

hand-raising common rhea

(*Rhea Americana*)

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A four year program began in 1970 at the Topeka Zoological Park to determine the causes of death of rhea chicks in their first year and what modification could be made in hand-rearing techniques to improve their survival rate.

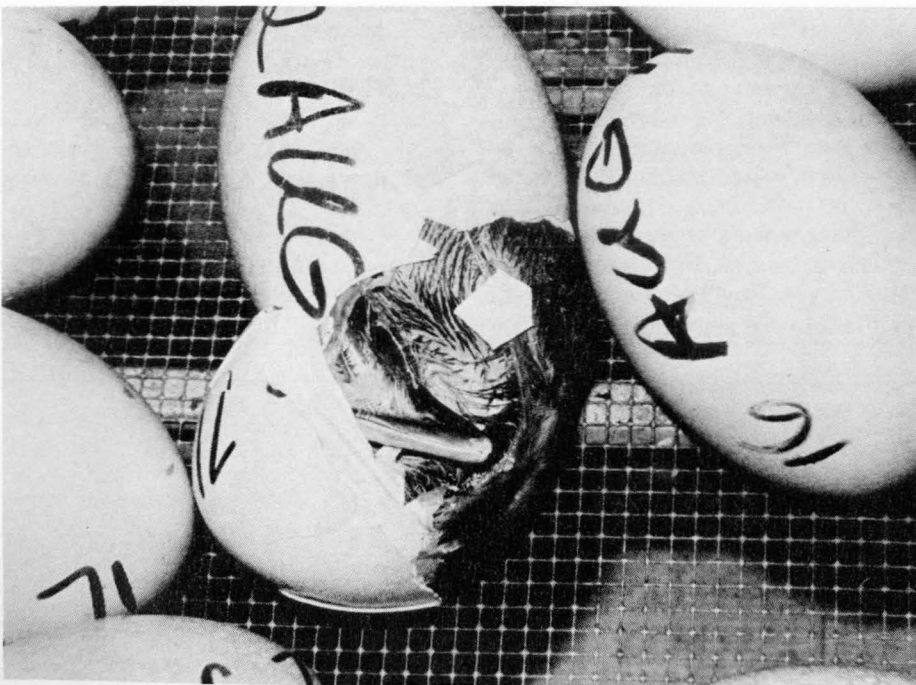
The survival rate of hand-reared common rhea chicks *Rhea americana* in zoos has been low in previous years. The availability of a nutritionally adequate prepared diet* has improved the survival rate. However, due to the birds' inactivity in certain conditions, inadequate food intake and environmental hazards, optimum survival rates were not obtained. This low level of survival has been attributed largely to the lack of satisfactory husbandry techniques. Therefore, the objective of this study was to determine the husbandry techniques necessary for the increased survival rate of hand-reared rhea chicks.

Previous experience had determined that the prepared diet* being fed, a dry slightly expanded pellet, was nutritionally adequate for all stages of development. Thus, the diet was eliminated from potential factors responsible for survival failures. The formulation of the diet remained constant during the study.

During the first three years of the study (1970-1973), various changes were made in hand-rearing techniques to define those factors considered most likely to be involved in low survival. Those factors included were:

a. Psychological factors — In their natural environment, rhea chicks are taught how to eat by the adult male. In a hand-rearing situation, rhea chicks without an adult male to observe do not know how to go about the process of eating. To deal with this problem, a domestic chicken was introduced to the rhea chicks as a surrogate father to teach them how to eat. As the chicken pecked at the food and ate it, the rhea chicks observed and soon got the idea of how to recognize food as food and began to eat. Two or three times daily a very small amount of chopped lettuce was placed on top of the diet to stimulate the chicken and rhea chicks to eat.

b. Environmental factors — The floor surface material of the facility influences



the birds' behavior to a great extent. Early in the study, it was found that an edible surface, such as grass, litter, and wood was not suitable because the birds would most certainly eat it. Though inedible, concrete was considered to be too hard and caused the birds to become inactive. Also, foreign substances, such as twigs, leaves, and nuts falling from nearby trees were eaten by the birds resulting in impaction of the stomach, and subsequently, death.

