

Incubation of Ocellated Turkey Eggs Using the Common Turkey as a Foster Mother

(*Agriocharis ocellata*)
(*Meleagris gallopavo*)

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Introduction

Birds have been playing major roles in scientific fields such as evolution, biogeography, taxonomy, ecology and now in conservation. Their study is giving us insights into the interplay between organisms and their environment and is helping us to understand the role that they play. However, we actually know very little about them in this region, especially the tropical species such as the Ocellated Turkey, *Agriocharis ocellata* (Ramos, 1985).

Their environment is being destroyed at accelerated rates (Myers 1970). Moreover the birds in these areas are commonly hunted, traded or trafficked (Nilsson, 1981; Ramos, 1982) and their population is declining at alarming rate (Ramos, 1985).

Long term research programs on tropical birds including those already vulnerable or in danger of extinction is important to make clear that development and conservation are not conflicting processes. They actually go hand in hand and we should not abuse either one. If deforestation progresses as fast as it is now, the actual number of species in danger of extinction would be increased greatly (Ramos, 1985).

Some groups of birds might disappear faster than others. Birds that live under the forest canopy, are insectivorous or have a territorial social system, may be the first to go. They are frequently highly specialized and minor disturbances could have major impacts (Ramos, 1985).

The future conservation of most threatened species will require not only the preservation and management of critical habitats but also scientifically managed propagation

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programs.

Given the endangered status of the Ocellated Turkey (*Agriocharis ocellata*) and its bleak future in the wild, it is of great importance establishing breeding programs on behalf of this magnificent vanishing species.

The objectives of this project are:

- To favor the incubation of Ocellated Turkey (*Agriocharis ocellata*) eggs and the survival and development of a higher number of chicks using a Common Turkey (*Meleagris gallopavo*) as a foster mother.

The broader objectives are:

- To favor the introduction of the new chicks of the Ocellated Turkey (*Agriocharis ocellata*) into their natural habitat.

- To learn more about the aspects of artificial breeding and behavior of this species.

- To promote general interest in breeding and conservatiuon of this endemic species to maintain a viable genetic pool.

Project Localization

The aim of this project is to breed Ocellated Turkeys (*Agriocharis ocellata*) in their natural habitat, that is why it will be developed in Tikal National Park, located in the state of Peten, north of Guatemala city (16° 55' 07" latitude and 89° 53' 05" longitude).

Peten is the bigger state in Guatemala, having an extension of 35,847 square kilometers, with less than 60% of forest cover and approximately 13% of its surface being savanna. The annual average temperature is 26.6°C and the annual rainfall varies between 1700 mm and 3000 mm.

Tikal National Park supports a lush, tropical forest characterized by very seasonal rainfall, with most of the precipitation falling from June to September. The entire 576 square kilometers of Tikal is a National Park of Guatemala, a sanctuary for all plants and wildlife. This protection has allowed the Ocellated Turkey to become very tame and readily studied.

Here we could find characteristic trees of the tall forest including *Ficus* sp., *Swietenia* Sp. (Caoba), *Brosimum* sp. (Ramon) and *Achras* sp. (Zapote). This type of forest is relatively unimportant as a feeding area for the turkeys, but is very important to the birds as a place of rest and preening during mid-day. Grassy plots constituted only about three to

six percent of the habitat, but is by far the most important feeding area, as well as the site of most reproductive activity. The density and distribution of Ocellated Turkeys in heavily forested areas such as Tikal may be largely controlled by the distribution and size of grassy areas. However, forests are important for roosting, resting, general maintenance activities and nesting. The scarcity of Ocellated Turkeys noted by some observers in heavily cleared areas also argues for their need for forests. This scarcity in disturbed areas is also partly due to hunting pressure from man which probably not only reduces the actual density of turkeys, but also makes them more wary and therefore more difficult to observe.

Smithe (1976) reported the turkeys at Tikal to be widespread but not numerous, and according to Steadman (1979) the density of Ocellated Turkeys in Tikal is about one individual per square kilometer.

Bibliographical Review

There are two species of turkeys, the Common Turkey (*Meleagris gallopavo*) and the Ocellated Turkey (*Agriocharis ocellata*) forming the family meleagridae.

They are large, powerful birds with strong legs, spurred in the male, but with rudimentary webs between the toes and with non-vaulted tails.

The Common Turkey occurs from eastern United States to Mexico and the Ocellated Turkey lives in lowland tropical forests from Peten, Guatemala and adjacent central and northern Belize, north through the Yucatan peninsula of Mexico and west into the eastern portions of Chiapas and Tabasco. The distribution of the Ocellated Turkey within this area is somewhat patchy today because of habitat destruction and hunting pressure (Steadman, Stull and Eaton, 1978). A more ominous threat to the Ocellated's status is the fear of domestic poultry diseases, to which they are extremely susceptible and regularly exposed through frequent contact with free roaming village flocks throughout their range (Jennings, 1987). This is a common situation in Guatemala.

