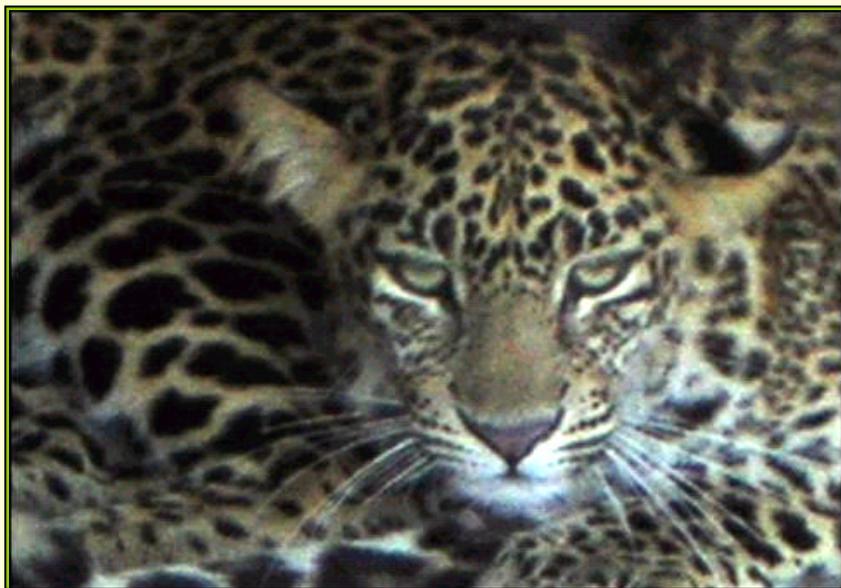


CARNIVORE CONFLICT



Support Provided to Leopards Involved in Conflict-related Cases in Maharashtra

Vidya Athreya
Aniruddha Belsare



The Wildlife Trust of India (WTI) is a non-profit conservation organization committed to initiate and catalyse actions that prevent destruction of India's wildlife and its habitat. In the long run, it aims to achieve, through proactive reforms in policy and management, an atmosphere conducive to conservation. WTI works through building partnerships and alliances and its strengths lie in its willingness to work with innovative conservation techniques like acquiring land for wildlife and rescue and rehabilitation.

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Vidya Athreya and Aniruddha Belsare

December 2006

An Occasional Report based on two Wildlife Trust of India Rapid Action Projects supported by the International Fund for Animal Welfare and the David Shepherd Wildlife Foundation and conducted by the Kaati Trust



CONTENTS

List of Figures	iii
List of Tables	iii
Preface	iv
Acknowledgements	vi
Executive Summary	vii
1. Introduction	1
2. Project Area	2
3. Methods	4
3.1 Tranquilisation Procedures	4
3.2 Morphometry of leopards	5
3.3 Low levels of conflict despite the presence of leopards	8
4. Results and Discussion	8
4.1 Morphometry of leopards	8
4.2 Low levels of conflict despite the presence of leopards	10
5. Recommendations	15
6. References	17
Appendix I	18
Appendix II	23
Appendix III	36

LIST OF FIGURES

Figure 1: Map of Maharashtra	3
Figure 2: Map of the Ahmadnagar Forest Division	3
Figure 3: Dental characteristics of old adults	6
Figure 4: Dental characteristics of prime adults	6
Figure 5: Dental characteristics of young adults	7
Figure 6: Dental characteristics of large cubs	7
Figure 7: Map of release sites of the leopards	12

LIST OF TABLES

Table 1: The weight of leopards	9
Table 2: The body length of leopards	9
Table 3: The total body length (including tail) of leopards	9
Table 4: The length of hind leg of leopards	10
Table 5: The length of fore leg of leopards	10
Table 6: Conflict data from Ahmadnagar Forest Division	11
Table 7: Number of leopards trapped in the Ahmadnagar Forest Division and released in the nearby forests	11

PREFACE

Man–animal conflict is the biggest threat that faces some of our wildlife species today—and none exemplifies this more than the leopard. This adaptive carnivore is equally at home in the deciduous *tendu* forests of central India, the alluvial floodplains of the Ganges and the sugarcane fields of Maharashtra. It can tolerate human presence, arguably more than any carnivore in the country. This brings it into direct contact with livestock, many of which resemble its natural prey in size and are much easier to take, and even children and small adults. When such depredations occur, the fear generated among the general public and consequently, the political and public uproar leads to the leopard or indeed, many leopards being trapped in the general vicinity of the incident by a harassed forest department.

Western Maharashtra has been the focus of many such conflict cases in the recent past and has been one of the severely affected states as far as man–leopard conflict goes. To understand the issue, apply short-term Band Aids to immediate problems and suggest long-term measures, all in one go, needs much hard work, good biology and practical common sense. The two authors of this report, which is a result of two separate Rapid Action grants given by the Wildlife Trust of India, combined all these in good measure. Vidya is a biologist and Aniruddha, a veterinarian and using the combined skills of both disciplines, the duo have managed an excellent set of conservation actions and study rolled into one.

We, at the Wildlife Trust of India are extremely happy that the short term aid that was afforded to these two individuals has resulted in such good work. Apart from several individual carnivores having directly benefited due to their interventions, their work is proving to be the basis for policy change in the country. This is what the Rapid Action Project set out to do, and this report is, thereby, an exemplar of the ideals of the RAP project.

Vivek Menon
Executive Director, WTI



ACKNOWLEDGEMENTS

This work was possible because of two grants from the Wildlife Trust of India (Rapid Action Projects) for the years 2004 through 2006. We would particularly like to thank Dr Rahul Kaul and Dr Sandeep Tiwari for processing the second grant (2005–2006), which was crucial for furthering our knowledge of human–leopard conflict.

