Ostrich Farming in Germany – an Animal Welfare Issue?

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Abstract
Commercial farming of African ostriches in Germany continues to be a controversial subject with regard to the aspect of animal protection. Those against it mainly argue that the wet and chilly weather in our latitudes affects the animals' welfare. According to them, artificial breeding results in impairment of the entire reproductive biology and, along with the fact that the young are not reared by the parent animals, has to be seen as an issue of animal welfare.
Based on the behavioral observation of adult breeding ostriches and ostrich chicks, the present study investigated whether farm breeding under Southern German climatic conditions is appropriate for the animals. This was done taking into consideration utilization of the stable and the influence of various climatic parameters on behavior. For that purpose, 18 adult animals in 5 breed groups were observed from January to December. The animals were extensively kept at pasture with appropriate open stables. In another study the relevance of the keeping of artificially bred vs. naturally bred chicks in terms of animal welfare was investigated based on behavioral observations. To that end, 21 naturally bred animals as well as 307 artificially bred chicks were observed from 8 a.m. to 8 p.m. over 1 year.
Both the chicks and the ostriches adapted their behavior to different weather conditions. In particular when it was cold and ground conditions were unfavorable the adult animals used the open stable with increased frequency to protect themselves against the weather, while the naturally bred chicks sought shelter underneath the parent animals. The daily amount of precipitation on the other hand had no influence on the utilization of the stable. In the outdoor enclosure, rain caused the animals to sit on the ground. Motion activity in the first 14 days of life was considerably higher in naturally bred chicks than in artificially bred chicks ($P < 0.05$). Feather pecking, however, was more frequent in artificially bred chicks ($P < 0.05$).
The aspects investigated here suggest that appropriate husbandry of ostriches is indeed possible in our latitudes. There is a need for legally binding regulations on the husbandry of these animals, reflecting the current state of knowledge and demanding extensive keeping with an appropriately high level of care and looking after (in particular the chicks), housing and nutrition of the animals as well as expertise on the part of the animal keeper. Occasional husbandry for hobby purposes, limited to a small number of individual animals, is to be rejected.
Keywords: Ostrich housing, natural breeding, artificial breeding, climatic conditions, behavior, animal welfare

Introduction

Ostrich farming in Germany has gained increasing significance over the last few years, particularly because of faulty BSE tests, antibiotics in animal feed and the use of nitrophen in organic farming. This has led to a slump in demand for pork and beef products. Therefore, the number of ostriches kept on farms in Germany is increasing constantly. Various organizations, however, oppose the keeping of ostriches on farms in Europe for reasons of animal welfare. They argue that the European climate, particularly during rainy periods (spring and fall) and in the wintertime is unsuitable for these birds, and that in addition, little is known about appropriate husbandry conditions in a Northern European environment. The German Federal Veterinary Association declared the ostrich the "protection-worthy animal of the year" in 1995 as they do not consider the keeping of ostriches as livestock in Germany a feasible option with regard to animal welfare (Pschorn, 1995). The German Animal Welfare Association also opposes the keeping of ostriches in our latitudes (Cl, 1994). Various points of criticism are being put forward to argue against ostrich farming in Germany:
Their lack of domestication prevents the proper keeping of ostriches as livestock in Germany in terms of animal welfare (Pfeiffer, 1993; Pschorn, 1995; Grohe, 2002). In our latitudes the animals encounter climatic conditions different from those in the regions in Africa where they come from, and they are not prepared for that. The wet and cold weather, along with unfavorable and unsuitable husbandry

conditions, results in climate- and housing-related damage to the animals (Müllers, 1995; Ruempler, 1995; Kösters *et al*., 1996). In particular the absence of a preen gland prevents oiling of the plumage and the resulting protection against wetting and loss of heat (Pfeiffer, 1993; Cl, 1994; Sambraus, 1994). Another issue under discussion has to do with the risk of bone fractures due to black ice (Schmitz, 2000). The animals' strong need for exercise cannot be satisfied in captivity (CL, 1994; Hagen & Hagen, 1996), and feeding does not reflect natural conditions (Hagen & Hagen, 1996). The impairment of the entire reproductive biology along with the fact that the young are not reared by the parent animals is another argument against commercial ostrich farming (Hagen & Hagen, 1996). In addition, a lack of success as regards the natural reproduction of ostriches kept on farms has been pointed out.
Due to the fact that there is little scientific evidence to support these claims, this study recorded the frequency of behaviors of male and female ostriches as well as the differences in behavior of ostrich chicks from artificial vs. natural breeding programs over a period of one year. The animals were kept on a farm in Southern Germany, and the findings were brought into relation with the different climatic conditions.

Adult ostriches and the climate

Those against the commercial farming of ostriches in Germany mainly argue that the often wet and chilly weather in our latitudes affects the animals' welfare and health. So far, however, scientifically documented data on the husbandry requirements of ostriches in Central Europe are scarce, and there are therefore hardly any answers to the question whether ostrich farming in Germany is feasible under animal welfare aspects.
In our study on the behavior and husbandry of the African ostrich ("Untersuchungen zum Verhalten und der Haltung von Afrikanischen Straußen [*Struthio Camelus*])" (Schulz, 2004) the suitability of the animals for farming under the climatic conditions of Southern Germany (Rhine valley) was assessed by observing the behavior of breeding ostriches. This was done taking into consideration utilization of the stable and the influence of various climatic parameters on behavior. For that purpose, the behavior of 18 adult animals in 5 breed groups was observed from January to December 2002 on a farm in Southern Germany. At the same time, a variety of climate data were collected. The animals were extensively kept at pasture with appropriate open stables.
The ostriches adapted their behavior to different weather conditions. Utilization of the stable depending on the season (cf. Fig. 1), the temperature (cf. Fig. 2), the condition of the soil (cf. Fig. 3) and the amount of precipitation (cf. Fig. 4) shows to what extent the animals try to avoid certain climatic situations by using the stables (cf. Table 1). Without taking a closer look at the individual behavioral patterns of the animals it was found that the animals used the stables for extended periods and with increased frequency particularly during the winter months (Fig. 1).
In January the average duration of stay was 436 minutes per day and animal, versus an average 16 to 50 minutes per day and animal during the months from April to October. In winter the stable was largely used for the purpose of night rest. During the summer period the animals visited the stable mainly for the purpose of feed intake and otherwise preferred staying in the outdoor enclosure. Fig. 2 shows the duration of stay in relation to the temperature. It shows clearly that the animals spent more time in the stable at low temperatures ($r = -0.52$; $P < 0.001$). Figure 3 illustrates the influence of the ground condition on the duration of stay in the stable. With an increasingly wet, frozen or snow-covered ground the animals spent more and more time in the stable. The mean values of stable utilization times with relation to the respective ground conditions show, as illustrated in Figure 3, that when the ground is wet, the animals spend about 10 times (327 minutes per day and animal), and when it is snow-covered, even 20 times (633 minutes per day and animal) as much time in the stable as when the ground is dry (31 minutes per day and animal). Figure 4 shows the relation between the duration of stay in the stable per day and animal and the amount of precipitation. The amount of precipitation did not have any influence on utilization of the stable ($r = -0.003$; $P > 0.05$). In the outdoor enclosure rain caused the animals to sit on the ground, but did not usually make them seek shelter in the stable.
The daily amount of precipitation, therefore, had no significant influence on the utilization of the stable. Comfort behavior was found to be clearly weather-related, in particular as far as sand bathing is concerned, warm temperatures and dry sand being the prerequisites.

