



GOING gangbusters

GROUP DYNAMICS IN PIED BABBLERS

Between raising young, fighting neighbours, evicting competitors or dispersing to pastures new, there is never a dull moment in babbler society. Researcher **MANDY RIDLEY** explains how a recently habituated population of Southern Pied Babblers *Turdoides bicolor*, has allowed revealing insights into the ups and downs of daily life in this socially complex, co-operative species. ▶

PHOTOGRAPHS BY
ANDREW RADFORD



AS DAWN BREAKS, heralding another scorching day in the southern Kalahari, our study group, known as The Outsiders, have already left their roost tree and are heading off towards their nest. It is early in the breeding season and the race is on as The Outsiders, a group of just four adults, must successfully raise young to boost group numbers before large neighbouring groups steal their territory.

The Outsiders' group is fairly typical, with a dominant breeding pair and subordinates who assist in defending the territory and raising young. The dominant male, Tomboy, is the biggest male in the area, regularly weighing in at a whopping 95 grams. The dominant female, Patch, is in direct competition with the subordinate female, Myxie, since both are unrelated to Tomboy. Muppet, a young male, is the fourth member of the group. At this time of the year (early summer), The Outsiders are incredibly busy: the number of chicks in the nest exceeds the number of adults available to feed them. Typically, babblers lay a clutch of three eggs, but in this group there are five, suggesting that both Patch and Myxie have laid eggs. Despite their constant foraging efforts, there is not enough food nor are there enough adults to feed the chicks, and one dies of starvation just nine days after hatching. Another is almost half the weight of the remaining three nestlings. As the chicks grow, the tiny nest becomes crowded and overheated, and the largest chick, Bambi, fledges early. This is extremely risky as her flying skills are poor and she fails to join the adults at their roost, despite their continual calls and displays encouraging her to follow. Eventually she is left alone in a spindly tree, exactly where she fell after jumping from the nest, while the adults roost more than 100 metres away.

Despite being stranded in an exposed location, Bambi survives the night alone. The rest of the brood fledges a day later. There are two large fledglings, Thumper and Matty, and surprisingly, a third, tiny fledgling, Little Myxie. Although they have successfully fledged four young, the work has only just begun for the adults. After fledging, the young are unable to fly for the first week. In order to move them, the adults must coax the fledglings to jump down from the tree they are in, run the gauntlet across

exposed terrain, where they are easy prey for yellow mongooses, and climb up the next tree. This is often a tortuous and lengthy process, particularly when the fledglings are either unable or too exhausted to climb the target tree once they have reached it. When fledglings are very young, it can take the adults more than an hour to get them to move as little as 100 metres. However, moving the chicks is imperative: if they remain in one place too long, not only will the local food supply be severely diminished, but their constant begging will attract predators.

With each passing day, The Outsider's fledglings become more skilled at moving about, but Little Myxie, much weaker than the others and unable to follow, is often left behind. The dominant pair never return to help the tiny fledgling, but continual calling and feeding by Myxie and Muppet result in Little Myxie moving far enough to remain within earshot of the group. In the first week after fledging, Little Myxie is left behind by the group almost daily, but her distress calls always elicit a response from the subordinate adults, and eventually she becomes strong enough to keep up with the group as they move between foraging sites.

As the fledglings grow and become more mobile, they start actively begging food from the adults by persistently ▸



Opposite *Pied babblers are territorial co-operative breeders, and all group members participate in all co-operative activities, including territory border defence, raising young, and predator vigilance.*

Below *The young birds are entirely brown when they fledge, and remain completely dependent on adults for food for 10 weeks post-fledging.*





Above Nest building, primarily undertaken by the breeding pair, is a complex task which often lasts several days. A new nest is used for each breeding attempt, and is either an open-cup or an abandoned Wattled Starling nest.

Opposite, top Allopreening between group members is extremely common and serves to maintain the condition of the striking black and white plumage characteristic of this species. Young group members in particular often solicit allopreening from older individuals.

