

ASA

A JOURNAL FOR BIRD BREEDING, CONSERVATION,
RESTORATION AND EDUCATION

JANUARY/FEBRUARY 2018





NEXT ISSUE

**MALEO
PART II**

The purposes of the Society are the study of foreign and native birds to promote their conservation and protection; the dissemination of information on the care, breeding, and feeding of birds in captivity; the education of Society members and the public through publications, meetings, and available media; and the promotion and support of programs and institutions devoted to conservation. Front Cover: Maleo pair *Macrocephalon maleo*, Photo Julie Larsen Maher©WCS Inside Cover: Maleo chick *Macrocephalon maleo*, Photo Julie Larsen Maher©WCS © 2012-2018 Avicultural Society of America.

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January/February 2018

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January/February 2018
President's Message



Greetings, fellow Aviculturists:
I'm delighted to be bringing you an ornithological paper from the Wildlife Conservation Society in New York.

Part one is in this issue and will be followed by Part two in the March/April issue and Part three in the May/June, 2018 of the e-Bulletin.

The paper exemplifies aviculturist observations of the Maleo and shares the unique breeding behaviors of this species.

A second piece was submitted by Joseph C. Witt about his adventures searching for Scarlet macaws in the wilds of Central America.

If you would like to submit an article, please send to info@asabirds.org

Yours truly,

Carol Stanley
President, YOUR Avicultural Society of America

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Avicultural Bulletin [USPS 925-380] ISSN 0567-2856 is published bi-monthly by the Avicultural Society of America, Inc., P. O. Box 3161, San Dimas, CA 91773. Postage paid at Arcadia, California and additional office, Alhambra, California.

The Society year begins the month following receipt of payment for membership: 1 yr. \$25.00, foreign countries, please add \$8.00 to cover postage. Remit in U.S. funds.

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POSTMASTER: Send address changes to Avicultural Bulletin c/o Steve Duncan, Membership Director P. O. Box 3161, San Dimas, CA 91773.

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Maleo *Macrocephalon Maleo*

HUSBANDRY AND CONSERVATION AT THE WILDLIFE
CONSERVATION SOCIETY - PART I



Figure 1: Male (left) is larger and brighter in color than the female. Photo: Julie Maher©WCS

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MALEO Taxonomic Classification

Table 1.1 Taxonomic classification for Maleo

Kingdom	Animalia
Phylum	Chordata
Class	Aves
Order	Galliform
Family	Megapodiidae

Genus, Species, and Status

Table 1.2. Genus, Species, and Status information for Maleo

Genus	Species	Common name	IUCN status
Macrocephalon	maleo	Maleo	Endangered

THE MEGAPODES

Megapodes are a distinct family of gallinaceous birds with a very novel breeding strategy. These birds are similar in appearance to other Galliformes, best suited for a terrestrial lifestyle; having relatively large bodies that reduce their ability to sustain long-distance flights. Typically, these birds forage and nest on the ground in tropical rain forests. Since they are reclusive, most of the observations involve the time spent at the nest sites and little is known about their behaviors during the time away from the nests. This secretive behavior is advantageous when avoiding danger, although they use vocalizations to contact or advertise territories to other birds. Maleo, Macrocephalon maleo, use a two part rolling call to contact potential mates at the areas around the nest sites. Megapode taxa use three different sources of heat to incubate their eggs. Mound builders use the heat from decaying vegetation for incubation, while burrow-nesters dig into volcanically heated substrates or in sand heated by the sun. They lay very large eggs that are 10-20% of the hens' body mass and these eggs have larger yolks than most avian taxa. The yolk, for most megapodes, fills approximately 50% of the egg, although the maleo yolk comprises up to 69% of the egg. External forces produced by the decaying vegetation, geothermal or solar radiation, rather than the body heat of the adults, incubate the eggs. Highly developed "super-precocial" chicks hatch after an incubation

Megapode chicks are able to regulate their body temperature, find food, and avoid predators, without any help from their parents or conspecifics.

period that lasts up to 70% longer than eggs of similar sizes in other birds. The shells are 30% thinner than expected, which allows for a greater rate of respiration. The chicks burrow out of the nest and require no parental care. Megapode chicks are able to regulate their body temperature, find food, and avoid predators, without any help from their parents or conspecifics.

Within the megapode family, there are seven genera and 22 species. All of these species occur within the Australasian region. This family is divided into three groups. Brush-turkeys included in the Alectura, Aepyodius and Talegalla genera, and a separate genus, the Leipoa are all mound builders and found in Australia or New Guinea. The most studied of these includes the mound building Australian brush-turkey, Alectura lathamii, and the malleefowl, Leipoa ocellata, and both breed in captivity. The scrubfowl representing the Megapodius have a wider distribution throughout Australasia, including Polynesian islands. Megapodius taxa also use a variety of nesting strategies, some are exclusively burrow-nesters, and others build mounds, while a few may use either. Macrocephalon maleo, restricted to Sulawesi, and Eulipoa wallacei from Moluccas only employ the burrow-nesting stratagem. Burrow nesting may have evolved from mound builders as a breeding strategy against predation. Many of the burrow nesters, including the maleo, are listed as endangered and face similar threats to their survival, including harvesting by endemic peoples for

Pairs of birds utilize the sun-warmed beaches or excavate into soil heated by underground hot springs to lay their eggs. Listed as Endangered on the Red List, the largest threats to their survival include habitat destruction and fragmentation, and uncontrolled egg harvesting.

traditional ceremonies. The maleo has been the only species of the burrow-nesting megapodes to breed in captivity. The study of this species' breeding behavior, incubation, and chick development can have a far-reaching impact on conservation strategies utilized in all of the burrow-nesting genera.

