SURVIVING THE CHALLENGE:
Rehabilitating Australian magpies, Tawny Frogmouth and others

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Abstract

Birds are thinking, feeling and vulnerable and therefore often more difficult rehabilitation prospects than has been acknowledged in the past. This paper emphasises some biological and developmental issues, alluding also to stress inducing variables, that may be decisive in achieving successful rehabilitation particularly of hand-raised and orphaned birds. Short-term care of a week or two usually does not present a problem as long as individuals can be returned to the original sites. Hand-raising them, on the other hand, demands an attitude that recognises their species-specific requirements and their needs for learning vital life skills. A good portion of the paper is devoted to the actual post-release stages of rehabilitation and release sites for some specific species, such as magpies, tawny frogmouths, noisy miners and blue-faced honeyeaters as representative of a large number of land- and songbirds. The discussion is embedded within a current biopolitical context of very worrying trends as outlined in the introduction.

1. INTRODUCTION

1.1 Contexts of conservation and rehabilitation of native birds

There are concrete ways in which one can work for birds and flagship species such as the koala and lots is being done on all fronts and with a good deal of compassion and know-how by many people. However, Australia has the scandalous ranking of being a world leader in extinctions. A further 41 species have just been reported as having gone extinct. This is particularly remarkable given Australia's size and its small population. We are number two in the world for killing off native wildlife and plants and the only western industrialised country in which it is legal and may have the explicit support of the law, under certain and numerous circumstances, to kill native wildlife. Over the years, the incidents of publicly approved killings of animals has seen more leeway than ever before, sometimes authorised for the whim of being a nuisance. All one might conclude is that the society, at least in the political classes, had lost its moral compass, and shows few signs of changing in the near future. Our natural flora and fauna, concerns for its protection and care, has almost disappeared from view in political debates. Conferences such as AWCR are therefore more important than ever.

Most other countries now have specialised police units that can fine and charge anyone for killing wildlife because such an act is illegal, enshrined in laws and enforced. Equally, there is a separate unit for abuse of domestic animals and that extra force is also armed with power that can remove animals, get their injuries and mistreatments professionally treated, get them

adopted elsewhere and impose fines on perpetrators. In Europe and North America, dogs can go to restaurants and travel on trains and busses, or pets can be kept in apartments. Too little of this occurs in Australia. There are moments, despite people's love of pets and animals generally when one ought to question whether Australia, from an animal loving nation, has not become the most hostile western nation to animals generally and wildlife specifically.

These acts of killings -from kangaroos to birds, happen in a legislative framework that has been relaxed rather than tightened. Moreover, decisions are all too often made on the basis of political expediency, not on the basis of any biological knowledge or fact, let alone as a national priority for compassionate reasons or as responsible stewardship.

This is a conference on wildlife rehabilitation. Given the current framework and the millions of animals killed by deliberate cullings and malicious habitat destruction each year, as well as a myriad of 'incidental' deaths due to technology, should we all go home?
Clearly, for any single animal saved at least a thousand get targeted and killed per year. Rehabilitation and all the efforts of specialised conservation groups can no longer undo the damage often done by a stroke of a pen and a slight change in the law.

The simple answer is no. We do not just rehabilitate animals, we learn more and more about their behaviour and needs and it is ultimately only such knowledge that will save species, especially when a political climate changes and governments, by public pressure, learn to behave in ways defensible for maintenance of the natural world that is an intrinsic part of this nation and the sole responsibility of the people living in it.

However, we, as wildlife organisations and also have to learn not to blackguard species or become indifferent to them either because they are behaving in ways that we do not condone or because they are common. The spree of wars against the emus in the 1930s setting prices on their heads and eggs for the prickly pear disaster (introduced by British settlers) were one example. Another were the attitudes to currawongs resulting in the death and starvation of many birds. They were accused of destroying small songbirds, and only when it was finally unearthed that these suggestions were scientifically untenable, did the barrage stop. My scientific licence permitted me to maim and kill native wildlife if my projects deemed this to be necessary. Noisy miners are currently getting the worst press, and one wonders how many will be killed as a consequence. There are contexts in which birds turn on each other but such hotspots can usually be traced back to human intervention and behaviour that set this chain of events in motion. If there is an issue specific to a species, usually classed as a 'fault' of a species, the species ought to display the same behaviour no matter where it lives, but this is not the case. 'Our' noisy miners, meaning wherever I have observed them, including in my last places of residence, not only fitted in well but lived peacefully among an assemblage of some 40 or more regular species. Vulnerable as they are, they are dealing with their own enemies as effectively as they can and have done so probably over the last 15 million years. This point is worth making because of another underlying attitude that has (often subconsciously) divided management of native species into 'common', 'interesting' and 'rare'- and the last two categories receive more attention than the 'common' ones.