The Maharashtra Forest Department has always been supportive of our work and we would like to thank all the officers we have had the opportunity to interact with over the last three years. Our special thanks to the PCCF (WL) Mr B. Majumdar, Mr P. Thosre (CCF, Pune*), Mr V. Mohan (CCF, Nashik), Mr Avasak (DCF, W.Nashik), Mr Shelke (ex-DCF, Ahmadnagar), Mr Wankhade (ex-DCF, Ahmadnagar), Mr Devkhile (RFO, Ahmadnagar), Mr Vyavhare (RFO, Sangamner), and the staff at all the forest nurseries in Nashik and Ahmadnagar. The list of names of the field officers who assisted us is too long to mention here but we are grateful for their help and interest. We acknowledge that our recommendations have been received positively by the Maharashtra Forest Department, at all levels.

We would also like to thank Mr. B. Raha (Nashik) for his frequent leopard news and support.

* *Many designations are likely to have changed*

EXECUTIVE SUMMARY

This report deals with the authors' work in the Nashik and Ahmadnagar Forest Divisions of western Maharashtra. The goals of this project were to:

1. Help the Forest Department in the rescue or veterinary treatment of carnivores.
2. Involve the Livestock Development Officers (LDOs) and other interested veterinarians in wildlife emergencies so that they are sensitized to the needs of wild animals and can help the Forest Department effectively in future situations.
3. Microchip wild-caught leopards and provide recommendations that will assist the Department in dealing with the conflict issue.

Since most of the work was related to leopards caught in human dominated areas it was also possible to:

1. Weigh and measure the trapped leopards in many cases.
2. Assess the degree of threat posed by leopards living in a human-dominated area in Ahmadnagar district.

Based on this work, it is recommended that:

- 1. The conservation and wildlife managerial community acknowledge that the leopard is a highly adaptable species that can live even amidst human inhabitations without attacks on people, if appropriate proactive management strategies are put into place.**

2. Proactive management actions addressing human–leopard conflict be science-based, taking into consideration the ecology of the species.

3. Teams of trained wildlife veterinarians and biologists should be set up in high-conflict states to assist the Forest Department in dealing with wild carnivores that require human intervention. Similar teams manned by field level Forest Department staff should also be created. They should be sensitized along with police officers, fire brigade personnel and local NGOs. Following the sensitization, basic tranquilisation equipment should be provided and bi-yearly follow-up training should be made mandatory at Range Forest Officer level. This should be carried out in all states experiencing conflict situations in the country.

4. Simple guidelines on captive management of Schedule I species that are most commonly encountered in conflict situations should be formulated and distributed to all captive facilities in the country, including zoos.

5. Periodic wildlife orientation courses have to be held in veterinary colleges in high-conflict states. This crucial resource base was found to be unsatisfactory, due to lack of training, as well as knowledge on the methods and drugs that have to be used in the case of wild animals.

1. INTRODUCTION

The most common perception among the conservation and wildlife managerial community towards the presence of leopards outside natural forests is that they are straying individuals. This is not based on any scientific information and does not acknowledge the fact that leopards are a highly adaptable species capable of living outside natural forests (see Seidensticker *et al.* 1990). The most common reaction to such animals, even in the absence of serious conflict (attacks on people), is that they need to be trapped and sent back into a natural forest.

This response neither considers the biology of this highly territorial species nor their homing instincts. Many high human–leopard conflict sites in India for which data is available (north Bengal, Gujarat, Maharashtra) are in the vicinity of forests where leopards have been released for the past decade (Athreya *et al.* *Accepted in JBNHS*). Information from leopards that have been translocated in Africa indicates that they can move large distances (~100 km), leave the site of release and face increased mortality following translocation (Hamilton 1981). Our work on microchipped leopards also indicates that they move large distances (tens of km) following translocation and can transfer serious conflict to areas without a history of conflict (Belsare and Athreya *In Prep*).

Trapping of leopards in response to conflict is the most common management strategy used in many parts of India. This leads to the animals being kept in captivity for varying periods. Often the process of capture itself causes injuries to the animal and it is important that these be dealt with effectively, especially if the animals are going to be released back to the wild. The process of rescuing a leopard often becomes a law

and order problem and it is important that the Forest Department is prepared to deal with such emergencies in an effective manner. The field level officers were found to have had no prior training or sensitization and as a result they were ill-equipped and ill-prepared. An earlier project (Athreya & Belsare 2005) which involved training five emergency response teams across Maharashtra found that even brief training sessions were effective and in a few instances, the local officers were even able to successfully rescue leopards in emergency situations using tranquilising drugs and simple equipment provided by the project team.

However, for the long term success of such a training programme, the entire process has to be embedded within the functioning of the Forest Department. Without the process being part of the system, transfers of the trained field staff, lack of sustained training and lack of care of the equipment lead to dissolution of the trained teams.

2. PROJECT AREA

The areas covered in this project lie on the eastern flanks of the Western Ghats, in the Ahmadnagar Forest Division (Ahmadnagar district) and the Nashik Forest Division (Nashik district) of Maharashtra. (Figures 1 and 2)

The territorial wing of the Forest Department administers an area of 1717 km² in the Ahmadnagar Forest Division and an area of 3460 km² in the Nashik Forest Division. The region used to support dry deciduous forests which have changed to lush croplands following numerous irrigation projects. Cash crops, such as sugarcane, maize, fruit plantations and vegetables are grown in the area.

