

# Capture of wild *Ostriches *Struthio camelus australis** in the Namib Desert

N.J. ADAMS, P. SEDDON, M. DU PLESSIS, W.R.J. DEAN, S. JACKSON

Percy FitzPatrick Institute, University of Cape Town, Rondebosch, 7700, South Africa

L. GELDENHUYS, P. MORKEL, H. BERRY

Directorate of Wildlife, Conservation and Research, Private Bag 13306, Windhoek, Namibia

M. PAXTON

Namibrand Desert Trails (Ltd), P.O. Box 197, Maltahöhe, Namibia

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## ABSTRACT

The extreme visual acuity of ostriches and their open habitat makes them difficult to approach undetected. We describe the procedure we adopted to capture wild birds in the Namib Desert. We attempted unsuccessfully to catch birds by hooking them around the neck from a moving vehicle. Casualties resulted from inexperience and incorrect handling. Drop nets were deployed to capture eight ostriches. Two casualties were a consequence of collisions with nets and a vehicle. We had few problems in handling blindfolded birds.

## INTRODUCTION

A recent study designed to investigate the energetics of free-ranging wild ostriches *Struthio camelus australis* (Williams *et al* in prep.) using the doubly-labelled water technique (Mullen 1973) necessitated the capture and handling of several live birds over a period of several hours. The study procedure required the injection of a precisely measured volume of labelled water into a captive animal, the attachment of a radiotransmitter and the withdrawing of a blood sample 2-3 hours later. A second blood sample is required a few days later after the animal has been allowed to range freely.

Ostriches are the largest living birds (adult mass: 59.5 - 87.3 kg, Maclean 1985) and are capable of maintaining running speeds of over 50 km/h across flat terrain. The open habitat in the Namib and their extreme visual acuity makes them difficult to approach undetected. Flight distances of individual groups of ostriches ranged from 300 m to 3 km, (pers. obs) making them difficult to capture successfully. We describe the capture procedure we adopted, highlighting potential problems and making suggestions for improvement.

## STUDY AREA

The capture operation was conducted at the Namibrand Desert Trails (Pty) Ltd game ranch approximately 150 km west of Maltahöhe in southern Namibia. The ostriches were confined largely to an area of 255 km<sup>2</sup>, although access to the remainder of the ranch and the adjacent restricted diamond area to the west was possible across unfenced steep rocky areas or partly unfenced boundaries. The terrain consisted of gravel plains, sparsely covered with perennial grasses, surrounded by a number of mountain massifs with additional isolated inselbergs on the plains. A grassed dune system bounded the study area to the southeast and north. Most ostrich activity was confined to the gravel plains or, more particularly, to drainage lines and to the base of rocky slopes where increased water runoff resulted in growth of more vegetation.

## METHODS

Two methods of catching ostriches were attempted.

### (a) Crook method:

A single ostrich was selected and then pursued by two vehicles.

These vehicles were driven into a position on either side of the running ostrich allowing the ostrich to be manoeuvred and effectively preventing the bird from making sudden direction changes. One vehicle, an open-backed pickup truck, carried the capture team, and was required to approach alongside the ostrich from the driver's side. One of the capture team then attempted to place a padded crook, on a 2m handle, around the neck of the ostrich. Once the crook was in place the driver decelerated gradually to slow the ostrich to a pace at which the 2-3 additional members of the capture team could jump safely from the back of the vehicle and restrain the bird.

### (b) Drop nets:

This technique has been used successfully on ungulates ranging in size from eland *Taurotragus oryx* (460-700 kg) to Sharpe's grysbok *Raphicerus sharpei* (6.4-8.9 kg) (de V. Pienaar 1973; Bothma 1989). Camouflaged nets are placed in a strategic position, typically downwind and across the path of a natural escape route. The animals are herded into nets which are suspended on lightweight aluminium poles. The nets collapse on impact, entangling the animal. If more than one animal is required it is usually necessary to erect two to three parallel lines of nets. At Namibrand, sites selected included narrow necks between rocky outcrops and a dune, in shallow drainage lines and across an artificial constriction between a boundary fence and a rocky hill. Erected nets were approximately 2 m high, set for various lengths and in one or two rows depending on the site. Mesh size was approximately 15 x 15 cm. Logistical constraints and the open nature of the terrain at the capture site meant that we were restricted to using motor vehicles for herding ostriches.

