

BEHAVIOUR OF CAPTIVE OSTRICH CHICKS FROM 6 WEEKS TO 1 YEAR

Liana Mihaela FERICEAN, Mihaela OSTAN, Olga RADA,
Silvia PRUNAR, Mihaela IVAN, F. PRUNAR, I. BANATEAN-DUNEA
Banat's University of Agricultural Sciences and Veterinary Medicine "King Michael I of Romania", Faculty of Agricultural Sciences, Aradului St. 119, Timisoara-300645, Romania
Corresponding author: liana.fericean@gmail.com

Abstract. Observations on behavior of captive ostrich chicks from six weeks to one year were made three times a day: morning, lunch and afternoon, in a extensive farm from Romania. The main categories of behaviors identified at captive ostrich chicks were: feeding behavior, drinking, lithophagia, resting, dancing, walking, socializing, coprophagia and aggression. Regarding the feeding behavior of six weeks-old ostrich chicks, the largest share were fed with green fodder with percentage of 8%. Also, when moving through the paddock, only a small percentage of 1% were ingesting sand. The drinking had a small percentage of 2%. It was observed that refilling the concentrated feed gutters stimulated ostriches to eat. It has also been observed that they pick up stones from the ground or just nibble on the ground as they walk. In 1-year-old chicks, feed is administered several times during a day. If in 6-week-old chicks, coprophagy had a high percentage, in one-year-old chicks, this phenomenon is not common. In 1-year-old ostrich chicks, in resting periods they stay with their eyes closed for periods ranging from thirty seconds to three minutes. The rest in standing position had a weight of about 5%, the very low percentage is due to the overpopulation in the paddock, the animals being often disturbed by those who walk. Understanding the feelings in animals through behavioral observations is a vital step in improving their welfare

Keywords: behaviour; ostrich chicks

INTRODUCTION

The growth of ostriches in Romanian farms is in a continuous development. The breeding of ostriches in Europe and implicitly in Romania could be a success because these birds adapt quickly to any environment respecting the minimum maintenance conditions. Today the domestic ostrich is bred for very good skin quality, fat-free meat and feathers.

The ostrich (*Struthio camelus*) is a representative of the order of birds known as ratites (running birds) or *Struthioniformes*. They are the heaviest and largest flightless, herbivorous bird from the wild (Schaller et al., 2011, Hallam, 1992; Alden et al., 1996, Brown et al., 1982). This bird is endemic to Africa and can be found in open habitat (Amado et al, 2011). The African ostrich is a social species, therefore it thrives better in groups (Bolwig, 1973). They are the fastest running bird, their land speed is about 60-70 km/h (Fericean et al, 2013, Hambali, 2015). The eggs are very large and can weigh up to 1.5 kilograms (Amado et al, 2011).

In the wild, chickens raised with their parents eat their feces, which contributes to good microbial activity and helps food digestion. Chickens raised on farms do not have this possibility but feed on feces from other chickens (Birau et al, 2019).

In farms the hierarchies start to be expressed at early stages of development (Croney et al., 2007). An understanding of the behavior of chicks should be used to improve production (Dragan et al 2019)

Understanding the feelings in animals through behavioral observations is a vital step in improving their welfare (Watanabe, 2007). An animal's welfare is compromised when it is having difficulty in coping with its environment, when in pain, when feeling fear, or when being unable to control its interactions (Deepa et al, 2014)

MATERIAL AND METHODS

Observations on behavior of captive ostrich chicks from 6 weeks to 1 year were made during three times a day: morning, lunch and afternoon in May 2020, in a small farm in Tormac village, Timis county.

No precipitation was recorded during the experiment period. The paddocks are covered with grass, and the exposed areas consist of sandy and gravel soil.

The observed birds were in three age groups, (I) at 6 weeks; (II) at 6 month; (III) at 1 year. Each age group was consisted of 30 bird. In each group only five randomly chicks were selected and observed.

Observations on behavior were made in each age group, for three consecutive days, and at three different periods per day. Period 1 - from 7:00 a.m. to 11:00 p.m.; period 2 – from 11:00 a.m. to 3:00 p.m.; period 3 - from 3:00 p.m to 7:00 p.m.