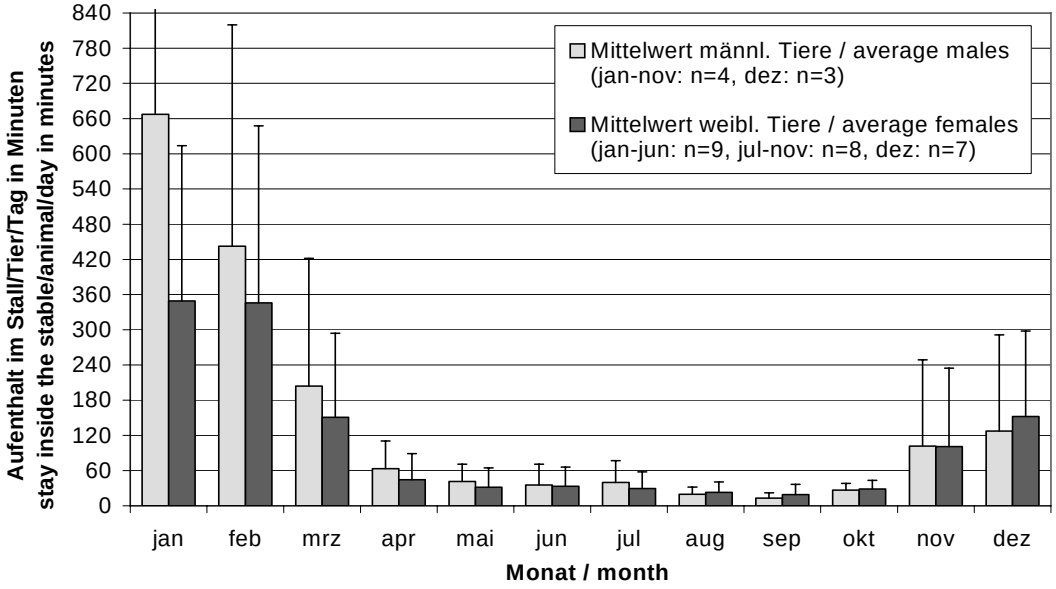


Figure 1: Average duration of stay in the stable (+ standard deviation (SD), without breed group 2)

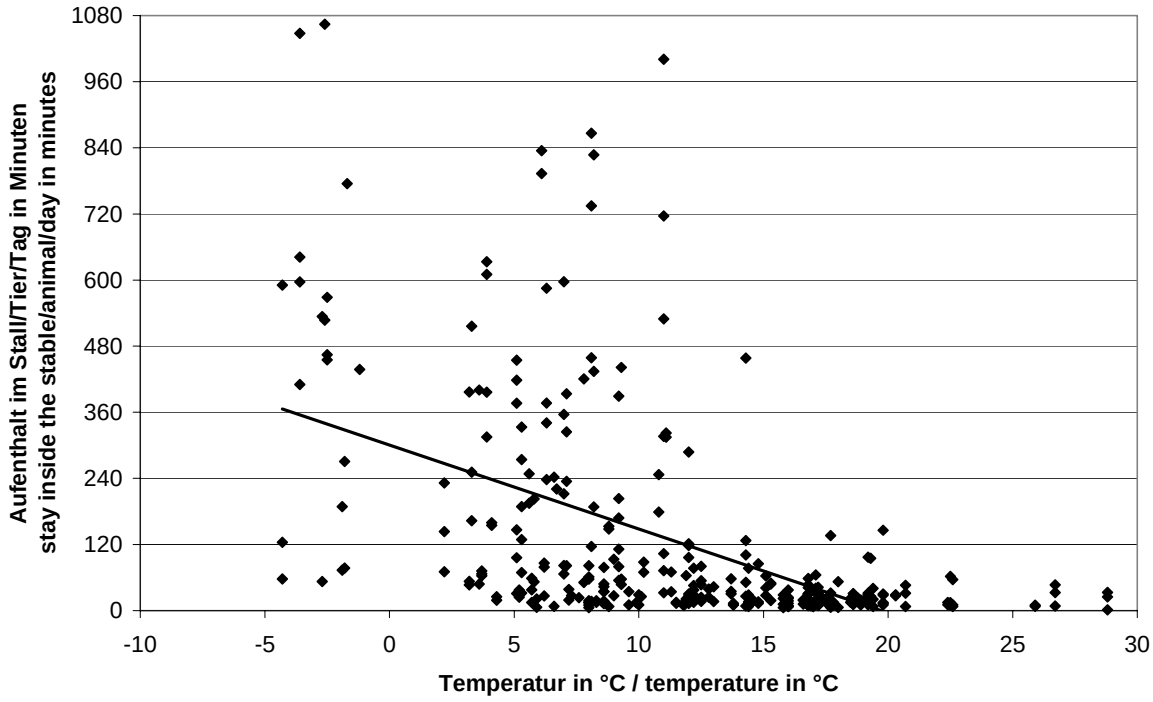


Figure 2: Correlation between the duration of stay in the stable and the temperature. At low temperatures the animals spent more time in the stable ($r = -0.52$; $p < 0.001$).

