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OBSERVATION ON SOCIAL BEHAVIOUR OF OSTRICH (*STRUTHIO CAMELUS*) IN CAPTIVITY

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Abstract

The ostrich, the flightless Ratite, is the world's largest bird. Ostrich has been reared in Romania for many years, but we have limited information on this species. The aim of this paper is to provide information on the social behavior of the ostrich (Struthio camelus) in captivity. Ostrich products, meat skin, and eggs are considered luxury products not only in Romania but also abroad. Observations on the social behavior of captive ostrich were made on two extensive farms in Romania in Arad County. The most common behavior patterns are walking, sitting, standing, foraging, pecking, dancing, coprophagia and aggression. The captive ostriches spend most of their time standing, resting or bathing, and nest-making. In the summer period, ostriches show the greatest difference in their behavior, they are more inactive and sit more in rainy weather than in dry periods. In the breeding season, they become more aggressive. They are violent toward humans, juveniles, even each other and other species. Some individuals may be showing abnormal behavior such as feather pecking, anorexia, coprophagy, and dietary indiscretion. Understanding the feelings in animals through behavioral observations is a vital step in improving their welfare.

Key words*: captivity, social behaviour ostrich, Struthio camelus.*

INTRODUCTION

The growth of ostriches in Romanian farms is in continuous development, as a new branch in agriculture. The ostrich feather trade, however, is several centuries old, dating back to primitive civilizations. From ancient times, ostrich feathers have been used for decorative purposes. In ancient Egypt, they were a symbol of justice. The main targets for ostrich growth are 60% for skin, 15% for eggs, 14% for meat, and 11% for feathers (Dragan et al., 2019; Fericean et al., 2013; Fericean, 2017).

The ostrich (*Struthio camelus*) is the largest, tallest, and heaviest flightless bird which has 2.75m in height and weight from 70 to 150 kilograms, and its feathers are fluffy and symmetrical (Mushi, 2008; Kreibich, 1995; Csermely, 2007; Newberry, 2007).

The ostrich is an herbivorous bird, a sole member of its order, is endemic to Africa and can be found in a range of open habitats (Hallam, 1992; Kreibich, 1995; Davies, 2003; Alden et al., 1996, Schaller et al., 2011; Birau, 2013; Croney, 2016). They have long necks and legs and are the fastest running bird achieving a speed up to about 60-70 km/h. At a month-old ostrich chicks can run at speeds approaching 50 kilometers per hour (Davies, 2003). They can lay the largest eggs that can weigh up to 1.4 kilograms. They can live until 50 years (Birau et al, 2013).

MATERIALS AND METHODS

Observations on the social behavior of captive ostrich were made for three consecutive days, three times a day: morning, lunch, and afternoon (period 1 - from 6:00 a.m. to 09:30 a.m.; period 2 - from 10:00 a.m. to 1:30 p.m. and period 3 - from 2:00 p.m. to 5:30 p.m.) in April 2021, in a two farm from Arad County. Observations were made on ostriches raised in the trio breeding system (Figure 1) and colony group (Figure 2). No rainfall was recorded during the observation days.

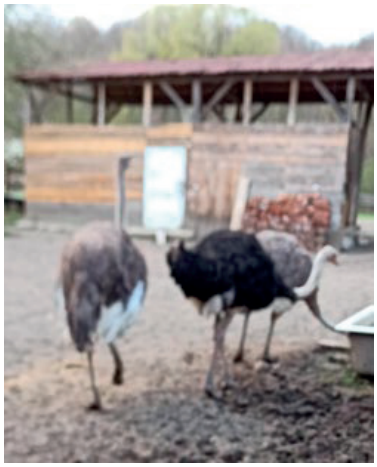

Figure 1 The trio families - one male and two females

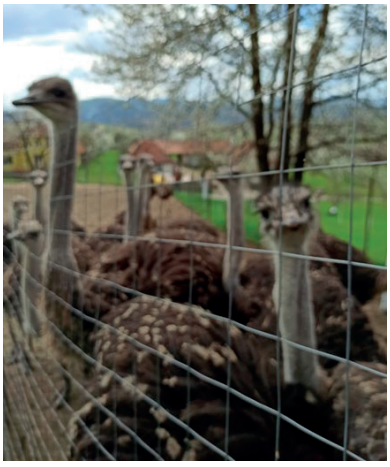

Figure 2. The colony groups

To produce the ethogram, a few behaviors were observed as feeding, courtship, dust-bathing, resting standing, sitting, walking, and aggression.