Opposite, bottom Young babblers often playfight, particularly when the group is at rest. Playfighting often takes the form of rough-and-tumble 'leg-grappling' between two or more birds.

following them around as they forage. For the first 10 weeks after leaving the nest, fledglings are entirely dependent on adults for food, slowly learning how to forage for themselves before becoming fully independent after three months. So strong is this dependence that fledglings often fight to gain access to an adult that has captured a large prey item. 'Fighting' most often involves a series of displays and postures, but is sometimes very physical, with birds pecking and clawing and feathers flying. When not begging and fighting among themselves for food, the fledglings often embark on prolonged 'playfight' sessions. This type of play is rarely observed in birds, and involves wrestling, rolling about on the ground, chasing, and hiding. Little Myxie is the only member of her brood who does not regularly indulge in these playfights; she continues to beg for food from the adults for most of the day, long after her siblings are satiated.

The brood is still entirely dependent on the adults for food when Tomboy and Patch begin to build a second nest, and a new clutch is laid before the first brood is a month old. This brings about an upsurge in begging and competition among the siblings of the first brood, because with one adult incubating there are only three adults remaining to provision the ever-hungry fledglings. The second brood hatches before the seasonal rains arrive, but only one member of the brood survives. The dominant pair now transfer almost all of their provisioning effort to the new fledgling, and the task of feeding and guarding the

first brood falls to the subordinates. As a result, the older fledglings begin to lose weight and their begging reaches a new intensity. Almost all playfighting stops as the fledglings devote their energy to soliciting food from the over-extended Myxie and Muppet. It is only in early January that the rains finally arrive, the food supply improves, and the frenetic begging ceases. The single surviving fledgling from the second brood quickly grows large and strong enough to playfight with his older siblings.

This extended chick-rearing period is tough work for the adults: not only do they have to spend more time foraging in order to provision the young, but they need to be increasingly vigilant for predators. Fledglings do not learn to look for predators until they are several months old, and they rely entirely on the adults giving alarm calls to warn them of impending danger. At this stage of the breeding season all the adults begin to lose weight, particularly Muppet, who does the lion's share of the work, often babysitting the older brood on his own. Ironically, Patch and Tomboy, the presumed parents of most of the fledglings, spend the least amount of time caring for them. Instead, these two spend much time foraging for themselves, regaining their lost weight in preparation for a third and final breeding attempt.

By the time the third clutch hatches, Bambi, Thumper, Matty and Little Myxie are old enough to help feed the nestlings, although their provisioning rate is much lower than that of the adults simply because they are less efficient at finding food. At this age, the juveniles (with the exception of Little Myxie) begin to engage in a number of aggressive interactions that suggest they are fighting for dominance amongst themselves. Matty begins following Thumper every time he feeds at the nest. Eventually, when Thumper approaches the nest, Matty chases him away. An extended, violent conflict follows, with the two birds rolling about on the sand. Finally, Matty steals Thumper's food item and feeds it to the chicks himself. This behaviour appears unusual, although previous researchers have suggested that when fledglings >



SARAH KNOWLES

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MANDY RIDLEY

Bonding with Babblers

I established the Pied Babbler Research Project with the intention of investigating the causes and consequences of helping behaviour in a social bird. To make new discoveries in this field of research, I had to be able to collect data that was difficult to gather in other bird populations. To do this, I set about habituating pied babbler groups so that I could observe the subtle details of their social behaviour.

Habituation was a lengthy process and required a lot of patience. I had to remain motionless for long periods of time before the birds would feel comfortable in my presence. Eventually they began to trust me and would even take the occasional small mealworm that I threw in their direction. The real breakthrough in establishing the population came when the first fledglings became mobile. Unlike the adults, they were accustomed to my presence from the moment they fledged, and thus were completely comfortable around me. They

would often playfight in the sand less than a metre from me and their fearless curiosity encouraged the adults to become less wary.

The biggest challenge was to be able to weigh the birds on a daily basis. Daily weight records give invaluable information about the cost of breeding, fledgling development and the effect of weight on various aspects of behaviour. Thus, getting the babblers used to a scale was imperative. Once they were fully habituated, I began luring them onto a scale by half-burying it in the sand, and placing small crumbs of food on the pan. I would then back away and allow them to approach it at their leisure. Each time I arrived at a group, I would stay a little closer to the scale, until eventually I was able to read their weight when they jumped onto it for their food reward. The groups have now become so used to the scale that they often spend time playing around it, or perch on it while preening themselves.



mature they must 'pay to stay' in the group, otherwise they will be evicted. Thus, by stealing Thumper's food item and feeding it to the chicks himself, Matty appears a better helper than he actually is, and Tomboy may be less likely to evict him from the group in the future.

