



*This article was originally published online in 1996.
It was converted to a PDF file, 10/2001*

EMU PRODUCTION

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Emus are native to Australia. Commercial production there and in the United States is a very recent development. The first emu producer's organization started in Texas in 1989.

PRODUCTS

Emu products include leather, meat and oil. Leather from emu hides is thinner and finer textured than ostrich leather. Anticipated uses include clothing and accessories. Emu meat, like ostrich meat, is being promoted as a low-fat, low-cholesterol red meat. Slaughter statistics from Emu Ranchers Incorporated (ERI) report average carcass weight is 80 pounds, with a 53.75 percent dressed yield. The average meat per carcass is 26 pounds and average fat is 17 pounds. ERI anticipates the sale price of emu meat to the public will be \$20.00 per pound. A private company is processing under the name brand New Breed(r). New Breed(r) meat products include sausage, hot links and summer sausage at \$15.00 per pound, jerky at \$5.00 per packet and steak at \$20.00 per pound.

Emu oil, rendered from emu fat, is being used in skin care products in Australia (Emmuman(r)). One emu will yield 4 to 5 liters of oil. Emu producers in the U.S. are developing products and have two nearing the market stage: Emuri(r) Daytime Skin Therapy with Sunscreen (spf 8)- 1.7 ounces for \$36.00; and Emuri(r) Night Revitalizing Cream - 1.7 ounces for \$45.00. Emu oil is being sold by several U.S. companies for prices such as \$20.00 per ounces or per 50 milliliters.

Emu feathers also may have potential as a commodity.

STARTING A BUSINESS

There are several options for getting into the emu business. Emu eggs and day-old chicks are seldom sold but possibly could be purchased for an estimated \$1,000 to \$1,500. Emu eggs probably are not insurable.

Sexed emu chicks at 3 and 4 months old can be purchased for approximately \$3,500 to \$4,500 per chick or \$7,000 to \$9,000 per pair. A rule of thumb is to add \$1,000 per month, per pair,

after 3 months of age. Emu chicks appear to have excellent livability, and mortality between hatch and adulthood is minimal. The risk in buying younger emus is less than with ostrich chicks. Emus currently are insurable at 3 months of age, but this may change to 6 months by May 1993. A disadvantage of purchasing young chicks is the length of time until they are of reproductive age.

Current prices for yearling emu pairs (sexed) are \$12,000 to \$18,000 per pair. Advantages of purchasing yearlings include the ability to estimate adult size and conformation, and insurability. The disadvantage is the time before reproduction capacity is known.

Current price for 2-year-old emus are \$25,000 to \$28,000 per pair. Birds of this age are insurable and their adult size and conformation can be judged. They are also of age to reproduce and may already be reproducing; therefore, a quick return on investment is possible. However, the breeding and laying potential of the birds is unknown and 2-year-old pairs sold during the laying season may be culls.

Proven breeding pairs currently can be purchased for an estimated \$30,000 to \$40,000 per pair. Quick return on investment is an advantage. Disadvantages include high cost, the special equipment and knowledge required for incubating and hatching eggs and the mortality risk of raising birds to a marketable age.

BIOLOGY

Emus are ratites, a group that includes all species of flightless birds: ostrich, emu, rhea, cassowary and kiwi. The name comes from the shape of the keel or breastbone, which resembles a raft and is actually a large, mostly cartilaginous plate. Emus have poorly developed wings, are flightless and have three toes (the ostrich has two). From hatch to about 2 months of age, the chicks have longitudinal stripes. From 3 months to about 1 year of age they have a dark brown neck and head, with beige and brown body feathers. Mature birds have a bare blue neck which begins as a crescent behind the eye, black feathers on the head and mottled body feathers.

The feathers of the male and female emu look alike. The female generally is the larger of the two, especially during the breeding season when the male may fast. The female is the dominant member of the pair. She chooses a mate and selects and defends a territory for the nest. The male emu sits on the nest. Emus live for about 30 years and may produce eggs for more than 16 years. Adult size is about 5 to 6 feet tall and 125 to 150 pounds.

FACILITIES AND MANAGEMENT

Pen size for an adult emu pair should be about 1/8 to 1/4 acre. Five-foot fencing is adequate for adult emu, but some sources recommend a 5 1/2 to 6-foot fence with a top rail. Alleys between pens (with gates opening into alleys) make it easier to move birds. Exercise pens and large pens for groups of birds usually are long and narrow rather than square to provide more running room. The facility should include an isolation or quarantine area for sick or new birds as far as possible from the remainder of the flock.

