

MANAGING POPULATION EXPLOSION AMONG SPOTTED DEER AT TATA STEEL ZOOLOGICAL PARK, JAMSHEDPUR

Dr. M. Palit,
Dy Director cum Vety. Officer

INTRODUCTION

The chital (*Axis axis*) also known as spotted deer are commonly found in dense deciduous or semi evergreen jungles and open grassland of Srilanka, Nepal, Bangladesh and India. Their coats are reddish fawn, marked with white spots and underparts are white. Only Adult or sexually mature males have antlers. The antlers shed annually. Their life span is in between 20 to 30 years.



Axis deer most commonly occur in herds of ten to fifty individuals, with one or two stags and a number of females and young. They are often fairly tolerant of approach by humans and vehicles, especially where they are accustomed to human disturbance. They do not occur at higher elevation forests where they are usually replaced by other species such as the Sambar deer. Axis deer eat primarily grasses and vegetation, but also eat their shed antlers as a source of nutrients. The chital has a protracted breeding season due in part to the tropical climate, and births can occur throughout the year. For this reason, males do not have their antler cycles in synchrony and there are some fertile females at all times of the year. Males sporting hard antlers are dominant over those in velvet or those without antlers, irrespective of their size and other factors.

The species is well represented in all zoos of the country and are prolific breeders. Due to this majority of zoos in India are stranded with a huge population of axis deer in their collection. Many a times to get rid of the surplus animals, axis deer are released into reserve forests or in wildlife sanctuaries in unplanned manner. Tubectomy or Vasectomy as a tool for controlling overpopulation among herd animals is rarely used in the Indian zoos, either due to lack of knowledge on the procedure or due to fear of losing animals during post operative care.

Why we adopted vasectomy?

The Recognition of Zoo Rules, 2009 under the Indian Wild Life (Protection) Act, 1972 prescribes that “Every zoo shall endeavour to limit the number of animals of each species within the limits set by the animal collection plan of the zoo by implementing appropriate population control measures like segregation of sexes, vasectomy, tubectomy and implantation of pellets etc. with due consideration of health and welfare of the animals”.

Keeping in view of the above directive & regulations detailed consultation was carried out by us regarding adopting a safe way to stopping further breeding among the herbivores in the safari. According to literature available, four methods to stop breeding among deer species were found to be in practice:

1. Segregation of sexes
2. Releasing excess population in wild reserves
3. Tubectomy
4. Vasectomy

1. The zoo safari already has animals above its carrying capacity and therefore, segregating the sexes by compartmentalization would further reduce the available space and jeopardise the welfare of the animals. Secondly the chances of infighting among males would also increase resulting in deaths of animals. And lastly due to its compartmentalization, a safari will not remain in its own state and get converted into small holding pens. Thus the thrill of seeing animals in an open forest environment will be totally lost and harm visitor interest. Therefore this option was ruled out.

2. Releasing zoo born herbivores into wild has to be taken up as per the IUCN guidelines for reintroduction of animals and guidelines prescribed by the Central Zoo Authority. The process is long drawn requiring identification of suitable habitat for the species, creating temporary enclosures in the release site, posting of manpower for monitoring and taking care of the animals in prerelease site and thereafter releasing them in the reserve. The chances of losing some animals during capture and translocation to the release site can also not be ruled out as it had happened in many of the deer parks and zoos in the country. A recent incident of death of large number of deer was reported during their transportation from a deer park in West Bengal, copy attached.

3. The option of tubectomy was also explored. However, it was felt that while adopting this method, chances of causing harm to expectant mothers would increase, as it is very difficult to judge the stage of pregnancy in wild animals.

4. Therefore the safest population control mechanism for herbivore was found to be through vasectomy, which the zoo already had experience. A protocol was designed to take up the operation. A copy of the protocol is placed at Appendix-1 to this article.

METHODOLOGY

Capture

Chital (Axis deer) Male were immobilized from group using Blow pipe dart syringe system using Xylazine and Ketamine Hcl Mixture 1:1 ratio (0.75 ml - 75 mg) each (estimated average weight 50 to 65 kg) . Under this general anesthesia the animal was kept on lateral recumbency, all the three legs were tied with rope and the upper hind leg pulled forward up to shoulder using a separate rope so that the scrotum is well exposed. Eyes were also covered to avoid excessive stress.



