

# Powerful Owl

*feather identification guide*



Photo: Mick Carlsson

# All About Feathers

*A feather found on the ground can tell us a lot of useful information. It can pinpoint locations that are important to birds, inform us of movement patterns and can even be used for genetic testing. A simple feather can help direct important conservation efforts!*

## Feather Anatomy

Feathers are remarkably light and strong. They are composed of keratin, which is the same protein that makes up our hair and nails, as well as the scales of reptiles.

A feather consists of a central hollow shaft, called a *rachis*, rather like a tree trunk. The feather shaft has two *vanes*, flattened parts of the feather attached on either side of the rachis. The vanes are formed by *barbs* that branch from the rachis like the branches of a tree. These barbs bear *barbules* that radiate, like the smaller branches of a tree. Tiny *hooks* on the barbules connect the barbs together to form the flat plane of the feather vane.

When birds preen, they run the length of the feather through their bills, which engages the barbules and shapes the barbs into a vane, making the feather work as one continuous unit. This helps birds to fly, stay warm and repel water.



## Types of Feathers

Each bird has several different types of feathers that each perform different roles on the body. There are seven broad groupings:

**Wing:** These feathers are for flight and have tight interlocking barbs. They are asymmetrical, one side of the rachis much shorter than the other. Tend to be referred to as primary and secondary flight feathers.

**Tail:** Tail feathers are often strong and similar in appearance to wing feathers. They can be symmetrical or asymmetrical and used for steering the bird in flight.

**Contour:** These cover most of the body of the bird. They are coloured only at the ends, whereas the base is fluffy or downy to help keep the bird insulated.

**Semiplume:** These feathers are largely hidden under the contour feathers. They have a central rachis but no hooks on the barbules so they don't interlock. This helps them remain fluffy and soft and serve to insulate the bird.

*Down:* These feathers don't have a strong defined rachis. Instead they are very soft and are used to trap air and create a layer of insulation.

*Filoplumes:* These are very fine feathers consisting of a thin shaft (rachis) with a few short barbs at the end. We think that these act as sensory receptors for the other feathers.

*Bristles:* These are feathers that often have a thick rachis with just a couple of barbs on the base (if any). They are usually found around the bill (particularly for insectivorous birds where they act as a funnel and a sensor) and eyes (where they act as eyelashes).

A number of feathers on an owl's body have very unique features. Around the face or eyes (depending on the type of owl) they have stiff facial disc feathers and they have bristles around their bills. Their feet are also quite feathered which helps keep them silent in flight and helps them react to prey or other items they are touching. Owls also have a comb-like edge to their primary (or the first row) wing feathers. These combs help break up the turbulence that would usually hit the wing and effectively muffle the sound of the air passing over them, helping with silent flight.

### Collecting Feathers (or rather, not)

While it is very tempting to collect feathers that you find, every state and territory in Australia actually has rules and regulations around the collection of bird feathers. In NSW it is illegal to retain a bird specimen or parts of it (including feathers) without the appropriate permission from the NSW National Parks and Wildlife Service.

There is also a very small, but real risk of infection from a number of diseases when coming into contact with wild birds, their secretions, droppings and feathers.

So rather than collecting feathers (or other bird parts), simply admire it, take a photo, and leave it in place (unless you are part of a project with the appropriate scientific licence). If you do touch feathers, be sure to wash and sanitise your hands afterwards.

*Identifying a species by a single feather can be very challenging. This guide has been designed by the Powerful Owl Project to help you determine if you have found a Powerful Owl feather. We have also included images of other species whose feathers look similar. The guide focuses mostly on wing and tail feathers as they are most often found but we have provided examples of other feathers where available.*

*This Feather Identification Guide has been generously funded by Ku-ring-gai Council. We thank them for their ongoing support of the Powerful Owl Project.*

If you find a Powerful Owl feather, please email [powerfulowl@birdlife.org.au](mailto:powerfulowl@birdlife.org.au) and include a photo and other relevant information such as the date and location.