Few want to rehabilitate magpies and currawongs, for instance, because they are common. And some do not want to rehabilitate noisy miners because they are supposedly 'nasty'. On both grounds, this assessment would be incorrect.

'Common' (an unfortunate word, really) simply means that distribution of a species is normal/stable and they are not obviously seen as having a risk of extinction in any categories of current schedules. However, magpie numbers are declining and, increasingly, so are kookaburras in some regions---yet without having reached the label 'of concern' (in terms of risk of extinction). The problem is that birds self-cull, meaning that they make no breeding attempt when conditions are not right or no suitable site for breeding can be found. A second problem is that Australian birds are generally long-lived, as kookaburras are for instance, lulling us into a false belief that a population of a species is ok when it no longer is. We may hear the laughter of kookaburras year in year out and do not realise that this is the same stock of adults that has not bred a new generation for years. When they reach the end of their lifespan, suddenly, their population crashes. In such a manner an entire local population of birds may go extinct, seemingly suddenly. Is it not the task for all managers of wildlife to ensure that numbers remain stable?

Another misconception derives from flocking behaviour in birds. When we see corellas or other species in their hundreds (the same may apply to bats too) flocking from the inland to coastal areas, there is often a mistaken belief that we are dealing with a glut of birds and that the particular species is plentiful. On the contrary, many such events that have become more regular in the last decade or so (with a measurable increase in temperatures) are the actions of desperate refugees from inland drought and heat. The birds are looking for shelter, water and food and often arrive exhausted and confused. In some areas, local populations have realised the demise of such birds but official responses have often been to issue permits to see them culled—a particularly heartless response to native species in trouble and fighting for their survival, I would have thought.

We will need to think carefully how we manage refugees from the inland in future and devise supportive strategies to aid their survival and that should be passed in law. In other words, official administrators, be they at local, state or federal levels need to be retrained and given strategies to help wildlife, not destroy it, help solve individual problems, not exacerbate them. We need to advise and help farmers to solve problems of bird flock invasion without having to shoot them and devise guidelines in such a way that agriculture and wildlife can live side by side. Old solutions of shoot and kill are the most ignorant, backward, uninformed and unenlightened, irresponsible and cruel ways of dealing with native wildlife (and shameful for a nation).

There is also a false argument that rehabilitation of individuals is a waste of time. Arguments favouring cost-effective planning for specific ecosystems often imply that wildlife rehabilitation costs a lot of money that would better be rechannelled into ecosystem preservation rather than individual rehabilitation of animals. . The problem is that this attitude implies that there is a pot of gold spent on wildlife rehabilitation in this country. And this is patently incorrect.

Not all but most endeavours of wildlife rehabilitation in Australia are undertaken by volunteers. And even if all costs outlaid privately by wildlife carers were added together, the cost of rehabilitation of wild-born species is considerably lower than any zoo captive breeding program could ever be. Indeed, species maintenance costs in captive breeding programs have been calculated as being about 300 per cent higher than conservation costs in the wild and this is a measure of public expenditure. The true conservation cost is even lower in Australia because of the large commitment of voluntary wildlife care groups. These costs are not costs that anyone can debate and include in any theoretical or financial discussion as if they were public funds.

Moreover, it is often in these individualised contexts that environmental problems become apparent. The questions where to release a bird, under what circumstances it can be released and how often it happens that birds from a particular species come into care. This is recorded and can reveal underlying problems.

1.2 Rehabilitation success

This paper will thus discuss rehabilitation as an integral part of wildlife conservation and as an established practice similar to the existence of hospitals in humans and will just raise some specific rehabilitation issues, from the very practical to the problems of release which require some understanding of the needs and behaviour of species to make these long-lasting successes. Moreover, I refer readers to paper by Dr Phillipa Mason of Healesville Sanctuary delivered in 2005 on rehabilitating birds at this very conference framework that covers many other important matters in bird rehabilitation. It can be downloaded from Google Scholar as a pdf file and can be read in conjunction with this paper, purposely confining itself to specific biological and behavioural aspects of avian rehabilitation.

