

Leopard rescue in urban area - a case study on planning and execution

Leopards are one of the most wide spread carnivores in India and have adapted themselves to almost all kinds of habitats. They are considered most elusive and more resilient. They have been known to live near human habitation with minimum level of conflict. Leopards, unlike tigers, are also found outside forests (Jhala et al. 2015). Massive cultivation activities attract prey like Wild Boars, hare, Bluebull, and Hog Deer, which subsequently make a suitable prey base for carnivores, especially leopards. There are studies where they are reported to dwell near human habitation without any negative interactions for years (Athreya & Belsare 2007). Leopard population in India was estimated to be 7910 in 2014 (Jhala et al. 2015) as compared to 12,852 in the forested areas of tiger states in 2018 (Jhala et al. 2020).

The leopard's menu is very extensive and preferred size of prey ranges up to 40 kg in most of cases. And most of the feral animals fall in this category of weight and attract leopards that occupy forest boundaries.

Leopards are not as feared by people who live along the fringes of the forests because they see them often, but if a city person sees a leopard, then an immediate fear is spread and despite being in no-conflict the animal is said to be in-conflict. When an animal senses a threat

then only he attacks and that's what happens in most of cases when animal is seen near cities. During such an operation, a leopard was sighted in a densely populated urban area of Meerut City.

A. First response

Information by Police Response Vehicle-112 Pallavpuram, Meerut and local corporator at around 0800 h was received at divisional director's office, Meerut.

Divisional director, Meerut gave information to the assistant conservator of forest, Meerut, forest range officers of Meerut and Rithani, and the wildlife guards and instructed them to reach the spot as soon as possible.

The information was reported to senior officers after confirmation that it's a leopard.

Photos and videos of first sighting location with GPS were collected to assess and plan accordingly. After confirming location, the leopard was found in the house portico hiding behind the air cooler (Tail portion of the leopard was clearly visible).

Accordingly, staff installed one big trapping net around house entrance up to the height of roof to restrict his movement. The staff constantly monitored its location and activities from a safe distance.



Space from where leopard trapped in between the boundary wall and net escaped.
© Social Forestry Division, Meerut.

A wildlife expert was involved in the rescue operation. He was briefed about the situation on field. After assessing the situation, the divisional director called one more team for immobilisation from the National Zoological Park, New Delhi.

But due to disturbing mob sound, the leopard reacted and jumped outside the house and got trapped in between the boundary wall and the net and somehow managed to escape through a point where net was not fastened properly to the ground as the rescue team didn't get sufficient time to do so.

Learning: Trapping net installation: Trapping net should be fastened properly to the ground with the help of proper hooks (for proper strength) or trapping net should be installed in such a way that ample amount of net remains at ground level so that animal gets trapped in that loose net while escaping.

Mob and ground media personnel

management: Barricade the area and adjoining roads as soon as possible to prevent any untoward incidence if animal somehow escapes.

Problem faced: Locating the leopard quickly. No pugmarks signs due to permanent road. Therefore, enquired all households of last sighted location after leopard's run.

B. How animal was located in these tough circumstances

Enquiries with all nearby households who were outside their houses narrowed down the probable area and accordingly deployed staff and police personnel in all directions in order to restrict mob movement towards probable location. The close circuit TV (CCTV) footage around the probable area was viewed for confirmation. Last sighted location narrowed down using all gathered information and search and combing operation with experts was

launched in probable two open plots. In first plot, two small room structures were present with outer boundary wall. On the other side, another plot was not having any boundary wall on two sides and was full of dense bushy vegetation (mini natural jungle type area).

Rescue team was of the opinion that animal must be hiding in one of these two open plots. Firstly, team checked those two small room structures with precautions and after the search, the rooms were closed to zero down the possibility of entry of leopard into those rooms.

It was not possible to sight the leopard due to bushy vegetation in other plot area. One staff taking wall as shield dared to narrow down probable location in that plot. Luckily, he saw few rosettes of the leopard skin along the wall hiding beneath a dense bush. After confirming the exact location, the team started planning how to restrict the movement of leopard in that plot itself.

C. Fool proof planning & strategy

Extra forces were deployed with the help of superintendent of police to restrict any movement of mob from all sides.

Clear directions were announced on field with the help of public address system of divisional director's vehicle.

Full proof cordoning off the core location was ensured with trapping net to ensure that the leopard couldn't escape from that plot.

D. Problem faced & resource mobilization

To cover plot (approx. 3,200 sq.ft. area) the

team needed at least 20–25 big nets.

Therefore, nearby forest divisions were contacted simultaneously for extra resources.

The rescue team contacted local known resources such as Regional Rapid Transit System (RRTS) project-National Capital Region Transport Corporation (NCRTC) system especially for construction nets to be used for outer layering of nets. Needed 14 feet poles for supporting 12 feet nets. Took help of local corporator of municipal corporation in arrangement of poles from local tent house.

Hooks to fasten the net with grounds were sourced from local tent house so that the leopard can't escape from any side. Temporary additional strengthening was done with the help of big boulders and small iron rods.

Extranet roofing was done at both open corner area to ensure that leopard will not be able to escape through jumping from corner ends of plot.

E. Innovations in planning

While starting net installation it was decided to use any machinery with horizontal boom to execute immobilisation in bushy mini jungle type area to easily locate the leopard and to ensure safety of immobilising team. The divisional director coordinated with district administration and RRTS for these machines. Within 90 minutes two big crane machines/backhoe loaders with horizontal boom were arranged through Meerut Development Authority and RRTS.



Immobilizing team on horizontal boom of a backhoe loader and plot covered with double layer of nets. © Social Forestry Division, Meerut.