# Powerful Owl



Dark brown/grey head, back and wings with white barring

## About the Powerful Owl

Powerful by name, and powerful by nature - the Powerful Owl *Ninox strenua* is Australia's largest owl with wingspan of up to 140cm. Despite being classified as Threatened throughout its range (at state level), the Powerful Owl can, and does, survive within cities. These owls are found in the suburbs of Sydney, Melbourne and Brisbane, particularly where bushland remnants are close by. They may even be using your backyard!

Off-white chest with dark brown 'V' chevrons

Photo: Jenny Stiles

## Identifying Powerful Owl Feathers

### Adults

- Wing feathers with barred colouring on both vanes curving in to meet at the rachis on both feather vanes. This is often symmetrical. Primary and secondary flight feathers are dark brown with light grey-brown/off white bars, c. 10 mm wide and spaced c. 20 mm apart
- Tail feathers are dark brown to grey-brown with white tips. Barring is off-white and evenly spaced - usually 6-7 off-white bars, c. 5 mm wide and spaced 20 mm apart. Adult tail feathers are usually more than 200 mm long
- Contour feathers have soft downy ends. They can have various proportions of brown to white depending on where they are located on the body
- Barring extends across the whole of the feather, wing feathers often have a white tip

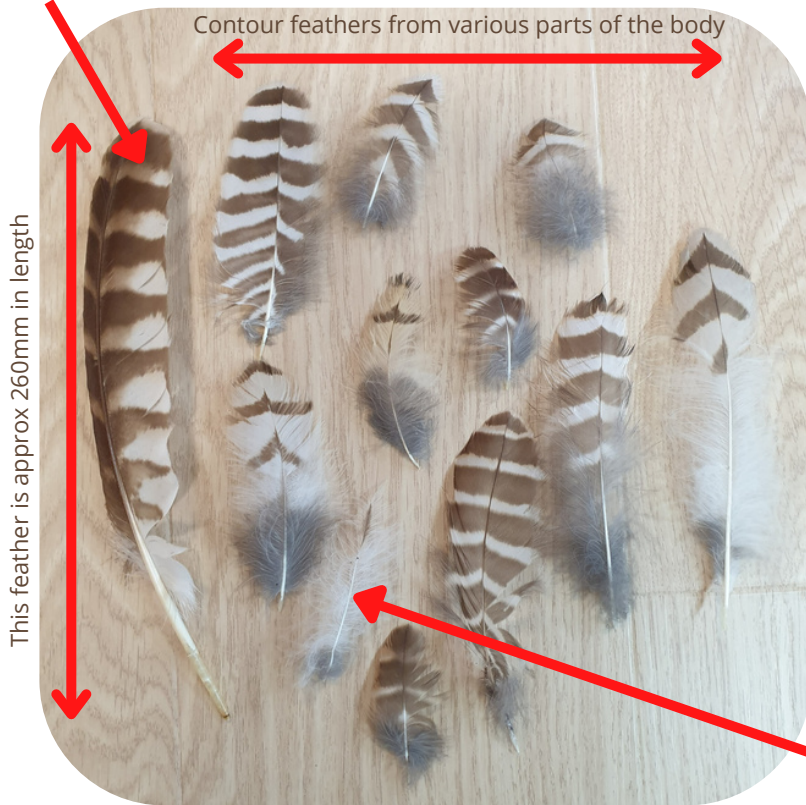
### Juveniles

- Feathers have an overall downier appearance and texture
- Wing feathers paler in colour and barring wider than adults
- Tail feathers paler dark brown than adult, with much broader bars; white bars 5-7 mm wide and spaced 5-7 mm apart



# Powerful Owl: Adult

Wing feather



A selection of contour feathers (note soft downy ends) and a wing feather from an adult Powerful Owl, except for a single chick feather as highlighted.

This feather comes from a chick. It gives the chick it's streaky appearance before the chevrons (V shaped marks) come through

Photos: Jenny Zvolanek



Feathers are from left to right 220mm, 330mm and 250mm respectively

Three wing feathers. Left and right are secondary flight feathers and the middle is a primary flight feather. Note the comb-like fringing on the primary flight feather.