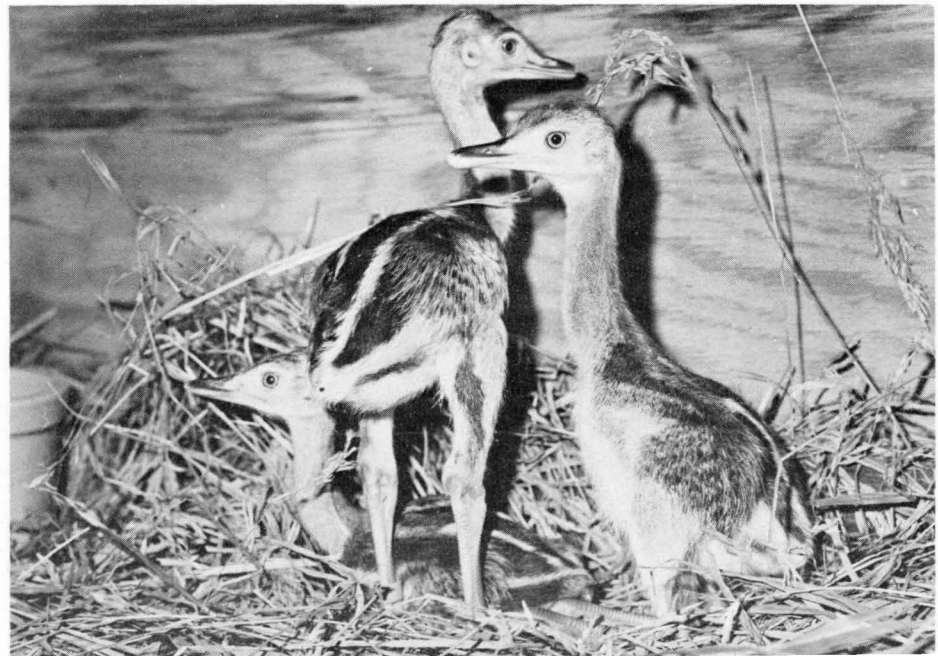
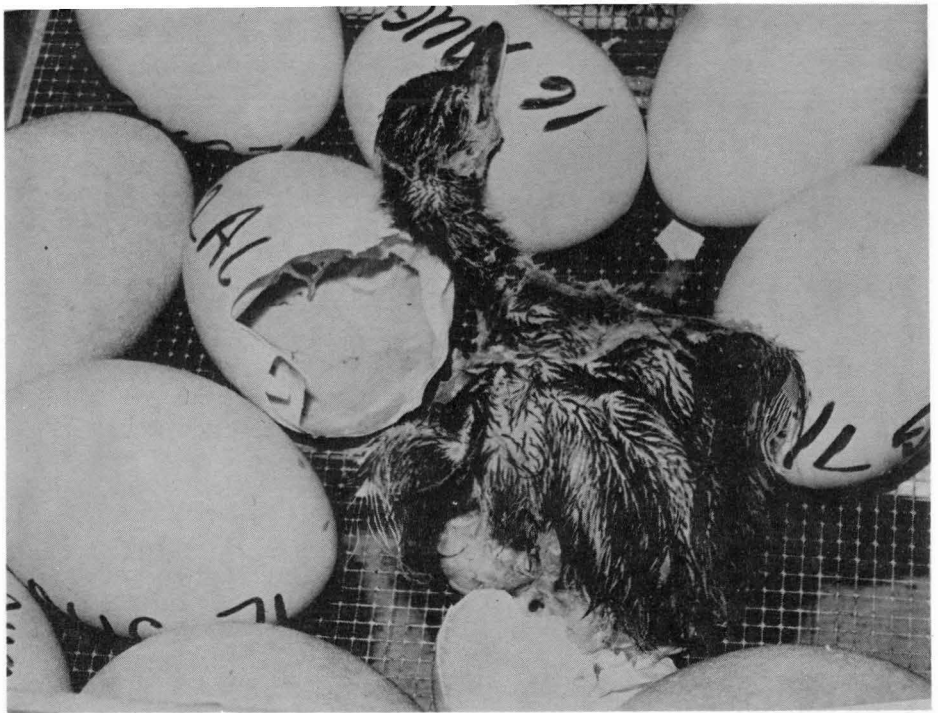
To solve these environmental problems, the floor surface chosen to be the most suitable was a type of artificial turf. This material was found to be inedible by the birds, was of satisfactory firmness, provided adequate traction, and easily could be cleaned free of any debris. The outdoor portion of the facility was enclosed with window screen to prevent various debris from falling or being blown into the run.