Learning

The horizontal boom was protective for immobilising teams. Since the animal was reluctant to move from his location despite every effort of the rescue team, a long bamboo stick was used to gently prod the leopard by lowering the horizontal boom carrying immobilising team.

F. Immobilisation of the animal

Drugs used: Injection xylazine @ 1 mg per kg body weight and injection ketamine @ 3 mg per kg body weight was used assuming total body weight of the leopard around 70 kg.

While rescue operation the animal immediately tried to escape through one end where rescue team was ready with dart gun and the animal was darted.

The leopard went back to same place after being darted to hide himself beneath bushes. After sometime the animal moved towards

another end where another rescue team observed that the dart was in proper position on rump region of leopard but had not injected medicine properly in the body. Realizing the situation another team immediately darted the leopard successfully. Again, the animal went back to the same hiding place. It was not possible to assess the level of sedation of the leopard. Therefore, a bamboo was used from another plot with safe distance to gently prod the animal in order to check the sedation.

The animal was taken out of the plot after cutting the bushy vegetation carefully and safely.

Learning

The immobilizing team should assess the proper drug delivery after darting as merely relying on injected dart in the muscles never guarantees immobilisation, as in our case dart by first team couldn't inject drug possibly due to improper pressure in dart air chamber.

Two team approaches proved helpful and animal was successfully immobilized.

G. Mob management

The main reason for mob becoming unruly after immobilising the leopard was the diverted attention of the few policemen towards leopard as they also wanted to have a glimpse of the darted leopard. However, situation was controlled immediately by using public address system by divisional director.

Learning

The divisional director used public address system twice to prevent mob from coming near the leopard cage.

Mob noise at the time of putting darted animal in the transportation cage should be strictly avoided as too much noise act as catalyst in awakening the darted animal.

Police force should also be kept at reasonable distance as their presence itself acts as barrier for mob.

H. Transportation and release of leopard

The leopard was transported according to protocol as described by Singh et al. (2018). The leopard was sent to forest range office where the animal was examined thoroughly by the veterinarian and was also given drinking water.

The animal was rested for around six hours for stabilization. The animal cage was properly covered by green net in order to provide calm

environment. A team headed by the divisional director with a veterinarian and other staff left Meerut for Shivalik forest division, Uttar Pradesh to release in natural habitat.

The leopard was checked twice while transportation by the team to assess health and safety of the animal.

The releasing site was a small valley surrounded by hillocks with natural water stream. The animal immediately came out of the cage after opening the door but interestingly male leopard came out reversely with posterior portion coming out first, which was very unusual. However, the animal was hale and hearty and ran away in forested area afterwards.

Learning

Leopard transportation immediately after stabilization proved very useful as the animal couldn't get much stressed and this also prevented him for self-mutilating injuries and human imprints.

Discussion

Leopards use bio-corridors to travel to other forests especially they follow rivers or other water channels but due to fragmentation of natural corridor in the form of man-made objects, they somehow reach human habitation. However, it's worth mentioning that they are human shy animals and generally avoid any type of conflict with us. But if easily accessible food is available then certainly some sort of conflict may arise in that particular area. Leopards especially males travel long distances

in search of food and mate especially in winters.

As leopards have very long choice of prey from a small mammal like mouse, monkeys, porcupine to dogs and sometimes large deer and birds etc. therefore presence of feral animals like dogs, blue bull fawns, hares, wild boars and in few cases, livestock attract them especially in farmlands as crops always occupy some farmlands and provide shelter to leopard's prey. At the time of harvesting, they come out but still without causing any harm.

But if such an animal is chased, it runs away in haste and sometimes may reach the cities. But one thing needs to be clear that only very few croplands are prone to leopard infestation, not all. According to Hayward et al. (2006), leopards preferentially prey upon species within a weight range of 10–40 kg. Regression plots suggest that the most preferred mass of leopard prey is 25kg.

Stabilizing animal for around six hours at a calm and quiet place proved beneficial before transportation as the leopard most of the time remained calm during journey which prevented self-mutilating injuries. This observation equates with Singh et al. (2018) which states that the animal usually struggles when taken inside the transport cage, hence the cage should be immediately covered by a green net and no one should be allowed to come close. Generally, after some time animal calms down. While loading the animal cage the face of the animal should always be in moving direction of the carrying lorry. It should be kept in mind

that the cage should not tilt while loading. Therefore, it is always advisable to upload the cage through a proper ramp.

Sontakke et al. (2017) described injection xylazine @ 1.1 mg and injection ketamine @ 2.2 mg per kg body weight which little bit corresponds with our dose regime, i.e., 1 mg per kg body weight and 3 mg per kg body weight, respectively.

According to Srivastava et al. (2014) before releasing any animal the rescue team should study the release-factors, such as its distance from rescue area, favourable conditions to survive and ecological balance. In this case also the release site was Shivalik wildlife division which is at considerable distance and possesses all conditions that are favourable for leopard's release in natural habitats, viz., perfect habitat in the form of dense hilly jungle with many natural water streams away from any form of human activities.

People awareness regarding proper disposal of garbage is one of the sectors which needs to be focussed on as garbage always attracts feral animals. And the place where easily accessible food is available with no or very less competition will further attract large predators.

Conclusion

Rescuing a leopard in a dense city area is always a very difficult task for the rescue team. There are instances where in such cases either the animal ran away or while running away in self-defence it injured some people due to

excitement or at some places he was beaten to death. But in our case, quick response from rescuers didn't allow leopard to leave the area and with the help of modern technology the animal was quickly located. The team was successful in keeping leopard calm as noise making mob was kept at safe distance initially. Timely liaisoning with other agencies and mobilization of available resources resulted in successful confinement of the leopard and subsequent immobilization and rescue.

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