Maharashtra State

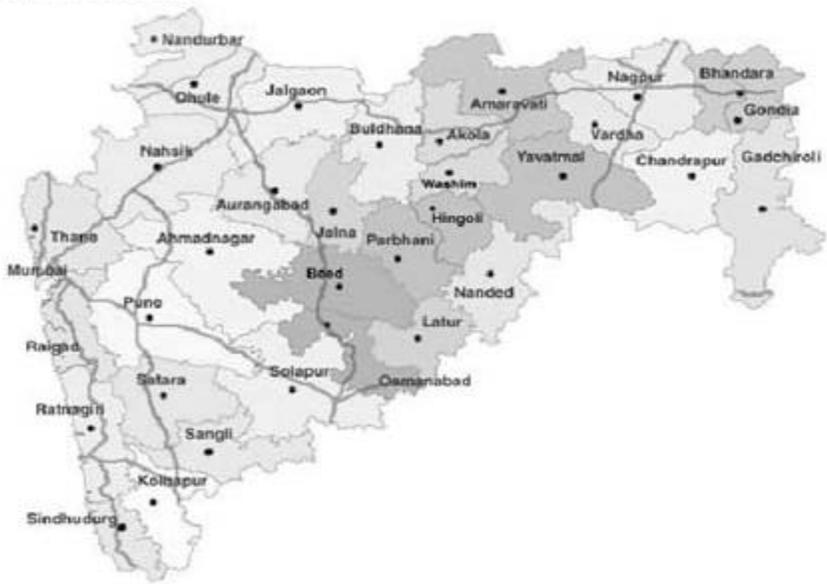


Figure 1: Map of Maharashtra



Figure 2: Map of the Ahmadnagar Forest Division

The Pravara river, a tributary of the Godavari originates in the Kalsubai Wildlife Sanctuary in the Western Ghats adjoining the Ahmadnagar Forest Division and the Godavari river originates in the Western Ghat forests adjoining the Nashik Forest Division. Leopards occur in the irrigated valleys of these two rivers. The density of people in this landscape is greater than 258 per sq. km (<http://Ahmadnagar.nic.in> and <http://Nashik.nic.in>). The landscape mainly comprises rural habitations and crop fields. Large numbers of feral dogs are present in the villages, as well as feral cattle and pigs.

3. METHODS

Veterinary support and/or assistance with human–leopard conflict situations was provided to the Maharashtra Forest Department when required. In cases when leopards had to be microchipped using PIT tags, details of the trapping site, date and reasons for trapping were noted. A report of the entire procedure and recommendations were provided on the spot to the officer-in-charge. The animals were tranquilised following the method described in the section below.

3.1 Tranquilisation Procedures

Whenever tranquilisation was required (either for treatment, removal of a snare or microchipping), the animal was darted with a blowpipe using 0.5 –1 mg/kg Xylazine and 4–5 mg/kg Ketamine. The weight of the animal was estimated visually. In the second phase of the project starting November 2005 (S. No. 22 onwards), actual weight was determined by suspending the tranquilised animal in a hammock attached to a weighing scale. Once the animal was completely immobilized (its responses were

checked), the required procedures were carried out. Furthermore, the inside of the cages were cleaned once the animal was taken out. Recommendations were provided on better cage hygiene as well as feeding procedures. These were found to be usually adhered to by the local officers.

The respiration rate (observing the number of times the rib cage rose and fell), the heart beat (placing a hand over the heart region) and the rectal temperature (using a digital thermometer placed in the rectum) were monitored every ten minutes (see Appendix II). This task was assigned to the local veterinarian if one was present. Seizures were noted only in one leopard—a known effect of the drug Ketamine. This was treated immediately by an intra-muscular injection of Diazepam. Water was sprinkled on the eyes of the immobilized animals since they remain open during anaesthesia using Ketamine and Xylazine.

On finishing this work (not more than thirty minutes), the animal was placed inside the cage and observed until it showed signs of recovery (usually 1.5–2 hours following the first dart).

3.2 Morphometry of leopards

When possible, the leopards were measured. The body-length (top of nose to where the body meets the tail), tail-length (where body meets the tail to tip of the tail), hind leg-length (from the hip joint to the end of the digits) and fore leg-length (from the shoulder joint to the end of the digits) were measured using a tape. The status of their dentition was noted to estimate age as per Bailey (1993). Pictures are provided here to show some examples.

Old Adults: Yellow teeth, canines and incisors, usually well-worn and sometimes missing.



Figure 3: Dental characteristics of old adults

Prime Adults: Yellowish teeth, incisors and canines slightly worn.



Figure 4: Dental characteristics of prime adults

Young Adults/subadults: It is not possible to distinguish the transition age between prime adults and young adults. However, all individuals with whitish perfect set of teeth and large body sizes (opposed to large cubs) have been considered as young adults.



Figure 5: Dental characteristics of young adults

Large cubs: Deciduous canines, incisors and small bodies.

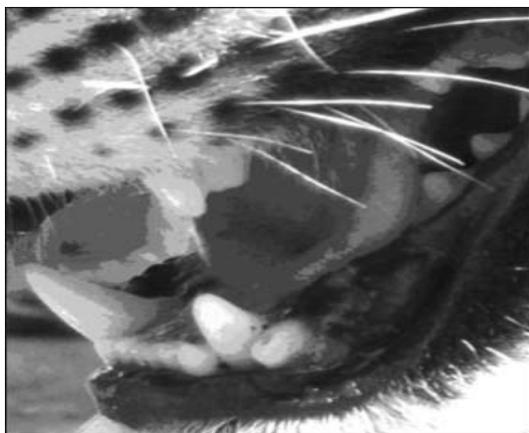


Figure 6: Dental characteristics of large cubs

3.3 Low levels of conflict despite the presence of leopards

Although age-related information was obtained from leopards trapped in both Ahmadnagar and Nashik Forest Divisions, conflict-related information was obtained only from Ahmadnagar Forest Division. Following our Junnar study in 2004 (Athreya *et al.* 2004), it was recommended to the office of the Chief Wildlife Warden, Maharashtra that translocation of leopards be stopped in the Western Ghat forests adjoining Ahmadnagar Forest Division, since it was likely to exacerbate conflict in the human-dominated valleys downstream of the release sites. From July 2004, releases of leopards were halted in the forests adjoining Ahmadnagar Division, except for one animal in 2005. However, a few translocations continued till recently into the forests adjoining Nashik Division.

Forest Department records on trapping and reasons for the same were used to assess the levels of conflict only in the Ahmadnagar Forest Division. The results formed the basis of management recommendations provided for enhanced management of human–leopard conflict in predominantly human dominated areas.

