Australian Raptors - Identification and Species Behaviour for the Vet

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Australian raptors can be very high strung and stressed when housed in captivity, as seen with raptors worldwide. Several Australian species are particularly aggressive to handle or are stressed when in housed in hospital caging. Identification of the Australian species presented, plus some knowledge of their behaviour in captivity, allows veterinarians to anticipate difficulties housing and handling raptors undergoing treatment. Behaviour and stress proneness will vary with husbandry factors and different management. When housed in large aviaries for flight training or display, fewer Australian species are noted for stressed or aggressive behaviour. Diet and requirements for release back in the wild can differ with species also.

Examples of species differences include: (a) the Pacific Baza has a diet of reptiles, amphibians and insects (not the common mammals or bird diet of most raptors); and (b) kestrels are extremely hardy whereas black-shouldered kites are highly stressed and very difficult to maintain in small caging as a result.

AIDS IN IDENTIFICATION TO GROUP OR SPECIES:

There are 33 species of Australian raptors, plus 3 other raptor species occasionally visit northern Australia from overseas. Unlike overseas raptors, Australian species tend to be seminomadic and don't undertake long mass migrations. It can be convenient (but not truly taxonomic) to think of Australian raptors as two groups of 4 for the owls (considering the lesser and greater sooty owls together), and four groups of 6 for the diurnal species. The diurnal or day-active species include 6 falcons, 6 kites, 6 hawks (with inclusion of the black breasted buzzard), and 6 others (3 eagles, 2 harriers, and the osprey). Raptors are especially distinguished from other types of birds by their strong well developed talons and that they catch prey using their feet. The familiar tawny frogmouth is not a raptor, both lacking talons and catching prey with its large beak not its feet.

Colour:

Colour is not a great help for identification – a lot are brown; or brown and white, grey, or black. A few are distinctly coloured when adult; notably the small white and black Elanus species kites, the white and deep rich red-brown brahminy kite (note osprey are near the same size but more brown/tan and white), and the grey and white very large white breasted sea eagle. Juveniles can be harder to identify to species, being more mottled brown and less distinctively coloured than adults. Recognising that a thin raptor is a juvenile through its less distinct colouring may allow the assumption it has been starving through inexperience hunting; whereas a thin adult would likely have an underlying problem that contributed to the weight loss or prevented it hunting. Juveniles still in the nest will have some down present.

Wing shape:

Wing shape differs with raptor groups, related to hunting style which has implications for the fitness required for release of rehabilitated birds back into the wild. High speed pursuit species such as falcons require absolutely perfect recovery to be fit enough to survive and not starve when released; occasionally less athletic and carrion eating species will manage after release with a minor defect (but very experienced people need be consulted to determine this if contemplated). High standard results are also required for species which hover (e.g. kestrels, Elanus species kites) or make fast dashes from cover (goshawks).

Features of wings to look for include camber (cross section curve of the wing), wing load (weight per area of wing e.g. light body large wing area is low wing load), and aspect ratio (length of wing in relation to width). Examples are the low wing load curved and round ended wings of owls (which also have very soft feel to their feathers making for silent flight), high wing load long narrow wings of falcons, and broad wings of hawks, eagles and kites.

Size:

Size can help distinguish which species a raptor may be, and helps when talking with members of the public who ring. For example, is it smaller than magpie/ galah size , galah to sulphur crested cockatoo size, or bigger than a sulphur crested cockatoo? All 3 eagles are up to 1-4kg so they can be recognised almost on size alone. The two smallest diurnal species, at under 220g, are the kestrel (a falcon) and collared sparrowhawk. Think of species as up to 300-400g, between 400-800g, near 1 kilo or over. Weighing the bird is very useful, allowing weights to be compared to possible species weights in field guides (especially once you have an idea if it is a falcon, owl or kite etc). Weight is also a clue to sex of the bird - all Australian raptors (as for most raptors worldwide) show reverse size dimorphism, i.e. females are larger than males. An exception to this is the powerful owl where the male is heavier than the female.