GENERAL INFORMATION

Maleo are monogamous, colonial, burrow-nesters endemic to the island of Sulawesi. These birds inhabit forest areas up to 1200m and descend to the beaches along the coast to lay eggs. They forage on fallen fruit, insects and invertebrates, but there is no detailed information on their diet in the wild. Pairs of birds utilize the sun-warmed beaches or excavate into soil heated by underground hot springs to lay their eggs. Listed as Endangered on the Red List, the largest threats to their survival include habitat destruction and fragmentation, and uncontrolled egg harvesting. These birds are abandoning many of their coastal nest sites due to the diminishing forest corridor that provides access to those sites. As their numbers at nest sites decrease their strategy as communal nesters are less efficient against both their natural (monitor lizards, the giant civet, wild pigs) and introduced predators (dogs) at the nesting grounds. In-land nest sites face over exploitation by human egg harvesters and hunting of adult birds as well.

Listed as Endangered on the Red List, the largest threats to their survival include habitat destruction and fragmentation, and uncontrolled egg harvesting. These birds are abandoning many of their coastal nest sites due to the diminishing forest corridor that provides access to those sites.



Figure 2 above: Adult female; note the smaller cephalon and duller coloration of the eye ring.

Figure 3 below: Adult male; Note the larger cephalon and brighter coloration of the eye ring. Photos: Julie Maher©WCS





Figure 4: Immature Maleo gradually lose the feathering on the head as the cephalon develops.
Photo: Julie Maher©WCS

The Wildlife Conservation Society (WCS) began successfully breeding a pair of wild caught birds in its Species Survival Center on Saint Catherine Island off the Georgia coast in 1988. Beginning in 1996, the offspring from this pair were transferred to the WCS/Bronx Zoo in New York, where they continue to be part of a successful breeding and research program. At the time of this publication, 29 maleo have been successfully hatched and reared to adulthood at the WCS facilities.

MORPHOLOGY

Maleo are large, mostly black, terrestrial birds with powerful legs and feet. They stand approximately

55cm in height. Specimens from the wild have shown body mass ranges of 1365-1622g for males, n=8 and 1430-1758g for females, n=5. Captive specimens have shown males ranging from 1610-1973g, n=2 and females ranging from 1439-2268g, n=4. However, it should be noted that there are significant fluctuations in weight for both sexes depending on the season. Wings and body are all covered in black plumage with the exception of the breast, belly and under parts which are salmon colored. Sexes are only slightly dimorphic with the male being slightly larger and the coloring slightly brighter. The male's brighter plumage can be appreciated most clearly in the coloring on the breast, but is also evident in the coloring of the face around the eyes (see: Figures 2 and 3). Both sexes have a small rounded tubercle right

behind each nostril, with the head being relatively bare. The powerful legs, also being a necessity for excavation, are dark grey. The hallux is on the same level as the front toes.

Most striking feature in the species is the knob-like crown or cephalon. The shape varies some with individuals with the male's typically being a bit larger (see: Figures 1 and 2). Many believe this structure to be involved in assessing ground temperature. It is more likely that thermosensitivity actually takes place somewhere inside the mouth as birds will frequently take a bill full of sand while excavating nest burrows. The functionality of the cephalon is speculated to play a role either in heat retention or as a shock absorber while birds hammer open hard-shelled nuts. The cephalon begins to form in birds when they are less than a year old. The final structure is not complete until the birds are several years old and, based on the amount of feathering on the head, the age of immature birds can be determined (see: Figure 4).

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Chapter 2. Care taking

HOUSING

Maintaining adult birds as monogamous pairs or in small groups of compatible birds is recommended. At the WCS/Bronx Zoo, non-breeding birds are held as small groups of adult females and/or sub-adult males. Housing for breeding pairs consists of two adjacent inside enclosures each measuring 1.7m X 2.8m X 3.7m high. Housing groups of as many as four compatible adult females in three adjacent inside enclosures with the same dimensions is routine and is the minimum space allotted. Breeding pairs, individuals and/or small groups of adult birds can have full visual/auditory access to each other. Pairs of birds are territorial towards other conspecifics, especially males, and particularly during the breeding season. The territorial behavior exhibited by birds housed in adjacent cages apparently does not cause stress and may actually serve to encourage natural behaviors. Give consideration when housing a group of birds of a mixed sex ratio together, involving sexual maturity of the birds as well as access to a nesting site. Pair bonding results in these birds demonstrating aggressive behaviors, as they defend their territory.

