

FREE FLIGHT TRAINING OF RAPTORS FOR RELEASE- WHY DON'T THEY JUST FLY AWAY?

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Raptors, eagles, hawks and falcons are a group of birds that live their lives at the top of the food chain and in doing so are required to be in peak fitness and health to function efficiently on a daily basis. When these birds come into the care of rehabilitators across Australia it is rarely going to be a brief visit lasting less than 10 days. Most will require care for extended periods of months, possibly years whilst they recover from their injuries or illnesses (*figure 1*).

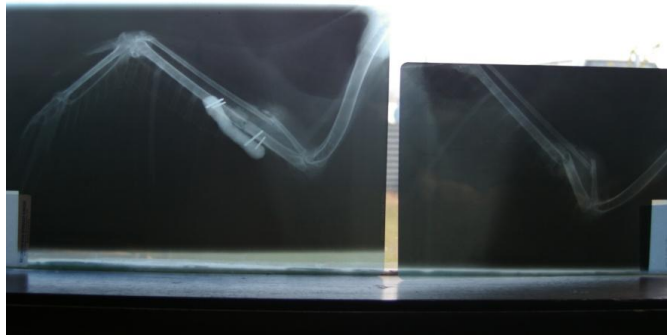


Figure 1- Broken radius and ulna of a male Wedge Tailed Eagle, this bird could be in care for 12 months before it is ready to be released.

In their natural environment these birds can spend most of their day on their wings hunting and foraging for their prey and in doing so maintain their fitness and strength through regular strenuous daily exercise. In captivity they do just the opposite, spending more than 95% of their time sitting on perches and thus not getting adequate amount of exercise at all. It is well known that after 14 days of being in care, a raptor will have lost enough fitness and flying ability that it will most certainly struggle to hunt and fend for itself when returned to the wild. Push this recovery time out to months, and the patient will have lost so much fitness that it will be unable to even move around the environment without becoming tired. Raptors are more unsuccessful, than successful when it comes to actually making a kill and with each miss, the bird's energy level will decrease. Several misses in a row by an unfit bird will almost always lead

to starvation and eventual death. Hence unfit birds that are released back to the wild often will only survive for a short period of time.

As raptor carers we are all well aware of the need to exercise our patients before releasing them so as to increase their chances of survival post release. To do this there are only two options;

- 1- Exercising them in their enclosure, commonly called “forced exercise”, and
- 2- Exercising them outside of their enclosure, also know as open air/free flight exercise (*figure 2*).



Figure 2- White-bellied Sea Eagle in free flight.

FORCED EXERCISE- This technique basically involves the rehabilitator “chasing” the bird around the enclosure and monitoring its recovery time after each group of flights. It involves limited training of the rehabilitator and requires an exceptionally large flight aviary to be successful. The biggest limiting factor of this technique is the size of the flight aviary. It doesn’t really matter how big your flight aviary is, we are never going to be able to simulate the true flying conditions that these birds undertake on a daily basis within these structural boundaries. Because of this, forced exercise of birds prior to release is not suited to all raptor species. Species such as the Whistling Kite, Black Kite and Harriers will do ok if they are put through a forced exercise regime as these species do not have any specific flying skills that they undertake whilst hunting their prey. Species such as Falcons, Eagles and Goshawks do not do well with this technique as they require specialist flying skills to undertake their hunt.

A further issue with this technique is that the birds are flying around in a confined, unfamiliar space (regardless of how big the flight aviary is) which has walls of some description and aviary furniture that the patient has the chance of crashing into and doing further damage. When a bird is going through a forced exercise regime, it is being moved around the aviary by its natural fear of people. When a bird flies out of fear, the first thing they want to do is get as far away from the cause of the fear as possible and usually the only thing running through their mind is this, NOT that there is a perch at the other end that they can get refuge on. So, for the first couple of sessions before the bird works out the solid boundaries of the enclosure, there is

a great risk of the bird doing further damage to itself by hitting these walls and furnishings, which could potentially increase the length of time that the bird is in care. Good aviary design and smart selection of aviary building materials can help to minimise the risk of damage but does not reduce the stresses placed on the patient from constantly being approached by something that it does not feel comfortable with.