4. RESULTS AND DISCUSSION

4.1 Morphometry of leopards

The various morphometric values of the leopards from Maharashtra are no different from those obtained from a similar sample size of the leopards from Kruger National Park, South Africa (Bailey 1993).

Table 1: The weight of leopards

Age	Sex	Weight (kg) \pm std	N*	Min (kg)	Max (kg)
Prime adult	Male	63 \pm 13	3	50	75
	Female	40 \pm 6	3	33	45
Subadult	Male	38 \pm 6	8	33	49
	Female	31 \pm 5	7	24.5	40

*N=Number

Table 2: The body length of leopards

Age	Sex	Body length (cm) \pm std	N*	Min (cm)	Max (cm)
Prime adult	Male	132.1	2 [#]	109.2	154.9
	Female	123.2	2	116.8	129.5
Subadult	Male	125.9 \pm 7.7	8	119.4	139.7
	Female	117 \pm 9.6	7	104.1	129.5

*N=Number

[#] Only a minimum amount of anaesthetic was given to allow insertion of the PIT tag and/or to treat the animals. Therefore in some cases it was not possible to remove the animal outside the cage for obtaining its weight and body size measurements.

Table 3: The total body length (including tail) of leopards

Age	Sex	Total body length (cm) \pm std	N*	Min (cm)	Max (cm)
Prime adult	Male	229.9	2	208.3	251.5
	Female	205.7	2	195.6	215.9
Subadult	Male	210.8 \pm 11.2	8	200.7	229.9
	Female	198.7 \pm 13.9	7	180.3	210.8

*N=Number

Table 4: The length of hind leg of leopards

Age	Sex	Hind leg (cm) \pm std	N*	Min (cm)	Max (cm)
Prime adult	Male	75.6	2	71.1	80
	Female	62.9	2	61	64.8
Subadult	Male	65.7 \pm 5.1	7	58.4	71.1
	Female	63 \pm 5.5	7	55.9	68.6

*N=Number

Table 5: The length of fore leg of leopards

Age	Sex	Shoulder (cm) \pm std	N*	Min (cm)	Max (cm)
Prime adult	Male	Not available			
	Female	61.0	1		
Subadult	Male	65.3 \pm 3.2	7	61.0	68.6
	Female	62.1 \pm 6	6	53.3	67.3

*N=Number

The average total body length of three male leopards hunted in the Vidarbha region of Maharashtra in 1911 was 7.1 feet and that of two females was 6.2 feet (Pocock 1939). The adult males in our sample were 7.5 feet long on average, whereas the females were 6.7 ft long on average.

4.2 Low Levels of Conflict Despite the Presence of Leopards

The most common management action used in response to a leopard problem (sighting, livestock predation or attack on humans) in most parts of India is the trapping of a leopard and its subsequent release into a nearby forested area. This also has basis in the Section 11 of the Wild Life Protection Act (1972). The same management action was commonly used in the Ahmadnagar Forest Division (see Tables 6 and 7).

For the past decade (data available since 1999), leopards trapped in the entire Ahmadnagar Forest Division were released in the forests adjoining the division (Table 6).

Table 6: Conflict data from Ahmadnagar Forest Division
(MSFD records)

	Number leopards trapped	Released in adjacent forests	Human death	Human injury	Total attacks on people
	na	na	2	11	13
1999	na	na	0	4	4
2000	4	4	1	4	5
2001	5	5	0	0	0
2002	10	5	3	29	32
2003	10	3	3	13	16
2004	14	3	1	12	13
2005	18	8	0	9	9
2006	7	0	0	3	3

Table 7: Number of leopards trapped in the Ahmednagar Forest Division and released in nearby forests (see Figure 7 for location of release sites)

Release sites	Kalsubai	Malshej Ghats	Igatpuri	Jawhar Trimbak	Other sites in adjoining W. Ghat forests	Total trapped
1999	4					4
2000	5					5
2001	4	5				10
2002	2	3				10
2003						15
2004		2	2	5	3	18
2005					1	13
2006 (until Oct 06)						7



Figure 7 : : Map with release sites of the leopards

Source: <http://wgp.greenwichmeantime.com>

Leopards used to be released in the Western Ghat forests adjoining the Nashik, Ahmadnagar and Junnar Forest Divisions (Table7, Figure 7). The Junnar Forest Division study showed that serious conflict in human dominated areas followed translocations of leopards in nearby forests (up to 60 km away) (Athreya *et al.* 2004). Furthermore, data from microchipped leopards that were translocated indicated that they can transfer conflict to the site of the release and also show large post-release movements in human dominated landscapes (Athreya & Belsare *In Prep*).

Leopards are strongly territorial species and have phenomenal homing skills (Hamilton 1981, Bailey 1993). Radio telemetry studies of translocated leopards in Kenya have shown that the animals move a distance of at least 25 km from the site of release (Hamilton 1981). Large post-release movements out of forests in a country like India would mean displaced leopards in human dominated landscapes, thereby increasing the potential for conflict.

The work in Ahmadnagar Forest Division enabled the analysis of each trapping incident. The results show that none of the trapped leopards were involved in attacks on people. Nineteen leopards were trapped between 9 October 2004 and 28 May 2006 in the agricultural fields of Ahmadnagar Forest Division. Twelve were from the Sangamner Taluka, three from Akole Taluka, two from Kopergaon Taluka, one from Nevasa Taluka and one from Shirampur Taluka. Of these, eight were prime adults (at least three years old) and 11 were young adults (at least two years old) based on their dentition. None of the nineteen individuals were involved in attacks on people.

Twelve leopards were trapped following complaints of livestock attacks, four individuals had fallen in open wells in the croplands, one was trapped in a snare, one used to enter a village for pigs and dogs and there is no precise information on the reason for trapping of the last, but it was not due to attacks on people. There were three more leopard incidents in the region in the same period - on 25th February 2005, a leopard fell into a well and escaped in the night via a ladder, on 19th September 2005 a leopard was seen in a chicken coop but escaped in the morning and on 29th December 2005, a dead leopard was found in a well.