Like most Gallinaceous birds, maleo roost at night. Ideal perching for adults measures: 5-7 cm in diameter, and is fixed securely at

Pairs of birds are territorial towards other conspecifics, especially males, and particularly during the breeding season.

either end of the enclosure. These birds prefer to roost high and roosting perches are provided at least 1.8 m off the ground. Flight paths to and from perches and the ground should be unobstructed. Pairs of birds will often roost very close together and frequently on the same perch. Perching should be long enough and solid enough to accommodate this. Non-paired but compatible groups of birds may not tolerate another conspecific to roost in very close proximity. Ample roosting perches should be provided in these situations.

Cleaning the soil and/or medium grain, coarse, sand substrate, for adult birds, by sifting and raking up fecal materials and debris.

Adult maleo kick and scratch at substrate regularly. The kicking of the substrate is a vital part of their social behavior. They are also prone to toenail injuries so it is best to avoid substrate or matting in which a toenail may become entangled, resulting in injury. Provide fine sand, or similar material to allow the maleo an opportunity to accommodate their frequent dust baths. Standard biosecurity measures should be utilized for all birds (see Chapter 7, Preventive Medicine).

Maintain the enclosure temperature within a range of 18.4°C to 24.0°C. The average temperature in Sulawesi is 27.0°C and rarely goes below 23.0°C and we observe the birds at the WCS/Bronx Zoo seeking warmer areas when temperatures drop below 12.8°C and cooler areas during periods when temperatures go above 30.0°C. Based on their natural history and these observations, maleo appear not to be cold weather tolerant, although the exact parameters have not been defined.

When the weather conditions are appropriate, each pair or group is provided access to an outside yard measuring 4.3m X 3.7m X 4.3m in height. Outdoor yards have plantings that consist of non-toxic decorative grasses and evergreens, while maintaining some open areas or arenas. Even though consumption of foliage is not commonly observed, avoid planting enclosures and exhibits with vegetation that is toxic. The

The majority of observed copulations between pairs take place in the outside pens. The reason for this seems to go beyond the relative time of year and seasonality. The pre-copulatory display by both birds occurs in an open, uncluttered space or arena.

majority of observed copulations between pairs take place in the outside pens. The reason for this seems to go beyond the relative time of year and seasonality. The pre-copulatory display by both birds occurs in an open, uncluttered space or arena.

Shift doors that lead to outside enclosures are sizable at 1.2m² and ≤15cm above the ground. Shift doors between enclosures are even larger measuring 70cm X 1.8m. Maleo are very wary of new surroundings and tight spaces so even the most tractable of birds can be difficult to move from one enclosure to another.

Birds should always have access to clean drinking water. Provide water in any shallow dish or accessible pool. Maleo have a peculiar habit of turning their heads sideways to sip water from the shallowest of puddles while an ample water source sits unused in full view.

Year-round access to the nesting pit is provided to breeding pairs and females of egg-laying age. Pairs will not breed unless given a suitable place in which to excavate a nest burrow. This environment also allows observations to be recorded easily as the reproductive biology of these birds is studied.

MIXING WITH OTHER SPECIES

Given a reasonable amount of space and accessible perching maleo can be safely held with a variety

of other species. One exception would be very young chicks. Being completely independent at a young age, they are likely to see any other animal as a predator, leading to undue stress or inhibiting foraging activities, although the additional investigation into post-hatch behavior is required. Until those parameters are established, housing neonates with any other taxa should be avoided.

Eliminate situations where maleo are housed adjacent to similarly sized Galliforms, specifically males, as this may increase adverse territorial displays or aggression. Birds and other non-avian taxa that prefer warm soil or sandy substrates should not be housed with maleo, in order to circumvent conflict and reduced fecundity. Below is a list of birds that have been successfully housed with maleo.

Table 2.1 List of species that have been successfully housed with maleo.

Common name	Scientific name
Bali Mynah	Leucopsar rothschildi
Black Parrot	Coracopsis nigra
Black-naped Fruit dove	Ptilinopus melanospilus
Great Argus (female)	Argusianus argus
Grey-headed Lovebird	Agapornis cana
Hooded Pitta (male)	Pitta sordida
Lesser Bird of Paradise	Paradisaea minor
Plum-headed Parakeet	Psittacula cyanocephala
Red Bird of Paradise	Paradisaea rubra
Sulawesi Forest Turtle	Leucocephalon yuwonoi

TRANSPORT AND RESTRAINT

Maleo can be securely transported, individually, in an air kennel or well ventilated wooden box. The crate should be large enough to facilitate the bird standing comfortably with a slightly raised head, and turn around without opening wings. For a full-grown bird, kennels typically used have interior measurements of 61cm X 40cm X 45cm high. For young birds (1-8 months old), kennels should have interior measurements of 43cm X 32cm X 30cm. Crates measuring 24cm X 34cm X 17cm high are recommended for chicks (0-4 weeks old). The ceiling of the crates must be well padded to prevent injury of the birds that are likely to panic and jump frantically, a set of behaviors

As a defense mechanism, maleo will shed an abundance of body feathers when handled. Fold and pin the wings to the body of the bird.

that are observed more in juvenile birds. Line the floor with matting or bedding and do not use perching. Darken the interior by covering any exposed air holes or slits with a dark-colored, breathable fabric.