To produce the ethogram, 12 behaviours were observed: Feeding - the ingesting of concentrated or green food; Drinking - the act of taking liquid in the mouth from the bowl. Lithophagia - eating sand, gravel or little stones; Pecking - beak used for social contact or environmental exploration; Dust-bathing - behaviour of birds, characterized by rolling or moving around in dust or sand, with the likely purpose of removing parasites from feathers; Standing - is a resting position when the birds feet are in one place with head raised;

Sitting is a resting position in which the body weight is supported primarily by the buttocks in contact with the ground;

Running - the activity of moving fast with both feet of the ground at times, either parallel with the boundary of the enclosure or across the field; Dancing - consisting of sequences of movement, jumping and skipping or different steps.

Walking - The activity with one of the feet always in contact with the ground; Coprophagia - is the consumption of feces ;

Aggression - hissing or kicking directed at other birds or defensive behavior toward people

RESULTS AND DISCUSSIONS

The main categories of behaviors identified at captive ostrich chicks were: feeding behavior, drinking, lithophagia, pecking, resting, dancing ,walking, socializing, coprophagia and aggression.

The adult ostrich has several characteristics that benefit it a lot, for example excellent vision, very well developed hearing, due to wide external auditory canals, very strong legs, with which it runs very fast, up to 60 kilometers per hour (Degen et al, 1989; Osterhoff, 1984). These characteristics lead to easy survival, mortality among adults is quite low. By comparison, however, in the wild, mortality among chicks, also associated with attacks by predators, leads to a mortality of 90%. In captivity, the mortality of the chicks in the first period of life, up to 4 months is high, the farm from Tormac registered a mortality of about 50% and due to the fact that it did not take into account the microclimate conditions in the shelters.

Ostrich chicks ingestion behavior includes feeding on concentrated feed, feeding on green feed and collecting pebbles or sand and ingesting them. It was observed that refilling the concentrated feed gutters stimulated ostriches to eat.

Regarding the feeding behavior of 6 week-old ostrich chicks, the largest share was fed with green fodder with percentage of 8%. Also, when moving through the paddock, the ingesting of sand had a small percentage of 1%. (table 1). The consumption of stones was not observed in the

group of six weeks, only the consumption of sand. All the chicks have in paddocks, gravel and sand. As a daily routine small stones and sand were consumed by all age groups. At 6 month, the gravel or little stone consumption was more frequent with a percentage of 5%, maybe coinciding food intake. It has also been observed that they pick up stones from the ground or just nibble on the ground as they walk. Amado et al, 2011 claim that ostriches need to consume stones for their digestive process and to separate the nutrients from the feed more completely.

Table 1.

Mean frequencies of behaviours of chick ostrich at different ages

Nr.	Behaviour	6 weeks %	6 month %	1 year %			
1.	Feeding on green fodder	8	7	7			
2.	Feeding with concentrated feed	7	6	5			
3.	Drinking	2	1	1			
4.	Lithophagia	1	5	7			
5.	Pecking	1	6	7			
6.	Dust Bath	1	4	8			
7.	Sitting	12	16	23			
8.	Standing	5	6	7			
9.	Walking	22	21	18			
10.	Dancing/ Running	13	10	9			
11.	Coprophagia	17	10	2			
12.	Aggression	11	8	6			

Regarding the water consumption, in all studied age groups was observed a low frequency (figure 1). Drinking had a small percentage of 2% and decreases at older groups. On hot days the number and amount of water increases considerably. The water must not be very cold and must be sterilized by boiling in the first two months, when ostriches are very sensitive to pathogens.

Throughout the experiment, the birds in the 6 weeks of life walked the most, whereas in the older groups birds stood still more. They spent most of their time walking through the paddock, about 22% of the time observed compared with 18% at one year.

Resting behavior in ostriches was recorded when they ceased any activity. Both standing and sitting positions were observed. The birds at 6 week of age spent little time standing when compared with those 1 year who spending more time standing quiet than the youngest groups.