Although the Ocellated Turkey is one of the most conspicuous members of the avifauna in Peten region, relatively little is known about their natural history. They are still hunted in Guatemala, especially during the mating season (February, March,

April) when they are more visible in open areas (Gonzales; personal comments).

Its plumage is a bright copper-bronze and green, barred with black, the naked blue head and neck is decorated with bright orange protuberances. The long, grey tail contains blue green eye-like spots. Flight feathers are barred with black and white and the secondaries exhibit broad white patterns. The iris is reddish-brown, the short bill is yellow and the legs and feet are red. Both sexes lack the chest "beard" of the Common Turkey. They are smaller and lighter in color than the Common Turkey, males measure 100 cm in length and 5 kg in weight, while females measure 81 cm in length and weigh 3 kg (Lint, 1977-78).

Ocellated Turkeys prefer open forests, secondary growth scrub, abandoned corn fields, wood edges and savannahs and they are non migratory. They find almost all of their food on the ground where they consume a great variety of vegetable matter: chickweed, tender shoots and grasses, fruits and seeds. They also eat invertebrates such as insects, grasshoppers, crickets, grubs and beetles. They flock together usually in family groups, roosting in trees during the night. At early dawn they spread over the country side in search of food (Lint, 1977-78).

Male turkeys do not reach sexual maturity until they are two to three years old. The courtship behavior is similar to that of the Common Turkey but much more spectacular. By spreading out his body plumage, the cock increases his size and displays his ornamental colored feathers. He raises his tail and spreads it fully, showing the blue green ocellae of each feather which attract the hen. The wings are then dropped until they touch the ground, as the pinions are rattled over the ground. At the same time, the bare outgrowths of the head and neck swell up and intensify in color. In this curious posture the cock dances forward and back, stamping the ground in his full beauty. The mating season begins in February and nesting commences in April (Lint, 1977-78; Steadman, Stull and Eaton, 1978-79).

The nest is built on the ground, share leaves, sticks and grasses are pushed about to form a depression. The clutch consists of 8 to 15 buff colored eggs finely speckled with

shades of brown. Ocellated Turkeys require about 1.5 days to lay each egg, as in the case of Common Turkeys (Schorger, 1966). A clutch will be completed in about 18 days (Steadman, Stull and Eaton, 1978-1979).

Only the female incubates, she covers the nest carefully with leaves before leaving it to look for food. If the eggs are removed (as they are laid) for artificial incubation, a pair is capable of producing up to 25 eggs per season (Jennings, 1987).

Once the eggs are hatched, the downy chicks leave the nest soon after they are dry but they are unable to fly and thus must follow the mother on foot. By the time the poults are two weeks of age, they are able to fly onto trees or roots where the hen will brood the chicks under the wings (Lint, 1977-78).

Ocellated Turkey chicks seem to suffer from wet weather as continued rain leads to many fatalities. According to the literature, many breeders have had problems in obtaining good fertility with Ocellated Turkey eggs. The main reason is males and females do not attain breeding condition simultaneously. Some individuals are late in developing and reaching their breeding potential (Lint, 1977-78).

Both natural and artificial incubation have been used in hatching Ocellated Turkeys, but they appear to be delicate and mortality in young poults is high, even when kept under the most favorable conditions. Poults are susceptible to colds at any age and thus this danger is always present and must be guarded against constantly. Inclement weather, foggy mornings and especially drafts may quickly cause the death of a poult. However it was found that poults incubated and hatched under a broody hen were somewhat stronger and dried faster than those incubated by artificial means. This is called *indirect cross fostering*, where a similar and more common species is used to raise the young for various reasons to safeguard the rarer species' population.

Comparison Between the Ocellated Turkey (*Agriocharis ocellata*) and the Common Turkey (*Meleagris gallopavo*)

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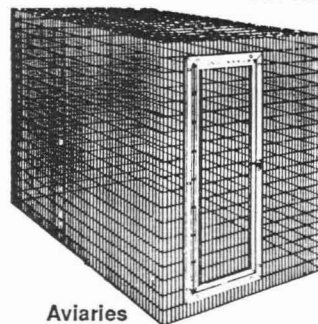
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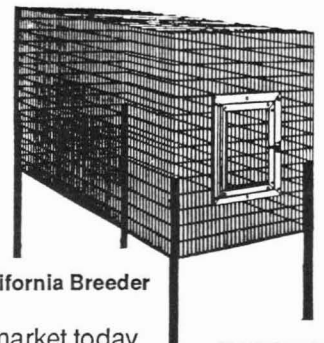
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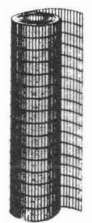
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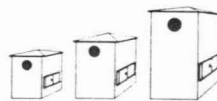


