THE BEHAVIOR OF OSTRICHES IN CAPTIVITY

Liana Mihaela FERICEAN, Olga Alina RADA

Banat's University of Agricultural Sciences and Veterinary Medicine, Timisoara
E-mail: liana.fericean@gmail.com

Abstract: *In this paper we present a few behavioral features regarding the digestive, social, pairing behaviour of ostrich in captivity and similarities and differences with the natural behavior. The researches have been done at ostrich farm of Tinca, Bihor county. The nutrition of ostrich was a major problem for the farmers because currently there are only a few studies on the optimal diet. They feeds on a wide range of plants and food should be chopped. The ostrich needs a significant amount of gravel and sand for food triturating. Changes in diet should be introduced gradually. Sudden changes in diet can cause digestive problems and even death, changing from one food to another is accomplished slowly, combining new diet with the existing. They are social animals, getting very quickly adapted to the environment conditions and became friendly to people. Their aggresive behavior is manifested by pinching, scratching, hitting with legs and wings, and most of the fighting takes place in the evening. Breeding season starts in early spring. During this period females make a prenuptial dance, bowing and shaking wings on both sides of the body. The male skin color on the legs, neck and beak becomes red, and they emit loud callings. Intensity and manifestation of mating decreases as the female approaches the end of the egg laying season. Ostriches reach sexual maturity between 2 and 3 years. Females tend to mature faster than males; Ostriches breed in monogamous or polygamous situations. Male builds the nest, that consists in a small hole in the ground. It can become very aggressive during the breeding season and will guard the female, nest and territory. In general, an egg is made every 1-2 days. Estimated production varies between 40 - 80 eggs per year.*

Key words: *digestive behavior, social behavior, pairing behaviour, ostriches*

INTRODUCTION

The ostrich is very adaptable and thrives under extreme conditions. Among the many ways of regulating its body temperature, it controls heat loss during cold weather by covering its thighs with its wings, and during hot weather, by lifting and moving its wings, it creates a gentle breeze.

Ostriches are completely diurnal. They are on their feet for most of the daylight hours, except when dust-bathing, resting or nesting. They invariably sit down at dusk and remain virtually inactive throughout the night unless disturbed (Degen, Kam and Rosenstrauch, 1989).

The chicks and juveniles are strictly gregarious and always remain in compact groups. Adults are semi gregarious and tend to be attracted to each other for short periods. In addition to temperature control, ostriches use their wings for a variety of display purposes, including courting, protecting eggs and young and submission (Sauer, 1966).

MATERIAL AND METHODS

The researches have been done at ostrich farm of Tinca, Bihor county raise in intensive system.

The farm has a number of 200 ostrich. The farm has all categories: ostrich chicks - depending on age, young ostrich, productive, pre-reproduction and reproductive families.

RESULT AND DISCUTION

The wild ostrich is sexually mature at four to five years of age, while the domesticated ostrich is mature at two to three years and they are called reproductive ostrich. The first two seasons of laying are insignificant, with a total of up to 10 eggs / season / female and most of them are not good for incubated only for consumption, these ostriches are called pre-reproduction.

Females tend to mature faster than males. Male ostriches attain the black-and-white plumage when mature. Females and immature birds have a much duller colouring, with grayish-brown plumage. The young have spiky, black-tipped buff-coloured plumage until they are about four months of age. The plumage of the cock is brighter during the breeding/mating season, while the skin, usually light blue, becomes bright red (scarlet) over the beak, forehead and around the eyes, and the leg scales and toes become pink.

Full distinction between sexes is reached at about two years of age. The wing quills are pure white in the male, while they are ringed with grey or black in the female. The tail feathers of the male are white or yellowish brown and those of the female are mottled light and dark grey. The thighs of the adult ostrich are almost devoid of feathers.

It is important to note that the scarlet coloration of the male is dependent on the presence of mature testes, while its black plumage is dependent on the absence of ovaries. A castrated cock never acquires scarlet coloration, but its feathers are the normal black of the cock. Removal of the testes after sexual maturity has little effect on the bird's sexual instincts, and it continues the mating procedure (Osterhoff, 1979, 1984).