# Powerful Owl: Juveniles



Above: A pair of Powerful Owl chicks (owlets). Photo: Sandi Rigby

Barring beginning to show at tip.  
Gives the 'V' markings on chest



Barbules don't interlock,  
giving downy appearance

Above: A selection of feathers from Powerful Owl chicks. Such feathers are often found around the base of nest trees. Photos: Beth Mott



# Powerful Owl



Left: Underside of a stretched wing of an adult Powerful Owl showing flight feathers and contour feathers.

Right: Selection of three tail feathers from an adult Powerful Owl.



Left: Side by side comparison of a Powerful Owl tail feather (top) and wing feather (secondary flight feather)(bottom).

Photos: Beth Mott



# Tawny Frogmouth



Bristles can be seen around beak

## About the Tawny Frogmouth

While they are a nocturnal bird, Tawny Frogmouths (*Podargus strigoides*) are not actually owls. Frogmouths have wide, flat beaks (hence the name - great for swallowing prey whole), while owl beaks are narrow and more hooked (for ripping). Owls have strong feet with powerful talons, while the feet of Tawny Frogmouths are weak.

Their feathers are streaked and mottled to look like weathered bark and this helps them to camouflage against the trees. They have three colour morphs. Grey is most common, and males are always only the grey morph. They have silver-grey upperparts with black streaks and slightly paler underparts with white barring and brown to rufous mottling. Females of this grey morph are often darker with more rufous mottling. Females of the populations in Eastern and South-Eastern Australia have a chestnut morph and females from Northern Australia have a rufous morph.

## Identifying Tawny Frogmouth Feathers

- Wing feathers are rounded and fringed, with barring
- Grey morphs have tail feathers that are barred with alternating light and dark bands of equal width. Light bands are white with speckling of grey/brown and dark brown, dark bands are white as well but with much heavier grey/brown and dark brown speckling. Sometimes the barring is outlined in black
- Many of the contour feathers are finely mottled with bark like patterns and black streaks, sometimes with white spots
- Bars may be staggered rather than extending straight across the feather

Photo: Glenn Emhke

Bodies are heavily streaked including black markings

Heavy mottling



Above: Tail feather from a Tawny Frogmouth. Photo: Beth Mott

Alternating bars of dark and light

Tail feathers

Wing feathers

Contour feather





# Southern Boobook



Photo: Andrew Silcocks

## About the Southern Boobook

The Southern Boobook (*Ninox connivens*) is the smallest and most common owl in Australia measuring 27 to 36 cm long. It is identified by its plumage, which is dark chocolate-brown above and rufous-brown below, heavily streaked and spotted with white. The facial disc is chocolate brown and the eyes are large and yellow/green. Feet are grey/brown in colour. Young Southern Boobooks are almost entirely buff-white below, with conspicuous dark brown facial discs. They have a characteristic 'boo-book' call.

Spotchy or spotted

## Identifying Southern Boobook Feathers

- Wing feathers dark brown with faint brown barring; bars often do not reach edges of feathers and grade into white near bases. Some primary feathers will have a row of white spots along outer edge
- Tail feathers dark brown with 6-7 faint brown bars that become lighter toward base (2-3 bars at base of feather usually white); bars c. 5 mm wide and spaced c. 10 mm apart
- Feathers from breast, belly and flanks are dark brown with large pale spots on edges of feathers that vary individually from almost circular to very elongated, almost streaky; spots mostly white with yellow-brown or buff spread around the feather edge



Photo above shows an outstretched wing and primary flight feathers,  
Photo below is a secondary flight feather. Photos: Beth Mott