William et al, (1993), suggested that ostriches tend to sleep only at night. This is because ostriches are diurnal birds that are more active in the early morning and late evening (Samour et al, 1994)

In 1-year-old ostrich chicks, resting periods were observed with their eyes closed, for periods ranging from thirty seconds to three minutes. The rest in standing position had a weight of about 5%, the very low percentage is due to the overpopulation in the paddock, the animals being often disturbed by those who walk.



Figure 1. Drinking behavior in ostrich chicks, age 6 weeks

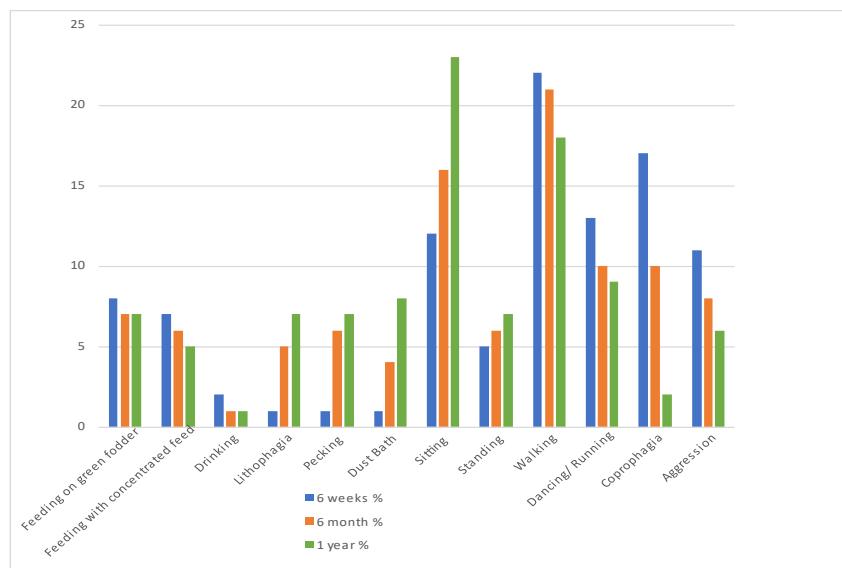


Figure 2 The behavior of chicks ostrich at different ages

According to Stewart (1994), dance is a common behavior in wild ostriches and can also be found in ostriches raised in captivity. Deeming et al. (1996) mention that dance is always present when birds are released from the night shelter the next day.

Birds at 6 weeks are much more active, run and dancing more, compared to older chicks that are less active. The results are similar to those observed by Csermely et al. (2006) in wild ostriches.

Pecking, was observed on birds at 6 weeks in a lower percent. At one year of age this behaviour was more common. Ostrich chicks frequently arrange their feathers with their beaks and do so while sitting, standing or walking. From the discussions with the caretakers we found out that this behavior has a higher weight on rainy days, ostriches nibble their feathers very often. Lack of glands leads to watering feathers when are exposed to rain.

If in 6-week-old chicks, coprophagy had a high percentage of 17%, in one-year-old chicks, this phenomenon is not common.

Aggression occupies a high share of about 11% at six weeks, during this period there are struggles for dominance, and the small space positively influences this behavior. Aggressive behaviors towards strangers were also observed in specially at ostrich of 1 years old.

Aggression in ostrich of 1 years old was commonly noticed during strangers approaching the paddock (figure 3).



Figure 3. Aggression towards strangers

Ostriches are social animals, adapt very quickly to environmental conditions and become friendly with humans. Their aggressive behavior is manifested by pinching, scratching, kicking and winging, and most fights take place in the evening. They pay attention to unknown noises, generating a state of alert throughout the staff.

If calcium supplementation is not ensured, some locomotor deficiencies may occur (figure 4). To avoid these deficiencies it is recommended the administration of crumbs of eggshells,

shells and granulated calcium.



Figure 4. Locomotor deficiencies

CONCLUSIONS

This study helped collecting valuable information on the different behavior as well as patterns thereof in ostrich chicks in Romania in extensive farm.

The findings from this study could be utilized to build a knowledge base on the relationship between behavior and welfare of ostrich.

In captivity, the mortality of the chicks in the first period of life, up to 4 months is high, the farm from Tormac registered a mortality of approximately 50% and due to the fact that it did not take into account the microclimate conditions in the shelters.

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