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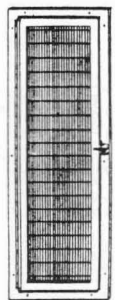
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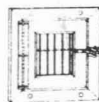
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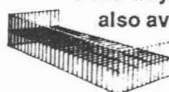
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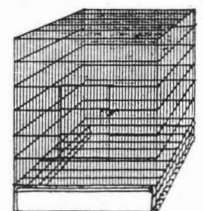
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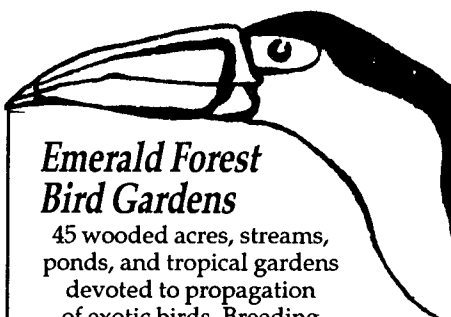
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Ocellated Turkeys are a slightly smaller but more colorful version of the wild turkey. The date of laying the first eggs of the clutch in Ocellated Turkeys ranges from March to May, while the hatching varies from May to July. Nests with eggs in Common Turkeys range from February to July, with the majority occurring in April and May (Schorger, 1966).

Habitat usage in Ocellated Turkeys is much as it is in Common Turkeys, being essentially a forest bird which frequents openings for grasses and other foods. The food of Ocellated Turkeys is dominated by seeds, particularly of grasses, followed by leaves, fruits, flowers and insects. Ocellated Turkeys generally feed more on leaves than do Common Turkeys. This probably facilitates water intake, as water is generally not available at Tikal except at widely separated aguadas, which are natural or man made reservoirs.

The social organization of Ocellated Turkeys differs from that of Common Turkeys in that the yearling males remain with the females and adult males through the period of copulation. This may be related to the fact that these younger males are apparently quite close in size to the females; in Common Turkeys however, the juvenile males are generally much heavier than the females (Steadman, Stull and Eaton, 1978-79).

Ocellated Turkeys feed more vigorously in the late afternoon than in the morning and least at mid-day. This pattern of feeding is very similar to that of the Common Turkey (Bailey, 1967).

Trees most often selected as roosts by Ocellated turkeys at Tikal are *Cecropia* sp. with widely spaced, usually quite horizontal branches 5 to 11 m above the ground. A review of the literature on the roosting habits of various populations of Common Turkeys throughout its extensive range reveals great variation in roosting sites and species of trees used, as dictated by limitations of the habitat involved. Ocellated Turkeys at Tikal descended from roosts shortly after daybreak and flew up to their roosts shortly after sunset. The intensity of the light seemed to be the determining factor in both cases (Steadman, Stull and Eaton, 1978-79).

Project Development

This project will be a stage of a global project that will include:

STAGE I - Radio tracking of females

during the nesting season. Identification of nests, collection of eggs and transportation (support given by WCD).

STAGE II - Incubation of Ocellated Turkey eggs using the Common Turkey as a foster mother and re-introduction of new individuals into a protected area.

STAGE III - Program of environmental education (Support by WWF).

The objective of this project is to use the Common Turkey (*Meleagris gallopavo*) as a foster mother to incubate the eggs of the Ocellated Turkey (*Agriocharis ocellata*) and rear the chicks in a natural way.

The first stage of the project will be to acquire 12 Common Turkey females born in captivity that will be submitted to a medical evaluation. This evaluation will include:

- Vaccination against Newcastle
- Vaccination against poxvirus and pasteurella
- Treatment against parasites and coccidia
- Treatment against trichomoniasis and histomoniasis
- Multivitamin and antistress

The Common Turkeys will be placed in a closed, dark area with a reduced number of nests and with dummy eggs to induce the incubation.

The females of the Ocellated Turkey will be followed using radio tracking equipment, finding in this way the nests where they will lay their eggs. Once the laying takes place, the eggs will be removed one by one, leaving always one to stimulate the production of more eggs by the females. The first egg will be removed just after the second egg is laid; the second egg will be removed after the third egg is laid and so on.

Each egg will be placed in the same position that they are found in the nest and stored in a fresh area at room temperature. Once the Ocellated Turkey finishes the laying, the eggs will be placed in the foster mother nest for their incubation. In some cases, the eggs will be left with the real mother, and some will be artificially incubated.

Once the eggs hatch, the chicks will be weighed and vaccinated against Newcastle at the age of 7 days and 28 days. They will be naturally reared by the Common Turkey using a diet constituted basically on insects (mealworms and crickets), leaves and grasses. ●