Newly hatched chicks cannot regulate their body heat and need a source of warmth until 3 months old if the outside temperature is cold. Maintain temperature at 90 to 95 degrees F for the first 3 days after hatch. Decrease temperature 5 degrees every 2 weeks. In warm weather, use supplemental heat only at night. The heat source should be of adequate size for all chicks to get around it, and the pen area should be large enough so the chicks can get away from the heat to avoid overheating. Brooder boxes for chicks 1 to 3 days old are typically about 1 foot high and 2 x 3 or 3 x 4 feet in area per 10 chicks. Chicks may pile and smother one another. Avoid overcrowding, extremes of heat or cold and sudden frightening of the chicks. Piling generally

becomes less of a problem after the first few weeks. The floor of the brooding area must be easy to clean and have good traction. Chicks can be moved to an 8 x 8-foot nursery pen at approximately 70 to 85 degrees F on day four and then into progressively larger pens. Encourage outside exercise periods and sunbathing starting at 5 to 7 days of age, depending on the weather. Separate juvenile groups by age and/or size into large communal pens (50 x 100 feet) or pastures. Grass usually survives well in emu pens except along the fence, where the birds' tendency to fencewalk kills it.

Breeding pairs select their mates in large communal pens. The female emu chooses the male and will become quite aggressive toward males she doesn't find suitable. In pens where adults are pairing up, some producers leave the corners loose to provide an escape route for birds being chased off by jealous rivals or angry females. These birds pop through the corner into an alley between the pens. Sometimes aggressive females are penned separately from the males, but with a common fence. Usually birds that settle down together in the evening will successfully pair up. Individual pens and shelters usually are provided for breeding pairs; however, polygamous arrangements have been successful.

Shelters may be made of wood, tin, fiberglass or other materials. Fiberglass is lightweight and easy to move (if self-contained). Fiberglass shelters are quite bright inside because of penetrating sunlight. Shelters with good lighting appear to encourage the emus to nest inside. Bedding, such as straw inside the huts, encourages inside egg laying and makes clean egg collection easier. Adult emus appear to be quite tolerant to cold weather. Normal reproduction (more than 30 eggs per pair) has been reported in North Dakota in barns "heated" to 35 to 40 degrees F with an outside temperature of 10 degrees F.

RESTRAINT

Emus generally are docile and non-aggressive towards people. However, inexperienced handlers have been hurt by kicking, struggling emus. An emu crowded against a fence will, by natural instinct, turn and try to crowd past a person. To restrain the bird, grasp its wings at the top, get behind it so that it cannot kick you and push downward, as if forcing the bird to bend its knees. To move a bird, grasp it by the chest under the wings and lift and push in the direction you want it to go. An adult bird used to being handled can be gently guided by the wings. Haul or trailer emus at night because darkness seems to have a calming effect. Trailers should be enclosed, well ventilated and padded with a non-slip surface.

NUTRITION

Commercial ratite rations are available from a number of sources. Most commercial feed companies are producing starter, grower and breeder rations in mash or pellet form. Limits on the addition of other sources of roughage or nutrients, such as alfalfa hay, may be recommended by the manufacturer. Protein contents vary from 16 to 22 percent. Nutritional requirements of the emu have not been determined by scientific research; however, similarities of the emu and chicken digestive systems suggest that their nutritional requirements may be similar. Many farmers feed newly hatched chicks a mixture of chopped greens, a commercial starter crumble and a vitamin/mineral supplement. The greens are thought to attract the birds to the feeder and stimulate feed consumption; the nutritional benefits are negligible. Water may be offered before food by about 12 hours. Grit is offered with the food although it is not necessary if feeding a processed commercial diet. Chicks are usually fed twice a day for about an hour. Diets are usually in a small pellet or large crumble form for chicks. Fiber content varies between 7 and 15 percent. Some nutritionists recommend fiber content between 5 and 10 percent. Diets with more

than 25 percent protein (such as dog food and catfish chow) have been associated with growth problems in young emu. Breeder diets contain additional calcium, or calcium can be offered "free choice" in the form of oyster shell. Breeders that are too fat do not appear to reproduce as well as those in normal condition. Some emu producers prefer free choice feeding systems, while others prefer one to three daily feedings. Advantages of each system are based on economics (your time, hired help) and personal preference. However, multiple daily feedings provide a time for interaction with the birds, making it easier to detect illness and control an individual bird's weight.