Survival, as we well know from human experience is not just a matter of good genes but of good luck. But unlike human beings, only the minority of birds breeds successfully. In magpies, figures of active breeders in a given year vary between 6-14% of a given magpie population-hence every species teeters on the edge of equilibrium. It obviously has worked well enough for millions of years that some reproduce and that is enough to keep numbers steady but with ever new and challenging conditions imposed on them (largely by human activity and technology), the odds will turn against even the hardiest and most intelligent.

A long-lasting success is a bird that recovers physically or grows into a healthy youngster and, on release, will be reaccepted by its own group or survive and form a partnership with a wild bird and successfully breed (be ‘rewilded’ and stay away from humans). For that to happen, birds must not be stressed or humanised and must have learned the skills needed for survival. There are relatively few follow-up studies of the success of releases in Australia. We know from overseas studies that release successes have increased over the years moving from 10 to 65% over the past five decades. The positive changes can be attributed largely to improved understanding of species behaviour.

The improved success rate is also due to a substantial shift in scientific opinion as to the abilities of birds. For a long time, cemented in with Descartes' attitude (animals cannot think-they are automatons), it was believed that birds -in fact, all animals- acted merely on instinct. All rehabilitators of nestlings and juveniles had to do is give them food and water and then release them into a species appropriate environment. With this belief, almost all released animals will perish and they did. I recall a group of 60 gibbons being released in Borneo (after a lot of time was spent in raising them) and after four weeks they were almost all dead, starving to death despite ample food being available in the forest. How was this possible?

The simple answer lay in the fundamental insight that birds and primates and most other vertebrates need to learn about their environment (which can be quite complex), need to learn to recognise food and need to be encouraged to choose the right ways of obtaining it. They also need to learn to recognise predators, where to find water and how to find safe roosting and sleeping locations. Birds learn this from their parents. Birds are much better than mammals in this regard. In most land-bird species and even amongst shore and waterbirds, offspring have the benefit of two parents looking after them. As many as 95% of all bird species have at least two parents dedicated to raising them, compared to just 5% in mammals, humans included. In Australia, a hotspot for cooperative breeding, such a support system may even extend to helpers at the nest. Magpies and noisy miners are among the species often resorting to cooperative breeding to give their offspring the best chance and the most time for their development.

In describing some of the insights into rehabilitating successes, I draw on my own research and detailed observations of magpies, tawny frogmouths and noisy miners. The first part of this paper will just describe some very basic steps for the physical wellbeing of birds while the majority of the paper will be devoted to describing mechanisms and interactive models that are based on detailed records of their behaviour. In the magpie and the tawny frogmouth these can be further followed up in my books on these species while the records of noisy miners and blue faced-honeyeaters are original and have never been presented before nor have they been published elsewhere.

2. SIMPLE STEPS IN REHABILITATION

These steps are kept very brief because it is assumed that most people involved in the rehabilitation of birds are well familiar with these basic requirements.

2.1 Transport:

It is important to remember the bird's anatomy- no arms and hands to hold on to a rail in case of movement require some substrate to which a bird can cling with its feet during transport. It is helpful to place a bird in a dark, comfortable and fairly contained container where it cannot slip, has a way to grip part of the substrate and that such substrate can absorb fluids. Importantly, the positioning should not facilitate or exacerbate an injury, such as a broken wing. And the individual should face in the direction of the transport, not backwards or upside down (as I have also seen).

2.2 A few important points concerning accommodation.

In cases of broken wings or legs, it is imperative that the bird remain in a hospital box that confines movement. In kookaburras, a slightly darkened space is of great benefit and so are painkillers in the first week of bone mending. It is equally important that the walls do not consist of broad bars in which wings can be hooked up. In case of hand-raising an orphaned nestling, it is important to follow the stages of its own development-from nest to branch to access to the outdoors, in each case providing a different or extended environment.

2.3 Format of food

While being fed to the beak, food is easy to manage once a species is identified and specialised foods are available. However, as time progresses, the nestling close to leaving the nest will start taking an interest in the food provided and that is when education and learning begins and individual nestlings must be given the opportunity to see and feed on foods on which they will have to rely in future (more of this later).