RESULTS AND DISCUSSIONS

The social behavior of ostriches is as complex as that of some social mammals with dominance among individuals (Schaller et al., 2011).
The ostrich (*Struthio camelus*) is a diurnal species, very active during the day. In the wild, a male ostrich has a territorial range and a small harem, and also, they can be violently protective of their territory.
In captivity, they are separated into categories: ostrich chicks of different ages, young ostrich, productive and reproductive families a group that included a male and more ostrich females. For safety reasons, it should you never have more than one male in a paddock.
They stand during the day unless they rest, bathe in the dust, mate, or nest. They remain inactive during the night if they are not disturbed (Degen & Rosenstrauch 1989). The resting behavior of ostriches is present both during the day and at night when they stop doing any activity.
This behavior includes sitting, standing, and sleeping. Sitting was made with the foot bent under the body, and the neck straight up in some cases (Figure 3), the head and neck tilted to the ground.

Figure 3. The sitting behaviour

Observations during the day show that the most commonly observed resting behavior was standing (Figure 4), followed by sitting. The sleeping behavior was observed only at night at trio families and at colony group was observed in the afternoon and at night.

Figure 4. The standing behaviour

Locomotion behavior is one of the most common behaviors (20%) in trio families and at colony group, it is much higher reaching 30%

and was observed in the morning, afternoon and evening and includes walking was with their necks straight up, was the most common locomotion observed behavior (93%) followed by running (7%).
The ingestive behavior of ostrich was divided into four categories: feeding on green fodder, feeding with concentrated feed (Figure 5), drinking (Figure 6), and pecking (Figure 7).

Figure 5. The feeding with concentrate

In the wild, the diet of ostrich consists of plants, insect eggs, fruits, small mammals, and sand. The ostrich spent a lot of daylight hours feeding with continuous ingestion.
Feeding with green fodder (35%) was the most frequent ingestive behavior observed, followed by feeding with concentrated feed (32%) followed by pecking (27%), and drinking (6%). Clean and fresh water must be available for the ostrich free choice.

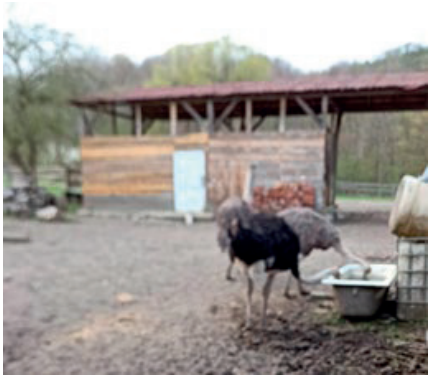

Figure 6. The drinking behaviour

Pecking has a lower percentage in breading families and higher in the colony group. Ostriches frequently arrange their feathers with their beaks and do so while walking, sitting, and standing.

Figure 7. The pecking behaviour

In natural habitats, the ostriches live in groups especially for water and food, with a dominant male defending and establishing territory, and a few other females of which a dominant female is called the "main hen".
The courtship has a high percentage of 30% and was observed only in breeding families of ostrich.
The hen ostrich is sexually mature at 4 years and the male matures at 5 years (Schaller, 2011). The male ostriches have a black-and-white plumage, while females and immature birds females have grayish-brown feathers.
Madekuroza et al. (2006) studied the sexual behavior of adult ostriches and mentioned that females showed violent behavior against other females and to impress their potential mates made pre-nuptial courtship by posturing (Figure 8 a, b). Young ostriches had a submissive behavior by lowering head and neck in S-shape. Males in mix-groups showed a dominant and aggressive behavior by posturing usually with tails held erect.
In reproductive families during the breeding season, males made ‘the breeding dance’ to attract the female for breeding. The ritual is very complex, he sinks slowly to the ground, by swelling their feathers, crouching, and using his wings to swing.

a.

b.