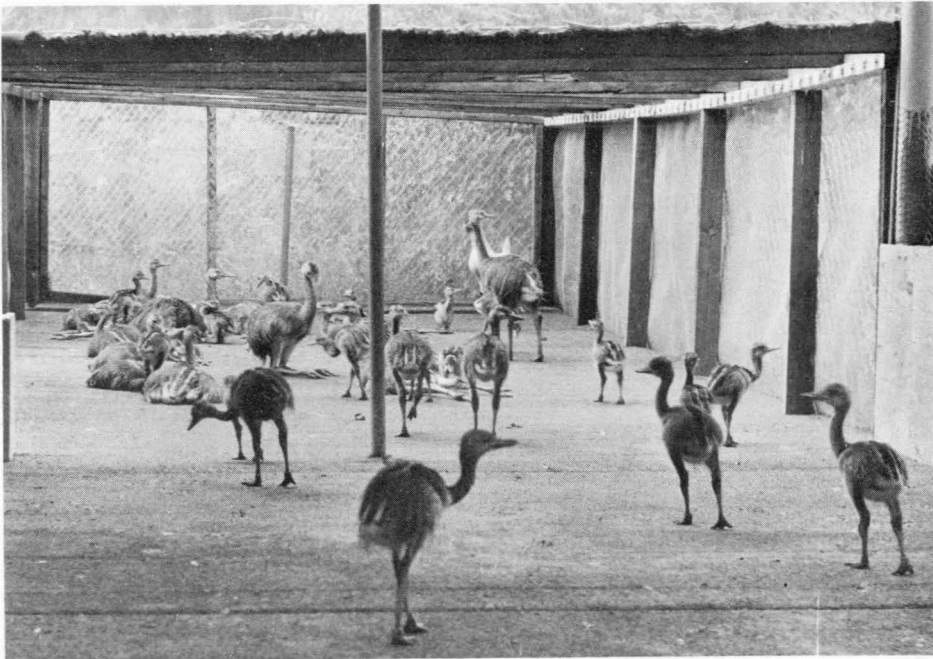
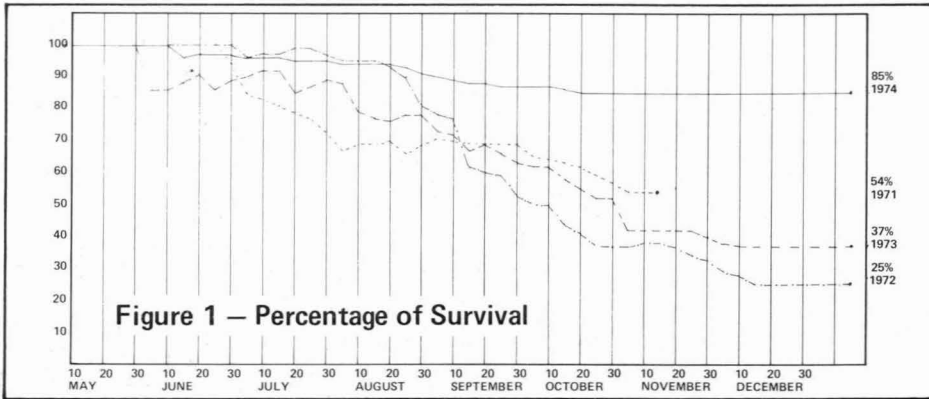
c. Inadequate food intake — A problem associated with rheas frequently reported by zoos is "spread leg". Evaluation of post-mortem and observation of young rheas at the Topeka Zoo indicated that the "spread leg" problem is caused by inactivity, resulting in a decreased appetite and inadequate food intake. Hard surfaces such as concrete appear to contribute to the inactivity of rhea chicks. Also, the lack of stimulation of activity provided by the male adult rhea in a natural environment made the chicks even more inactive.

During the last year of the study, the floor of the rearing facility was covered with artificial turf. A floor surface with proper firmness and traction allowed the chicks to comfortably obtain adequate exercise. Stimulus to exercise was provided by the chickens and older rhea chicks.

The hand-rearing facility consisted of a rectangular indoor brooder room 2m by 7m. Artificial turf was used as the floor covering. The temperature of the indoor facility was maintained at 25°C. Outside facilities consisted of a run 3m by 15m, with a floor covering of artificial turf and completely enclosed by a fine mesh screen. Half of the run was covered with fiberglass panels to provide shade. Heat

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lamps were included in the outdoor and indoor portions of the facility.

Hatched birds were removed from the hatcher after 24 hours and placed in the hand-rearing facility described above. A domestic chicken was introduced to the rhea chicks as a surrogate parent to teach them how to eat and stimulate activity. Food was available at all times and was sprinkled with a small amount of chopped lettuce two or three times daily.

Activity was stimulated by the surrogate parent and older rhea chicks as well as proper floor covering and a comfortable ambient temperature. During cold weather, the chicks tended to cluster heavily under the outdoor heat lamps and the youngest birds were crushed by the older ones at times. So, when the outdoor temperature dropped below 10°C, the birds were moved to the inside brooder room.

When the rearing facility became too crowded, birds 5 weeks of age and older could be placed in a grassy yard to reduce the concentration of birds being reared in the special enclosure. Birds of this age were not distressed by eating the grass and could pass the undigested fibers in their feces.

Even with satisfactory rearing facilities, a few deaths occurred, mainly due to inadequate food intake. In observing the feeding behavior of the young rheas, it was found that individual characteristics of each bird were involved. The feeding stimulus and reaction to the surrogate parent was greater in some birds than others.

Table 1 and Figure 1 are included herein to show the success of the modified enclosure built to hand-rear the rheas. It easily can be seen that as solutions to the psychological and environmental problems were implemented during the first three years, survival rate increased during the fourth and final year of the study. When all positive factors were implemented, survival rate was greatly improved.

Table 1

	1971	1972	1973	1974
No. Female Laying	4	4	2	4
Length of Laying Season (da)	161	184	159	173
No. Eggs Laid	197	173	105	179
No. Eggs Incubated	194	108	100	149
No. Eggs Hatched	116	134	86	113
% Hatched	59%	79%	86%	76%
% Survival	54%	25%	37%	85%

*Zu/Preem Ratite Diet, manufactured by HILLS Division Riviana Foods, Inc., Topeka, Kansas ■