REPRODUCTION

Emu reach sexual maturity at 18 months to 3 years of age. Males and females usually are paired in a 1:1 ratio although polygamous mating (more than one female per male) has been successful in some cases. Emu courtship consists of strutting and displaying the neck feathers by both the male and female. The female makes a drumming sound ("booming") and the male makes a grunting sound ("growling"). Allow emu to pair naturally from a communal pen or across a fence, and then move them to a breeder pen together. Non-compatible birds will fight. Many emu begin producing in their second year. Emu lay eggs in the winter months, usually between November and March. Eggs are laid every 3 or 4 days, with an average of 30 eggs laid per season. Some may produce up to 50 eggs per season.

INCUBATION AND HATCHING

The incubation period for emu eggs is 46 to 56 days with an average of 50 days. Length of incubation is greatly influenced by temperature. Optimal temperatures, 96.5 to 97.5 degrees F, should result in an incubation of 49 to 52 days. Humidity settings should range from 24 to 35 percent. Successful incubation of eggs in vertical, air-cell- up or horizontal positions has been reported. Turn eggs four to six times per day. As in the ostrich, egg weight loss is important and 15 percent is the ideal. A weekly system of egg weighing and good record keeping are essential. Emu eggs are opaque, so a method called tapping replaced the candling procedure. Tapping the egg with a small cylindrical metal rod produces particular sounds that can be used to identify an egg that has internally pipped and needs to be moved to the hatcher. Hatcher temperatures are usually the same at the incubator or one degree less. Percent hatchability in emu chicks has been reported as 50 to 80 percent. It is important to keep good records because specific problems with hatchability are often associated with embryonic death at various points in incubation. Common problems include infertile eggs, bacterial infection of eggs and malpositioning.

IDENTIFICATION

Identification is important for record keeping and protection against theft. Microchip identification systems are commonly used. At hatch, microchips are inserted in the pipping muscle just behind the head with an implant gun and needle. The code in the microchip is read by a device called a microchip reader, which costs \$1,000 to \$1,250. Each brand of microchip requires its own reader. The chips cost about \$8.50 each and come in packs of 50. Numbered leg bands, available in a variety of colors, are used for identification and usually are placed around the ankle. Tattooing as a means of permanent identification also has been used successfully, but does require a certain skill.

HEALTH

A pre-purchase examination by a qualified veterinarian can ensure the purchase of a healthy animal. A good client-veterinarian relationship is helpful if future veterinary treatment or consultation is needed.

Chick mortality in the emu does not appear to be as great as in the ostrich. The incidence of impaction and ingestion of foreign objects is also low, possibly because of anatomic differences in the digestive tracts and feeding habits of emus and ostriches. Impaction usually is the result of birds ingesting long, fibrous material (small sticks, grass, fabric). Both non-surgical (mineral oil/laxative) and surgical treatments have been successful; assistance by a qualified veterinarian is recommended.

Both internal and external parasites affect emus. Ivermectin given at 1-month intervals beginning at 1 month of age is used to prevent nematode infestations. Carbaryl dust (5 percent powder) has been used by the USDA at 14-day intervals to treat tick infestations in ratites.

Health problems peculiar to the emu include: Equine Encephalitis Virus (EEE) infection (which can cause a severe bloody diarrhea); parasitic migration in the brain by *Chandlurella quisquali*, a nematode parasite of grackles which is carried by biting insects; and scoliosis (a deviation of the neck and spinal cord), which may be of parasitic, hereditary or nutritional origin.

General preventive care includes vaccination (EEE and sometimes avian pox) and treatment or prevention of parasitic infestations.

FURTHER READING

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- Minaar, Philip and Maria. 1992. *The Emu Farmer's Handbook*. Induna Company, Groveton, Texas.

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Issued in furtherance of Cooperative Extension Work in Agriculture and Home Economics, Acts of Congress of May 8, 1914, as amended, and June 30, 1914, in cooperation with the United States Department of Agriculture, Zerle L. Carpenter, Director, Texas Agricultural Extension Service, The Texas A&M University System.