After the first violent encounter, Matty continually chases Thumper. Each time Thumper stops evading Matty, he is attacked mercilessly until he is eventually evicted from the group and forced out of the territory. Being alone is highly dangerous: because babblers must dig in the ground for their food, they cannot forage and watch for predators at the same time. In addition, if a solitary babbler ventures into another group's territory, it risks being chased and attacked. In this species, group-living is certainly the safest lifestyle option.

After his eviction, Thumper spends the afternoon repeatedly trying to rejoin the group, inching onto the periphery of the foraging area. However, every time he is detected by Matty, he is chased away. None of the adults interferes in this ongoing conflict. After just one day of eviction, Thumper's weight drops by 10 per cent, evidence of the huge effort he has exerted to regain his position in the group. At dusk, Thumper tries to sneak into the roost tree after the rest of the group has settled for the night, but is again chased away by Matty. Eventually, long after dark, he goes to roost 50 metres away from the

group, giving calls similar to those of a young fledgling.

Over the next few days, Thumper's efforts to rejoin the group continue, and day by day his body condition worsens, his weight falling to that of a month-old fledgling. It appears inevitable that he will die. To weigh the babblers daily, small crumbs are used to entice them onto a scale. Thumper becomes so hungry from his efforts to rejoin the group that in a bid to receive food he often tries to jump onto the scale before it touches the ground. For the next two weeks, despite his deteriorating condition, Thumper never stops trying to rejoin the group. Eventually, Matty's aggressive behaviour ends and he allows Thumper to return. But the readmission comes at a cost: Thumper, who is now subordinate to Matty, must suffer occasional bouts of food-stealing from his now-dominant sibling.

The Outsider's third brood produces just one fledgling, Ricky, who falls victim to predation only two weeks after fledging. Patch soon disappears too, presumably also eaten, and Myxie inherits the role of dominant female. With five new juveniles in the group, The Outsiders' breeding season has been more successful than those of their neighbouring groups. As the juveniles grow older, they begin to join the adults in many territorial interactions and, through these constant border

displays and conflicts, over the winter period The Outsiders succeed in slowly enlarging their own territory as their smaller neighbours concede ground.

All five juveniles survive the winter months and during the next breeding season are able to help as efficiently as adults. As a result, despite the huge effort Muppet invested in raising the new recruits, Tomboy, the dominant male, evicts him from the group. With a number of adult offspring around him, Tomboy benefits more by removing his closest competitor from the group than by having an additional helper for the upcoming breeding season. Herein lies the social complexity of adult life for these babblers: subordinates benefit far more from being in a group than by living alone, but their membership of a group is dependent on their being tolerated by dominant group members. While Muppet, like the rest of the group, benefited from the increase in group size brought about by successfully raising young, this expansion also sealed his fate as a future group member. The new recruits negate Muppet's position as a necessary ally for Tomboy in the race to reproduce. Ultimately, co-operation turns into conflict as each adult tries to maximise its own personal benefits from group-living. Muppet has not been seen since his eviction, so it is unknown whether he was a victim of predation while alone or if he managed to gain entry into another group, as does sometimes happen.

Above, left Southern Pied Babblers are located throughout the Kalahari desert, most commonly along dry riverbeds, where large acacias provide ideal roosting and nesting sites.

Above Pied babblers are primarily terrestrial, spending more than 95 per cent of their time on the ground. They glean insects from the sand surface, and also dig for items such as scorpions, burrowing skinks and larvae. Adults have been observed taking lizards and grass snakes.

Little Myxie, while always remaining smaller than her broodmates, became a primary helper in the next breeding season, assisting her parents to raise three broods. Bambi dispersed and joined a neighbouring group. Thumper dispersed to a group outside the study area, and Matty went missing, presumably predated. Tomboy and Myxie continue to be the dominant breeding pair, and Tomboy remains the most successful male (in terms of number of young produced) in the entire study population. Time will tell whether his offspring manage to fight their way to dominant positions and become as successful as their father. □

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