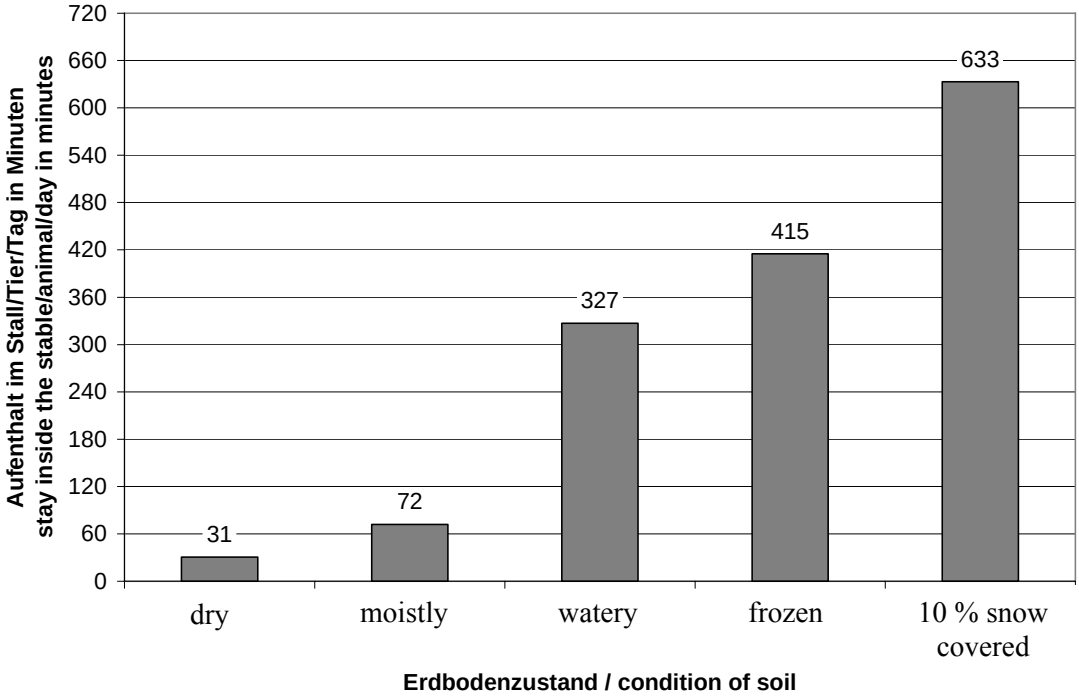


Figure 3: Average duration of stay in the stable with different ground conditions. Wet, frozen or snow-covered ground caused the animals to visit their stable with increased frequency ($r = 0.49$; $p < 0.001$).

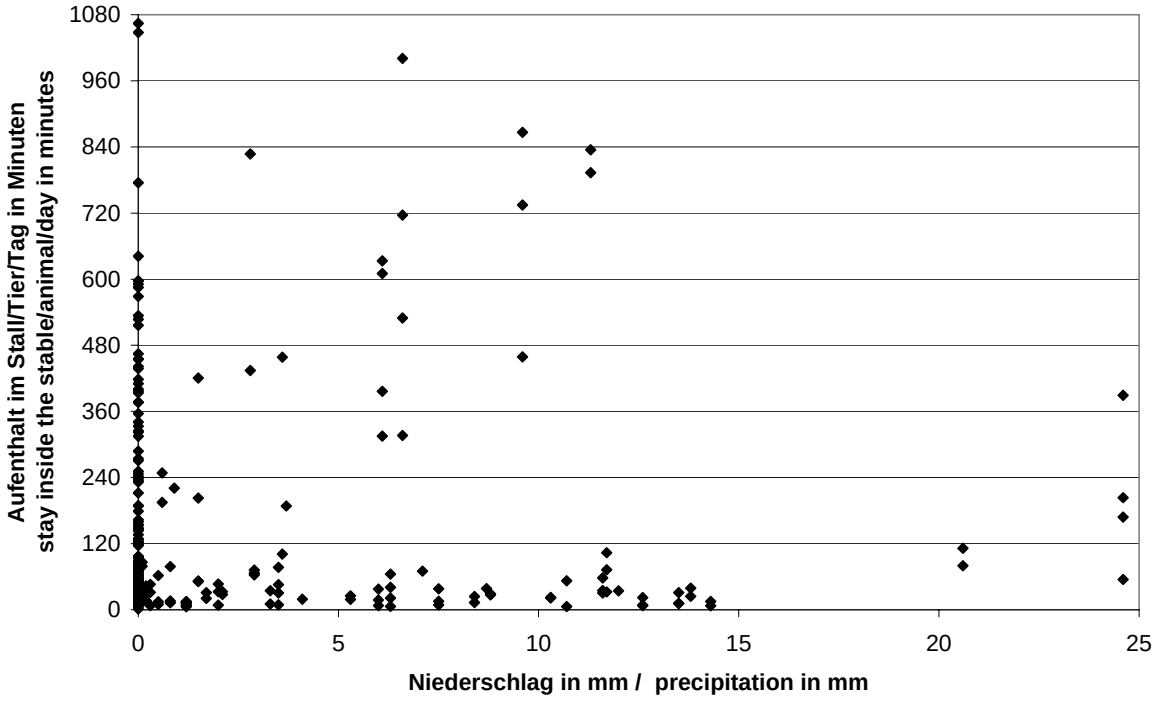


Figure 4: Correlation between the duration of stay in the stable and the amount of precipitation.

Table 1 summarizes the results correlating the duration of stay in the stable and the individual climate parameters.

Table 1: Correlation between the duration of stay in the stable and the individual climate parameters.

	r	**P**
Average daily temperature	-0.52	< 0.001
Daily amount of precipitation	-0.003	> 0.05
Daily relative humidity	0.17	< 0.01
Wind speed	0.34	< 0.001
Duration of sunshine	-0.34	< 0.001
Condition of ground	0.49	< 0.001

To compensate for the absence of a preen gland for oiling the plumage the ostrich's feathers are arranged somewhat like a thatched roof, which causes rain water to drip off to a certain degree and also permits the formation of air cushions between skin and plumage. In addition, the ostrich has a fair amount of subcutaneous fat, which is a good heat cushion thanks to its poor perfusion, among other things.
The fact that ostriches adapt their behavior to different weather conditions is clearly evident from their extended nocturnal stays in the stable during the cold winter months. In particular low temperatures and wet or frozen ground as well as high wind speeds cause the animals to visit the stable especially for the purpose of night rest. The 'daily amount of precipitation' does not have any influence on stable visits. During rain, the animals will sit on the ground until the rain subsides. The animals observed used their open stables as a shelter against the weather as required. This means they should always be offered the possibility of using a stable especially during the winter period. In this context it is important that the animals get used to those circumstances, and it involves certain constructional requirements. The stables must be large enough to accommodate all animals at the same time, ensuring them a measure of individual distance. The minimum stable space of 5 m² per animal as called for by the German association "artgerecht e.V." (2003) seems adequate, provided that the animals are never locked in so that they can satisfy their need for exercise in the outdoor enclosure, and that animals of a lower rank always have the possibility of getting out of the way. In addition, the compatibility of the individual animals must always be taken into account when assembling a group. From a legal point of view, the minimum stable area of 10 m² per animal as defined by the European Council (1997) has to be considered. It is particularly important not to fall short of this requirement if the animals are locked in during unfavorable weather conditions.

