

Short Communications

Territorial marking by Persian Leopard (*Panthera pardus saxicolor* Pocock, 1927) in Bamu National Park, Iran

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Felids make an extensive use of olfactory and visual signals when communicating, especially when marking their home ranges or searching for mates (KLEIMAN & EISENBERG 1973, VERBERNE & DE BOER 1976, SMITH et al. 1989, SUNQUIST & SUNQUIST 2002). Both males and females urinate regularly for scent-marking, often scraping the ground by their hind paws (KLEIMAN & EISENBERG 1973, VERBERNE & DE BOER 1976). Little is known about the scent-marking behavior of free-living leopards (BOTHMA & COERTZE 2004). Leopards of both sexes patrol their ranges and scent-mark trees, bushes and rocks with urine mixed with anal gland secretions. Scraping, urine-spraying and tree-clawing are most commonly used by Leopards (BAILEY 1993, SUNQUIST & SUNQUIST 2002). Male Leopards scent-mark significantly more frequently than females with and without cubs, especially on days preceding mating and when mating occurs (BOTHMA & COERTZE 2004). Leopards use urine-spraying more extensively than tree-clawing, although both forms of scent-marking occur (BAILEY 1993, BOTHMA & LE RICHE 1995, BOTHMA & COERTZE 2004). Tree-clawing or scratching has been interpreted as conveying a variety of signals, from territorial marking to simple sharpening of claws (BOTHMA & LE RICHE 1995, SUNQUIST & SUNQUIST 2002). Scratching leaves the traces of interdigital glands which act as chemical signals in addition to the visual claw mark (JOHNSON 1973).

From June 2007 to April 2008, we investigated leopard scrapes and scratches that we found during camera photo-trapping surveys in Bamu National Park (BNP). BNP is situated in Fars Province, southern Iran, and covers an area of 485.94 km². The climate is semi-arid with warm, dry summers and cold, humid winters. The three main landscape features are mountains, hills and plains (DARVISHSEFAT 2006). KIABI et al. (2002) estimated a number of 15-20 leopards for BNP which is among the highest values for any single protected area of Iran. Looking for scrapes and scratches, we walked along the established leopard trails which offer a wide view of the surrounding area, primarily for prey, and which were commonly recognized from the predator's scats, tracks and scrapes (KARANTH & SUNQUIST 1995, KHOROZYAN & MALKHASYAN 2002). Signs were carefully measured, recorded in protocol forms and analysed. We also used the three photo-trap pictures of marking leopards (Fig. 2).

We found and analysed altogether 48 leopard scrapes in BNP. All were found on the ridge-top trails and had the following dimensions: mean length 39.3±1.06 cm (19-60 cm), mean width 22.7±0.66 cm (12-30 cm) and mean depth 4.7±0.18 cm (2-7 cm). Scrapes were often accompanied by scent marks of urine. Traces of urine could often be seen in the soft ground of fresh scrapes, on the small mound at the rear of the scrape. These data agree with



Fig. 1. Scrape is a typical signal of territorial marking used by leopards in Bamu National Park. Photo: Taher GHADIRIAN.

the others data recorded elsewhere: scrape length 30-35 cm and width 15-20 cm with strong smell of urine in South Africa and scrape length 35-50 cm in the Caucasus (BAILEY 1993, LUKAREVSKY et al. 2007). When a Leopard scraped, it lowered its rump, slightly arched its back and clawed the ground with its hind paws, alternating between left and right paw (Fig. 1). We also found 20 scrapes (41.7% of all) with scats placed inside or near the scrape, similar to that which SCHALLER (1977) found with Leopards on Pakistan's Karchat Hills. BAILEY (1993) suggested that in dry environments marking by urine is used less intensively than by scats due to high evaporation, but we found a quite high intensity of urine-marking by Leopards in BNP.

Most Leopard scrapes in BNP (N=28, 58.3%) were recorded on a ridge-top trail shared by three leopards (1 male and 2 females) in the eastern part of this protected area. Scraping occurred in winter when Persian Leopards mate (KHOROZYAN & MALKHASYAN 2005). No scrapes were found on this trail in the following spring. Such a pattern of territorial marking was also observed in other leopard studies (BAILEY 1993).

We also found 5 trees with leopard scratches on them. They were all located in the huge plains separating the mountain ridges, near natural water holes or artificial water holes pumped by wind mills. Length of the scratches was around 90 cm and they were placed around 50 cm above the ground.

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Fig. 2. The photo-trap pictures of tree-scratching (top left) and ground-scraping Leopards (male) in Bamu National Park. Photo: Plan for the Land Society.

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