Other aspects:

Falcons are easily distinguished from others by having a notched “tooth” on the upper mandible (used for breaking the neck of birds caught) and a fleshy eye ring. Goshawks and eagles may have a heavy bony brow ridge over the eye, giving a fierce expression. Leg build (heavy and robust e.g. eagles, or fine), leg length, and whether the legs are feathered to the feet or if the tarsometatarsi are bare, can help distinguish species. Locality guides in field guides also help to eliminate which raptor species are not likely to be encountered for certain areas. Field guides can also be used for finer points of identification and for information on diets, weights and habits.

BEHAVIOUR, HOUSING AND HANDLING:

Dim light is calming for raptors – and is the principle behind the use of leather hoods covering the eyes for trained raptors. Raptors are usually solitary birds in the wild not social flocking birds (except in Australia the black kite in Australia is gregarious). In captivity raptors are high strung and stressed easily. Some species are less stress prone than others. Housing to reduce stress and damage resulting from stressed birds hitting cage walls is imperative.

In veterinary hospitals cover cage doors (e.g. with towels on the inside) to provide a dim environment, and have solid sided cages with no exposed wire. This is important because stressed raptors will often frantically try fly or throw themselves at cage walls and doors, causing injury and

feather damage which will prolong and complicate their treatment in captivity. Feathering needs to be perfect when birds are released, or flight and hunting ability will be impaired. Damage to feathers means extra time in captivity awaiting the feathers to grow out (or replacing damaged feathers through imping – glueing on a cut piece of a saved good feather to replace the damaged section, using a whittled piece of wood inserted in the shaft of the cut down damaged feather).

Put raptors in a quiet area of the hospital away from predator or prey sounds (dogs, cats, other birds, human noise), e.g. in the isolation room; and hospitalise them the minimum time necessary before passing them to experienced rehabilitators. Some raptors feel less stressed when up high – e.g. in top cages rather than ground level cages. They will often pick at red coloured bandages (flesh colour) so use other colours preferably. Stress may be shown either as frantic/escape behaviour, or some will sit quietly and be withdrawn.

For rehabilitation flight aviaries again there should be no exposed wire and they should be sited away from human noise and traffic, dogs barking, etc. Flight aviaries are used to allow the bird regain physical fitness before release back into the wild (fitness can also be regained through free flight training however falconry is illegal in Australia). A bush aspect is ideal, and dimmed interior (e.g. lined with shadecloth) also helps reduce stress. Lining with shadecloth, or other methods to line the interior such as with vertical wooden dowels, also protects against feather damage in aviaries. Note that raptors in zoos and wildlife parks may often be unreleasable cripples or birds accustomed to wire. Many raptors will be stressed in small caging but more settled once in aviaries.

Handling: Most raptors can also be aggressive to human keepers, especially if human imprinted when young and thus losing their fear of humans. Handling is very stressful for raptors (and can be for their handlers). When handling raptors, keep in mind that the feet are the main weapon of defense and attack and are most dangerous. Some falcons will bite, but this is minor compared to being grabbed by the feet. Aim to control the most dangerous part – use towels to cover the bird and control the wings then grab the legs securely. Covering the eyes with the towel while handling the bird helps calm it. Always maintain control of the feet, and use of preferably isoflourane anaesthesia greatly helps handling and examination. Examination under anaesthesia is far less stressful for the bird (provided it is obviously fit enough to anaesthetise). As with all birds handling is stressful, so minimal necessary time handling (and under anaesthesia) is desired – have all equipment and medications prepared beforehand.

Some species are notoriously aggressive to handle and will try fly at you from cages so be alert. Some will roll on their back and throw their feet at you – for these you can try use two towels, giving them one to occupy their feet then try catch them with the other. Experience handling is sometimes the only way. Be prepared for them waking suddenly under anaesthetic, and consider methods to keep control of their feet or lessen the danger. The slip knot ties used to tie out dog speys can be looped gently round the tarsi, or some people tape ball bandages onto the feet. Note that removal of ball bandages may be a problem when the bird is awake). If grabbed by their feet there are some suggestions, but probably not totally reliable solutions – some suggest throw the bird (idea is the bird lets go as it tries to fly), or straighten the hocks fully with your other hand (associated with the toes extending and loosening as the hock is extended).