Chick rearing
As already mentioned in the introduction the potential impairment of the entire reproductive biology along with the fact that the young are not reared by the parent animals is another argument against commercial ostrich farming (Hagen & Hagen, 1996).
In our second study comparing naturally with artificially bred chicks in Germany ("Vergleichende Untersuchungen zur Naturbrut und Kunstbrut in Deutschland") the relevance of the two forms of breeding in terms of animal welfare was investigated based on behavioral observations. To that end, the behavior of 21 naturally bred chicks (19 focus animals) and 307 artificially bred chicks (32 focus animals) was assessed in Rheinmünster-Schwarzach in the German land of Baden-Wuerttemberg (also see the study by Anja Schulz). In the first 14 days of life the group was monitored from 8 a.m. to 8 p.m. according to the method of 'instantaneous sampling', while the focus animals were observed using 'instantaneous sampling' as well as 'continuous recording'. The eggs were collected from their nests and kept in the storage room for 1-20 days before they were placed in the incubator. They then remained in the incubator for about 40 days and were transilluminated after day 10. Shortly before hatching the eggs were placed into the hatcher. The chicks remained for 5 days in the so-called "nursery" (area: 20 m^2), which was equipped with rubber mats and heat lamps. From day 3 the animals were given feed and H_2O ad lib. as well as the opportunity to exercise for 30-60 min/d on a concrete space of 28.75 m^2. From day 6 the animals were kept in a 100 m^2 chick house, which was unheated. Heating was done partially by means of heat lamps directed at certain areas which were additionally

equipped with heat mats. The animals were given free range on the above-mentioned concrete space as well as 2 hours of exercise 3 times a day on a chick pasture of 500 m^2.

Results

In order to determine the various egg parameters 604 artificially bred eggs were evaluated. 159 of those eggs were unfertilized. 307 chicks hatched from the remaining 445 eggs. Compared to other published data the hatching rate ranges in the upper third (cf. Table 2).

Table 2: A comparison of fecundation and hatching rates

Literature	**Fecundation rate**	**Hatching rate**
Gansinger (1996)	61.5 %	71.3 %
Jost (1993)	74.0 %	47.5 %
Deeming (1995)	77.8 %	51.5 %
Deeming (1996)	78.7 %	39.2 %
Krawinkel (1994)	81.8 %	48.8 %
Own investigations	**73.7 %**	**69.0 %**

Figure 5 shows that contrary to the common opinion of breeders extended storage of the eggs has a significantly negative effect on the hatching rate. In addition, the month of laying and the ambient temperature seem to have an influence on the fecundation rate. Figure 6 shows clearly that the fecundation rate was highest in June.

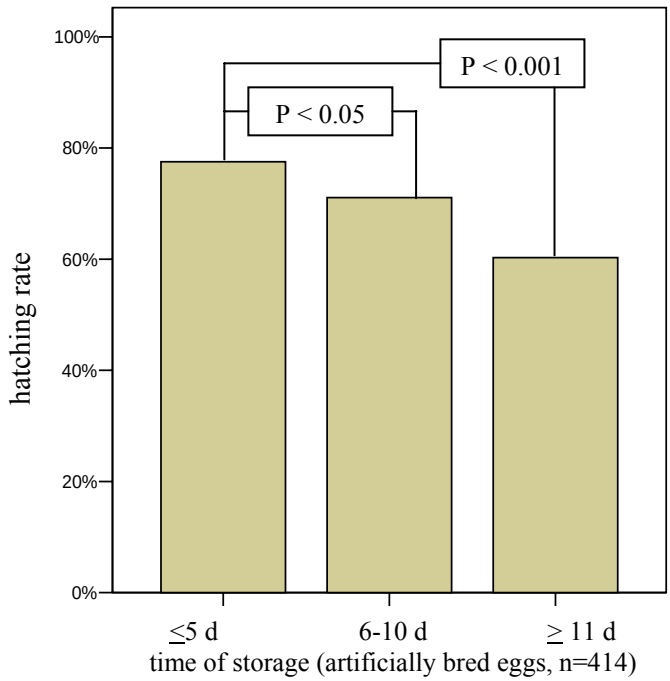


Figure 5: Correlation between duration of storage and hatching rate in artificially bred eggs (%)

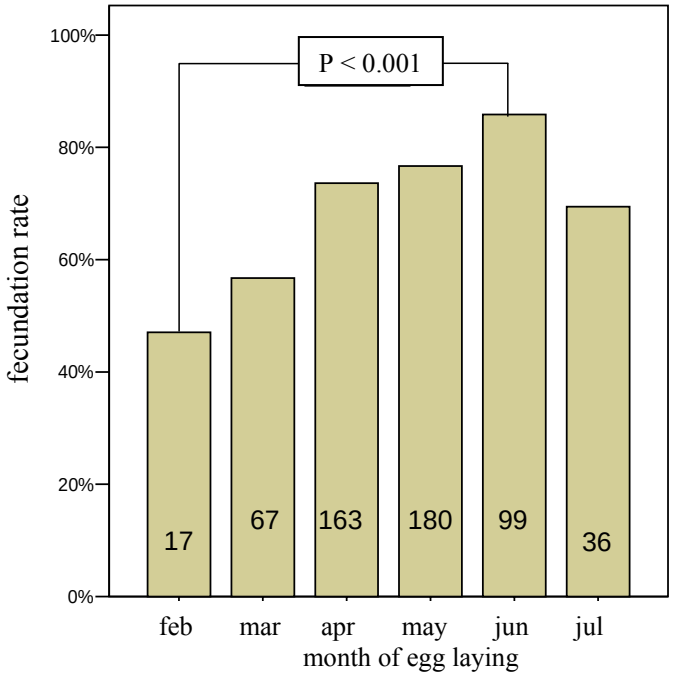
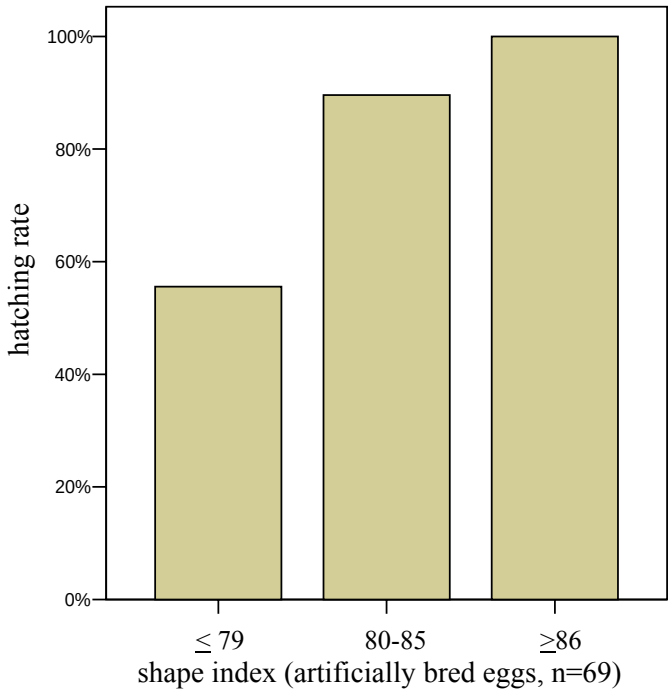


Figure 6: Correlation between fecundation rate and laying month (%)



The shape index (= breadth/100 x length) also has a significant influence on the hatching rate (cf. Fig. 7). The rounder the egg, the higher the hatching rate.