Surgery

The scrotum was washed cleaned and shaved, pained with Betadine lotion. About 2 inch length incisions are made through the skin of scrotum on the caudal surface parallel to median line or median Raphae at the level of scrotum neck on both side of the line. Thus the incision goes through skin, subcutaneous tissue and tunica vaginalis surroundings. A pair of curved forceps was introduced through the incision under the cord to elevate it. A 1 inch length incision was made through tunica vaginalis (over the cord) to reveal the Vas deferens as a small shining elastic tube like structure (felt on palpation). The Vas deferens was ligated by



Catgut size "0" (Chromic NW 4242EP absorbable suture ETHICON JOHNSON& JOHNSON) at the two places $\frac{3}{4}$ inch apart, and a the $\frac{1}{2}$ inch piece is cut and removed between these two ligatures. After the proper ligation the vas deference and the entire cord engorged with BETADINE solution and NEBASULF(neomycine-bacitracine-sulfonamide) (Pfizer Lt) powder sprinkled and placed the cord in its original space. Skin incision was closed with horizontal mattress sutures using silk thread. Operation on the other cord was done in similar way.

Marking and post operative care:

The animal was tagged (Ear tag Identifier) and put under long acting Antibiotic umbrella Enrofloxacin 100 mg /ml (FORTIVIR , Virbac lab), tetanus toxoid (Tetvac) . The animal is mobilized (recovered using Injection Reverzine(Yhimbine Hcl 10 mg/ml Parnell lab. Australia) , 3 ml through slow Intravenous Injection . After the surgical process is over the animal is kept in sternal recumbency . Cold water is splashed over the body and head to awaken the animal. The animal is kept in a separate cell for post operative care for a week. Fly repellent (Himax , Indian Herbs) is sprayed twice a day. 1 bolus of Serratiopeptidase bolus (Serakind Vetkind , 60 mg) is given twice daily. From the 3rd day onwards $\frac{1}{2}$ bolus of Oflokind-OZ bolus (Ofloxacin-1 gm and ornidazole- 2.5 gm , Vetkind)is given twice daily for another 3 days for antibiotic coverage, orally. All the 12 animals (which were operated) recovered nicely from the surgical procedure and their physical appearance and vitality was maintained as normal.

RESULT

On experimental basis vasectomy was performed on 2 Black bucks (*Antelope cervicapra*) and 2 Nilgais (*Boselaphus trago camelus*) , last year. When it was seen that the natural appearance and health status of the animals were normal and did not show any change, the operation was started for spotted deer (*Axis axis*) .

A total of twelve male spotted deer were vasectomised in the period of April 2010 to August 2010. The result shall be observed in forthcoming breeding season in the zoo, which sets in from October month.

EXPERIENCES GAINED

Chemical Immobilization of herbivores is itself a very risky task and therefore the following points are to be taken care of:

- 1) Proper dosage is one of the important factors which depends on the weight, sex, age, season and the health status of the animal.
- 2) Manual capturing using nets/luring into small areas(kraal/cell) will make the operation easy as the dose requirement of tranquilizer is less compared to capturing the animal in a large area.
- 3) The first 6 hours of the post surgery period is very crucial and needs close observation of animal to meet any emergency/ medical care promptly.
- 4) The process is to be preferably be carried before noon so that post surgery observation can be made during the course of the day.
- 5) A team of trained professionals is very important to achieve the final goal.

Standard Operating Protocol for performing Vasectomy among Axis deer / small herbivores

Step-I

Selection of animal

Adult male with shed antlers or antlers in dwarf stage

Step-II

Animal restraint / Capturing

1. Manual capturing through use of nets / luring the animal into a closed kraal
2. Chemical immobilization

Team of experienced staff are engaged for execution of whole operation

1. Briefing up the whole process among staff and their job distribution.
2. Keeper and Asst keeper of that beat and other beat at least 5 to 6 staff
3. Staff from Veterinary hospital expert in animal Handling.
4. Shifting/ transportation of animal from its restraint site (involve 5-6 persons)

Step-III

Veterinary surgical intervention

1. Choice of drug along with antidote
2. Preparation of surgical instrument (sterilization)
3. Kit preparation to face emergency condition during surgery
4. Drug safety kit
5. Personnel safety- Situational awareness animal / people concern.

Step-IV

Recovery and post operative care

1. Releasing the animal in a restricted paddock / kraal after marking / tagging
2. Observation / monitoring of animal till it completely recovers (6 hour to 12 hour)
3. Post operative use of medicine – inject able/ oral /external spray
4. Follow-up for normal food taking and other condition

Step-V

Release of the animal in main display enclosure

Generally after two weeks post surgical intervention.
