

The Behavioral Ecology of the Brown-headed Parrot in Southern Africa.

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My previous article (*AFA Watchbird*, Sept/Oct 2000) concentrated on the present day status and distribution of wild Brown-headed Parrots in Southern Africa. In that article, I mentioned that the reason for the demise of this species is, in part, that their preferred habitat is being lost. Here I will

concentrate on the annual cycle of the species illustrating the powerful link between the species and its habitat.

The preferred habitat consists of a light to medium dense shrub layer with an abundance of taller trees of varying ages. However, this general description belies a number of particular specific criteria.

Mating and Nesting

Brown-headed Parrots begin to mate in April, the beginning of the South African winter.

Although, the literature indicates that this is the time when the parrots choose mates, my research has shown that the pair bond is intact throughout the year. I will return to this subject. There is strong but circumstantial evidence that the pairs return to the same nest site each year.

The nest consists of a hole in an old tree. They are unable to excavate the hole themselves and probably rely on insects or woodpeckers for the appearance of new nest sites. The cavities are highly prized commodities. I have seen both hornbills and squirrels investigate a cavity whilst the Brown-headed Parrot chicks were still *in situ* and the parents sitting nearby with no sign of alarm. On one occasion squirrels were seen moving nesting material into a cavity within an hour of the chicks departing.

Some authorities mention *Adamsonia digitata* (Baobabs) as the principal tree species. This is incorrect. The species is not fussy, as long as the cavity is suit-



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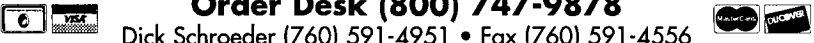
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able. I have seen nests in *Entandropbragma caudatum* (Wooden Banana or Mountain Mahogany), *Colophospermum mopane* (Mopani), *Acacia nigrescens* (Knobthorn), *Azelia quansensis* (Pod Mahogany), and various *Combretum* species, as well as Baobabs. The parrots have no preference whether the tree is dead or alive.

A suitable hole is between 4 and 10 meters above ground, with the entrance around 10 to 12 cms in diameter. The hole may be in the trunk but if it is in a branch the hole should be facing the ground and have some sort of perch around a metre below. The birds can then fly up and turn in the air. Nests in use show much scraping at the bottom of the hole where the adults have perched. No nesting material is used but if feathers are discarded at this time they are left in the nest.

Eggs and Babies

Two to three eggs are laid in late March or early April, with an interval of around two days between them. The incubation period is around 30 days and is solely by the female. The male feeds the female at this point. The male alone continues feeding the babies after hatching and although the female brings food to the nest, she regurgitates this food to the male at a perch outside the nest. After feeding, the female enters the nest and carries out nest maintenance. Feeding is not regular.

Interestingly, although only the male directly feeds the chicks, they both return to the nest at the same time. If only one parent returns, it will sit on the perch close by and call for its partner. If the partner does not turn up then it will leave without attempting to feed the chicks. This is interesting from a conservation point of view. If the parrots are being captured at this time then not only is one parent taken out of the system but all of the chicks will probably die.

Around 50 days after hatching, the chicks leave the nest for the first and last time. They are then escorted to what I have termed a "nursery area." The nursery area consists of a few heavily foliated trees surrounding standing water, e.g., a dam, a river, etc. Each family of chicks occupies one of

the trees where they stay motionless and silent, however, they can move if alarmed. Parents return every three to four hours to feed them.

This finding led to an interesting question. If the chicks move, how do the parents find them? Through various playback experiments, it was found that the chicks recognize the voices of their parents. The incoming parents call as they approach and their chicks respond with their food begging call. This finding also means that the voice of each individual Brown-headed Parrot is individual, much the same as the voices of humans are distinct.