Figure 7: Correlation between shape index of the eggs and hatching rate

As regards the hatching weight the naturally bred chicks were on average 90 g (± 130 g) heavier than the artificially bred chicks (cf. Table 3).

Table 3: Hatching weight of naturally vs. artificially bred chicks (g)

	Artificial breed	Natural breed
Max.	1120 g	1180 g
Min.	845 g	920 g
Mean	959 g	1050 g

In context with the behavioral observations of the naturally and the artificially bred chicks their total behavior was subdivided into the function circles of comfort behavior, resting behavior (with the chick sheltering "underneath the parent animals"), excretion behavior, locomotion, feeding behavior and other forms of pecking. The chicks' habit of placing themselves underneath their parents was evaluated separately as it was not possible to observe what the chicks were actually doing there. However, it is assumed that the chicks' motivation of seeking their parents is for warmth and protection combined with resting.

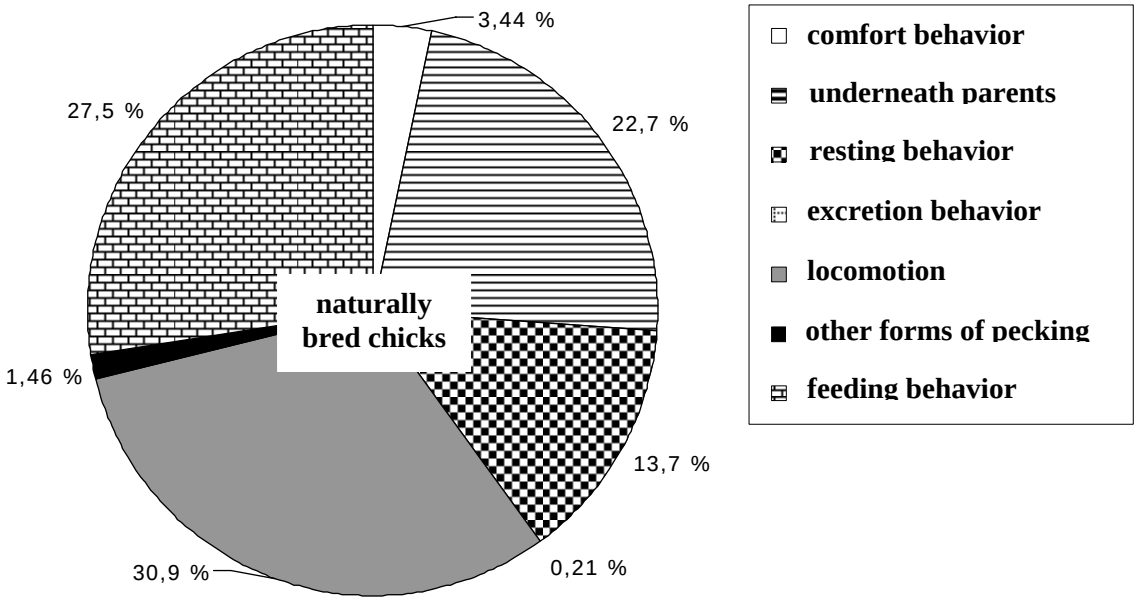
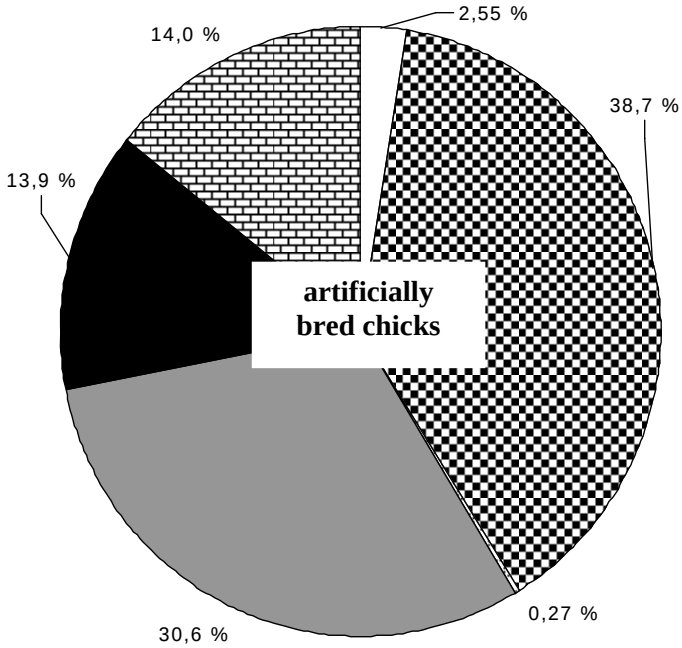


Figure 8a: Proportion of the function circles in the total behavior of naturally bred chicks



As can be seen in Figures 8a and b the function circles of feeding behavior (27.5 %), locomotion (30.9 %) and resting plus "underneath parents" (36.4%) make up three almost equal Proportions. As opposed to that, the part of feeding behavior in artificially bred chicks (Fig. 12b) is only 14 % of the total behavior, whereas at 13.9 % "other forms of pecking" have an equally large proportion of the total behavior. "Other forms of pecking" is defined as the pecking at things other than feed, water, grass, ground, fence, straw, feces, other chicks and air. For instance, "other forms of pecking" include pecking at the feed and water containers, the fencing of the nursery tables and the pecking at stones.

Figure 8b: Proportion of the function circles in the total behavior of artificially bred chicks

In the following the individual function circles are described in more detail based on their frequency of occurrence during the first 14 days of life.
Figure 9 shows the proportion of a lying position in artificially bred chicks (picture on the right) and the share of "lying underneath the parents" of naturally bred chicks in the first 14 days of life. One striking fact is that the naturally bred chicks seek their parents only rarely after the 6th day of life, whereas the artificially bred chicks still spend about 20 % of the light day in a lying position on days 7 and 8.

