

3. TREND ANALYSIS OF MARKED LEOPARD *PANTHERA PARDUS* CAPTURED AND RECAPTURED AROUND GIR PROTECTED AREA, GUJARAT

One of the most important management practices in Gir National Park and Sanctuary is the rescue or capture of injured, distressed or problematic large carnivores like Lion (*Panthera leo persica*) and Leopard (*Panthera pardus*) which stray into peripheral villages and revenue areas (Singh and Kamboj 1996). The expert rescue teams from the Wildlife Division, Sasan-Gir, normally undertake the rescue or capture operation with the help of local staff. Although both lions and leopards are regularly rescued throughout the year from the peripheral villages, leopards pose a serious threat to the lives of the locals by straying very close to human habitation and attacking human beings (Prater 1997). A greater fear psychosis prevails from leopard movement than from the lions amongst the people in the areas surrounding Gir. The Gir PA management, after recognizing the threat, immediately acts to capture the straying leopards. The leopards rescued and captured in peripheral areas by the Forest Department are the ones responsible for human injury or death, and have created fear among the villagers due to regular movements in farms and residential areas, or those that have fallen accidentally into farm wells, be suffering from illness or injury.

Depending upon the field situation, trap cage with bait, ropes (for rescue from wells) or chemical tranquilization is used to capture the animal. The captured leopards are then brought back to the Wildlife Treatment Centre, where they are kept under observation or for treatment. After some time, the healthy animals are generally released into the core zone of the forest area (National Park). But before release, the animals are fitted with tags or microchips for identification and to record future recapture from other areas. The plastic ear tags are colour coded, serially numbered, and are in two identical halves, which are fixed to the ear using special pliers. The animal can be identified by its colour and the number can be read through binoculars. The microchips are placed at the base of the tail, between skin and muscle, subcutaneously. Each microchip has a distinctive number, which can be read by a machine. The numbers, with details of the captured animal, are recorded for future comparison. Microchips have an advantage over the tag method. The tag can be seen on the animals, and creates a fear psychosis among the locals, who think of marked animals as being problematic. Sometimes this leads to unpleasant situations during rescue operations.

Some leopards do not remain confined to their area of release due to unknown reasons and stray out again to the

peripheral revenue areas of the Gir Forest. This study was intended to analyze the data on captured and recaptured animals to identify the problematic ones and to know their movement in and around the Gir PA. It is based on 38 cases of captured and released leopards during 2001 and 2002.

Findings

Thirty-eight leopards were captured from the areas surrounding Gir National Park and Sanctuary between April 2001 and February 2002. This included 19 females and 19 males. The age group of captured leopards ranged from c. 1½ to 13 years. Majority of animals (n=29, 76%) were adults i.e. more than 4 years of age. The captured leopards are mainly released in the core zone areas (mainly National Park) of Gir Forest like Miyakuan, Laptani and Patriara. Talala sub-district recorded the maximum — 12 leopard captures, followed by Una sub-district with seven cases. Rescues from other sub-districts are: Visavadar (3 cases), Sutrapada (4 cases), Kodinar (4 cases), Maliya (4 cases) Khamba (2 cases), Mendarda (1 case) and Ranavav (1 case). It is known that majority of captures took place in the southern areas of Gir Forest, which may be due to extensive cultivation of sugarcane and presence of large tracts of mango orchard (Vijayan and Pati 2001). The majority of captures were mainly from farmlands (21 cases, five specifically from sugarcane), followed by farm wells (7 cases), villages (7 cases) and buildings (2 cases). The leopards that were caught from farmlands and villages were mainly due to fear among the people, but some were actually involved in attacks on human. Six leopards were involved in attacks on humans that took place in farmlands (2 cases), villages (2 cases), and buildings (2 cases). Two leopards were shifted to Sakkarbaug Zoo, Junagadh, due to cases of established human deaths. Majority of the rescued or captured leopards were healthy (95%) and only two cases had some injury related problems.

