
Notes and records

Capture and rapid handling of jackals (*Canis mesomelas* and *Canis adustus*) without chemical immobilization

Meggan E. Craft*

Department of Ecology, Evolution, and Behavior, University of Minnesota, 1987 Upper Buford Circle, Saint Paul, MN 55108, U.S.A.

Introduction

Wildlife researchers constantly strive to reduce the impact of animal handling. While catching jackals (*Canis* spp.) in the Serengeti for disease sampling and radiotagging, we used a technique for handling jackals that did not require chemical immobilization. Traditionally jackals have been handled after parenteral administration of drugs and have been captured using cage traps or leg-hold traps (Rowe-Rowe & Green, 1981; Kaunda, 2001; Admasu *et al.*, 2004; Di Concetto *et al.*, 2004). A drawback to chemical immobilization is that recumbency, ataxia and disorientation frequently occur during recovery, and during the recovery phase the jackal must be intensively monitored to decrease the chance of injuring itself or being attacked by other predators (Di Concetto *et al.*, 2004). The method we used does not utilize chemical immobilization and hence minimizes animal handling time and the chance of recovery accidents.

Materials and methods

Three species of jackals (*Canis mesomelas*, *Canis adustus* and *Canis aureus*) occur in the Serengeti National Park, Tanzania, a 14,763 km² protected area with high densities of wild carnivores (Sinclair, 1995). Jackals were trapped and handled in order to radiotag individuals for an ecological study, and to sample jackals for diseases.

Capture and handling of jackals took place from April to August 2005. A team of four to five people, including a veterinarian, set up trap stations in areas where jackals

were recently seen. Trapping exercises began at sunrise or in the late afternoon, as these were times when jackals were active and visibility allowed us to monitor traps without the use of artificial lights. During each trapping session, two to three trap stations were set up using four or five rubber-padded leg-hold traps [Oneida Victor® Soft-Catch® Wildlife Trap (Fox), Cleveland, OH, U.S.A.] at each station as detailed in other studies (Rowe-Rowe & Green, 1981; Kaunda, 2001). Our set up differed only in that, on the short-grass plains typical of the Serengeti, traps were placed against rocks to encourage the animal to approach the bait (piece of a fresh wildlife carcass) from only one side. Once each trap station was ready, observers in a vehicle watched the trap station from a distance of 200–300 m. Traps were never left unattended due to concerns about predation on trapped animals that were considered at particular risk given the high density of large carnivores in the Serengeti, specifically hyenas (*Crocuta crocuta*) and lions (*Panthera leo*). In addition, this prevented any trapping of nontarget species.

When a jackal was caught, the team closed all other traps in the area and attended to the caught jackal. Usually more than one leg was caught in more than one trap. The head of the animal was held securely to the ground with a dog catching pole (Tomahawk Live Trap, Tomahawk, WI, U.S.A.), a small lightweight blanket placed over its head, and the muzzle loosely taped over the blanket, or just held shut by hand. Once the animal was restrained, the trap(s) was removed from the paws, the catchpole released and the jackal held in a sitting position between the handler's legs while the handler held the jackal's head, keeping a firm grip on the muzzle (Fig. 1). At this stage, blood, saliva and tissue samples (from ear notching) were collected, sex and reproductive status documented, photographs taken of the incisors for age estimation (Lombaard, 1971), the animal inspected for injuries, weighed, and then fitted with a radiocollar (Advanced Telemetry Services, Isanti, MN, U.S.A.). For release the jackal was simply put on the ground as the grip on its muzzle was released, allowing the blanket to fall off as the animal ran away. This animal handling protocol was approved by IACUC number 0407A62362.

*Correspondence: E-mail: craft004@umn.edu



Fig 1 Technique for manually restraining a jackal for sampling and radiotagging

Results

Five jackals (two male and two female *C. mesomelas*, one male *C. adustus*) were caught on nine trapping occasions (six evenings and three mornings). Observations from vehicles totalled 42.5 h of watching separate trapping stations. When the jackal was first caught in the trap it would either struggle or lie down. Although it would try to bite the catch pole, once the blanket was placed over the head, the animal would immediately calm down, stop biting and remain still. The jackals did not struggle during the invasive procedures such as ear notching and blood sampling.