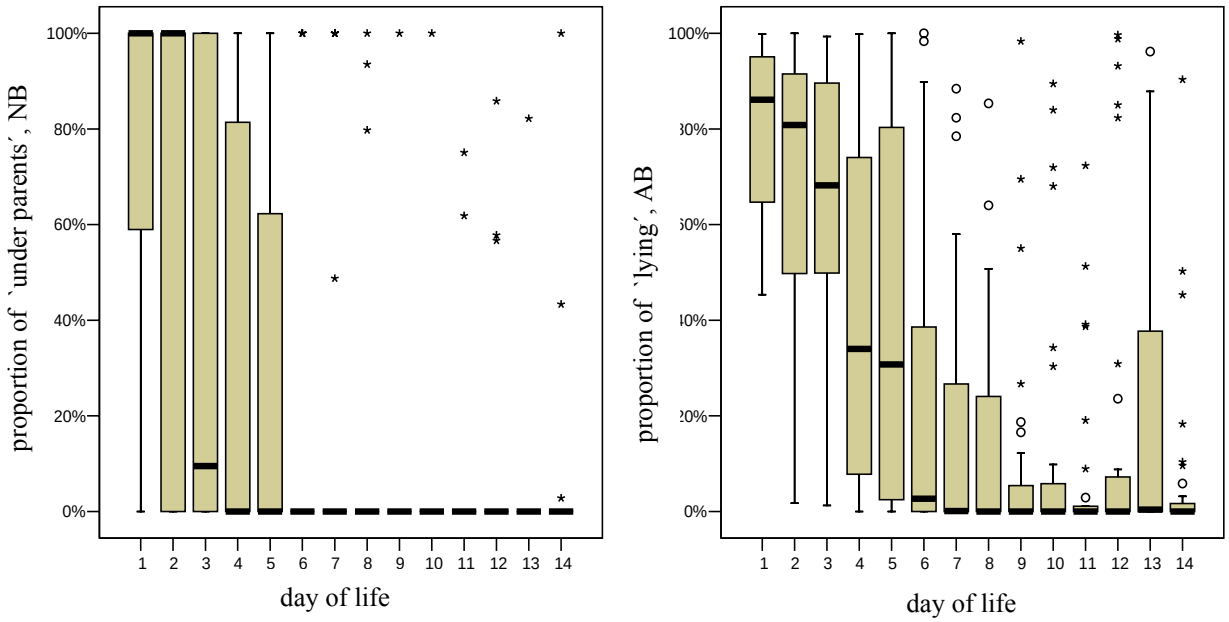


Figure 9: Proportion of the behavioral patterns of "underneath parents" with naturally bred chicks (NB) and "lying down" with artificially bred chicks (AB) during the first 14 days of life

Accordingly, the proportion of walking is inversely proportional in particular with artificially bred chicks. Whereas the naturally bred chicks spend about 50 % of the light day with walking from as early as the 3rd day of life, artificially bred chicks do not reach that level until the 6th day of life.

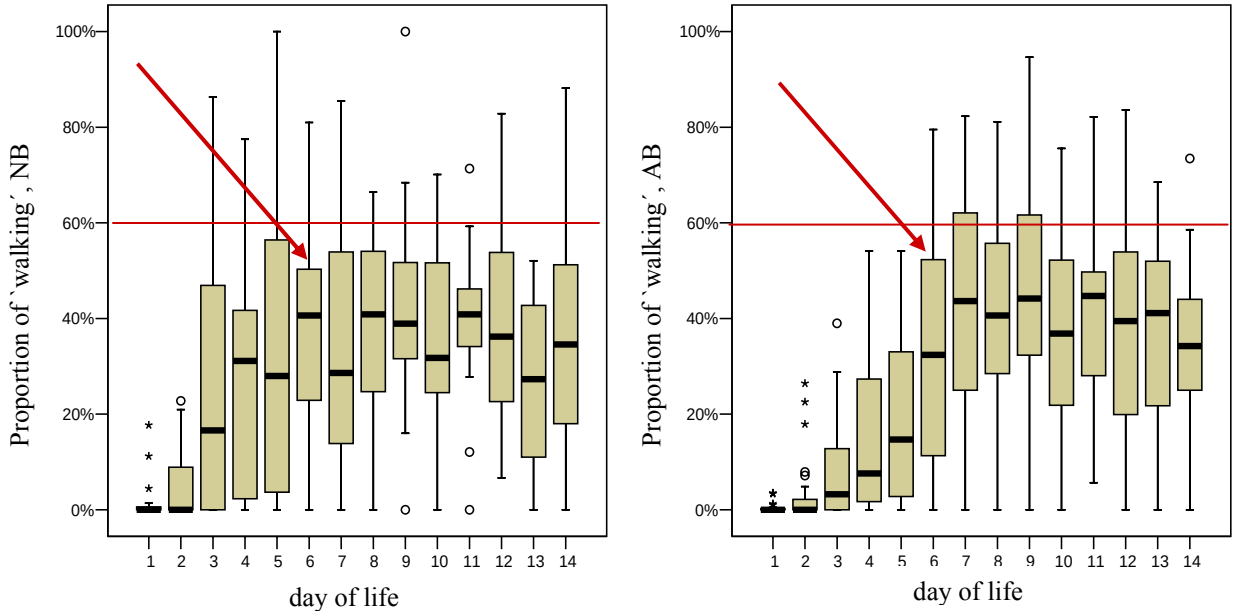


Figure 10: Proportion of the behavioral pattern of "walking" during the first 14 days of life with naturally vs. artificially bred chicks (NB, AB)

Figure 11 shows clearly that in connection with feeding behavior the naturally bred chicks already start "grazing" from the 3rd day of life.