Perching:

In the wild raptors spend less time perching than in captivity. In hospital caging they spend near all day on their feet and are very prone to bumblefoot as a result. Development of this, and the need for treatment of the bumblefoot, means extra time in captivity (prolonging the period of stress in

captivity). Soft perching and substrate is important in prevention. Astroturf covered perches and floooring, soft rope wrapped perches, and paperbark.perches are very good to use. An extra factor in development of bumblefoot for some birds is getting over weight, through the regular feeding and reduced exercising in small caging. There are other causes of bumblefoot apart from hard perching; such as increased weightbearing on one leg when favouring an injured leg, and talon punctures introducing infection into the foot. Raptors feel more secure when perched high.

HE GROUPS AND THEIR BEHAVIOUR:

To identify a raptor, it is first necessary to identify whether it is an owl, falcon, eagle, hawk, or other hawk allied species. Behaviour comments given here for each type when in hospital caging or aviaries are drawn from rehabilitator records, and communications with raptor keepers at two wildlife parks which house many raptor species. Biologist references are also drawn on with regard to wild and some captive behaviour. Several species are quite more stressed when in small hospital caging in comparison to when they are in aviaries. Behaviour and stress proneness will vary with differing management and husbandry, and the experience of people keeping the birds.

Owls: (Order Strigiformes, Family Strigidae)– The owls are distinguished by their large forward facing eyes, short rounded wings and soft feathering in contrast to the other raptor groups. The other raptor groups (diurnal raptors) have eyes set more to the side of their heads. There are nine species of Australian owls (plus a hawk owl occasionally visits Western Australia from overseas). Many are rare or threatened, especially rufous, powerful, masked and sooty owls. The owls can be considered as two groups of 4 :

(a) The barn owl types (Tyto species): having a typical facial disc.
These are the Barn (T. alba), Grass (T. capensis), Masked (T. novaehollandiae) and Sooty Owls
(greater sooty, T. multipunctata, and lesser sooty, T. tenebricosa – lesser sooty confined to and replacing greater sooty in the rainforests around Cairns). These are all similar size and are distinguished by colouring and posture; and that the Masked and Sooty Owls have heavier legs and feet, with feathering down to the feet.

(b) The Ninox species (boobook type, or hawk owls): are distinguished especially by size, and have an incomplete facial disc.
These are, in order of size, the Southern Boobook (N. boobook – smallest, weight 170-360g), Barking (N. connivens, 425-510g), Rufous (N. rufa – very rare, northern Australia) and Powerful Owls (N. strenua, 1050-1700g).

Behaviour: All owls species have been kept in aviaries by one wildlife park; rehabilitators have kept all except rufous and grass owls. Overseas, owls are regarded as varying in nature and size but often are mild and placid, seem to cope with captivity better than other raptors, and settle in quickly breeding readily.

In hospital caging, powerful and barn owls are prone to stress and will sit quietly and be withdrawn. Powerful owls are also noted for aggression and attacking or “playing dead” before attacking. Their large size and reknown tendency for aggression when in small caging make them dangerous and intimidating to handle. Barn owls and masked owls show aggression by clicking their beak and swaying or hissing, as reported for owl behaviour overseas. Barn and sooty owls are quiet in small caging. Barn owls at times will “play dead”, and most Tyto owls when threatened will open their wings and stand up tall – this and/or head bobbing are signs of imminent attack

when seen in a powerful owl. Boobook owls at times are active and easily stressed in small caging, and occasionally will attack. Boobook and barking owls can be fast to escape by you when the cage door is opened if given opportunity. Barking owls will scream, can be fussy feeders and may pretend to ignore you though very aware of your movements. Barking owls are generally well behaved in small caging.

Powerful owls are also noted by rehabilitators to be aggressive when kept in aviaries. They are found difficult to keep by one wildlife park, being quiet and withdrawn with stress, and not settling in well.

