



Photo by Chris Smith

Two- to three-week-old Eurasian Eagle Owl chicks.

The Eurasian Eagle Owl (*Bubo bubo*) at the Oklahoma City Zoological Park

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It is a cool spring evening in the Scandinavian forest. A full moon illuminates the the night sky. A lemming emerges from its burrow and ventures out in search of a meal. As the lemming browses and grazes though the grass, it fails to notice it is being watched by a creature perched in a nearby tree. This creature has a barrel-shaped body and a small round head with a short hooked beak. Two dark slanted horns over its large fiery orange eyes give the creature a menacing appearance. Suddenly, without a sound, the animal flies from the tree on a direct course to the unsuspecting rodent. The lemming looks up at the winged terror diving in upon it, but it is too late. Eight sickle-like talons tear into the lemming, killing it instantly. The predator rests over its kill for a moment, then flies off as quickly and silently as it had attacked. The creature heads toward a ledge on the side of a cliff. There awaits its hungry offspring. It has been another successful hunt for the Eurasian Eagle Owl, *Bubo bubo*.

The Eurasian Eagle Owl is the largest species of owl. This bird can measure 72 cm (28.3 in.) in length, and can weigh 3,000g (6.5 lbs). The wingspan can reach 175 cm (68.9 in.). Eurasian Eagle Owls are generally colored with various shades of browns and tans arranged in barred patterns on the back and wings, and in streak patterns on the chest and underside. The chin and throat are white. Two dark brown tufts give these owls an

"eared" appearance similar to that of its close relative the Great-horned Owl, *Bubo virginianus*. The eyes are usually bright orange, but can sometimes be bright yellow. Males and females are similar in appearance, except females tend to be larger and sometimes darker. These owls are also known as "Tigers of the Sky" due to their large size and fierce reputation.

The range of the Eurasian Eagle Owl is vast. These birds range from the Iberian peninsula, across the southern half of France, most of central Europe, central areas of Italy and through the Balkans across most of the Asian mainland, south of Siberia to the southern border of China. These owls also occur in Scandinavia, northern Africa and the Arabian peninsula. On rare occasions, Eurasian Eagle Owls are found in Great Britain, northern Europe and Japan.

Eurasian Eagle Owls can be found in many types of habitat; coniferous and deciduous forests, scrub, woodland, grassy steppes, high altitude meadows, and rocky and sandy deserts. Although Eurasian Eagle Owls can adapt to a wide variety of habitats, they prefer areas with steep and rocky slopes or cliffs, their usual nesting sites. Eurasian Eagle Owls are gradually becoming established in a few rural areas in Europe and Asia, like the Great Horned Owl has in North America.

Approximately 20 subspecies of the Eurasian Eagle Owl are recognized.

Each subspecies varies in size and coloration. The largest subspecies, *Bubo b. sibericus*, is found in southern Siberia. Most of the northern subspecies tend to be larger and darker than those found in milder climates. Two desert subspecies, *Bubo b. ascalphus*, found in northwest Africa, and *Bubo b. desertorum*, found in the Sahara and Arabian deserts, are much smaller and lighter in color. Some sources even list these two as separate species. Perhaps the most recognized subspecies is *Bubo b. bubo*, which is found in central Europe, and is generally the most common in captivity.

The diet of the Eurasian Eagle Owl is quite easy to summarize; anything it can catch and subdue. Prey items range in size from beetles to deer fawns. Like most other birds of prey, these owls usually prey upon the most abundant and available food source. These are most often small mammals, such as rats, voles and hares. Birds, such as pheasants, waterfowl and seabirds are also common prey. Eurasian Eagle Owls are rather unusual in that they will also prey upon raptors and other species of owls. Foxes, bats, chamois, and domestic cats are even predated upon occasionally. The habitat in which the owls live often determines their dietary choices. Owls found on the mainland prey mostly on small mammals, while those birds found near coastal areas consume more birds and fish.

Eurasian Eagle Owls, like most other species of owls, do not build nests. Instead, they often use ledges on cliffs or rocky outcroppings. These owls will also nest on the ground

TABLE 1
Daily weight (in grams) of hand-reared Eurasian Eagle Owl chicks.

Day	1994 Hatch Male	1996 Hatch Female	1996 Hatch Female	1996 Hatch Male	1997 Hatch Unknown
1	49.5	49.9	52.0	49.3	-----
2	48.2	52.0	52.0	53.0	-----
3	47.4	58.8	60.0	61.2	-----
4	54.9	73.0	75.5	76.0	-----
5	53.2	91.8	92.2	87.3	-----
6	62.1	117.9	116.5	100.5	-----
7	77.0	143.9	144.5	110.7	150.3
8	90.8	172.5	174.0	123.3	142.2
9	116.5	200.4	200.0	138.3	162.5
10	-----	224.0	241.4	161.5	193.5
11	139.5	248.5	271.4	185.0	233.0
12	-----	279.2	295.1	201.0	285.0
13	168.6	303.7	324.2	225.0	310.6
14	177.7	339.4	375.0	240.5	348.5
15	190.0	377.2	418.0	273.5	405.7
20	363.0	585.6	700.8	463.8	727.0
25	676.0	958.0	1026.0	753.0	-----
30	939.4	1200.0	-----	1119.6	-----

beside fallen trees, boulders or any other protected site on the ground. On rare occasions, Eurasian Eagle Owls will nest in abandoned raptor nests or excavated anthills. They are highly territorial and do not tolerate raptors and other owls within their territory.