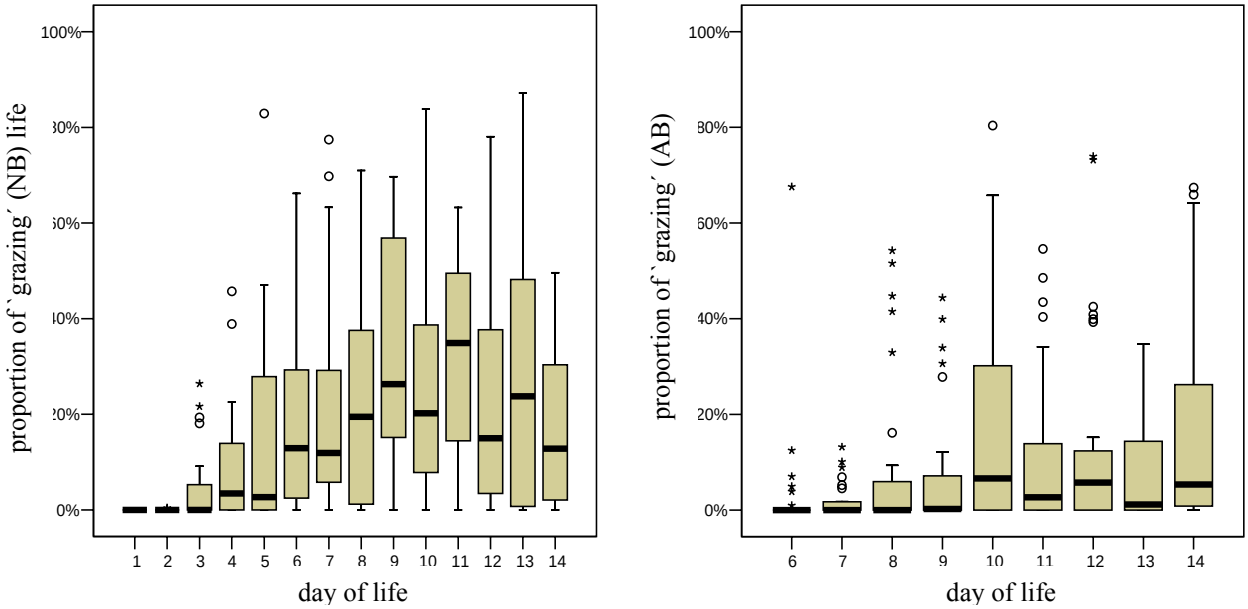


Figure 11: Proportion of the behavioral pattern of "grazing" during the first 14 days of life

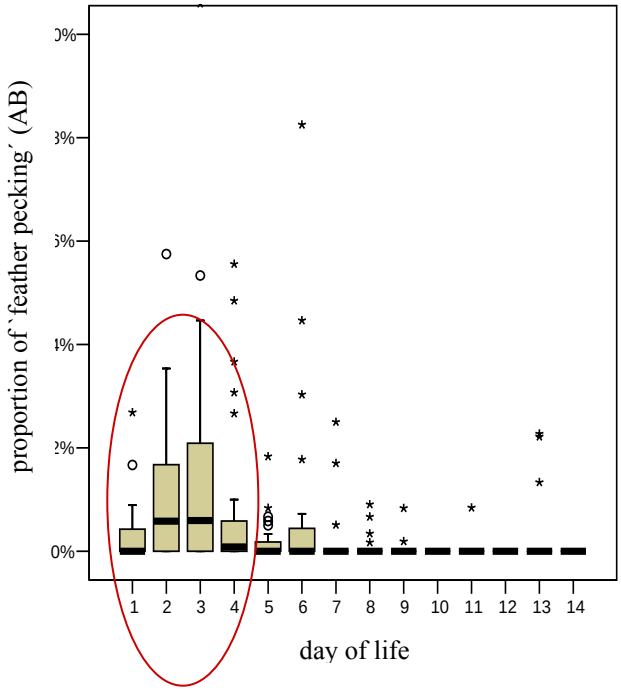


Figure 12: Proportion of the behavioral pattern of "feather pecking" during the first 14 days of life of artificially bred chicks (AB). The average proportion of the total behaviour is 0.03% in naturally and 0.78% in artificially bred chicks.

Figure 13: Pecking at the partner animal in artificial breeding

As the artificially bred chicks only leave the "nursery" on the 5th day of life "grazing" could not be observed until that time. It becomes clear that artificially bred chicks are less intensely occupied with pecking at blades of grass than naturally bred chicks. However, a marked pecking tendency seems to be present even in the first few days in the nursery, which given the sparse equipment of the "nursery" is directed at the siblings (cf. Fig. 12 and 13). Although to a small extent (0.78 % of total behavior) it is nevertheless more frequent than in naturally bred chicks ($P < 0.05$).

In context with the climatic conditions naturally bred chicks exhibit marked reactions depending on the weather:

- with dropping air temperatures the chicks increasingly sought shelter underneath their parents' wings ($r = -0.189$, $P = 0.001$)
- with higher air temperatures the naturally bred chicks rest (lying down and sitting together) more often ($r = 0.277$, $P < 0.01$)
- with increasing duration of daily sunshine the share of "resting" in total behavior grows as well ($r = 0.356$, $P < 0.01$)
- with increasing relative humidity the share of "resting" in total behavior decreases ($r = -0.241$, $P < 0.01$)
- with increasing duration of daily sunshine the naturally bred chicks take to sand bathing more frequently ($r = 0.168$, $P < 0.005$)

Mistakes in ostrich husbandry in terms of animal welfare

Mistakes in chick rearing in terms of animal welfare are primarily found in handling, management, housing and feeding. *Management mistakes* in chick rearing include a lack or failure of teaching the artificially bred chicks the process of feeding and water intake as well as inadequate care of the artificially bred chicks. Classic *housing mistakes* are too small and vegetation-free enclosures (Fuhrer, 2001), too high stocking density (Fuhrer, 2001; Stewart, 1994) as well as insufficient contact with animals of the same species (Scharenberg, 2001). *Feeding mistakes* are attributable to nonexistent possibilities of grazing and the exclusive feeding of concentrates, together with a lack of minerals and trace elements or crude fiber (Reiner, 2000; Stewart, 1994), as well as the use of feed too rich in energy. The result of this is that the chicks become full too quickly, with the consequence of a pecking deficit or the pecking at unsuitable objects or the partner animal.

Such mistakes in chick rearing and housing lead to stress (Huchzermeyer, 1998; Stewart, 1994), boredom (Reiner, 2000; Stewart, 1994), insufficient satisfaction of needs (Reiner, 2000) and wrong imprinting (Huchzermeyer, 1998; Reiner, 2000). This may in turn result in behavioral disorders. This includes substitute actions (e.g. excessive intake of unsuitable substrate, intake of foreign bodies, feather pecking, snapping sand), idle actions (e.g. snapping air, sand bathing outside the sand bath), apathy and loss of interest (Reiner, 2000), aggressiveness (Reiner, 2000) and also anorexia and/or adipsia (Stewart, 1994). Diseases may result from constipation (Huchzermeyer, 1998), from wounds inflicted by mutual pecking (Berendsen, 1995; Huchzermeyer, 1998; Samson, 1996; Stewart, 1994), and from internal injuries by the intake of foreign bodies (Horbanczuk, 2002; Samson, 1996).

