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Behaviour of Wild Ostriches (*Struthio camelus*) at Mokolodi Nature Reserve, Gaborone, Botswana

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Abstract: The behavioural patterns of 80 wild ostriches (*Struthio camelus*) at Mokolodi Nature Reserve, Botswana was investigated in a study conducted between March and October 2000. The ostriches were observed in the afternoons from 2:00-4:00 p.m, using binoculars. The behavioural patterns observed included social ranking, kantling, dancing, vocalization, pecking, parental teaching and thermo-regulation among others in addition to comfort behaviour namely sand bathing and care for feathers. The most prevalent behaviours noted were thermoregulation followed by pecking, twirling and aggression, respectively. The time budget strategies were also observed. Feather and air pecking, the 2 common behavioural disorders were rarely noted although the younger ostriches were seen to incessantly peck at objects on the ground. Gender pairing was noted to be in the ratios of 1:1-1:4. Ratios of 2:1 or 3:1 were not commonly encountered among ostriches seen in herds of about 10-20 birds. The dominant males were seen to occupy alpha and beta positions in the groups. Interspecies ranking and tendency to keep away from other animals was evident.

Key words: Wild ostriches, behavioural patterns, Botswana

INTRODUCTION

The ostrich (*Struthio camelus*) is the largest living bird in the wild belonging to the order of birds known as ratites (running birds) (Hallam, 1992).

By definition, behaviour is to act or react in a specified way to a situation and is therefore the interaction between the ostrich and its external environment. Ostriches in the wild have certain behavioural requirements and capabilities that enable them to cope with their natural environment. Some of these behavioural patterns are cultural for the survivability in the wild. The present study was aimedat studying the behaviour of wild ostriches in their natural habitat in order to understand their behaviour under domestication in captivity.

MATERIALS AND METHODS

The behavioural patterns among 80 ostriches bred and reared in the wild at Mokolodi Nature Reserve, Gaborone, Botswana were studied at bi-weekly intervals from March to October 2000. To reduce error due to time variation, observations were conducted in the afternoons from 2-4 p.m. The social ranking, herding, gender ratios, type of behaviour and number of birds displaying this behaviour and the frequency of these displays was noted. Also studied were the time budget and any behavioural disorders.

RESULTS

The wild ostriches (*S. camelus*) at Mokolodi Nature Reserve, were seen to move in herds of about 15-20 birds. They avoided thickets. They were sighted in open spaces. Then cocks and hens ratio ranged from 1:1-1:1.5. Ratios of 2:1-3:1 were not common. The dominant cocks assumed alpha and beta positions.

Behavioural patterns pertaining to social and sexual feeding were noted in edition to behavioural disorders (Table 1). The cocks exhibited kantling which is both a sexual and social behaviour. Kantling was seen to be used to confront hostile male rivals.

Aggressive behaviour was demonstrated between hens and cocks and also towards human intruders.

Aggressive mood among ostriches was however not dominant. Other behavioural patterns included twirling, dancing, vocalization by the males, cooing by the chicks, parental teaching by breeding hens, thermoregulation. Comfort behaviour such as sand bathing and care of plumage and other body parts were constantly observed. An ostrich could spend as much as 30 min cleaning itself provided there was no disturbance in the environment.

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Table 1: Behaviour observed and number of times observed

Behaviour	Number of birds	Occurrence
Kantling	6	4
Aggression	10	6
Twirling	15	5
Vocalization	2	2
Parental teaching	8	4
Pecking	18	14
Bathing	3	1
Thermoregulation	25	19
Feather pecking	0	0

While sand bathing, the ostrich would lie down in a dry sandy place. It would then push the neck in the sand using snake-like motions and shovel sand over the body. This activity was carried out even in winter except during the rainy season when the ostrich would just sit in the rain.

Ostriches were seen to waltz when a game ranger's truck zoomed past. Apart from the male ostriches which stood their ground, the rest scuttled in disarray.

Yawning and stretching accompanied by flapping of wings seemed to form an integral part of thermoregulation.

Pecking at stones was not common among the younger birds while feather pecking was not observed at all. Since no supplementation was done in the game reserve, the ostrich had to make do with the available forage and insects which were abundant in the Reserve.

Interspecies ranking was obvious at watering holes where other animals such as the gazelles and waterbucks took precedence over the ostriches. Furthermore, it was noted that ostrich herds kept a large distance between them and other animals.

The time budget was gender-dependent with males spending more time watching around predators while the females brood over the eggs in the afternoon. Generally, all the age groups spent about 60% of the afternoon either standing or walking. Males spent more time standing than the females. Every 5-10 min a group of males would crane their necks hold their body and head position to scan the horizon and even behind them.

Ostriches only started resting towards 4 p.m and resting was less during the cold winter months of May-July. It was interesting to note that ostriches preferred rain to seeking shelter under the acacia trees. It was not clear whether this was for safety reasons.

DISCUSSION

In the present study, the behaviour of wild ostriches (*S. camelus)* in their natural habitat was investigated during an 8month study encompassing the four seasons experienced in this country. Previous observations have shown that some of these behavioural patterns are seasonal and therefore physiological while others are disorders (Berendsen, 1995). An understanding of the behaviour of ostriches in the wild would elucidate the pathophysiology of some disorders or vices sometimes exhibited by ostriches in captivity.