Scientists studying large carnivores have often commented on the fact that large cats, especially leopards, do live close to humans without causing serious conflict (IUCN-Cat Specialist Group 1992, McDougal 1991, Seidensticker 1990). The results of this work provide strong evidence for the same. All the 22 leopards, each of them at least two years old and eight at least three years old were living in a high human density area (258 people per square kilometer) and were trapped because of reasons other than attacks on people. Among those that were trapped due to livestock attacks, a 75 kg male (chip number 00-0658-D1AA) escaped from the trap cage (in December 2005) after two weeks in captivity in the Forest Department nursery located at the edge of the town of Sangamner. No attacks on people were reported following his escape.

The Ahmadnagar Forest Division reported more than 70 attacks on people between 2001 and 2004 (Tables 6 and 7). In the same period, 28 leopards trapped in different parts of Ahmadnagar Forest Division were released in the forests of the Western Ghat adjoining the Division (Tables 6 and 7). In late 2004, it was recommended to the Forest Department that all releases into the adjoining forests of Ahmadnagar Forest Division must be halted. Data from the Maharashtra Forest Department records indicates that attacks on people have declined although leopard activity was present at the same time (Tables 6 and 7) and is still reported.

It is important that the wildlife management and scientific community acknowledge that the leopard species is capable of living near human inhabitations. The mere presence of a leopard does not necessarily mean that it has to be removed. Instead, monitoring protocols have to be devised. Furthermore, a crucial requirement necessary for the reduction of conflict, as well as the care of the leopards, is the presence of captive

holding facilities manned by trained staff. Some level of trapping will be inevitable (following attacks on people or injured animals that have to be cared). Good captive facilities and/or procedures for euthanasia of these animals have to be in place, so that better management of leopards present in human-dominated areas is achieved.

The work in Maharashtra allows an understanding of how conflict can be effectively managed using inputs from the biology of the species. It is important that this experience is also shared with the other states experiencing severe conflict, where the same wildlife management strategy is in place—that of capture and release.

5. RECOMMENDATIONS

1. The conservation and wildlife managerial community acknowledge that the leopard is a highly adaptable species that can live even amidst human inhabitations without attacks on people, if appropriate proactive management strategies are put into place.

2. Proactive management actions addressing human–leopard conflict be science-based, taking into consideration the ecology of the species.

3. Teams of trained wildlife veterinarians and biologists should be set up in high-conflict states to assist the Forest Department in dealing with wild carnivores that require human intervention. Ideally such teams should be present within the Forest Department and it is important that methods of creating and sustaining these teams be created as soon as possible, across India.

4. Simple guidelines on captive management of Schedule I species that are most commonly encountered in conflict situations should be formulated and distributed to all captive facilities in the country, including zoos. There are no standardised animal husbandry guidelines followed across India, either in zoos or in rescue centres. Therefore simple booklets which provide such information would be of great use to the managers.

5. Periodic wildlife orientation courses have to be held in veterinary colleges in high-conflict states.

Lack of awareness on how to deal with wild animals and even wrong treatments are common. Providing veterinary students wildlife exposure and then allowing those interested in wildlife medicine to obtain training at rescue centres/zoological parks is recommended.

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Appendix I

Summary of information on all the animals treated in the WTI RAP (December 2004 to September 2006)

Date	Place	Species	Chip #	Sex	Age class	Fate	Action
30 Dec 04	Sangamner	<i>P. pardus</i>	00-063B-1FB6	M	Adult	Released in wild	Treatment and chipping
30 Dec 04	Sangamner	<i>P. pardus</i>	00-063B-02A1	M	Young adult	Released in wild	Treatment and chipping
30 Dec 04	Sangamner	<i>P. pardus</i>	00-065D-9E86	M	Young adult	Released in wild	Treatment and chipping
30 Dec 04	Junnar	<i>P. pardus</i>	00-063B-3F95	F	Adult	Translocated leopardess that was recaptured	Checking for chip
30 Dec 05	Junnar	<i>H. hyaena</i>		F		Released at site of capture	Treatment
6 Jan 05	Junnar	<i>P. pardus</i>	00-063B-6AF5	M	Adult	Recently trapped and died	Post mortem
17 Jan 05	Junnar	<i>P. pardus</i>	Not chipped	F	Adult	Injured in MVA and subsequently died	Treatment
3 Feb 05	Sangamner	<i>P. pardus</i>	00-065E-AEF7	F	Young adult	Sent to rescue centre	Treatment and chipping
3 Feb 05	Sangamner	<i>P. pardus</i>	00-065D-B493	F	Adult	Sent to rescue centre	Treatment and chipping
8 Feb 05	Nashik	<i>P. pardus</i>	00-0658-E952	M	Young adult	Released in wild	Treatment and chipping

Date	Place	Species	Chip #	Sex	Age class	Fate	Action
8 Feb 05	Sugaon Nursery	<i>P. pardus</i>	00-065D-A0A9	F	Young adult (not had cubs before)	Sent to rescue centre	Treatment and chipping
21 Feb 05	Kolhapur	<i>P. pardus</i>	Leopard skin, yng	Uk	Young		Checking for chip
22 Feb 05	Sangamner	<i>P. pardus</i>	00-0658-DDC2	F	Adult with three cubs	Released in wild	Treatment and chipping
22 Feb 05	Nashik	<i>P. pardus</i>	00-0658-BC7C	F	Adult (Old adult? All canines blunt or broken)	Sent to rescue centre	Treatment and chipping
27 Mar 05	Sangamner	<i>P. pardus</i>	00-0658-DD78	M	Large adult	Sent to rescue centre	Treatment and chipping
27 Mar 05	Sangamner	<i>P. pardus</i>	00-0658-BE28	F	Young adult (not had cubs before)	Sent to rescue centre	Treatment and chipping
27 Mar 05	Sangamner	<i>P. pardus</i>	00-0658-C53A	F	Adult but very small	Sent to rescue centre	Treatment and chipping
28 Mar 05	Igatpuri	<i>P. pardus</i>	00-065D-CA37	M	Young adult	Released in wild	Treatment and chipping
28 Mar 05	Aurangabad	<i>P. pardus</i>	Animal fallen in well in Osmana bad	M	Large Adult	In zoo	Checking for chip