Jackals were freed from the foothold traps on average 8 min after entering the trap ($n = 5$, $SD = 4$ min). No jackals pulled free of the traps and we caught no nontarget species. On average, the total handling time (from animal first sighted in the trap until release from handling) was 25 min ($n = 5$, $SD = 14$ min). No injuries, abrasions or broken skin were sustained on any of the jackals, all animals ran away without limping, and all animals that were collared (four) lived at least 8 months after capture. Jackals were not noticeably more afraid of humans or vehicles after the handling; jackals did not flee from vehicles any sooner than their nonhandled conspecifics.

Discussion

The advantage of this method is the quick and efficient handling – from an immediate release from the leg-hold traps to a quick release back to the wild. Because jackals

rapidly subdue once restrained and blindfolded, this method of handling jackals does not require chemical immobilization and minimizes handling and recovery time for the animal. In other studies involving chemical immobilization, handling times from anaesthesia to release ranged from 48 to 140 min, and this did not include time in the trap, as it was not known how long the jackals had been caught in the trap before handling (Kaunda, 2001; Admasu *et al.*, 2004; Di Concetto *et al.*, 2004). In addition, the jackal is not ataxic, disoriented nor recumbent after capture, so it can be immediately released and not under increased threat of predation by lions and hyenas.

Furthermore, a veterinarian might not be needed for this capture method. I chose to have a veterinarian assist for two reasons. A veterinarian would have been useful in order to immobilize nontarget species in case another species was captured in the traps. (Current regulations in Tanzania require a veterinarian to immobilize animals.) Secondly, I wanted a professional opinion on the welfare of the animal; it was the opinion of two veterinarians (Dr Hoare and Dr Eblate) that the additional handling once trapped was not more stressful than normal recovery from chemical anaesthesia. Further studies should compare physiological parameters (such as stress hormone levels) with and without chemical immobilization.

Acknowledgements

Thanks to TAWIRI and TANAPA for permission to carry out this research. H. Brink, S. Brown, B. Chunde, Dr E. Eblate, Dr R. Hoare, C. Mentzel, M. Rostal and K. Skinner all significantly contributed to the trapping sessions. K. Laurenson, S. Thirgood, C. Packer and S. Cleaveland provided advice on the trapping technique and manuscript. M. Craft was supported by NSF Long-Term Research in Environmental Biology grant DEB-0343960, NSF Bio-complexity grant BE-0308486, and NSF-Ecology of Infectious Disease grant EF-0225453 with additional funding from Lincoln Park Zoo Field Conservation Funds and the Wilkie Research Fellowship.

References

- ADMASU, E., THIRGOOD, S.J., BEKELE, A. & LAURENSEN, M.K. (2004) Spatial ecology of golden jackal in farmland in the Ethiopian Highlands. *Afr. J. Ecol.* **42**, 144–152.
- DI CONCETTO, S., FUNK, S.M., GOWTAGE-SQUEIRA, S., VILA-GARCIA, G., JENNER, N. & HAMMOND, R. (2004) *Comparison of Anaesthetic*

- Protocols for the Field Immobilization of the Black-Backed Jackal Canis mesomelas*. 5th scientific meeting. European Association of Zoo and Wildlife Veterinarians (EAZWV), Ebeltoft, Denmark.
- KAUNDA, S.K. (2001) Capture and chemical immobilization of black-backed jackals at Mokolodi Nature Reserve, Botswana. *S. Afr. J. Wildl. Res.* **31**, 43–47.
- LOMBAARD, L.J. (1971) Age determination and growth curves in the black-backed jackal, *Canis mesomelas* Schreber, 1775 (Carnivora: Canidae). *Ann. Transvaal Mus.* **27**, 135–175.
- ROWE-ROWE, D.T. & GREEN, B. (1981) Steel-jawed traps for live-capture of black-backed jackals. *S. Afr. J. Wildl. Res.* **11**, 63–65.
- SINCLAIR, A.R.E. (1995) Serengeti past and present. In: *Serengeti II: Dynamics, Management, and Conservation of an Ecosystem* (Eds. A. R. E. SINCLAIR and P. ARCESE). University of Chicago Press, Chicago, IL.
- (Manuscript accepted 23 March 2007)
- doi: 10.1111/j.1365-2028.2007.00782.x