OPEN AIR/FREE FLIGHT EXERCISE- This technique of exercising birds prior to release allows the rehabilitator the chance to fully observe and assess the flying ability and fitness level of their patient without the limiting factor of the size of their enclosure. It does this by allowing the patient to fly in the open air and display the skills required for hunting in simulated hunting exercises. Free flight training birds however is a very time consuming process and requires a great deal of understanding about the birds natural behaviour and also requires a great deal of patience and knowledge from the handler with respect to suitable training methods and safe handling techniques.

Falcons, Eagles and Goshawks are the species that will get the most out of a free flight exercises program as it will allow them to, for Falcons stoop and chase a moving lure from an aerial position (*figure 3a and 3b*), for Goshawks, to chase an aerial lure from a standing start or from an aerial position, and for Eagles to allow them to soar on thermals and make stoops to capture ground lures (*figure 3c and 3d*). None of these skills can be suitably assessed by the rehabilitator inside an aviary.



Figure 3- Raptors capturing lures- 3a) left, female Peregrine Falcon catching lure- 3b) right, Female Peregrine Falcon in chase of lure



Figure 3c) left, male Wedge tailed Eagle chasing dragged lure- and, 3d) right, male Wedge tailed Eagle capturing dragged lure.

The question then arises as to why don't they just fly away when they are let go during a daily training session? The simple answer is that to be flying free, these birds have undergone a patient specific training program of which the handler has put in lots of time and effort, careful observation and encouragement to the patient before they are allowed to fly free. However, there is nothing stopping them from flying off if THEY WANT TO.

Training, and behavioural management of animals in captivity has come a long way in the last 10 - 15 years. Gone are the days where animals are starved, beaten with sticks and forced to do behaviours whether they be natural or not through strong negative reinforcement and harsh punishments. These days the animal has a chance to participate and it is the trainer's responsibility to encourage the animals to WANT to participate in a training session through positive reinforcement and encouragement. Each bird is treated as an individual and as such will have its own individual training program prepared for it. These programs vary greatly in length of time required to get the bird to the free flight stage. On average it requires about 8 to 12 weeks to get a bird to the free flight stage, however bigger birds like eagles can take anywhere from 3 to 9 months before they are trusted enough, and they trust the handler enough, to be allowed to go free.

Whilst teaching an animal to display certain behaviours, the handler may be required to respond to the student's action in one of two ways;

Positively reinforce: This involves giving the bird a reward for doing an action which can later be put to a command. Only the correct action is rewarded and incorrect actions are ignored. As a general rule, a bird will only undertake a behaviour if it is going to get a result or something beneficial for its actions. Therefore using this technique, any action that does not receive a reward will eventually cease, and the rewarded action will increase. For raptors, the most effective form of reward is food as they are highly motivated by it, and after

coming into care from the wild have a fantastic appreciation for taking food when it is offered. They are not so much into affection or praise but are intelligent enough to be bridged to their reward by whistles or clickers. A bridge is a sound or action that fills the time gap between the animal doing the correct action and the actual giving of the reward. Quite often a bridge of “Good Bird” will be used but over long distance whistles become more effective as it will travel further. The reason a bridge is used is so the bird can get a true understanding of what action received the reward, the reward needs to be presented within 5 seconds of the action happening. If the bird is a long way away from you then this is impossible and hence the bird needs to know what it did to get the reward by hearing the sound at the moment the action occurred. So, positively reinforcing an action is the act of giving a reward or bridging an action to a reward for a positive action that the bird has undertaken (*figure 4*).



Figure 4- Hedwig the Barn Owl receiving his reward for responding to a call to come to the glove.

As the bird begins to understand the reward system then it will strive to achieve this reward and if the rewards do not come when an action is undertaken then they will try harder.

Negative reinforcement: Instead of encouraging the bird to undertake an action, negative reinforcement involves the use of a punishment to remove the undesired behaviour. Broken down to its simplest form, when a bird is punished for doing the incorrect task, it will continue to get a punishment until the correct behaviour is achieved. This quite often will lead to a great deal of confusion between the bird and the handler as the bird may take some time to work out what it needs to not get punished. This technique creates too many variables for the bird to work out and hence being confused will lose confidence and make errors. Interestingly enough, the most important way that this technique differs to that of a positively reinforced environment is that when the punishment disappears so does the behaviour and very quickly the behaviour that it has been taught will break down and the bird

will not try to not get punished. A punishment is an action that will tell the bird that it has done the wrong thing. Punishments can include things as mild as forcing a bird off a perch that it is not supposed to be on, unfortunately all the way through to physical punishment, which these days is not condoned by any self respecting animal handler across the world. The important thing to remember is that an animal trained using harsh punishment will allow the behaviour to break down once the punishment is withdrawn.