Late February and early March are normally the times when Eurasian Eagle Owls begin to lay eggs. Clutch sizes range from one to six eggs, but two to three eggs are most common. Females do most, if not all, of the incubation. The males provide food for the females and chicks and also guard the nest site. The eggs are white and measure roughly 60mm x 50mm (2.4 in. x 2 in.). The incubation period is about 35 days. At five to six weeks of age, chicks begin to leave the nest, although they are unable to fly until about seven to eight weeks. The parents continue to care for their offspring for several more weeks after they are able to fly. By the end of the summer season, the chicks are able to fend for themselves, and leave their parents' territory.

Eurasian Eagle Owls have been found to adjust well to captivity. These birds have long lifespans while in captivity. The oldest known Eurasian Eagle Owl lived 68 years, and several others are known to have lived well over 50 years. These owls will breed readily if an adequate environment is provided. The earliest recorded captive breeding of this species was in 1849 from a private collector in Norfolk, England.

According to the December 1996 ISIS Bird Abstract, approximately 250 Eurasian Eagle Owls are reported to be kept by 58 zoological institutions throughout the world. However, most of these are from European zoos. In North America, only 25 specimens are kept by fewer than a dozen zoos. From this handful of specimens, there is currently only one breeding pair.

The Oklahoma City Zoological Park has exhibited the Eurasian Eagle Owl since 1992 when a pair of young birds was acquired from Havelock Raptor Center in Ontario, Canada. The owls' first exhibit was a Behlen corn crib style cage, about 3.1 m (10 ft.) in diameter and approximately 4.6 m (15 ft.) high. A small wooden barrel was

mounted about 3.1 m (10 ft.) above the ground for the owls to use as a nest box. In the spring of 1993, the owls began producing eggs. Three eggs were laid, but were infertile. For a young pair of owls, it is not unusual for their first clutch of eggs to be infertile.

In 1994, the owls were moved to a 12.5 m x 9.7 m x 9.7 m (45 ft. x 35 ft. x 35 ft.) flight cage. A nesting platform, about 1.1 m x 1.1 m (3 ft. x 3 ft.), was mounted about 4.2 m (15 ft.) high. Their new exhibit also had several small bushes, rocks and logs which could serve as nest sites. In March, 1994, the owls began laying eggs again. The first egg was found on the ground unattended, and was pulled for artificial incubation. Two more eggs were laid on the ground, but were cared for. The nest was behind a small log near the back of the exhibit.

The first egg was placed in an incubator set at 36.9 degrees C. (98.5 degrees F.). The humidity was maintained from 50 - 52%. The egg was rotated half-way five times daily. After a 35 day incubation period, the chick hatched unassisted. Several days later, the eggs under the parents hatched, however one of these chicks disappeared several days after hatching, and was presumed to have been eaten by the parents or fed to its sibling.

The artificially incubated chick was left in the incubator for 24 hours after hatching. This allowed the chick to dry off and absorb its yolk sac. The chick was then moved to an isolette set at a temperature of 33 degrees C. (92 degrees F.). The temperature was gradually decreased as the chick grew. A small bowl covered with a towel served as a nest. Small sticks were placed on the bottom of the bowl to provide a foothold for the chick. This also helped prevent the legs from splaying.

The chick's diet initially consisted of chopped newborn mice, sprinkled with two vitamin supplements; Vionate, a general vitamin mineral powder, and D-Ca-Fos, a calcium supplement. As the chick grew, adult mice and Nebraska Bird of Prey Diet were offered. The adult mice were skinned and chopped when first introduced. Chopped mice with the skin and

whole mice were gradually added to the diet as the chick grew. Feedings were offered five times daily at 0800, 1100, 1300, 1500, and 1700. After two weeks, only four feedings were offered. By four weeks, the chick was eating food left on a small dish. Afterwards, only three feedings were offered.

After five weeks, the chick began to fly, although its flights were rather brief and clumsy. By eight weeks, the chick was able to fly without difficulty. At



Adult European Eagle Owl used in an educational bird program.

this age, the chick had lost most of its down feathers and was looking much more like its parents.