## RESULTS

### Crook capture

Two attempts were made using this technique (Table 1). Both were unsuccessful. Inadequate co-ordination between the driver of the vehicle and the catcher resulted in the ostrich veering away from the vehicle after being hooked and tripping. The bird fractured its lower tibia and was destroyed. The second bird was captured but died within a few minutes of capture while being transported to the processing site. We speculate that exertional hypoxia combined with physical restraint, which restricted movement of the sternum and ribs and inhibited gaseous exchange resulted in heart failure.

TABLE 1: Summary of ostrich capture attempts

Attempt	Method	Time am / pm	No. vehicles	Initial ostrich grp. size	Total herding time (± 15 min)	Med & high* speed chase distance (m)	Total herding distance (m)	Result
1	nets	early pm	2	11	45	3550	5550	no birds caught
2	crook	early pm	2	2	165	<sup>b</sup> 4400	<sup>b</sup> 9600	1 ad. male died
3	crook	early pm	1	1	165	<sup>b</sup> 6000	<sup>b</sup> 11200	1 ad. female died
4	nets	am	2	8	45	5050	?	3 sub-ads caught
5	nets	early pm	1	2	30	ca6500	ca7000	1 sub-ad. caught
6	nets	am	3	5	15	7850	ca8000	1 ad. male caught / 1 ad. female died
7	nets	am	3	1	15	ca4000	ca4000	1 ad. male died
8	nets	am	3	11	15	6400	ca7000	1 ad. female caught

## Notes on attempts:

1. Nets over rise; pursuit vehicles too far behind; birds saw nets and had time to turn and run back.
2. Tripped and broke right tibia; euthanized.
3. Caught but died of stress during transport.
4. Nets between fence and koppie; two drives at nets; some birds avoided nets by going over fence or climbing rocky slopes.
5. Nets next to a fence in a wash; very close pursuit by a single vehicle.
6. Nets in wash; neck broken in nets.
7. Nets in wash; toe broken during chase; euthanized.
8. Single bird selected from the group.

\*medium speed: 20 - 40 km/hr - jogging, easy stride, avoiding approaching vehicles.  
high speed: >40km/hr (maximum recorded ca 70km/hr).

<sup>b</sup>add to attempt 1 for total distances. N.B. ca. 10 mins slow walking between attempt 1 and 2/3.

### Drop nets

A total of six drives was made and six birds were successfully caught with an additional two casualties (Table 1). One death occurred at capture. Dissection of this ostrich revealed fractures of the vertebral column in the neck and mid-lumbar region. The second casualty occurred as a consequence of collision with the herd vehicle. The ostrich was destroyed.

### Post capture handling

On capture, ostriches were immediately blindfolded and extricated from the nets. Birds were kept standing until they recovered from the chase. Restraining birds in a prone position may prevent effective expansion of the thoracic cavity (see above) and will reduce the area of bare skin in contact with the atmosphere. To reduce the heat load after high speed chases of up to 8 km, birds were sponged with water on the bare skin of the thighs and behind the wings. Once blindfolded, ostriches remained for the most passive, making no attempt to kick or struggle. Birds could be easily restrained by two persons each gripping the base of a wing. Birds were initially placed in small V-shaped holding crates and restrained with straps behind the tail and over the back. The design was based on that of plucking crates used on commercial ostrich farms. The apparent uneasiness of birds restrained in such a way, along with restricted access to the body for drawing blood samples meant that crates were useful for short-term containment only. A more satisfactory option proved to be individual, shaded holding pens that allowed ostriches some freedom of movement. These pens, approximately 2 x 3 x 2.5 m, were constructed of plastic shade netting and erected inside a large steel framework crate. In such pens it proved possible to take blood samples from the medial tarsometatarsal vein and attach radiotransmitters with minimal restraint. Birds were held for a total of three to four hours with no signs of stress.