Fortunately, training birds through harsh negative reinforcement is on the way out as more and more handlers realise the importance of positive reinforcement, which leads to happier healthier birds and on a rehabilitation side a greater chance of success post release.

The entire process of teaching a bird to fly free is based around the handler forming a type of communication with the bird. To do this the handler must create a common language that each will understand. This language is usually based around either a visual command, or an audio command or both combined. A visual command is any action that the handler does that the bird associates with a behaviour or action (*figure 5*). An audio command is any sound that the handler makes so that the bird can associate with performing a certain action or behaviour. It is very common to associate both a visual and audio command with one action as sometimes the bird may not be able to see you but is able to hear you. The success of teaching your bird to understand what you are asking it to do relies on the handler being consistent with what he or she is doing. That means, giving the same commands for the same action and rewarding the actions consistently.



Figure 5- Jenny the Peregrine Falcon being asked to jump to the fist using a visual command of raising the left glove to a horizontal position with the back of the hand facing her.

When a bird has undertaken an action that is consistent with the command then it will receive its reward. For this process to be effective, the bird must want the reward and thus must be motivated enough to want to undertake the action to receive the reward. With food rewards being the most commonly used for raptors, the bird must be motivated to want the food reward. This is where a good knowledge of the species with which you are working and a sound patient weight management program will come in handy. If the bird does not want the food it is not motivated by it. Therefore the bird must be hungry to be motivated by the food. This however DOES NOT mean starving. With your excellent knowledge of the species you will have already ascertained the weight range for the species, and also the maximum, or fat weight of the individual you are working with. The fat weight is the weight at which the bird gets to when it begins to leave food behind from a meal. During the rehabilitation process, whilst the bird is recovering from its ailment it should be fed as much as it wants as most of the time it will be underweight when it comes into care. Checking the birds condition across the keel will also give you a good indication of the how close the bird is to its fat weight. Once this upper limit is achieved, the animal has recovered from its injuries and the initial shock of coming into care, the training process can begin.

This is where the skill and patience of the handler comes to the fore. Through positive reinforcement in small steps, we should be able to motivate the bird with minimal if not zero reduction in weight. Sometimes however we may need to reduce a weigh by 3 to 5% to get an appropriate response. If however we are not getting a response and we start going over the 5% drop and start moving towards 8-10%, then it may be necessary for the handler to briefly pause and reassess why the bird is not responding and go back to the basics and start again. In the past, birds have been put through 15, 20 and even 25% weight reduction to achieve an appropriate response. At these greater weight loss limits, it is well documented that the birds will become lethargic and simply not have the energy to undertake the task that you are asking it to do. For example, let's look at a female peregrine falcon who has a fat weigh of 800g.



Figure 6- Daily weighing of Hedwig the Barn Owl, weighing for birds of this size should be accurate to a single gram.

Fat weight= 800g,

3% weight drop= $800/100 \times 3 = 24\text{g}$ therefore 776g

5% weight drop= $800/100 \times 5 = 40\text{g}$ therefore 760g

After this we need to reassess our training program.

Just to note, 20% weigh drop= $800/100 \times 20 = 160g$ therefore 660g body weight. To reach this level things have gone terribly wrong and the inexperienced trainer has just assumed that the bird motivation is the problem, not that the bird is confused and does not understand what it is required to do and has been taken too far out of its comfort zone.

Through daily weighing (*figure 6*) of the birds we are able to maintain a close check on what the bird is doing with its food and also the general health of the bird. If the patient is losing weight, but is eating more, then something is wrong and the bird needs to be physically checked over. Through daily weighing and good records the handler will soon be able to know how much food the bird needs to maintain weight, put on weight and take off weight, and therefore the handler can move the birds motivation as required. Now throw in a weekly lay (or starve day) which is a standard and essential part of raptor husbandry and we are able to create a pattern (*figure 7*) were by the bird is fed so that as it hits the day before the lay day, its body weight is up substantially enough to not allow to much of a drop for the missed day of food.