Feeding in the nursery area goes on for a further two weeks. At this point the chicks join their parents but are still fed by them for another fortnight. The chicks beg incessantly for food and are open to cheating. I have a recording of an "adult," which was busy eating some fruit. At the approach of two other birds, it dropped the fruit, resorted to a chick food-begging call, was fed by what was presumably its parents and, on their departure, it flew down, picked up the fruit and returned to adult calls.

Diet in the Wild

Chicks are fed various regurgitated seeds depending on availability. The parents fed almost exclusively on the seeds of *Cassia abbreviata* (Sjambock pod) in the northern Kruger in 1997. But in 1998, that species failed to produce seeds and they fed on the seeds of *Combretum* and *Terminalia* species.

By the time of the chick's independence at the beginning of summer, the parrots feed mostly on fruit as it becomes available. Important species at this time are *Diospyros mespilliformis* (Jackal Berry) and as the summer progresses, *Cassine aethiopica* (Kooboo Berry) and *Lannea stuhlmanni* (False Marula). A surprising fruit utilized by the parrots in the south of the Kruger is *Strychnos madagascariensis* (Black Monkey Orange). The fruit is around 10 cm in diameter and has a hard shell and soft peach like interior. The fruit is enjoyed by monkeys and baboons, which are able to rip open the hard shell to get to the interior. However, much of the fruit is discarded and the parrots fly to the ground to retrieve the

leftovers. Apart from drinking, this was the only time that I have seen Brown-headed Parrots on the ground.

Especially important in mid-summer is the fruit of *Ficus sycamoras* (Sycamore Fig). These huge trees, reaching 20 meters in height, produce enormous amounts of fruit and up to 50 birds may be seen feeding on one tree. This probably led to the erroneous conclusion that the species flocked in the summer and broke off into pairs prior to breeding. My research has shown that these flocks consist of paired birds and that the pair bond is intact throughout the year. Towards the end of summer, Brown-headed Parrots supplement their diet with caterpillars. They actively search for the cocoons, pick them off, discard the leaf and consume the whole animal. They also eat ants.

An important dietary item in the south of the Kruger is the fruit of *Trichilia emetica* (Natal Mahogany). This tree is especially prevalent in Pretoriuskop camp. The availability of fruit around the end of December attracts parrots into the camp and for over a month, Brown-headed Parrots are, if not the most common bird in the camp, certainly the most noisy.

Vocalizations

Comparatively little work has been done on the calls of parrots in general. Unlike, many bird species, whose calls are relatively stable, parrots tend to "play" with their voices. It is therefore difficult to try to attach any "meaning" to the vocalizations. During my work I have not been able to associate any call to a purely sexual situation, which also lends support to the conclusion that the pair-bond is not ephemeral. The flight call is a raspy "chreeow-chreeow" sound, which the parents also use when approaching the nursery area. Group maintenance and contact between individuals is kept by a double chip sound. A lone bird will indulge in quiet chattering, interspersed with loud contact calls. Whilst feeding, individuals will make contact calls and also a loud "kreek." The alarm call is a loud rasping growl. However, for the most part, the calls seem to be made up of bits of calls or

strings of bits of calls and are sometimes made so quietly that they cannot serve any other function than expressing contentment.

Daily Activity

The parrots are most active before 10 A.M. and after 2 P.M., during this mid-day period they are usually asleep either upright or with their head tucked under a wing. Occasionally they will move towards their partner. They will then tap their partner on the head and extend their head. The partner will then preen them for some 10 seconds at which point the preener will tap the offered head and extend its head. The preening will then be reciprocated. This exchange can last several minutes. This pair bond maintenance behavior is also seen when feeding. One bird will approach its partner, tap it and lower its body. The tapped bird will then bob its body and convulse its oesophagus and gizzard and regurgitate into the mouth of its partner in much the same way as the parents feed their young. This is interesting from an avicultural point of view. I once kept a Brown-headed Parrot. After a few months, when I approached the cage, it tried to regurgitate to me. This is undoubtedly a sign that a pair bond has been established between the bird and the keeper.

Playing?

At all times, birds will indulge in what can only be described as exploration or playing.