Young maleo are very likely to panic, and thus incur serious injury if pursued, particularly during capture. To reduce the risk of injury, crate training is employed for transport and restraint of these birds, utilizing a familiar kennel. Successful crate training of chicks can begin at two weeks of age. Extracting young birds from the kennel for restraint presents less risk for injury. If this is not feasible, catching birds in an uncluttered space of suitable size, and preferably with a soft mesh ceiling, is recommended. As with any capture, time is of the essence, so utilize experienced personnel should be used to diminish stress and prevent injury to the birds. Any capture procedures must be completed within a two-minute period, or the process should be concluded and revisited after several hours have elapsed.

Since egg production is a significant factor in maleo, monitoring the reproductive cycle is important when capturing a mature female. Birds that are likely to be egg forming should not be physically restrained because of the significant health risks this poses. Body mass of the females should be monitored in order to be able to determine, through substantial weight gain and feed intake, when

a potential egg is forming. A recent gain of ≥ 200 g is evidence of an egg being developed.

Once the bird is in the net, it should be immobilized quickly to prevent undue resistance. As a defense mechanism, maleo will shed an abundance of body feathers when handled. Fold and pin the wings to the body of the bird. Also, secure the legs, as maleo have very powerful legs, sharp nails and will likely kick desperately. Two methods are used in the restraint of the legs; extend both legs evenly behind the body using one hand at the hock joint with a finger in between the legs or firmly hold the legs above the knee in the same fashion. Greater control of the bird is achieved by holding the legs, at the femur, and results in reducing the tendency of explosive movements. Maleo will rarely ever bite their handler so restraint of the head is not necessary. Maintain the head in an upright position, since birds will often regurgitate while in hand, particularly during extensive medical procedures, to prevent aspiration.

When releasing a bird from a kennel there should be no obstacles in the bird's path that might cause harm if the animal flushes. Young birds will often recoil and cower in a kennel. It may take several minutes or several hours for them to emerge on their own. Chicks, under two weeks of age, will often only venture out of a crate once it is dark and it is recommended that these birds be provided that opportunity without encouragement.

Chapter 3. Nutrition

DIET AND WEIGHT

Maleo, like all megapodes, are considered omnivorous. In addition to fruits and seeds, they feed on a variety of invertebrates, including ants, termites, beetles, and snails. The exact nutritional requirements for these birds continue to be developed. Given the nature of their reproductive behaviors and the physiological demands on the female, it seems intuitive that there is a greater need for protein and calcium when compared to similar sized gallinaceous birds.

Adult males, in captivity, gain $\approx 10\%$ of their body weight prior to the breeding “season” and they maintain this weight gain throughout the season. A synchronistic weight gain has been recorded in one breeding female and her mate, during this period,

which highlights the importance of courtship feeding in forming the pair bond and subsequent breeding success. The weight of the female throughout the season will, like the male, remain static except when egg forming. Females will increase body mass several days before laying the massive egg. Combining this with the already heavier weight of the female throughout the breeding season and weight fluctuations for the same breeding female can fluctuate $\pm 20\%$ at various points throughout the year.

The standard diet that has evolved at the WCS/Bronx Zoo is based largely on the one developed while the birds were first bred on St. Catherine Island. Further studies are recommended to optimize the nutritional requirements for the species to increase fecundity.

The current adult diet for birds housed at the WCS/Bronx Zoo is as follows:

Table 3.1. Adult maleo diet

Amount offered per bird per day	Food item
30g	Game bird Pellet
40g	Fruit and vegetable mix*
25g	Pigeon seed**
20g	Low iron Soft-bill diet***
10g	Dog Kibble***
10g	Primate diet
2	Peanut
<6	Insects** (mealworms, waxworms, crickets)



Steve's Photo Pick

Green Singing Finch, also called Yellow-fronted Canary, *Serinus mozambicus*, is native to much of sub-Saharan Africa where its population is stable. It occurs in woodland and savannah and is often a common around farmland. Mature males have a solid yellow throat as pictured. Females and juveniles have a necklace of gray spots and slightly duller overall. The males have a very pleasing song much like their close relative, the canary. Green Singing Finches can be kept in a communal aviary of mixed species of finches and doves, but they are territorial with their own kind or birds that are similar in appearance. Nesting is in an open cup-shaped nest and extra insect food should be provided while rearing chicks. Steve Duncan
Avian Resources



All food items are dusted with CaCO₃.

Birds have continual, year-round access to large pullet size oyster shell.

*Fruit and vegetable mix contains the following:

-Peas, corn, green beans, blueberries, diced carrots, apples, pears, and grapes

All supplemented with Zeiglers® Bird of Paradise meal

Additional Supplements:

**Pigeon seed is supplemented as follows:

37.5 cups of seed + 1 Tablespoon Vitamin E oil + 10 Tablespoons CaCO₃.

All mealworms and crickets are gut-loaded on a diet of Mazuri®5M38 High Ca cricket diet.

Table 3.2 WCS preferred brands and nutrient break down.