Date	Place	Species	Chip #	Sex	Age class	Fate	Action
17 May 05	Nashik	<i>P. pardus</i>	00-065D-824F	M	Young adult	Released in wild	Treatment and chipping
9 Jun 05	Nashik	<i>P. pardus</i>	00-065D-8C36	M	Large adult	Sent to rescue centre	Treatment and chipping
29 Jun 05	Sangamner	<i>P. pardus</i>	00-065D-9457	M	Adult	Released in wild	Treatment and chipping
26 Jul 05	Sangamner	<i>H. hyaena</i>	00-065D-C494	F		Released at site of capture	Treatment and chipping
12 Aug 05	Shrirampur	<i>S. entellus</i>		M		Problem situation	Advising FD
22 Aug 05	Kolhapur	<i>P. pardus</i>	Two leopard skins, Yng	Uk2	Young		Checking for chip
23 Aug 05	Bhimashankar	<i>B. gaurus</i>		Uk2		Reappeared in area after 12 years	Assist the Department in deciding PoA
26 Sep 05	Sangamner	<i>P. pardus</i>	00-065D-7414	F	Adult (not had cubs before)		Treatment and chipping
26 Sep 05	Sangamner	<i>P. pardus</i>	00-0658-C032	F	Adult (not had cubs before)		Treatment and chipping

**Summary of information on all activities carried out in the Wild-Aid RAP
November 2005 - September 2006**

Date	Place	Species	Chip #	Sex	Age class	Fate	Action
14 Nov 05	Nashik	<i>P. pardus</i>	00-065D-B184	M	Adult	Captivity	Treatment and chipping
14 Nov 05	Nashik		00-065D-B719	F	Adult	?	Treatment and chipping
14 Nov 05	Nashik		00-0658-B8D0	F	Adult	?	Treatment and chipping
14 Nov 05	Nashik		00-065E-A10A	M	Adult	?	Treatment and chipping
14 Nov 05	Sangamner		00-0658-D1AA	M	Adult	Escaped from trap cage	Chipping
26 Nov 05	Junnar Rescue Centre			M			Treatment
5 Dec 05	Nashik			F	Cub	Died after few months	Treatment
8 Dec 05	Nashik	<i>Hyaena</i>				Died	Treatment
18 Dec 05	Chalisgaon		00-065D-9987	M	Adult	Released in wild	Chipping
19 Jan 06	Mumbai SGNP,	To meet forest department officials					
11 Apr 06	Sangamner		00-065D-6D87	F	Adult	Died	Treatment - was unwell

Date	Place	Species	Chip #	Sex	Age class	Fate	Action
11 Apr 06	Sugaon		00-0658-BB97	F	Adult	Released in wild	Treatment and chipping
11 Apr 06	Sugaon		00-065D-F027	M	Adult	Released in wild	Treatment and chipping
15 Apr 06	Nashik	Meeting with CWW, CCF (T), DCF (T) and RFOs to discuss leopard problem management					
25 May 06	Ahmadnagar		00-065D-847A	M	Adult	Not known	Chipping
5 June 06	Ahmadnagar district	Visit to Mahalsakore and Bhorkhind to hold workshops with gram sabhas to discuss complexities of leopard problem and to provide information on precautions to be taken in a leopard area					

Appendix II

Summary of visits

<p>30th December 2004:</p> <p>Nimbala Nursery, Ahmednagar Forest Division, Maharashtra</p> <p>Three male leopards trapped in human dominated areas and slated for release into the wild were microchipped. The tail wound of one of them was treated.</p>	 <p><i>The doctor, LDO and Forest personnel weighing the leopard.</i></p>
<p>30th December 2004:</p> <p>Manickdoh Rescue Centre, Junnar Forest Division Maharashtra</p> <p>A hyaena was found in Junnar with bite wounds on legs and abrasions on mouth and face; she was treated. Female leopard trapped in Chalisgaon, Jalgaon, was checked for microchip and was found to be a Junnar animal released in Yaval in October 2003. Report submitted to the PCCF (WL).</p>	 <p><i>MRC staff helping the doctor</i></p>

6th January 2005:

Manickdoh Rescue Centre, Junnar Forest Division Maharashtra.

A call was attended to on the night of the 5th of January 2005, to check a leopard sent to MRC (Manickdoh Rescue Centre) which was trapped in Khanapur, Pune Division in December 2004. However, he died late in the night. Next morning, a post-mortem examination was conducted and samples sent for laboratory analysis.



Leopard trapped in Khanapur, Pune Division, dead

17th January 2005.

Manickdoh Rescue Centre, Junnar Forest Division Maharashtra.

A female leopard was captured in Ghodegaon range of the Junnar Forest Division on the night of the 16th. She was paralysed from the waist downwards. She was believed to be involved in a motor accident.

The hyaena was also checked. He had almost completely recovered. He was recommended to be released close to the area where he was found within a week's time.



Medical check up of leopard paralysed from waist down

3 February 2005

Nimbala Nursery, Sangamner, Ahmednagar Forest Division.

A female leopard was trapped in a snare set for wild pig in a sugarcane field in Sangamner on 27th January 2005. We were called to treat her and insert a chip. The wound was washed, treatment given, physical measurements taken and chip inserted (00-065E-AEF7). The cage was cleaned.



Washing the paw, prior to treatment

3 February 2005

Nimbala Nursery, Sangamner, Ahmednagar Forest Division.