Figure 8. The femele ostriches mating dance a, b

The male scraped in the ground a nest who contains one or more eggs. The main hen mates with the male and puts her eggs in the center of the nest where have the best chance of hatching. The other female may mate with the male and then lay their eggs in the same nest made by the male. Both the main hens and the males incubate the eggs and care for the chicks, the female sits on the eggs at night and the male during the day. An ostrich egg is very shiny and has the color of bone-white (Figure 9).

Figure 9. The ostrich egg

In the early stages of raising the chicks, the male is very protective and aggressive. High aggression towards the caregiver or other males was observed during the breeding period.

In Romania, the breeding season depends on climatic conditions, the quality of food, and state birds and commences in early spring.

In reproductive families, aggression had a high share of 7% (Figure 10) and was observed especially in males compared to the caregiver or other strangers both during egg collection and during the administration of feed. The males kept in the neighboring shelters showed aggression.

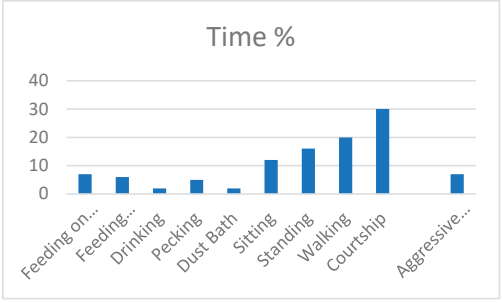

Figure 10. The behaviour of trio families

At the productive ostrich, the aggression had a very low weight of 1% (Figure 11) and was observed only during the administration of concentrated feed.

Comfort behaviors were low during the research period, especially in breeding families, and include

the care of feathers and other bodies, bathing in the sand when the ostrich would lie down in dry sand. The aggressive behavior was lower in the afternoon and evening compared to the morning.

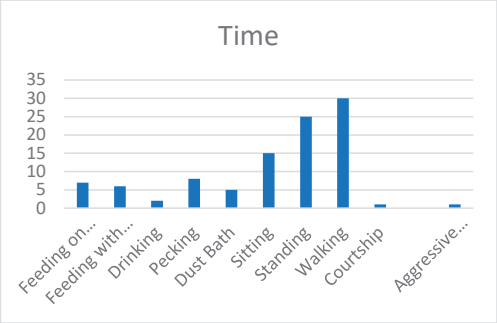

Figure 11. The behaviour of colony group

Bolwig (1973) and Kock (1996) investigated interspecific behaviors of the ostrich with mammals and birds and observed that the ostrich tolerates other species.

Amado et al. (2011) mentioned that the behavior of ostriches diverges according to the day period and age. In addition to the behaviors mentioned, a variety of maintenance activities were observed, including stretching and yawning.

Magige (2008) and Vyver (1992) observed that frequency of behavior changes in the winter and summers seasons.

Due to inadequate growth techniques, ostrich age groups can engage in abnormal behaviors such as stinging, feather picking, dietary indiscretion, behavioral stargazing, anorexia, and aggression.

CONCLUSIONS

During captivity, the ostrich can also experience stress so it is necessary for the conditions in the shelters to be as close as possible to the natural environment. In captivity, the ostrich improves the feed concentrates very well.

In the breeding season, the aggressivity is higher, the males are violent toward each other, humans, or caregiver.

Some individuals may show abnormal behavior such as feather pecking, anorexia, coprophagy, and dietary indiscretion. Understanding the feelings in animals through behavioral observations is a vital step in improving their welfare.

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