Food item	Brand used	Protein	Fat	Fiber
Game bird pellet	WCS Avian Diet	Min 18.0%	Min 3.5%	Max 6.0%
Pigeon Seed	Blue Seal®	Min 13.0%	Min 2.0%	Max 4.0%
Low iron Soft-bill diet	Reliable Protein Products	Min 20.0%	Min 7.0%	Max 6.0%
Dog kibble	Exclusive® Chicken and rice formula senior	Min 25.0%	Min 11.0%	Max 3.0%
Primate diet	ZuPreem®	Min 8.5%	Min 2.5%	Max 1.5%
Starter grain diet	Blue Seal® Home Fresh® Multi-flock Starter/ grower	22%	3.5%	4%
Oyster shell	Coastal Brand Poultry Shell	N/A	N/A	N/A

***It should be noted that in cases where maleo are housed with species that have certain dietary restrictions (specifically Iron-sensitivity) the Soft-bill portion of the diet has been substituted for equal parts Mazuri®Zulife® Softbill, and dog kibble completely eliminated from the diet. These changes have so far had no apparent impact on animal health, or breeding success.

PREFERENCES

Maleo readily take peanuts by hand, and are a preferred feed item. Peanuts are one of the first items young chicks will eat and remains favored for the duration of their lives. Nuts (e.g., almonds and walnuts) and seeds (e.g., pigeon, finch and even sunflower seeds) are also favored by these birds. Adult maleo will eat a variety of insects, although not with the same exuberance and will sometimes only consume live food as a novelty. Adult maleo prefer mealworms, although wax worms, cockroaches, and crickets are also taken, if offered. They will eat a variety of fruits and vegetables although they prefer corn, peas, and most other types of legume.

*When birds happen
upon a large piece
of food that must be
broken down or a nut
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they will heavily
pound on it with their
bills.*

FOOD PRESENTATION

Maleo feed by scratching and raking through soil and debris on the ground. This feeding behavior starts very young and continues with throughout life. When birds happen upon a large piece of food that must be broken down or a nut that must be opened they will heavily pound on it with their bills. This scratching and pounding lend them to be decidedly untidy eaters. Presenting the diet in a food dish that is shallow enough to allow unencumbered access by the birds but deep enough to prevent excessive food spillage is important to keeping enclosures tidy. Rubber food tubs with a diameter of 43cm and a height of 13cm are utilized, even with small chicks. The added benefit of a tub this size is that full-grown adults are conditioned to stand in them in order to record body mass.

VOICE

Dekker described six distinct male vocalizations. These deserve some clarification as studies of captive birds have revealed more complexity in the bird's language.

Rolling male call – A loud, distinctive, vibrating call lasting about 2.5 seconds. It was thought to be expressed only by the male, with one anecdotal note of a young chick producing it. On Sulawesi, it can be heard both at the nesting site and away from it. It is speculated that the call has a territorial function as well as being made when the pair is separated due to disruption thus functioning in the latter sense as a contact call. At the WCS/Bronx Zoo, there have been numerous accounts of adult females and subadult birds expressing some form of this call. Several elements would lead one to believe that these are in fact different vocalizations serving different purposes.

In captivity, the true rolling call of the male appears to serve a primarily territorial function. Males usually produce it during the nesting "season" and normally in response to another male vocalizing or in the presence of some ambient reverberating noise (e.g., combustion engine). Males, side-by-side, will vocalize to each other in an antiphonal manner for several minutes. It should be noted that males respond the most

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to other males in full view, but a lawn mower in audible range will elicit a similar response. In fact, a lawn mower can provoke more of a response than a playback of a male vocalization. While the male is vocalizing, his attention is focused solely on the offending male/machinery and never towards a female. The posture of the male while making the call is distinctive: standing with head upright, neck outstretched, and throat pulsating. That behavior is broken up by short periods of strutting with tail flattened and fanned, and jerking of the head. While strutting, the male produces a soft, constant, clicking vocalization. This soft clicking is heard in even very young strutting birds that are becoming defensive. It should also be noted that in captivity, when the pair is separated from each other either physically or just by a visual barrier, the male does not produce the loud rolling call.

The female/sub-adult version of this call sounds similar but is usually much softer, the notes are not as clearly defined, and there is little to no vibration component. There is no relegated posture when it is produced and an absence of the soft clicking. The purpose of this call is unclear but is frequently heard when a bird is separated from familiar cage mates, thus functioning more as a contact call. It is also often heard in response to a familiar caretaker's voice that has slipped out of view. Males do not respond to this softer version of

At what point this communication in the young male morphs into the true rolling call of the adult male is also a mystery, but should be considered a deciding element to sexual maturity.

Somewhat of a misnomer, it is first typically heard about two days before an egg is laid, increasing in frequency 24 hours before laying and then occasionally continuing on for several hours post-lay. In the hours, just prior to the egg being laid it is produced on a constant basis.

their rolling call and there appears to be no antiphonal pattern to it among groups of birds. Versions of it have been heard in birds of either sex as young as three months but more frequently in birds four months and older. Vocalizations like this, heard in young birds, lend more evidence to support the social nature of young maleo. At what point this communication in the young male morphs into the true rolling call of the adult male is also a mystery, but should be considered a deciding element to sexual maturity.

Copulation vocalization – Originally, it was not known which sex was producing this sound (Jones et al., 1995) it has been learned from captive birds that it is indeed coming from the female. This high-pitched bray is produced just prior to the male dismounting.