2.4 Precocial species

2.4.1 Risks in precocial species:

The first question to ask is whether a bird belongs to the super precocial species (megapodes) or to the precocial or altricial groups. If a bird belongs to the megapodes, it is important from the start to feed the bird without being seen. Megapodes are equipped to find food from day 1 post climbing out of their mound. Brush turkeys get no parental help or protection at all. If humans start feeding such a bird, it will become totally fixated on humans for feeding, thereby greatly diminishing its chance of survival. At the very least, such birds would then also be perceived as a nuisance because not only will that specific bird stay or return to humans for food begging purposes, but it will bring with it a whole group of other brush turkeys that will seek food from humans. In the precocial cassowaries this can become a problem when they may demand food using their claws if denied. This kind of habituation has to be avoided at all cost.

2.4.2 Imprinting

Precocial species are fully equipped to walk and find their own food but they receive parental protection, often for considerable periods of time (can be as long as two years). The way the young stay close to the parent is by a process called imprinting and imprinting on humans could make such a bird unfit for release.

There is a second form of imprinting, called sexual imprinting, usually occurring before the first moult and if a bird sexually imprints on a human carer it will forever end the chances of release of such a bird. In the Margaret River sanctuary for birds of prey in Western Australia, half of the raptors in care were permanent residents because they were sexually fixated on humans and would try to copulate with them, usually exerting some force with their talons on a human's head. Either carers had not known that this could happen and had kept them too long in personal care or had treated them as one might treat pet dogs.

Tawny frogmouths, and probably many other species that we have never tested, can be sexually imprinted on their human carers and when this occurs, then all chances are forever forfeited for that bird to lead a normal life in the wild. Sometimes such sexual imprinting is mistaken for tameness or for friendship (this bird likes me) but the real reason may be that the bird has a misdirected sexual fixation. A late but still safe time for release is generally three months post fledging but not much later. We do not know details of such sexual imprinting in many bird species so it is safer to err on the side of caution. Filial imprinting wanes relatively quickly (by second or third week of life) but sexual imprinting is lifelong and will therefore do considerable harm and undermine the rehabilitative process.

2.5 Altricial species

Most of the time, rehabilitators are exposed to altricial species in which filial imprinting does not apply. All perching/songbirds, including the small songbirds, fit into this category and so do the owls, eagles and hawks. Many birds hatch in a very immature state, before they open their eyes and without having developed any feathers. The young of these species usually stay in the nest and are entirely dependent on care from their parents for all of their needs. Such time of total dependence on parental care may be for as short as several weeks but usually it takes much longer. Such nest-dwelling and dependence, and the pattern of their development, is called altricial.

Altricial young undergo very rapid growth after hatching. This places enormous demands on the parents, particularly if food is difficult to obtain. Absences away from the nest expose the young nestlings to predators and many nestlings are lost in this way. Absences must also be balanced against loss of body heat by the nestlings. Birds are unable to maintain their own body temperatures (i.e. thermoregulate) in the early period after hatching. Once they develop this ability, the parents can leave the nest for longer and travel further in search of food. The growth of the downy feathers also helps the young to stay warm, as does huddling together with siblings and shivering**.**

To be able to keep the body temperature of the hatchlings within the correct range is a great challenge to most avian parents, particularly those living in either very hot or very cold climates. Keeping the nestlings at the right temperature in very hot environments is, perhaps, a greater challenge. Dehydration of the hatchings is a serious problem. Nest cleanliness is of high priority and the parents remove faeces as soon as they are deposited, often assisted by the faecal waste being inside a gelatinous sac. The Australian magpie parent is ready to collect this sac as soon as the nestling expels it and before it even touches the nest.

Begging is the most noticeable behaviour of nestlings. They may stretch the neck, gape the beak and make begging calls. In the early days, extending the neck and opening the beak is often limited to a few seconds and the carer has to ensure to catch these moments before the hatchling is too exhausted to swallow the food. This response is often triggered by the arrival of the parent at the nest, either when the nestling sees the parent perched on the edge of the nest or when the landing parent causes the nest to move abruptly. Simply vibrating the nest triggers the behaviour in some species.

2.6 Issues concerned with the hatching event (synchronous versus asynchronous)
Amongst altricial species it is important to distinguish between synchronous and asynchronous breeders.