Jenny weight chart

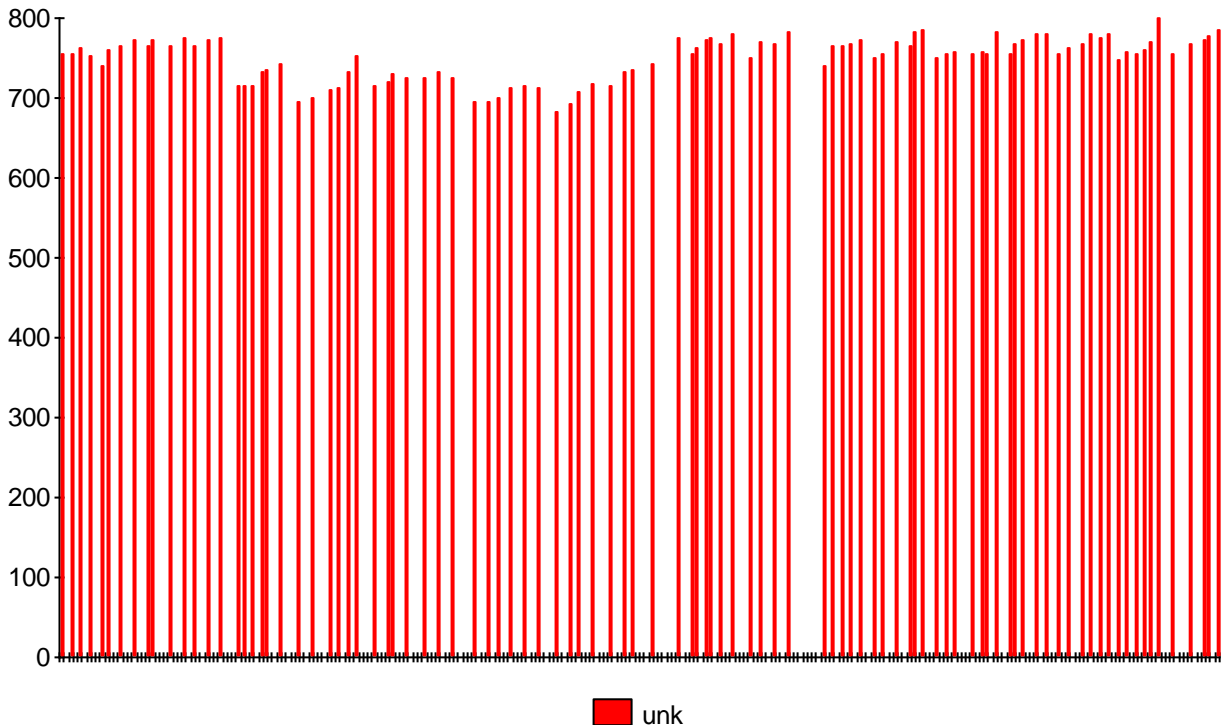


figure 7- Jenny the Peregrine Falcon daily weights chart, note the pattern leading up to the lay day which occurred roughly once a week, lay days can be picked by the sudden drop in weight on the chart.

Now we have sufficient information about our patient, we can look at the steps of the training program;

1. Manning- getting the bird to trust the handler enough that it will allow the handler to handle it without the bird becoming stressed or nervous,
2. Jumping to fist in the mew- with the bird comfortable in its mew, with no distractions,
3. Going outside the mew,
4. Leash flights and then creance line flights,
5. Introducing the hunting simulation task,
6. Free flight.

MANNING:

Manning is the process by which the handler gains the trust of the bird. This usually involves the handler spending ample time with the bird whilst using positive reinforcement for the bird making movements towards the handler. Historically birds are tethered to a perch or block and then restrained on the fist by jesses until they decide to eat from the glove. However, although it may be slower, you will get better results by allowing the bird to retreat to where it is comfortable and encourage it to come to you for its reward. This can be done by undertaking small steps by rewarding the bird when it turns and faces you, and then takes a step towards you and so on until it is walking along a perch to you to take food from the glove. Once the bird is doing this comfortably then you can be sure that you are on your way to gaining trust from the bird and that you starting to develop some kind of relationship with the animal. As the trust increases and the relationship strengthens you will see that the bird will be looking forward to you approaching the mew rather than fearing it and retreating or flying around the mew nervously. Gaining trust from the bird is similar to saving money in a bank account. How? Well, simply, all good experiences the bird has with you are deposits into the trust account; all bad experiences the bird has with you are withdrawals from the trust account. Now, make lots of deposits and your trust account will increase in size and strengthen, make withdrawals and it will weaken. Too many withdrawals and the account will go in to the red, bankrupt and you will essentially again have a bird that behaves like a wild animal around you.