Pre-lay vocalization – Originally described as coming from both sexes at the nesting ground, in captivity it has been discovered to be solely a female vocalization. This is a very soft and constant grunt or hum repeated in periods of less than two seconds to several seconds. One must be within a few feet of the bird in order for it to be audible. Somewhat of a misnomer, it is first typically heard about two days before an egg is laid, increasing in frequency 24 hours before laying and then occasionally continuing on for several hours post-lay. In the hours, just prior to the egg being laid it is produced on a constant basis. There has been no

detectable response from the male to this vocal.

Sneaker vocalization – Dekker does not describe this vocalization, although it is reported in adult males in the WCS/Bronx Zoo. It is a single high-pitched squeak, similar to the screech of a sneaker on a gymnasium floor. It appears to be produced, at least in part, by forcing air through the nares. There is no apparent associated designated posture and a function for this communication is yet unknown. It has, so far, only been noted in males of breeding age housed with a similarly mature female, but the faint beginnings of this vocal have been heard in immature males housed in a mixed sex group.

Courtship vocals – Pairs generally appear to communicate with each other using more of a duck-like “kuk” call. Males will string these vocalizations together in a fast repetitive “kuk-kuk-kuk” while offering a food item to a female. The female will frequently respond to the male with a single “kuk”, not to be confused with the aforementioned pre-lay vocalization, which is much softer and always in a repetitive manner. This “kuk” will also be produced by either sex if they become agitated.

birds especially, tend to be silent, allowing their posture to communicate to conspecifics. Similar body posturing has been observed in the adult birds. Noteworthy, among these postures, is the “strut”, which can be described as the head being held high, tail held high, flattened, and fanned, similar to other male Galliformes. This posturing is observed most often in males during the breeding “season”, although either sex will strut when being territorial. In a group of birds, dominance is demonstrated by the individual holding the tail in the highest position. When birds assert their dominance, it usually begins with “the bow”. One bird will approach another, bow down, bring their body close to the ground, and fluff up their breast making them appear as large as possible. This is frequently accomplished without any accompanying vocalization. If the second bird does not yield to the first, the posturing is repeated. This posturing is highly effective, as interactions will rarely escalate into actual physical aggression.

Watch for Maleo Part II in the March/April 2018 ASA Bulletin

POSTURE

Much of how maleo communicate with each other appears to be through visual cues. Younger



Searching for Scarlet Macaws (Guacamayas
Rojas) in Chiapas and Belize

Joseph C. Witt





I recently (October 2017) visited two sites, one in Chiapas (Mexico), and one in Belize, where free flying Scarlet Macaws (Guacamayas Rojas in Spanish), may be readily seen, and where serious conservation efforts are apparently taking place. While there, I resolved to write a piece for ASA Avicultural Bulletin to get the news out, and to support the good work being done. My observations are non-technical and anecdotal. Perhaps others might want to visit these endeavors and make more in-depth observations. I hope!

For years I have been visiting Chiapas, Yucatan, Guatemala, and Belize on my own, seeking the world of nature (el mundo natural). I never saw wild Scarlet Macaws, and was under the impression, from my reading, that they are extremely rare, and likely to be seen only in very remote areas due to habitat destruction coupled with intense pressure from the illegal pet trade.

The 2008 book by Bruce Barcott documenting the unsuccessful attempt by Sharon Matola, founder of the Belize Zoo, to stop construction of the Chalillo Dam in the Macal Valley, Belize, reinforced my perception. She believed that construction of the dam in an area of great natural richness would adversely affect Belize's population of no more than 200 Scarlets, and other species.

Three years ago, in San Cristobal de las Casas, Chiapas, I found out about El Centro Ecoturistico AraMacao Las Guacamayas in southern Chiapas, about two hours by bus east of the national park, Lagunas de Montebello, and longed to visit. Two years ago, I found out about Las Cuevas Research Station, Belize, from a staff member of the Belize