Ostriches are seasonal breeders, breeding only during particular seasons of the year. On average, the breeding/mating season lasts from six to eight months every year, although the timing and duration of breeding can vary with latitude and altitude (Shanawany, 1994a). In the northern hemisphere, breeding commences during March and ends around August/September (Leuthold, 1977), while in the southern hemisphere it begins around July/August and finishes by the end of March (Jarvis, Jarvis and Keffen, 1985).

In our country the breeding commences during March and finishes by the end of September. The duration of this season depends on the quality of food, state birds and climatic conditions. Ostriches react immediately to changes in weather.

Breeding season starts in early spring. During this period females make a prenuptial dance, bowing and shaking wings on both sides of the body. (figure 2) The male skin color on the legs, neck and beak becomes red, and they emit loud callings.

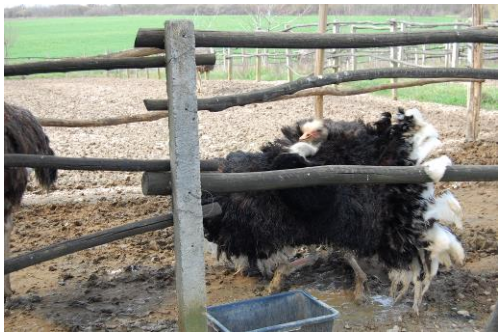

Figure 1: Ostrich mating dance (male)

Figure 2: Ostrich mating dance (female)

Male ostriches are polygamous and can mate with more than one female. In the wild, the cock starts nesting with one or two or even more hens. Domesticated ostriches are kept in pairs in trios (one male and two females) for the breeding season.

Nesting season is preceded by courtship behavior, a complicated series of actions, dance, vocals and synchronized behavior. The ostrich female make bows and shaking wings on both sides of the body.

Males make loud callings while swell the red skin of the neck walking to the area

He squats (goes down on his haunches) and flaps his wings backwards and forwards while hitting his head on alternate sides of his back, making a thudding sound. (figure 1) Mating behavior of male is very interesting, moving his wings up and down while shaking his head to one and the other side. It also makes a noise, swelling his neck. Usually an egg is made every 2 days.

Male builds the nest, that consists in a small hole in the ground. (figure 3) It can become very aggressive during the breeding season and will guard the female, nest and territory. Both male and female sitting in the nest. The female starts to lay fertile eggs shortly after mating. She made until 25 eggs then hen stops laying for a period of one or two week, after which she starts a new clutch. High-producing females lay between 40 to 80 eggs during the breeding season. A family consisting of one male and two females usually produces about 140 eggs per season. Breeding males can be extremely aggressive and protective. (Figure 8) Intensity and manifestation of mating decreases as the female approaches the end of the egg laying season.

Figure 3: The ostrich nest with egg

In some cases the ostrich male pay more attention to one of the females. Negligence of male affects female having a weaker production.

The eggs are laid in a communal nest on the ground, with other females laying their eggs in the same nest (Bertram, 1992). If the eggs are not removed, the female will start incubating them during the day.

In commercial ostrich farming, it is important that all eggs are removed from the nest at least twice daily since, if allowed to incubate, the female will stop laying until the chicks have reached four to five weeks of age, resulting financial loss.

Eggs are usually infertile in the latter part of the breeding season, probably due to male infertility. The eggs vary from white to yellowish white in colour and their hard shiny surface is pitted with superficial pores of various sizes and shapes.

Females and males must be separate after the breeding season. This will allow the birds to be more rested and begin quickly egg production when they are placed together in mating season.

Dominant males who frequently beat must be removed from the group. (Figure 8)

Some ostrich breeders consider natural incubation method as the best because the ostrich chicks obtained by artificial means are not as healthy. Unfortunately in the natural incubation of chicks surviving number is lower and ostrich stand on up egg to 6 weeks have low power. In the first two months of life ostrich chicks register the highest mortality.

After hatching chicks are helpless and unable to stand. In the wild they learn to peck from parents. In the first week food consumption is reduced.

Sometimes the ostrich chicks refuse to consume food or water. This problem can be easily remedied by placing several older puppies (1-3 weeks) who already eating among young ostrich.