The bond /relationship between a handler and their bird is strictly between the handler and the bird, no other party is involved in this relationship and as thus it should not be expected that the bird will react the same around all people. It is a one on one scenario. If another handler steps in, the bird will behave like a wild bird until the new handler gains its trust. So in the rehabilitation context, birds should only be handled by the absolute minimum amount of people preferably only with one handler. This will mean that when the bird comes to be

released it will pose minimal to zero risk to the public and will return to its wild nature quite quickly after release.

IN AVAIRY FLIGHTS TO THE FIST:

This involves encouraging the bird to jump off the perch to the fist, and continues to build the trust between handler and bird. Because this work is done in the confines of the mew or flight aviary, it requires no equipment to be placed onto the bird and always gives the bird and chance to take refuge if for some reason it becomes uncomfortable. The mew environment also is one in which the bird will feel secure, and will provide no distractions from the outside world and allow the bird to focus entirely on the task at hand. This step is a precursor to the same routine outside of the mew and will allow the bird to be confident when jumping to the fist outside of the mew.

GOING OUTSIDE THE MEW:

Now that the bird is comfortable jumping to you it will more than likely allow you to move it around whilst on the fist and therefore may allow you to take it out of the mew and expose it to all of the distractions that are present outside the mew. Things like other birds flying around, different noises, different light conditions, and different scenery will all take the birds attention off of the handler. During this step it is crucial that the handler be highly aware of the bird's body language so as they stay within the birds limits and try to avoid the bird bateing (jumping off the fist when not asked to or allowed to go). Funny thing is that with birds, there will always be that imaginary line at the door that makes them very nervous when they cross it. Go slow and if the bird looks like bateing then go back just a few steps and reassure and then try again, until you are going in and out of the door with the bird comfortable on the glove. Now take the bird to the area that you intend to fly it and allow it to become accustomed to the area, get used to all the sites and sounds, and feed as soon as food is offered without hesitation. Your flying area should be open, away from hazards such as roads and power lines and be reasonably close to where the bird is housed just to reduce travel time.

LEASH FLIGHTS AND CREANCE LINE FLIGHTS:

Once the bird is comfortable outside of the mew we need to attach the leash which is a short piece of cord that attaches to the birds jesses to the handler as a security line (*figure 8*).



Figure 8- Jenny the Peregrine Falcon undertaking leash flights to the fist, leash length here is 6ft.

To start with the leash, being short is less hassle to handle and is less likely to become tangled and put the bird off in this crucial stage. With the leash attached the bird can be placed onto a stump or a perch and the steps which were undertaken inside the mew can be repeated outside. Birds usually take to this quite quickly as they already know what to do and birds are always more comfortable moving into an environment that they know, rather than moving into an environment that they don't. Once the bird is jumping to the fist at the full length of the leash, approx 6 feet, then it is ready for the creance line. The creance line is a really long leash and can be up to 50 meters long. The length of the creance is not overly important and we have had great success with creance lines of only 10 to 15 meters. As you can imagine, having a really long length of line attached to the birds jesses can lead to a whole array of bad scenarios. Lines getting tangled around objects or getting snagged in low vegetation when the bird is flying to you will give the bird a bad experience of flying to you. The end of the creance line should always be attached to the handler and have a block or handle fixed to the end so that it is hard for the bird to drag but does not give a sudden jolt when the bird comes to the end of the line. If the bird is suddenly frightened and is able to fly away it may become entangled in a tree which is disastrous if the bird cannot be located. The handler should also be careful not to bring a bird that has taken fright to a sudden stop by yanking on the creance as this will lead to leg injuries. Instead they should go with the bird and slowly increase pressure on the line until the bird comes to ground. Creance lines should be removed from the training program as soon as the handler is confident that the bird understands what is required and the handler trusts the bird to respond to their commands. It should be noted that it is possible to train a raptor for free flight without the use of the creance line.