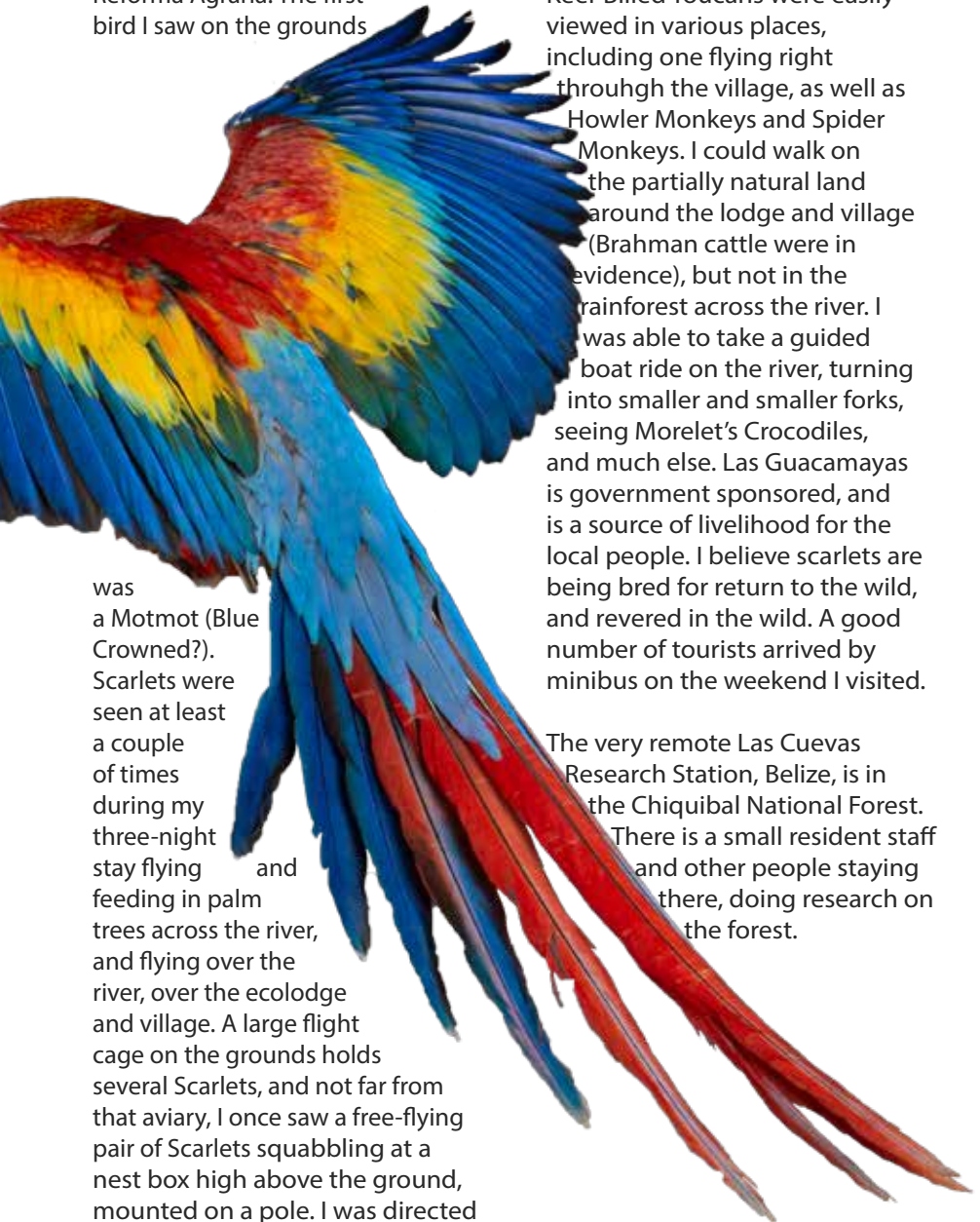
Zoo.

I was told that Scarlets may be seen there all year. Again, I longed to visit. On that trip two years ago, I had visited Red Bank Village, Belize, where Scarlets gather in the forest in search of food from about January through March each year, and where the local people operate a guesthouse. I was there in October, and did not see Scarlets, but did see much of interest. Finally, I was able to visit both Las Guacamayas and Las Cuevas in 2017.

I flew from Los Angeles to Tuxtla Gutierrez, Chiapas, and flew home from Belize City nine days later. I travelled by combi (minibus) and taxi, and took a boat ride on the great Rio Usumacinta to get from Chiapas to the Guatemalan frontier, from where I travelled overland to Belize, and rented a vehicle in San Ignacio, Belize, to drive several hours to Las Cuevas. Both sites provide accommodations and food.



Las Guacamayas is a beautiful ecolodge across a river (I believe to be a tributary of the Rio Usumacinta) from the Lacandon Rain Forest, next to the village of Reforma Agraria. The first bird I saw on the grounds



was a Motmot (Blue Crowned?). Scarlets were seen at least a couple of times during my three-night stay flying and feeding in palm trees across the river, and flying over the river, over the ecolodge and village. A large flight cage on the grounds holds several Scarlets, and not far from that aviary, I once saw a free-flying pair of Scarlets squabbling at a nest box high above the ground, mounted on a pole. I was directed

to a series of large, tall aviaries in the village, which held three pairs of Scarlets. I understood that they were breeders.

Keel-Billed Toucans were easily viewed in various places, including one flying right through the village, as well as Howler Monkeys and Spider Monkeys. I could walk on the partially natural land around the lodge and village (Brahman cattle were in evidence), but not in the rainforest across the river. I was able to take a guided boat ride on the river, turning into smaller and smaller forks, seeing Morelet's Crocodiles, and much else. Las Guacamayas is government sponsored, and is a source of livelihood for the local people. I believe scarlets are being bred for return to the wild, and revered in the wild. A good number of tourists arrived by minibus on the weekend I visited.

The very remote Las Cuevas Research Station, Belize, is in the Chiquibal National Forest. There is a small resident staff and other people staying there, doing research on the forest.

Rustic dormitory accommodations are present for use by college students on field trips. I heard that students had been there from Britain, Florida, and Colorado, among other places. My room was in a smaller cabin (all are off the ground). I had an assigned guide for hiking, a very knowledgeable individual, but was also allowed to hike on my own. Owl Butterflies! . . .Morpho Butterflies! At Las Cuevas, Scarlets were not heard and seen and heard as frequently as at Las Guacamayas. I could see them wrangling in tall forest trees, as well as flying. Keel-Bill Toucans were much in evidence. I was privileged to see a number of Mealy Amazons, as well as a single male Ocellated Turkey which occasionally came out of the forest to forage on the grassy grounds of the station. The Chiquibal National Forest is near the Guatemalan border, and marauders/poachers seem to be a problem. Ranger and military stations are evident along the road to Las Cuevas. In was told that some young Scarlets are taken from their nests for protection and hand feeding, and I was able to see the modern rearing room, with the adjacent large, tall aviary used to prepare the young for release into the wild. Hand feeding formula comes from HARI (Canada). I was told that at a forest lake some distance away, a significant number of Scarlets may be seen (next trip!)