The only owl kept that hasn't managed to be bred by that park is the sooty owl, which can also be slow to settle into aviaries. The other wildlife park hasn't kept powerful owls. Rehabilitators find barn and sooty owls are calm in aviaries.

Falcons: (Order Falconiformes, Family Falconidae) – Falcons (Falco species) are distinguished by having fleshy eye rings, and a beak notch or "tooth" present on the upper mandible used for breaking the neck of captured prey. They also have long narrow pointed wings, being fast pursuit hunters, and often have a "teardrop shaped" marking round the eyes. The different falcons can be distinguished by colouring and size, except the brown and black falcons can be confused at times (black falcons can be more dark brown than black). There are six Australian falcon species, with the grey falcon being rare or threatened.

The species, from smallest to large, are the Kestrel (Falco cenchroides 163-173g), Little Falcon or Hobby (F. longipennis 217-270g), Grey Falcon (F. hypoleucos 336-567g), Brown Falcon (F. berigora 476-610g), Peregrine Falcon (F. peregrinus 552-823g), and Black Falcon (F. subniger 638-835g).

Behaviour: Falcons generally are found aggressive. In hospital caging the kestrel, brown falcon and peregrine females are noted for aggression. Female peregrines are especially known by rehabilitators as aggressive and liable to attack when in hospital caging and aviaries, changing from quiet to aggressive after one week's captivity once they have worked humans out. Kestrels will roll on their backs and throw their feet in the air when cornered. Grey falcons and kestrels are robust when hospitalised, and black falcons can be stressed easily. Hobbies are prone to stress when in hospital caging and in aviaries. Grey falcons are found quiet and unobtrusive. Rehabilitation aviaries for falcons shouldn't be cluttered as they prefer open spaces.

Hawk and hawk-like species:

Six species of raptors represent the eagles, harriers and the osprey in Australia. These along with the hawks, buzzard and kites are the representatives of Order Falconiformes, Family Accipitridae in Australia. The osprey, which has special adaptions for catching fish by diving into water, is the only member of the Subfamily Pandioninae; and the other hawk and hawklike species are members of the Subfamily Accipitrinae. The hawk and hawklike species are small to very large birds with often broad round wings, and may have bony brow ridges above the eye giving a fierce expression e.g. goshawks. Eagles and the large kites have long broad wings; the goshawks and sparrowhawk have short broad wings, long legs and long tails. Some species have a crest that can be raised, most notably the Crested Hawk (Pacific Baza) and Little Eagle.

EAGLES, HARRIERS AND OSPREY:

The three Australian eagles are distinguished by their size, powerful feet and legs, and broad wings; with Wedgetail Eagles (Aquila audax) and White-bellied Sea Eagles (Haliaeetus leucogaster, actually related to the kite species) at between 2-4 kg being the largest Australian raptors by far. The Wedgetail Eagle and the third eagle, the Little Eagle (Hieraaetus morphnoides 635-1046g), are two true "booted" eagles with heavy feathering down to their feet, contrasting to the Sea Eagle's bare tarsi and distinctive adult grey and white colouring. Wedgetail eagles have hackles at their nape, and little eagles have a small crest.

There are two species of Australian harriers, the Spotted Harrier (Circus assimilis 465-671g) and Swamp Harrier (Circus approximans 647-890g). Harriers are slim bodied birds with long narrow wings, long legs, long tail, and an owl-like facial ruff.

The Osprey or "fish hawk" (Pandion haliaetus 1013-1235g) is a large white and brown bird with powerful feet, bare tarsi, and a crested nape.

Behaviour: Eagles are regarded overseas as fairly calm, robust and easy to keep in aviaries (forbes, arent) except for suffering tremendous stress at times when changed to different facilities (forbes). Australian eagles tend generally mild mannered in aviaries. Little Eagles in aviaries are prone to stress at first but will settle in quick. Flight aviaries for Australian eagles are best open and uncluttered.