### Release

After processing, birds were led a short distance from the

holding pen, faced towards an expanse of open terrain, the blindfold was removed, and they were released. The ostriches quickly reoriented themselves, generally running away for a short distance before slowing to a walk and on occasion commencing feeding. No post-release mortality occurred during the approximately week-long study. After this period birds were shot, under permit, to obtain the final blood sample and, in addition, intestine and stomach samples to investigate the role of gut bacteria in digestion and for analysis of diet.

### Chemical immobilization

Injury to one of the birds allowed us to test the effect of etorphine HCL (M-99). 0.5 mg M99 was injected into the carotid artery of an adult male (~90 kg). Infusion was by intra-arterial injection and induction time was no more than 30 s. Depressed respiratory function required artificial respiration for about 5 min after injection. Subsequent administration of the antidote approximately 10 min after the initial injection returned the bird to full consciousness.

## DISCUSSION

Our study required a minimum of 6 ostriches to be captured. The crook capture method was potentially the most selective. Previously, the technique had been used successfully on wild but vehicle-habituated ostriches at Namibrand (M. Paxton pers. obs). Our failure to capture any ostriches successfully resulted largely from inexperience. More powerful chase vehicles, capable of rapid acceleration, would reduce chase times and herding distances. This, coupled with more careful handling, would presumably reduce the risk of capture-stress mortalities. The one presumed capture-stress related death occurred in the ostrich that had been herded for the greatest distance (Table 1). With additional experience and suitable terrain the technique may prove successful. However, manoeuvring at high speed, across-country within two metres of an ostrich will always be a relatively high risk operation.

The use of capture netting is considerably more labour intensive but may carry a lower risk. Problems associated with entanglement in the net can be eliminated by ensuring rapid restraint of ostriches by sufficient personnel who should take particular care to ensure the neck is not twisted or the trachea occluded by the net. Greatest risk to ostriches may be in hitting the nets at high speed. Over open terrain ostriches are capable of speeds in excess of 55 km/h with a concomitant risk of injury. However, reducing chase speed prior to impact may give birds the opportunity to see and avoid the nets, particularly in open habitats. The use of helicopters rather than motor vehicles may be an alternative but more costly option for herding but only if suitable net placement positions, easily accessible to the ground crew, are available.

Although one bird apparently died of capture induced complications after an extended chase, it is clear that birds could be successfully captured after high speed chases lasting up to 8 km, with no visual ill effects provided birds are given the opportunity to recover from oxygen debt. Maximum daily ambient temperatures during the capture operation ranged from 28-30°C. Capture stress is likely to become more severe during summer when day-time temperatures frequently exceed 35°C. We experienced few problems in handling blindfolded ostriches. Birds could be walked, bled and manipulated to attach transmitters with minimal restraint. No administration of sedatives or tranquilizers was necessary. More recent experience (P. Morkel pers. obs.) suggests even fully-sighted, captive ostriches are unaggressive and may be handled in a mass crate. However, the behaviour of such birds may well be more unpredictable with potentially dangerous consequences.

Given that we experienced a number of mortalities other capture methods for ostriches should still be considered. There may be a potential for capture by chemical immobilization, under certain circumstances providing problems of dosage and delivery can be overcome. The feasibility of such an approach, using helicopters as a platform for darting free-ranging ostriches and a combination of the drugs, carfentanyl and xylazine, has been

demonstrated recently (K Raath pers. comm. to P. Morkel). The mortality rate was less than 5%. Although there appear to be some problems associated with the use of M-99 (this study) its successful use with ketamine on captive ratites (Stoskopf et al. 1982) suggests this combination of drugs may also prove suitable.

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