Another female who had head wounds was also treated, a chip inserted (00-065D-B493) and physical measurements taken. The cage was cleaned



Cleaning the wound on the head

8 February 2005

Nashik, DCF (E. Nashik residence), Nashik Forest Division.

A male leopard that fell into a well and was trapped in Kalvan Range on 17th December 2004 was chipped prior to release and his physical measurements were taken. His chip number is 00-0658-E952. The cage was cleaned.

8 February 2005

Sugaon Nursery, Akola, Ahmednagar Division.

A female leopard trapped in Sugaon Khurd on 31 October 2004 was chipped and physical measurements taken. The number is 00-065D-A0A9. Better hygiene and feeding practices were recommended and the cage was cleaned.

22 February 2005

Nimbala Nursery, Sangamner, Ahmednagar Forest Division.

A female leopard was trapped in the outskirts of Sangamner town in a wheat field. Her three very young cubs were found during the day of 11th February 2005 in the field and they were placed in the bait cage and she was trapped the same evening. A very large female. Chip number 00- 0658-DDC2 was inserted.



Trapped female leopard with three cubs (inset)

22nd February 2005

Pandavlini Forest Park, Nashik.

A female leopard trapped in Sinnar was treated. She had wounds on many parts of her body (face, flanks) and was severely troubled by flies that attacked the wounds. On examining her closely she was found to have none of her canines, and severely damaged claws. She was trapped following an attack on a little girl and a man. She recovered and was photographed a month later (inset).



Female leopard photographed a month after her capture

27th March 2005

Nimbala Nursery, Sangamner, Ahmednagar Forest Division.

Two females (00-0658-BE28, 00-0658-C53A) and one male leopard (00-0658-DD78) were chipped. One of the females had puncture wounds on her elbow and forehead (which had maggot eggs). These wounds were cleaned and treatment given.



Health check up of leopard

<p>28th March 2005</p> <p>Vaitarna Nursery, Igatpuri.</p> <p>A male leopard was trapped in a sugarcane field in Nandur Shingote, Sinnar on 18th Mar 05. He had maggot wounds on his forehead and an elbow. These were cleaned, maggots removed (shown in picture) and treatment was given. Chip 00-065D-CA37 was inserted. Recommendations were provided for better post-capture management of leopards at this facility.</p>	 <p><i>Maggots being removed from forehead of male leopard</i></p>
<p>28th March 2005</p> <p>Aurangabad Zoo</p> <p>A leopard was trapped in a well in Osmanabad in the third week of January 2005. Since this area had never reported any leopards it was likely that he might be a translocated individual trying to home back to his site of capture. Chip presence was checked.</p>	 <p><i>Leopard found trapped in a well</i></p>

17th May 2005.

Residence of the DCF - East Nashik, Nashik.

A leopard trapped in Kalvan range of East Nashik Division was chipped with number 00-065D-824F.

9th June 2005

Pandavlini Forest Nursery. Nashik.

Male leopard trapped at Wanjarwadi village, west Nashik. His chip number is 00-065D-8C36

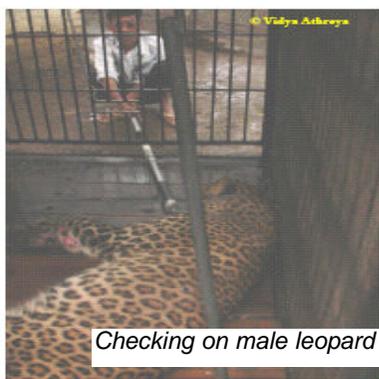


Male trapped at Wanjarwadi village

29th June 2005

Nimbala Forest Nursery, Sangamner, Ahmednagar District.

Male leopard trapped at Kopargaon Range, Nagar. His chip number is 00-065D-9457



Checking on male leopard

26th July 2005

Nimbala Forest Nursery, Sangamner, Ahmednagar District.

Hyaena female found at the side of road near Chandanapuri Ghats, Sangamner. Chip 00-065D-C494 was inserted. She was released at the site of capture after recovery.



Injured female hyaena

<p>22nd August 2005</p> <p>Range Forest Office (WL) Kolhapur.</p> <p>Two leopard skins were found. One was found in a village near Radhanagari WLS, Kolhapur and the other in Kolhapur. Chips were checked for in the skins of the animals since chipped leopards have been released in that area in the past. However, no chips were recorded in the skins, both of which appeared to be of young animals given the size and the dark coloration.</p>	 <p><i>Leopard skins seized in Kolhapur</i></p>
<p>23rd August 2005</p> <p>Bhimashankar Wildlife Sanctuary, Pune District.</p> <p>A gaur has made a re-appearance in these forests after a gap of 12 years. The previous individual seen in the area died after falling off a cliff. Recommendations were given to the Department that the animal be radiocollared and monitored. The animal was seen to feed on the rice fields during the night.</p>	 <p><i>Evidence of gaur in the rice fields at night</i></p>
<p>26th September 2005</p> <p>Nimbala Forest Nursery, Sangamner, Ahmednagar District.</p> <p>Female leopard trapped at Nimaj, AFD, following livestock attacks in the area. Chip number was 00-065D-7414</p>	 <p><i>Female trapped following livestock attacks</i></p>

26th September 2005

Nimbala Forest Nursery, Sangamner, Ahmednagar District.

Female leopard trapped after having fallen into a well at Kanoli village (AFD) was chipped with number 00-0658-C032

14th November 2005

Pandavlini Forest Nursery, Nashik Division, Maharashtra

Chip #	00-065D-B184	00-065D-B719	00-0658-B8D0	00-065E-A10A
Sex	Male	Female	Female	Male
Place of capture	Lahavit	Tarukhedle	Mahalsakore, Sinnar Range, TQ Niphad.	Pahuchibari
Trapped on	13.11.05	22.10.05	29.10.05	9.11.05
Reason	A girl was attacked at Wanjarwadi		9 year old girl taken and eaten.	He got inside a house
Condition	Normal	Normal	Fat	To be observed
Treatment	None	Dectomax + LAP	None	Dectomax, dressing done.
Notes		Old head and body scars present; UL canine chipped	Old head wounds	Head wounds, flies present

The second phase of the project started here, with accurate weighing by placing the tranquilised animal on a hammock.