In adult ostriches the main housing mistakes are also a too small area of enclosure and stable. Inappropriate dimensions of fencing and acute angles can lead to fatal injuries of the animals. The absence of nests and sand bathing facilities may cause deficits in the reproductive and comfort behavior. Frequently, the stables are too dark and there is not enough straw, and the fencing of the enclosures is poorly secured.

Husbandry requirements

Appropriate husbandry allows all animals to execute all essential behaviors in all function circles. Open-stable husbandry as practiced in Germany needs to take into account several aspects in order to bring ostrich farming into accord with the requirements of animal welfare.

The husbandry of artificially bred chicks always requires the highest level of care. In particular in stress situations there must always be a caretaker present. The so-called "trilling" of the chicks, which they only utter in stress situations or when they are afraid or unwell, may serve the caretaker or keeper and also the veterinarian as a useful indicator of the quality of husbandry and management.

When rearing artificially bred chicks the animals must be encouraged to help themselves to feed and water from the first day. In addition, the animals should be granted access to an exercise area in the open air including a pasture as early as possible. In bad weather, the animals should be driven into the stable immediately. As opposed to naturally bred chicks, which increasingly seek shelter underneath their parents' wings as the temperature drops, artificially bred chicks do not have that option.
Chicks which tend to peck at others should be placed among older animals. Ostrich chicks should never be kept isolated.
Naturally bred chicks should be checked on at least once a day as well. Young animals rejected by their parents should be removed from the breeding animals' enclosure and further cared for by humans. Their chances of survival will increase if they are placed among a group of artificially bred chicks of roughly the same age. Thanks to regular monitoring of the animals behavioral disorders can be detected at an early stage and possibly remedied. If, for instance, stereotyped pecking is directed against a certain object the latter should be removed. Naturally bred chicks must be offered feed and water in such a way as to ensure it cannot be taken away by the older animals. Given the weather conditions in our latitudes naturally bred chicks should hatch no later than in mid-September.
As the wire worm (*Libyostrongylus douglassii*) has meanwhile been shown to trigger diseases in ostriches in Germany as well, it is advisable to take regular stool samples and deworm the animals if required.
Adult animals should be kept at pasture throughout the year with ready access to an open stable. For pasture requirements please refer to Table 4.
The requirements issued by the German Federal Ostrich Association (Bundesverband Deutscher Straußenzüchter e.V.; BDS, 2002; http://www.straussenzuechter.de) and the German Federal Ostrich Farming Association (Berufsverband Deutsche Straußenzucht artgerecht e.V.; 2003; http://www.artgerechte-straussenzucht.de) should be considered as binding.
The stable must be able to accommodate all animals at the same time. It should have two entrances to give lower-ranked animals the possibility of getting out of the way. The stable should never be heated but should instead be provided with clean and dry straw especially in winter.
The animals will only accept sand baths if they are dry. Roofing the sand baths is a viable option here. In addition, the enclosures should be free of built-up water as far as possible. Breeding ostriches should be given the opportunity to rear their own chicks, which would of course be best towards the end of the breeding season. However, as already mentioned above, the chicks should hatch no later than in mid-September for climatic reasons.

Table 4: Space requirement of a breeding ostrich enclosure

	Recommendation from the European Council (1997)	Expert report by BML (1994)	TVT (2003)	BDS (2002); Artgerecht e.V. (2003)	BVET (2004)
Trio:	2,000m^2 + 200 m^2 for each additional hen	1,000 m^2 + 200 m^2 for each additional hen	2,000 m^2 + 200 m^2 for each additional hen	2,500 m^2 +250 m^2 for each additional hen	1,600 m^2 + 200 m^2 for each additional hen

BML formerly German Federal Ministry of Agriculture, now BMVEL, German Federal Ministry of Consumer Protection, Food and Agriculture
TVT Tierärztliche Vereinigung für Tierschutz (Veterinary Association for the Protection of Animals)
BVET Bundesamt für Veterinärwesen, Schweiz (Swiss Federal Veterinary Office)

Summary and conclusion
In conclusion, the results from the two studies on the husbandry of breeding ostriches (Schulz, 2004) and chick rearing (Riel, 2006) suggest that under defined husbandry conditions and under appropriate management the keeping and breeding of ostriches in Germany seems a viable option. Provided that certain husbandry requirements are observed, the animals are well able to cope with the local climate.

However, further scientific investigations in other farms, possibly under variable climatic conditions, are necessary.
The ethogram of the "farm ostrich" corresponds to that of animals living in freedom or in other climates, i.e. warmer regions. "Farm ostriches" adapt their behavior to the current weather conditions and utilize the facilities open to them within the enclosure, which makes it a prerequisite to offer a freely accessible open stable and a sand bath.
As regards artificial versus natural breeding, contrary to various opinions very good breeding results have been achieved in natural breeding as well. Intensive care of the animals is the decisive factor here. The motion behavior of artificially bred chicks is largely comparable to that of naturally bred chicks, provided that the respective requirements in terms of space and activity are fulfilled. The option of a pasture is essential for artificially bred chicks as well to develop a natural feeding behavior. This particularly involves "grazing", which naturally bred chicks already practice in the first days of their lives.
Ostrich husbandry should be acknowledged as an alternative to the husbandry of conventional livestock within the framework of extensive keeping. However, this should not lead us to consider the ostrich as another supplier of meat within the meaning of potential intensive husbandry, but point out the possibility of utilizing those animals in extensive husbandry in keeping with animal welfare. This should not hide the fact that particular expertise is required for ostrich husbandry which a hobby keeper will certainly not be able to provide.
According to § 2 of the German Animal Protection Act (in its recent version as published on May 25, 1998 I 1105, 1818; last revised by Art. 153 V dated November 25, 2003 I 2304) anyone who keeps, cares for or is in charge of an animal, 3. must have the expertise and abilities required for adequate nutrition, care and proper housing of the animal.
According to § 11 of the German Animal Protection Act the husbandry of ostriches requires permission from the competent authority. The application for approval shall be accompanied by documents proving the respective expertise. This expertise may be obtained within the framework of expert seminars offered by the keeper organizations (Berufsverband Deutsche Straußenzucht artgerecht e.V. and Bundesverband Deutscher Straußenzüchter e.V.).
Currently, the ostrich only provides niche products for which the consumer is willing to pay the price on condition of appropriate husbandry and ecological production (harmlessness in terms of food hygiene, especially as regards drug residues) as the product is considered to be something special. Among other things, ostrich meat is considered to be low in fat and is therefore acknowledged, especially by the food-conscious consumer, as a "healthy" alternative to conventional types of meat.

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