In synchronous breeders, such as magpies, all birds hatch at the same time (at least within a few hours of each other). By contrast, in asynchronous breeders, as in tawny frogmouths, kookaburras or galahs, there is a gap of a day or two between first and second egg and often as much as a 4-day gap between first and last egg hatched, as can be the case in kookaburras and in tawny frogmouths.

This information is important to have and be certain about when raising a nestling. Wildlife organisations have long believed in the buddy-system, meaning that whenever possible two or even more nestlings of the same species should be reared together. This avoids the serious problem that singletons raised in isolation may not recognise their own species and the equally problematic condition that they would not have learned how to behave to conspecifics in a species-appropriate way.

While the idea of the buddy system is a good one in principle, it needs to be handled with care in synchronous altricial species. The magpie is a species in which all eggs hatch at once. In magpies and many others, it is indeed important to raise more than one together, but if there is even a slight discrepancy in age, the 'raising together' becomes at once problematic for the younger sibling who will be bullied, pecked, and tormented to such an extent that it can permanently traumatise, injure and even kill the younger of the two. It is even of no help to the older one because the older one also learns inappropriate social behaviour. There are ways to establish whether the nestlings are about the same age by length of beak, overall size and weight. It does not matter whether nestlings come from different areas: as long as they are same age, they will get on well with each other and may or may not substantial bonds well into the future.

In asynchronous breeders, only the social skill acquisition is important in the buddying system while nestlings readily tolerate age differences. That is, in tawny frogmouths, it is easily possible to put nestlings of different ages together because this corresponds to the way they are normally experience the first weeks of life.

After fledging has taken place, most young are fed by their parents and stay in the vicinity of the nest site. They are sometimes referred to as "branchlings" at this stage of development. Other young birds may join other young of the same age and so form a nursery flock, or crèche. Galahs fledge at about the seventh week of life and then join a crèche. While in the crèche, they continue to be fed by their parents for several weeks, as was shown by Ian Rowley. Since galahs hatch asynchronously and also fledge asynchronously, the parents always face a week or so when they must feed their first-fledged young in the crèche as well as their young still in the nest.

The matter is more complicated in tawny frogmouths. While they hatch asynchronously as do galahs, they fledge synchronously. This means that the last hatched of the tawny frogmouths may be as much as 4 days behind in development of the first one but will be driven to fledge along with its siblings and often to its own demise. It will try to fly off with the others but, instead, will often just flutter to the ground and become potential food for someone else. One suspects that the fledglings that are brought into care may well be the last in line, not a runt but a bird in which fledging prematurely was triggered by older sibling-fledging.

3. LOCATION OF NESTLING/BRANCHLING AND BEHAVIOUR OF CARER

How is a bird prepared for release best raised? I mentioned before that treating such a bird as a pet can have devastating consequences. Stress is a major issue in birds but people who do not know this also do not know that stress remains invisible. When I remarked that it is not good for the bird to be placed next or on top of a television set, the person replied 'the bird does not mind'. Well, the bird does mind because it can severely affect its brain development and its capacity to act appropriately as an adult. Equally, placing a bird cage on the floor for a species used to perching in trees and flying, is devastatingly stress-inducing. Equally are noisy and screaming children (high frequency calls mimic alarm calls and suggest the nearness of danger) or pets such as dogs and cats able to get near the enclosure are heart-stopping events for birds. Similarily, problematic is touching and stroking birds and allowing children to do so reaching out. These all fall into the category of threat displays in the natural world bird and can do permanent harm to an inexperienced young bird. If it learns to overcome its fear, it has learned the wrong thing, namely that threat displays need not be feared (suppression of flight or fight response) and this, post-release, makes it more likely that the bird will be killed by an opponent, not even a predator, because it has failed to respond. Birds are not mammals. Stroking them on their backs signals predator presence and most birds try to cope when humans do this and often half close or close their eyes. This is an indication of stress, not of enjoyment. Keeping a bird in a well-lit room without cover at night results in sleep deprivation.

At the other extreme are the cases of sensory deprivation and the inability for the bird to acquire knowledge of the appearance of the outside world. For instance, placing a young bird in the laundry (usually the coldest, darkest, and a draughty room) offers little other than sensory deprivation and lack of access to sunlight. Safe, warm, draught-free locations that, during the day offer exposure to sunlight, to seeing shrubs and trees and other species allow the bird to become familiar with its natural environment.