The fact that ostriches are social animals was exemplified by the herding in groups of 10-20 in which the cocks to hens ratios ranged from 1:1-1:5 with the 2:3 ratios being less common. This set up represented a polygamous partnership whereby there is a major hen with secondary hens in the company of the male. This polygamous relationship has been exploited in farming ostriches in the pairing strategy during breeding (Sambraus, 1994c). It has been suggested that the larger the groups, the more the birds feel secure (Berendsen, 1995). However, the herd size in this study was smaller than that observed in the wild by the latter author. This could in part be attributed to the relatively low risk of finding ostrich predators at the Mokolodi Game Reserve, Gaborone. There were no lions in the Reserve. Large groups or herds of ostriches have been shown to reduce the watching time from the normal 34.9% for an individual ostrich (Ross and Deeming, 1998; McKeegan and Deeming, 1997). Consequently, more time is spent on feeding.

There was a lot of time spent walking and standing, 2 functions that are not life preserving. This behaviour was dominant in the males probably because the females would be brooding eggs sitting on the nests. They guard the nests against predators.

An idiosyncrasy noted among ostriches was restlessness and preening of feathers while standing. It was not clear whether this was due to ectoparasitic infestation. In some countries, blood-sucking arthropods have been known to imbibe blood meals from ostriches causing discomfort in the process (Sasaki *et al*., 1995). The terrain at the Mokolodi Nature Reserve consists of open savannah grassland interspersed with acacia trees and some thickets. The ostriches were seen to avoid very tall bushes and thickets but rather favoured open spaces. This was probably a safety precaution to avoid hidden predators. Male ostriches were seen craning their necks scanning the horizon with their keen eyesight especially when the hens were sitting on eggs.

Social ranking was noted among some herds with dominant cocks occupying the alpha and beta positions. Social dominance is also practised in captivity (Sambraus, 1994b).

Interspecies lower ranking was phenomenal especially at watering holes whereby other animals such as waterbucks and gazelles and eagles took precedence over ostriches. Ostriches throughout this study were observed to keep a considerable distance from other animals. With social ranking and territorial attitude often

evident among ostrich groups, aggression is inevitable. However, in this investigation, aggressive mood among cocks was not dominant probably because of the spacious nature of the Reserve. No actual fights were encountered in contrast to the farmed ostriches especially during breeding.

Attempts to investigate part of the circadian rhythm of wild ostriches showed that ostriches slept less on cold afternoon in a bid to generate heat by feeding more (Deeming, 1998a, 1998b; Sambraus, 1994b). There is also a need to determine the circadian rhythm of wild ostriches in order to establish proper husbandry practices for the ostriches in captivity.

One of the most outstanding behavioural patterns was kantling exhibited by cocks to seduce females partners and also ward off male contenders. This was accomplished by the cock dropping to his hocks, fanning both wings forwards hitting his head with a thump on either side of his spine. Similar displays are shown by farmed ostrich cocks. While courtship behaviour in human imprinted farm ostriches is human instigated Bubier *et al*., 1998; Hicks-Alldredge, 1998), these displays in the wild were not imprinted on humans. The authors did not observe actual copulation probably confirming the observations made by Sambraus (1994d) that this takes place mostly in the morning.

Comfort behaviour namely caring for their feathers and sand bathing were seen. Since no observations were made in the morning, it was not clear whether this was an afternoon only activity or it was arbitrarily done. Cleaning was not only restricted to the feathers but also the head, neck and toes. The authors observed that an ostrich could spend as much as 30 min cleaning itself if there was no disturbance in the environment. It would therefore be recommended to set up facilities for these activities to prevent stress among farmed ostriches. Sambraus (1994d) described similar behaviour in captive ostriches.

Parental teaching by the hens was evident whereby the hen performed pecking movements on the ground. While ostriches of various ages were seen to peck at grit, no air or feather pecking, vices sometimes seen in farmed ostriches were noted. Feather pecking a behavioural disorder has been associated with stress among captive ostriches (Lambert *et al*., 1995; Sambraus, 1994a; Paxton *et al*., 1997; Sambraus, 1994d).

Thermo-regulation accomplished by flapping of wings to fan the thighs, panting, stretching and occasionally yawning, were shown by ostriches in the afternoon as a means of dissipating heat from the body. Constant fanning of the thighs with the wings was common. During the cold winter months, feathers were kept close to the body to minimise heat loss.

Twirling and dancing was noted when birds were suddenly frightened. This was done by the birds turning and flapping their wings as if they were waltzing. Although ostriches are considered to be silent birds, limited vocalization was identification made mating booming sounds which could be heard over long distances.

It has been suggested that this booming was a territorial marking threat to ward off rural cocks. While ostrich chicks have been described made cooing cries of distress in captivity, these sounds were only heard, when chicks were frightened in the wild.

Observations made in the study would no doubt, assist ostrich farmers in preventing stress and stress-related diseases among farmed ostriches.

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