I understand that Scarlets may be seen at Macaw Mountain, Honduras, and also at the Mayan ruins at Copan, Honduras. The famous Miguel Alvarez del Toro Zoo (ZooMAT) in Tuxtla Gutierrez has a magnificent large planted aviary containing maybe seven or eight Scarlets: other Scarlets are set up for breeding in smaller aviaries

All the sites I have mentioned may be accessed through google on the Internet.

I really enjoyed my nine-day adventure, and hope that other aviculturists will be able to seek out these sites to support them, and to gather fuller information on what is going on, to share with us.

Joseph C. Witt



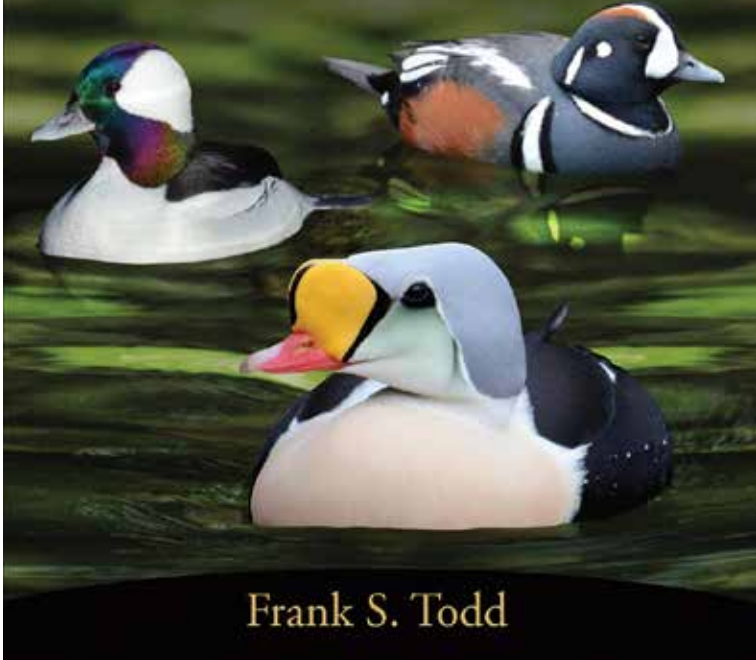
Who's Your Daddy?



Stumped? See answer on page 34

NORTH AMERICAN DUCKS, GEESE & SWANS

IDENTIFICATION GUIDE



Frank S. Todd

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GREEN-WINGED MACAW (ARA CHLOROPTERUS) FLYING IN PERU PHOTO RICARDO SÁNCHEZ

Who's Your Daddy?

From page 29, Answer: Green-winged Macaw (*Ara chloropterus*)

The green-winged macaw can be readily distinguished from the scarlet macaw. While the breast of both birds are bright red, the upper-wing covert feathers of the green-winged macaw is mostly green but can occasionally sport a few yellow feathers above the band of green (as opposed to mostly yellow, or a strong mix of yellow and green in the scarlet macaw). In addition, the green-winged macaw has characteristic red lines around the eyes formed by rows of tiny feathers on the otherwise bare white skin patch; this is one of the biggest differences from a scarlet

macaw to the casual viewer. Iridescent teal feathers are surrounded by red on the tail. If seen together, the green-winged macaw is clearly larger than the scarlet macaw as well. 

From Wikipedia, the free encyclopedia

For more information, Google "Pekin Robin" or see:
https://en.wikipedia.org/wiki/Red-billed_leiothrix#References

EVENTS

2019 EVENTS



AMERICAN FEDERATION OF AVICULTURE - AFA's 45th Annual Educational Conference and Avian Expo will be held **August 8th – August 10th** B Resort and Spa | 1905 Hotel Plaza Blvd. | Orlando, FL 32830 More info on www.afabirds.org



AVICULTURAL SOCIETY OF AMERICA - ASA's 14th Annual Education Conference in Fall of 2019 will be announced soon. Watch for more details online at www.asabirds.org

Let us know of your avicultural event to be posted on our Events page at: info@asabirds.org



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Contra Costa Avian Society
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www.contracostaaviansociety.org

Orange County Bird Breeders
www.ocbirdbreeders.org

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acadianabirdinc@hotmail.com

Fort Worth Bird Club
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fwbc@fortworthbirdclub.com

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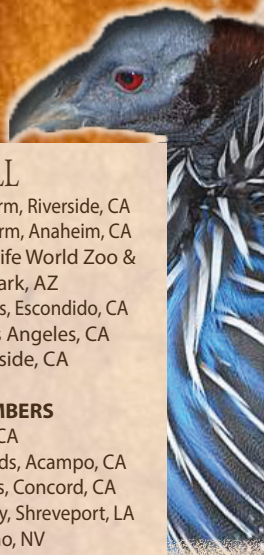
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