Individuals will roll pieces of twigs in their bill or when confronted with an unfamiliar object, approach tentatively and extend their tongues towards the object before moving towards it and conducting a full scale investigation. The role of play in animal society is a controversial one. Some authorities maintain that all behavior is functional. In finishing, I'll recount an episode which I can only assume was playing albeit a rather dangerous and life threatening game.

At 6:46 A.M. on the 20th January 1997, I was doing what I had been doing every day for the previous eight months – watching Brown-headed Parrots in the Kruger National Park.

This group of 15 individuals were feeding on the fruits of False Marula down a "No Entry" road, near Punda Maria gate. The noise from the "conversational chattering" of 15 parrots is considerable.

As I watched through binoculars and recorded the fruit intake per individual, three Hobby Falcons glided into the area. The falcons, two adults and an immature, circled the tree before breaking off to the right of it. The immature then turned and dived towards the tree, swooping up at the last moment. Its attempts at flushing out a parrot seemed to be in vain as in eight attempts, the chattering of the parrots didn't abate. They carried on feeding until quite suddenly, all the parrots froze, the only sound being the parrots' silence and me trying to urge them to ignore the intruder and start feeding again.

Abruptly, one parrot launched itself out of the tree, swept down low into the shrub layer with the three falcons in close pursuit. I had assumed that one of the reasons for the coloration of a parrot was predator confusion. The fleeing parrot, manoeuvred in exactly the way I had predicted. It flew fast in between the shrubs changing direction and aspect. The target for the falcons was first green and straight in front then suddenly yellow and off to the left and constantly shrieking. The parrot flew around 600 meters before landing on exactly the same perch on exactly the same tree from which it started. Visibly excited it bobbed up and down on the perch, still shrieking. The other birds remained silent.

Then another bird swooped out and went through the same routine, a minute later it landed on the spot that it had just left, hopped up and down and shrieked. Only once was I aware that one of the parrots was in trouble. Its flight call changed to an alarm call. However, shortly after this it changed direction abruptly and put some distance between it and its pursuers. The alarm call changed back to the normal flight call. Nine birds flew more or less the same route, each one chased by the falcons and each one landing at its point of origin. The falcons conceded defeat and left.

Environmental Difficulties

In the northern Kruger the parrots utilize at least 15 different tree species for food throughout the year, whilst in the south their diet is made up from 17 different species. This does not include tree species used for nesting.

In mixed woodland in the tropics, the availability of berries, seeds and fruits varies both seasonally and from year to year. Further, availability of food may be highly unpredictable, and limiting for basic maintenance and reproduction. Although Brown-headed Parrots are flexible in their dietary requirements, it is a truism to say that they must depend on at least one tree species providing food at any time of the year. The removal of any tree species from this mosaic in any one area, which causes even a temporary food vacuum, certainly means the end of the parrots in that area.

However, this is not the problem, the ever growing and poverty stricken population of rural Southern Africa, view all trees as either a potential fuel supply or an imposition towards growing food. Notwithstanding the capture and sale of the birds, their habitat has quite simply disappeared. It has been changed into buildings, fences, carvings, firewood and unsustainable agricultural and grazing practices. The last stronghold of probably only 2500 individual Brown-headed Parrots in South Africa is the Kruger National Park, where at least in some areas, the necessary mosaic still exists. In the other reserves and parks, they have silently gone extinct.

Occasionally, I feel like joining the falcons and conceding defeat, but I hope to keep returning to try to understand more about what for me is the world's most intriguing bird. Well Africa's at least.

[Editor's Note: Stuart Taylor graduated with honors from Edinburgh University, Scotland in Ecological Science. In 1994, he attended the University of Natal, Pietermaritzburg, South Africa, where he gained a Master's degree (*cum laude*) by researching the control of small mammals as pests in commercial forestry. In 1996, he began work for a Ph.D., researching Brown-headed Parrots in South Africa.

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