4. RELEASE AND POST RELEASE CARE AND OBSERVATION

While a large number are eventually released, little information is available about their ultimate survival. It is a mere hypothesis that soft release is better than sudden release. I have been able to follow the fate of about 10 magpies and 8 tawny frogmouths over the period of the last twenty years and then was also able to follow the fate of two noisy miners over two years and of two blue-faced honey-eaters.

4.1 Deciding on a release site

It goes without saying that release of a bird is preceded by thorough health checks and any released bird is free of disease and overloads of parasites and has learned as much as there has been possible, as well as having acquired the skills of confident flight. Choosing a release site, however, varies very much with species.

4.1.1 Magpies --In magpies, it is not necessary to choose a release site because as, in the wild, magpie youngsters are asked by their parents to disperse and they then have to find their own way. 'Their own way' in the magpies' case means to find other evicted juveniles and join them as quickly as possible. Bachelor groups can reach up to 25 birds (rarely more) or, more typically, consist of half the number but usually no less than 7 -10 birds. They need to exist and feed outside or on the fringes of established territories and they are therefore usually condemned to much less nutritious feeding grounds. Indeed, if they had been given the opportunities to learn while growing up under the parents' guidance, they now would need to put all they had learned into practice. Often, even that is not good enough and many magpies die in their bachelor years between age 1 and 5.

Birds that have found a permanent territory of their and start nesting are in a critical minority. They are the survivors of years of wandering and uncertainty and of seeing vast social changes, deaths and injuries amidst their bachelor peers and often go through major periods of near starvation or nutritional deprivations. When they have survived all this and amongst the few who successfully breed, it is then that some councils step in and, in some cases, translocate or even shoot adults. The ignorance and tragedy involved in such events is palpable.

4.1.2 Tawny frogmouths --In tawny frogmouths, finding a suitable release site is a far more difficult proposition and a constant headache. I have used playback of the tawny frogmouth hoots to establish whether a site is taken. Given their cryptic plumage it is difficult to see them and because of the size of their territories it is almost impossible to establish whether an area is already occupied in this seriously territorial bird. I once made the mistake of releasing a juvenile tawny frogmouth in a forested area in which I had never seen or heard a tawny frogmouth. Release at late afternoon, about half an hour before dusk was meant to ensure that no nocturnal birds would harass the juvenile. However, I was incorrect. Seconds after I had released the bird and it was flying, from nowhere, so it seemed, came a male tawny frogmouth adult flying at high speed and ramming the juvenile from behind so hard that it fluttered to the ground. I ran as fast as I could and just managed to rescue the juvenile from the adult that was about to take the dazed juvenile by the neck and kill it. I literally had to remove the juvenile from under the clutches of the adult- it did not fly away even when next to that male and he showed every sign of wanting to complete the grizzly task of killing the invader. Hence, I had to collect the bird again and treat it for concussion for a week. That is the time when the idea of using playback was born.

Juveniles do not stand a chance of survival, not even of a day, in a territory that is occupied by tawny frogmouths. There are rare exceptions when a male tawny frogmouth is on his own and the released bird is a female. Generally, however, it is wise to check out the area first.

4.2 The open-door aviary and enticements

In each case, each individual bird was soft-released meaning that gradually their realm of activity was increased in my own backyards (different locations). The final stage was to leave the aviary door open but once daily continue to place food in the aviary. All songbirds learned the routine very quickly and made use of the food on offer, i.e. returning to the aviary and, at first, usually choosing the aviary as a night roost as well. As it turned out, the ability to use the aviary as a refuge was a very important mechanism for turning the release in each case into a success. The reason in each case was not just bridging a period of relatively little success in finding food but as a refuge from other birds. Indeed, almost all birds, even those that are not strongly territorial, at first raised objections against these juvenile newcomers. Conspecifics and other species start investigating the lone strange youngster(s) and usually conclude, at least initially, that they should be moved on. Not only have these orphaned youngsters no guidance from their parents but they also face a relatively hostile avian environment. So how do they negotiate this?

I have seen rigorous pursuit by adult noisy miner of noisy miner youngsters and equally among blue-faced honeyeaters. Interestingly, the young birds learned very quickly that they were safe in their aviary because the wild birds never followed to the inside of the aviary. There they had time to recover, refuel and then find the courage to have another go at the outside world, getting to know the routes better and the environment generally.