Figure 4: Feeding with alfalfa silage

Figure 5: Watering of ostrich

Chicks should always have light and access to food rations in the first three weeks of life. Ostriches can be fed with gravel

Succulent feed consisting of alfalfa, wheat, rye, vetch, oats is recommended for young puppies and adults.

Ostriches also eat sand and small stones (Figure 6) that help grind up food in their digestive systems.

Figure 6: Ostrich eating sand and small stones

Feed management takes place in two periods during a day: morning at six o'clock and after noon at two o'clock at reproductive families and at seven o'clock and after noon at three o'clock at ostrich chicks.

It is essential that ostriches have clean drinking water available on the day. They should receive food that provides the optimum level of protein and amino acids, vitamins and minerals

Corn grain with alfalfa silage is frequently used in rations composition of ostriches for meat production. Along with corn is also used barley, oats, wheat, soybeans. Fish meal and bone is inserted into the diet and is a good source of protein.

Reproductive families are fed with alfalfa silage, chopped grass and with mixture consists of wheat, triticale, oats, flower, soybean, premix, calcium and sunflower oil.

Figure 7: Ostriches fighting

Figure 8: Ostrich male aggressive behaviour

Although the ostriches are considered to be silent birds limited vocalization was identification made mating booming sounds which could be heard over long distance.

CONCLUSIONS

Nesting season is preceded by courtship behavior, a complicated series of actions, dance, vocals and synchronized behavior.

Fighting behavior was observed at males that had shelters too close to each other.

Their aggresive behavior is manifested by pinching, scratching, hitting with legs and wings, and most of the fighting takes place in the evening.

Feed management takes place in two periods during a day: morning at six o'clock and after noon at two o'clock at reproductive families and at seven o'clock and after noon at three o'clock at ostrich chicks. Diet for adult ostriches is like diet for the chickens except that breeding birds must have a ratio of calcium and vitamins sufficient to compensate egg production.

In commercial ostrich farming, it is important that all eggs are removed from the nest at least twice daily since, if allowed to incubate, the female will stop laying until the chicks have reached four to five weeks of age, resulting financial loss.

BIBLIOGRAPHY

1. Bertram, B.C.R. 1992. *The ostrich communal nesting system*. Princeton, NJ, USA, Princeton University Press.

2. Degen, A.A., Kam, M. & Rosenstrauch, A. 1989. Time-activity budget of ostriches (*Struthio camelus*) offered concentrate feed and maintained in outdoor pens. *Appl. Anim. Behaviour*, 22: 347-358. 3. Jarvis, M.J.F., Jarvis, C. & Keffen, R.H. 1985. Breeding seasons and laying patterns of the South African ostrich (*Struthio camelus*). *Ibis*, 127: 442-449.

4. Leuthold, W. 1977. Notes on the breeding biology of the ostrich (*Struthio camelus*) in Tsavo East National Park, Kenya. *Ibis*, 119: 541-544.

5. Osterhoff, D.R. 1979. Ostrich farming in South Africa. *Wld Rev. Anim. Prod*., 15: 19-30.

6. Osterhoff, D.R. 1984. Behaviour of ostriches. Proc. Int. Congr. Appl. Ethol. Farm Anim., Kiel, Germany. p. 288-291.

7. Samour, J.H., Markham, J. & Nieva, O. 1984. Sexing ratite birds by cloacal examination. Vet. Record., 115: 167-169.

8. Sauer, E.G.F. 1966. Social behaviour of the South African ostrich (Struthio camelus australis). Ostrich, 6: 183-191.

9. Shanawany, M.M. 1993. Factors affecting fertility in ostrich flocks. Review paper presented at the Annual Meeting of the British Domesticated Ostrich Association, Sandbach, England.

10. Shanawany, M.M. 1994a. The importance of light for ostriches. Ostrich Update, 3: 52-54.

11. Shanawany, M.M. 1994b. Handling and storage of ostrich hatching eggs. Ostrich News, 3(3): 7-8.

12. Vyver, A. van der 1992. Viewpoint: The world ostrich industry will South Africa maintain its domination. Agrekon, 31: 47-49.