INTRODUCING THE HUNTING SIMULATION TASK:

This is where the real aspect of preparing your bird for release comes to the fore. This step is also where it becomes very species specific;

- Peregrine falcons, Australian Hobbies: aerial hunters taking food on the wing from heights with stoops should fly to a swung lure.
- Kestrels: fly to a ground lure only after displaying some hovering skill.
- Goshawks and Sparrowhawks: taking prey from a stationary start but catching on the wing or from the perch, are flown to a swung or dragged lure.
- Eagles: search aerially and then take ground prey are flown to a dragged ground lure.
- Brown Falcon: aerial searching with both aerial strikes and ground strikes can fly to both swung lure and dragged lure.
- Black Falcon: aerial searching striking prey on the wing can be flown to the swung lure.
- Kites: searchers and scavengers are flown to the fist for exercise but can be flown to ground lures and black kites taught to catch prey on the wing.

With all of the species that fly to the lure, they will need to be taught what the lure means (*figure 9*). The lure should represent the type of prey that the bird will normally be chasing in the wild. In most cases lures are made out of a sewn leather bag in a rough shape of the prey item. The process of introducing the bird to the lure is similar to that of introducing it to the fist by using a small piece of food tied to the lure as the motivation.



Figure 9- Introducing a Peregrine Falcon to the lure whilst still on the creance by dropping the lure with the reward tied to it on the ground directly in front of the bird. Although this is not how we want her to catch the lure in the end, it is how she learns that the lure is her prey.

Eventually the lure does not have to be baited as the reward will come soon after the lure is caught from the handler's fist. The lure is also a very useful tool for the handler if the bird

becomes nervous or lost as the bird will almost always come back to the lure before it will come back to the handler.

FREE FLIGHT:

Once the bird has become comfortable with flying to the handler and the lure, we are ready to allow the bird its freedom by removing the creance line. It is important to replicate the exact movements and training behaviour. The first free flight of any bird is always a nervous moment for any handler. Will the bird do just as it has previously or will it fly away? This is the normal thought process of every handler, it is important to be completely confident that the bird is ready for this next step. The key to all training procedures and what should be at the front of your mind for all training sessions is that you want to set the bird up for success, not failure. Know your birds' limits, where it was at in its last training session, and make things as simple as possible for them. For their first free flight, the weather wants to be perfect, not windy or raining. The birds' weight must be at or below its target to assure its motivation, there should have been nothing out of the ordinary happened between the last session and this one, and most importantly the handler does not give off nervous vibes as the bird will pick up on this. For the first free flight you should go back several steps in the birds program.

For example: a Peregrine Falcon has been confident flying 20 meters or so to a lure that is being thrown to be caught in the air, go back to jumping onto a lure thrown on the ground within a couple of meters. The reason being is that the bird will know it doesn't have the creance attached as it won't feel the drag of it on the ground behind it, which will lead to the bird flying faster. Going back to the ground lure also puts the bird at a stage where it should feel very comfortable and secure and thus is less likely to stray. It also gives you almost total control of the situation. If there is a breeze, the bird should always be flown into the wind for the first flight as they won't have to work as hard to stay in the air and won't be traveling as fast through the air. Once the first free flight is complete, the bird can progress quickly to where it finished on the creance line. The bird can now fly without the restrictions and can progress to a full on lure hunting mission.

Once the bird is totally free flying, you can work on increasing the birds fitness through longer times spent in the air and greater repetitions so long as your bird has the motivation and, with the lure hunting tasks you have taught the bird you will be able to fully assess whether or not your patient is going to be able to survive once released back to the wild (*figure 10*).



Figure 10- White bellied Sea Eagle exercising on a windy day after completing his training program and on the way to building fitness for release.

CONCLUSION:

Free flying raptors prior to release has been proven to be the most efficient way to prepare these ultimate predators for a return to the wild. It can not be called “Falconry” in its true form as you are not hunting with your bird. You are using “falconry” training techniques to help the bird gain fitness and improve its hunting skill on inanimate lures. The background knowledge and skills learned to undertake a training program in this method can be used for not only raptors but a whole assortment of different animals and we have seen results using positive reinforcement with species such as wombats, cormorants, herons and a range of native parrots. The power of positively reinforcing behaviours is limited only by the vision of the rehabilitator. A good relationship, consistent communication and reward scheme, combined with small steps good animal observations will lead to excited and quick learning by your patient and will help to reduce the stress all animals go through when they come into care after suffering some form of trauma.