measured all leopard tracks encountered, recording maximum track length and width, and pad or "heel" width, following LUKARESVSKY et al. (2004). All measurements were taken by one of us (MSF) during the whole survey period in order to avoid possible bias caused by variation in the abilities of different tracers, as noted by SHARMA et al. (2005) for tigers. Camera trapping was applied during the survey period in order to estimate leopard density as well as to verify the real owners of the tracks measured at the camera trap stations. Since leopards occupy ranges that probably exclude other adults of the same sex (HAM-

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