From the 38 leopards that were rescued from various areas and released into the core area of Gir forest, four animals were caught for the second time and one was captured for the third time (see Table 1). The period between release and subsequent recapture of leopard from other areas ranged from 11 days to six months. Leopards recaptured for the second time were mostly found from different areas, some were found very close to the earlier capture site. The distance between the site of first capture and subsequent recapture ranged from 2.2 km to 33 km. A leopard caught for the third

Table 1: Details of leopards captured and released more than once in and around Gir PA

Age & sex	First Capture		Released Forest area	Distance between capture and release site	Second Capture		Approximate period and distance between release site and 2nd capture	2nd release site (Forest area)	Distance between capture and release site	3rd capture and distance between 2nd release site	Distance from the place of second capture
	Subdistrict	Village (distance from PA)			Place (distance from PA)	Distance from first capture					
9 years Female	Talala	Ratidhar (18 km)	Patriara	28 km	Bhimdeval Talala (15 km)	2.2 km	11 days 28 km	Shivtali	38 km	—	—
5 years Male	Talala	Rasulpura (2 km)	Varvangda	13 km	Jasapur Talala (3 km)	2.7 km	5 months 18 km	Lapatani	22 km	Jasapur (20 km)	0 km
5 years Female	Sutrapada	Sutrapada Revenue (45 km)	Devakaniya	56 km	Vandarvad Maliya (25 km)	33 km	6 month 40 km	Miyakuan	44 km	—	—
9 years Male	Talala	Jasapur (2 km)	Junvaniya	18 km	Chatariya Mendarda (3 km)	25 km	1 month 27 km	Miyakuan	38 km	—	—
7 years Male	Maliya	Vandarvad 25 km	Devkania	51 km	Sukhpur Maliya (35 km)	13 km	1 month 47 km	Shivtali	54 km	—	—

time was recaptured from Jasapur (Talala subdistrict) where it had been caught earlier. The maximum distance travelled by a leopard, before being caught again, was 47 km (from Devkarnia (NP) to Sukhpur in Maliya subdistrict). Of all leopards that were recaptured from peripheral areas, two were involved in attack on humans, one had killed livestock, and the rest were captured due to fear and disturbances to humans.

In 1996, a male Leopard captured from a village farm well in Kodinar sub-district and subsequently tagged and released inside the forest area, had migrated to Dharoi village in Mehsana district (North Gujarat), where it was shot inside a house by the Police Department for the safety of people. The leopard had travelled 340 km (within 8 months) from the area of release.

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4. SPECIES OF BARKING DEER (GENUS *MUNTIACUS*) IN THE EASTERN HIMALAYAN REGION

The barking deer or muntjacs are small, solitary, cryptic forest dwellers found throughout southern and eastern Asia from India through China, Indochina, and Malaysia, to Indonesia. Two species have long been known from the eastern Himalayan region. The Red Muntjac (*Muntiacus muntjak*) is relatively common and widely distributed, whereas the Chinese or Reeves' Muntjac (*M. reevesi*) is confined to southeast China, east of about 100° E. During the 1990s the discovery of two new muntjac species and the rediscovery of a third species in the Annamite Mountains along the Lao-Vietnam border focused attention of zoologists on this ancient lineage of cervids (Groves and Schaller 2000, Amato *et al.* 2000). In 1997, yet another new species was discovered in Myanmar (Burma) and named Leaf Deer (*M. putaoensis*) by Rabinowitz *et al.* (1999). That year, the Black Muntjac (*M. crinifrons*), previously known only from China, was also found in Myanmar, extending its recorded range by about 1,750 km (Rabinowitz and Khaing 1998, Rabinowitz *et al.* 1998). Although the Leaf Deer and Black Muntjac were each initially found only within small areas, our recent work has shown these species to have a much more extensive distribution.

The purpose of this note is to describe their known geographic range and point to their possible occurrence in India and elsewhere in the eastern Himalayan region.*

Leaf Deer (*Muntiacus putaoensis*)

The Leaf Deer, so named because local hunters wrap their kill into large *Phrynium* leaves, is a diminutive fawn-coloured muntjac, weighing about 12 kg, with spike antlers in males up to 5 cm long. The conspicuous canines are of the same size in males and females, an unusual condition in muntjacs (Rabinowitz *et al.* 1999). It was discovered in secondary and old-growth evergreen broad-leaved forest northeast of Putao in northern Myanmar (26° 58' N, 96° 09' E) at elevations of around 800-2,000 m (Rabinowitz and Khaing 1998, Rabinowitz *et al.* 1999). Analysis of its mitochondrial DNA confirmed it as a new species most closely related to two other small muntjacs (*M. rooseveltorum*, *M. truongsongensis*) in the Annamite Mountains (Amato *et al.* 2000). We now have additional specimen records from the Hponkan Razi area (27° 30' N, 97° 09' E), the Hukaung valley (26° 58' N, 96° 09' E), and near the Saramati massif (25° 42' N,

*This note was submitted for publication in March 2002. In it we predict that two muntjac species new to India might occur within its borders. One of these was discovered in November 2002. See, Aparajita Datta *et al.* 2003, Discovery of the Leaf Deer *Muntiacus putaoensis* in Arunachal Pradesh an addition to the large mammals of India. *Current Science* 84: 454-458.



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