When Australian eagles are housed and handled in small hospital caging, stress and aggressive behaviour can be seen. Wedgetail Eagles occasionally will be aggressive and will be fast with their feet, throwing their feet at you when cornered. Wedgetail Eagles are very observant, wary and shy; and usually quiet in small caging and aviaries. Little Eagles are very stress prone in small caging, sometimes "fainting" when approached if ill, or "fitting and dying" with stress. Little Eagles often will thrash around at first but will settle down fairly quick. The White-bellied Sea Eagle can be a most difficult and aggressive bird, especially the female. White-bellied Sea Eagles can be fussy feeders, are easily stressed in small housing, and are very hard to handle through biting hard and readily using their talons. Some White-bellied Sea Eagles will be aggressive also when in aviaries.

Harriers: One wildlife park regarded harriers as quite difficult to keep in aviaries being stressed in captivity. The spotted harrier was one of only two of all the raptor species the park had kept that it hadn't managed to breed. Rehabilitators had kept very few harriers. The swamp harriers in rehabilitation were easy to catch, did tend to fly into the roof of the aviary,were flighty and did make escape attempts through stress. Spotted harriers were found quieter and easy to catch.

Osprey: Rehabilitators found osprey usually fed well once settled in. One wildlife park found osprey quite difficult to keep in aviaries longterm as they were stressed in captivity. Osprey find walking with their long claws and foot shape on flat ground difficult without their wings to balance; hence wing amputation for them can be cruel and is not recommended.

KITES:

There are six kite species in Australia. The two small "white-tailed" kites (Elanus species) are small gull-like grey and white hawks with long pointed wings, short legs and often will hover. The small kites are the Black-shouldered Kite (Elanus axillaris, often seen hovering by roads 249-293g – the other raptor that hovers by roads is the kestrel) and the Letter-wing Kite (E. scriptus – inland Queensland area and actually fairly nocturnal 289-343g).

The four large kites all have small feet, and long broad wings for soaring. They are distinguished on tail shape, and also distinctive white and deep red brown colouring for the adult brahminy kite (the other three are brownish hawks). They can be confused at times with the similar sized black breasted buzzard or little eagle, but the latter two species have much more robust build and legs (and feathered tarsi for the little eagle). The four species are the Square-tailed Kite (Lophoictina isura, tail has square end, 501-650g), Brahminy Kite (Haliastur indus 536-588g), Black Kite (Milvus migrans, tail has forked or square end, 554-626g) and Whistling Kite (Haliastur sphenurus, tail has wedge shaped end, 632-907g). The square-tailed kite has a small crest and is rare or threatened.

Behaviour: The Australian kites are generally shy and nonaggressive. They range from the notoriously stress prone Black-shouldered Kite to what is regarded as a "beginner rehabilitator's" bird in the Whistling Kite. Black-shouldered Kites can be moderately difficult to keep in aviaries and very difficult to keep in small hospital caging, due to the stress of captivity. Black-shouldered Kites are easily stressed in small caging, often just sitting quietly and "sulking" then dying from stress in a few days. Alternately they will face their handler screeching when approached and often will lie on their back or head down when cornered. Black-shouldered Kites can be quite vocal and frantic, throwing themselves around hitting the walls and roof of small caging and aviaries trying to escape (and prone to feather damage as a result). It is best to get Black-shouldered Kites in rehabilitation out of hospital cages into aviaries within a few days or sooner if at all possible (with consideration for their clinical condition if it allows). Letterwing Kites were kept by one wildlife park and were similarly stress prone, being very flighty and requiring planted aviaries to provide cover and security for the birds.

The four larger soaring kites, like soaring hawks overseas and eagles, are fairly robust when in aviaries. Black Kites in captivity are generally quiet, and can sulk on the floor in small caging with their heads in a corner sometimes up to a week. They feed well once they settle down, and the young especially may lie flat on the cage floor. They can be prone to feather damage in confined places as they can be quite clumsy. Whistling Kites tend to be much more robust than Black Kites being quiet, feeding well even gorging themselves, and being easy to handle and rehabilitate; hence are a "beginners" bird. Young Whistling Kites will often lie on the ground with wings out as if ill (an act).