While the adult Eurasian Eagle Owls were caring for their chick, they were offered more food and were fed more often. Their diet consisted of mice, rats, day-old chickens, and Nebraska Bird of Prey Diet. They were also given vitamin supplements sprinkled on the diet. Entries into the exhibit were kept to a minimum. Despite traffic of zoo visitors around their exhibit, the owls did not seem to be disturbed while nesting or rearing their offspring. Surprisingly, the owls showed very little aggression towards their keepers.

After about four weeks, the young owl began to venture from the nest and explore the exhibit. Like its hand-reared sibling, it began flying for short distances after five weeks, and started flying about the exhibit by eight weeks of age.

In the spring of 1995, the owls began laying eggs again. One egg was

laid on the nest platform, but was later found broken on the ground. Two more eggs were laid on the ground in the same area as the previous year. One chick was successfully hatched and reared by the parents.

The most productive year to date was 1996. After one egg laid on the nest platform was pulled for artificial incubation, a clutch of four eggs was laid in the ground nest. The eggs were left under the female for most of their incubation period. Two of these eggs were pulled, since the parents had never reared more than one chick at a time. All five eggs hatched, and all of the chicks were successfully raised. The hand-reared chicks were raised with the similar techniques as that of the first hand-reared chick.

Several months after the hand-reared chicks had reached adult size, blood samples were taken to determine their sexes. After examination of the chicks' growth charts, a correlation was noted between gender and growth rate. Weights of birds that were eventually sexed as females were significantly higher than those of birds later determined to be males. The weight difference is easily seen after one week of age. However, this observation is noted from only four specimens. Additional studies should be conducted before any definite conclusions are made.

In 1997, the owls produced two clutches. The first clutch consisted of four eggs. Two of these hatched. After one chick was found dead, the surviving chick was pulled for hand-rearing. The third egg had a chick that had pipped, but died in the shell. The fourth egg was infertile. The surviving chick was successfully hand-reared. The owls produced a second clutch shortly after the first had been removed from their enclosure. Three eggs were laid, of which two hatched and survived.

As of 1997, 13 Eurasian Eagle Owls have hatched at the Oklahoma City Zoological Park, of which 11 have survived. These chicks have since been placed in other zoological institutions. Many of these birds are to be used as educational animals throughout the country. The impressive size of these owls seems to have made them popu-

lar with education programs.

The Eurasian Eagle Owl is currently listed as non-endangered, but the wild population has steadily declined throughout the twentieth century. Human persecution is the primary cause for their decline. For many years, these owls were hunted by people who believed them to be threats to livestock. Superstitions and fear also led people to hunt the owls. Throughout most of northern Europe, the Eurasian Eagle Owl has vanished.

Other factors in the population decline include; overhead power lines, highway traffic, land development, pollution and egg collecting. Many owls have been accidentally killed on power lines and by automobiles. Development and pollution have rendered some of their range uninhabitable. Egg collecting, a popular hobby in Europe, has had a small impact, with nests being robbed of the eggs. Although these owls are large and powerful predators, they are easily disturbed when nesting and will abandon eggs or chicks if approached. As humans continue to urbanize rural areas, the large undisturbed tracts of land the Eurasian Eagle Owl prefers become scarcer.

Within the past few decades, most European countries have enacted laws that offer protection to the Eurasian Eagle Owl. The capture of wild birds for collections is now banned in many countries. Efforts to reintroduce this species into areas where the population had disappeared or was rapidly declining has been moderately successful. Despite high mortality rates, frequently as high as 50% within a few months of their release, several release sites now have stable populations once again.

While efforts to preserve the Eurasian Eagle Owl are in progress, the future of the species is still uncertain. Protection of its habitat is perhaps the most important issue to preserve this owl. Education is another factor. If people can be taught about these owls and their needs, perhaps persecution will decline and a way can be found for humans and owls to co-exist.

The Eurasian Eagle Owls hatched at the Oklahoma City Zoological Park may soon be seen at an educational

bird program, and helping to inform people about the lives and needs of owls. In addition to education and conservation, zoological institutions should also consider the need for adding new founders to the gene pool of these owls, in order to maintain a healthy and viable captive North American population.

Summary

The Eurasian Eagle Owl, *Bubo bubo*, the largest species of owl, has been successfully hatched and reared at the Oklahoma City Zoological Park. Chicks have been raised both by parental and hand-rearing means. Although not listed as an endangered species, this owl is in decline throughout much of its range. With education and conservation, the survival of this species can be upheld.

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Products Mentioned in Text

- Behlen Mfg. Co. Hwy 30 East Box 569 Columbus, Nebraska 65602
- D-Ca-Fos Natural Bone Ash with Vitamin D3 Supplement. Produced by Fort Dodge Laboratories, Inc., Fort Dodge, Iowa 50501.
- Nebraska Bird of Prey Diet. Packaged by Nebraska Packing, Inc., North Platte, Nebraska 69101.
- Vionate Vitamin Mineral Powder. Produced by Gimborn-Rich Health, Atlanta, Georgia 30340.

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