Over the weeks, the hostile pursuit of the adults diminished in intensity and frequency. I then instated one nectar feeder outside and waited until my released charges approached and started feeding from them. The adults were not far away and watched and quickly learned that this was a desirable food source. Within a further number of weeks, the youngsters used the refuge less and less often but there was a noticeable change in their relationship to the adult birds. In fact, the youngsters led them to the external food source and then stepped aside and let them feed first.

Blackmail, perhaps. However, over a period of half a year, there were five blue-faced honeyeaters feeding together at the feeders: 2 adults with their own offspring and the two I had hand-raised. Slowly, the amount of food provided was reduced from two feeders daily (small normal water containers used for caged birds) to a one-day supply once a fortnight and then such supply was stopped during periods when nectar producing flowers were plentiful. The five blue-faced honey-eaters have remained together and the two youngsters were truly integrated into the local bird community one-year post-release and no longer faced any harassment. They are confident and healthy and while they show no fear and approach me readily when I go towards the provisioning site, they are not fraternising in any way and disappear immediately after they have fed. They are now in their second year, healthy and socially competent. Importantly, their integration into the wild community, they can still learn how to negotiate their environment and, specifically, learn the art of surviving predators, a skill I had not taught them.

Retelling the story of the noisy miner release followed very similar patterns as in the blue-faced honeyeater, notably also the use of the open-door aviary as a refuge. In my assessment, the noisy miner youngsters were faster learners and more competent that the blue-faced honeyeaters and they needed to be. The pursuit by an adult pair was more relentless and lasted longer than in the

blue-faced honey-eaters but that too stopped after about half a year. The importance of comparing the strategies of noisy miners with those of blue-faced honey eaters lies in their respective different social system. Blue-faced honey eaters live in pairs, while noisy miners are basically a cooperative species, meaning they can occur in pairs and in relatively large groups. Their cooperative system is one of the most complex social systems in the Australian bird world and one of the few species that tolerates the inclusion of unrelated stray migrants. These vagrants may join the cooperative group. They may be allowed to become a permanent part of the group but without breeding rights at first. Noisy miners are charming birds, fast learners and while they were under scrutiny from the resident noisy miner pair, they came under their tutelage and thus will likely remain part of a group in future.

Noisy miners in my samples have not once been the supposed source of trouble of which they have been accused in recent years. Both, at sites in the Northern Tableland and in the subtropical coastal areas of the Mid-north coast that have been under observation for at least five years they live peacefully amidst bird assemblages. In each case, they have never once shown any of the aggression or attempts to try and eliminate other honeyeaters or other smaller birds. At the coastal site, noisy miners live among an assembly of 40 or so other regular bird species, including eastern spine-bills, scarlet, Llewin's and blue-faced honeyeaters -and assortment of dove/pigeon, lorikeet and cockatoo species as well as currawongs, magpies, kookaburras, drongos, satin bowerbirds, ravens, rails and an assortment of finches. Indeed, the noisy miners are a very important warning system for other birds, jointly calling when a snake, lace monitor or bird of prey is about. It might be important to mention that the sites are cat-free and sit among farmlands (Macadamia nuts) of relatively low human population. Hence, environmental context is of substantial importance in assessing behaviour, likely success of release and future behaviour of a given species.

5. SUMMARY

In rehabilitation then, apart from a proper diet, it is important to be aware of the kind of behaviour associated with the hatching and developmental system of a species and the kind of environmental stimulations they need and do not need. Many mistakes can be avoided when this is integrated into the rehabilitation program. Hopefully, it has also shown that post release programs have to be given great weight. They have to be consistent and are relatively long-drawn out processes to allow the released bird to get integrated both into avian communities as well as learn the geography of the area in terms of access to food. This paper has hopefully also shown that because many Australian land-birds get exquisite and long-term parental care, rehabilitating orphaned birds will fail if we don't recognise that these long periods (three months post fledging at least and usually even a little longer) are biologically fixed for full brain development, vocal and social learning. There used to be a view that as soon as juveniles self-feed one can let them go—in at least half the species, that would be a likely death sentence.

When we perceive problem behaviour in birds, in most cases, human behaviour or human initiated actions are the problem, not the native birds. Some environmental measures are also undertaken without an understanding or appreciation of bird behaviour.

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