TRUE HAWKS AND BUZZARD:

The remaining six Australian broadwinged raptor species include three Accipiter species hawks, two other hawks and the Black Breasted Buzzard. The three Accipiter species, comprise the Collared Sparrowhawk (Accipiter cirrhocephalus 126-218g), Brown Goshawk (A. fasciatus 227-350g male 343-570g female), and Grey Goshawk (A. novaehollandae 356-720g); and have short rounded broad wings, long tails, long legs and long toes, and a "fierce expression" due to heavy brow ridges. Collared sparrowhawks and male brown goshawks can be similar; except collared sparrowhawks have spindly legs and the middle toe is much elongated, projecting past the other toes. Northern Australia also has a Red Goshawk (Erythrotriorchis radiatus 635g male 1100-1300g female) which has a slight brow ridge, massive feet (as do brown and grey goshawks),and bare tarsi: and is quite rare.

The fifth remaining hawk is the Crested Hawk or Pacific Baza (Aviceda subcristata 307-347g) which has no brow ridge but possesses a distinctive crest and has small weak feet.

The Black Breasted Buzzard (Hamirostra melanosternon 1196-1330g) is a large bird, between the Little and Wedgetail Eagles in size. It has a slight brow ridge, robust feet, bare tarsi and distinctive black breast when adult. It is also rare or threatened.

Behaviour: The Australian Accipiter species, as with Accipiters overseas, are the sprinter hawks which dash at quarry. They are particularly noted for being highly strung and very stressed in captivity. These contrast in behaviour to the fairly robust soaring hawk allied species ie eagles, the four large kites and the Black Breasted Buzzard. In the wild the Australian goshawks and Collared Sparrowhawk are quite shy woodland inhabitants, but are aggressive and fierce hunters sprinting after quarry from trees and occasionally soaring (e.g. Brown Goshawks around chicken coops). They use up their energy reserves quickly especially when stressed. Rehabilitators found the Australian goshawks and Collared Sparrowhawk needed well planted aviaries with outside views kept to a minimum by use of trees and brush, as they are highly strung.

Collared Sparrowhawks die easily from stress in captivity, and Brown Goshawks will often show frantic behaviour. The Brown Goshawk is aggressive, even viscious in captivity. Brown Goshawks will often lie on their backs when cornered, attack with their feet, and can be slow to settle in aviaries. Grey Goshawks are usually quiet in small cages, calm when handled and feed well, but are flighty in aviaries and so prone to feather damage. Collared Sparrowhawks are similar to Brown Goshawks in being very fast with their feet and talons, very nervous needing hiding places, being fussy feeders and are prone to feather damage as they are flighty in aviaries. Rehabilitators and one wildlife park had not kept the Red Goshawk.

The Pacific Baza is a quiet or docile species, sometimes difficult to get to feed in rehabilitation (even allowing for its more unusual natural diet involving reptiles, amphibians and insects). Black Breasted Buzzards are regarded as the most intelligent Australian raptors by one wildlife park, but they can sulk and sit quietly through stress at times. The Black Breasted Buzzard is one of the few tool using birds, using rocks to break open emu eggs to feed on in the wild. They also “sussed out” (figured out) their keepers quickly. Though very intelligent, Black Breasted Buzzards have not been reported to feather pick (unlike the very intelligent North American Harris Hawk which is known for this when bored in captivity).

CONCLUSION

By having some idea of the identity and likely behaviour of a raptor species, vets can anticipate how difficult it may be to handle and house the bird whilst under treatment. Particular attention needs to be paid to stress prone species with regard to housing in quiet hospital areas, minimising noise from dogs and cats and minimising handling and lighting. Vets can also be prepared in advance when a difficult or aggressive species requires handling for treatment. Knowing the raptor species also impacts on its rehabilitation and release requirements. Information presented here may help prepare vets in advance to better deal with a raptor case and the bird’s requirements in hospital and aviaries.

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