14th November 2005

Nimbala Nursery, Ahmadnagar Forest Division, Maharashtra.

Two leopards were present, one was chipped and the other could not be tranquilised because two syringes bounced off resulting in drug discharge and drugs ran out.

Chip #	00-0658-D1AA	Not put
Sex	Male	Female
Place of capture	Ashvi Khurd,	
Taluka Sangamner	Not taken	
Age	Adult	Adult
Trapped on	28.10.05	
Reason	Livestock attacks	
Condition	Normal	Normal
Treatment	None	Dectomax + LAP
Notes		Old head and body scars present

26th November 2005

Junnar rescue centre, Junnar Division, Maharashtra.

Male leopard at rescue center had wound in right fore paw. It was treated in a squeeze cage present at the facility.



Male leopard treated in squeeze cage

<p>5th December 2005</p> <p>Pandavlini Forest Nursery, Nashik Division, Maharashtra.</p> <p>Two leopard cubs were found in a sugarcane field in Malsake, Sinnar Range, Tal Niphad. A female, about 2 - 2.5 months survived. It was recommended to the RFO that a better holding facility be made and that the animal should receive sunlight.</p>	 <p><i>Leopard in holding facility</i></p>
<p>8th December 2005</p> <p>Pandavlini Forest Nursery, Nashik Division, Maharashtra.</p> <p>Treatment and checkup of hyaena injured in a motor vehicle accident at Nandur Shingote on National Highway. It had suffered serious skull injuries (skull was fractured) and the animal was ataxic. Left eye ball was out of the socket and right eyeball had gone inside the cavity. It was euthanized.</p>	 <p><i>Injured hyaena</i></p>

<p>18 December 2005</p> <p>Patnadevi WLS, Chalisgaon, Aurangabad Division</p> <p>Leopard trapped in Village Padali, Tal Shirur, Bhid Zilla. Trapped on banks of river Uthala which is about 100 km from Mazalgaon area. Area never had leopards for at least 10 - 15 years and 10 days before 17th December 05, attacks started on livestock. Wolves and hyaenas also found in area and livestock is killed by wolves. People saw the leopard and called it a tiger. Godavari is about 10 - 15 km from problem area. Trap cage was set in cotton fields on 12 Dec 05. The range has about two trap cages.</p> <p>Chip number 00- 065D-9987 was inserted. The animal was released in the Patnadevi WLS.</p>	 <p><i>Leopard trapped on banks of River Uthala</i></p>
<p>19 January 2006</p> <p>Place: Sanjay Gandhi National Park, Mumbai.</p> <p>A visit was made to the Sanjay Gandhi National Park to meet the Park Director for offering our help to the rescue centre there</p>	

11 Apr 2006

Nimbala Nursery, Sangamner,
Ahmadnagar Forest Division.

A trapped female leopard appeared to be unwell. No obvious external injuries were seen except for an old head wound but her overall body condition was not good and a blood report also indicated that she was unwell. She died the same evening

Chip number	00-065D-6D87
Date chipped	11-Apr-06
Division	Ahmadnagar
Place trapped	Hanumanthgaon, Nagar F.D.
Date trapped	04-Apr-06
Released	Died the same evening
Date released	
Sex	F

11 Apr 2006

Sugaon Nursery, Akole, Ahmadnagar Forest Division.

Chip #	00-0658-BB97	00-065D-F027 (picture below)
Sex	Female	Male
Place of capture	Akole	Not taken
Age	Adult	Young male
Trapped on	26.12.05	10.01.06
Reason	Livestock attacks	Fell in well
Condition	Normal	Normal
Treatment	None	None
Notes	Released in Yaval WLS in first week of August.	

25 May 06

Bhingar Nursery, Ahmadnagar,
Ahmadnagar Forest Division

Place where chipped	Bhingar Nursery
Chip Number	00-065D-847A
Date Chipped	25 May 06
Place Trapped	Nevasa
Date Trapped	21 May 06
Date Released	
Sex	M



Health check-up

25 May 06

Mahalsakore and Bhorkhind villages, Nashik Forest Division. Meeting with local people (picture on title page)

Appendix III

A sample copy of the physical examination sheet

PHYSICAL EXAMINATION WORKSHEET

Priority to be given to treatment of life threatening conditions like shock, bleeding wounds; otherwise a systematic physical examination should be carried out before initiating treatment).

Date 8 Feb 05 Species Panthera pardus
 Location captured/rescued Euzoon khurd: cap. in cage near river Pravara
 Sex female
 Microchip ID# 00-065D-ADAA Location of chip Base of tail
 Weight(kgs) 32
 Body condition (Fat/good/thin/poor)
 Dehydration status -

adult
 but not delivered
 yet

Skin

Wounds/cuts/abrasions/swollen lymph nodes - N.A.D.

Parasites

not detected

Eyes

discharge
 conjunctiva
 pupils
 lesions

NO ABNORMALITY DETECTED

Ears

discharge
 foreign body
 parasites

N. A. D.

Nasal area

discharge
 mouth CRT sec
 lesions
 gums

N. A. D.

teeth (plaque/coloration/wear and tear/broken)

no broken teeth.

Musculoskeletal system

swelling
 fracture/dislocation

N. A. D.

Cardiopulmonary system

Heart rate/min (Auscultate left side of the chest between 3rd and 6th intercostal space)

60-80 per minute

Respiratory rate/min

depth
 regularity

17-24/min.

Urogenital system

N. A. D.

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The most common reaction to human–leopard conflict is their trapping and translocation to nearby forests. This report documents the technical and veterinary support provided to the Maharashtra Forest Department during the capture and translocation of leopards from conflict areas. It recommends science-based action keeping in mind the ecology of the species.



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