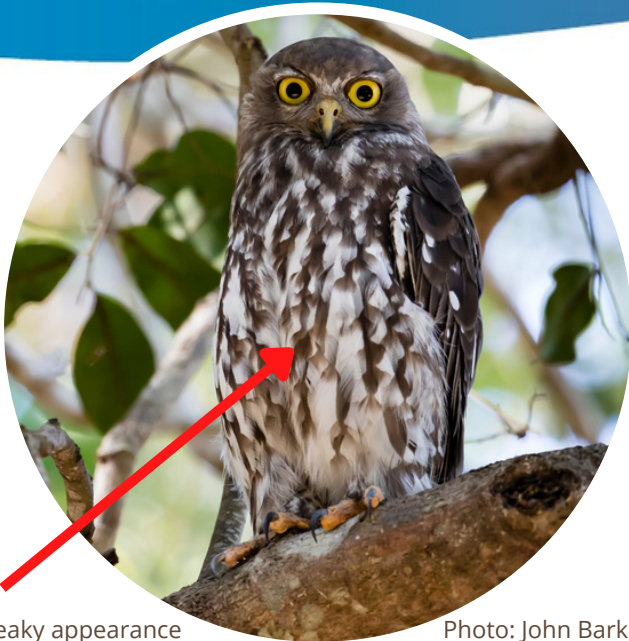


Right shows a selection of wing feathers, contour feathers and a tail feather for a Southern Boobook. Photos: Beth Mott





# Barking Owl



Streaky appearance

Photo: John Barkla

## About the Barking Owl

Adult Barking Owls are grey-brown above, with white spots on the wings, and whitish below, with a vertically streaked chest. The head is almost entirely grey/brown, and the eyes are large and yellow. They look very similar to Southern Boobooks but are larger (39 to 44 cm long) with streaking on the chest rather than splotchy spotting. Barking Owl feet are bright orange (as opposed to grey/brown Boobook feet). They are listed as Vulnerable in NSW and Threatened in Victoria and are most well known for one of their calls which sounds like a 'woof woof'.

## Identifying Barking Owl Feathers

- Wing feathers are strongly banded brown and white. Primaries, dark brown with light grey-brown barring; bars c. 7 mm wide and spaced 12-17 mm apart; outer edge of bars very pale near middle of outer 4-5 primaries, sometimes appearing as white spots on edge
- Tail feathers are dark brown with narrow light grey-brown barring and off-white tips; bars c. 5 mm wide and spaced 12-14 mm apart
- Contour feathers often feature between 1 and 3 pairs of white spots



Barring and spots on wing feathers (all primary flight feathers)

Contour feathers showing pairs of white spots



Photos: Beth Mott

# Species Comparisons



Powerful Owl wing feather. White barring extends to the end of the feather

Southern Boobook wing feather. White barring is curved and incomplete (doesn't go to the edge of the feather)

Tawny Frogmouth wing feather is more grey in colour with mottling amongst the bars.

Barking Owl feather shows white spots

Photo: Jenny Zvolanek



Right: Primary flight feathers of (from left to right) - Tawny Frogmouth, Southern Boobook, Powerful Owl and Barking Owl. Note the fringing on the feather vane.

Photo: Beth Mott



# Other Species

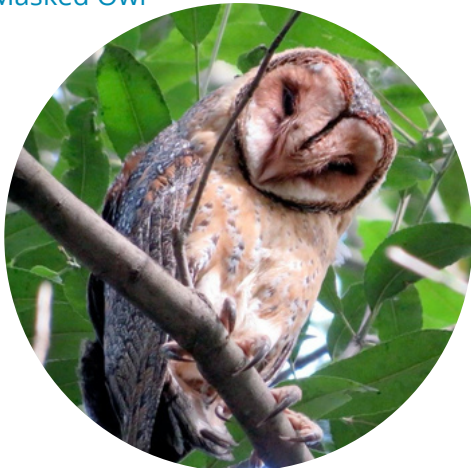
Barn Owl

Photo: Andrew Silcocks



Masked Owl

Photo: Sandi Rigby



Greater Sooty Owl

Photo: William Betts



Feather photos above: Beth Mott



# Other Species

Brown Goshawk

Photo: Andrew Silcocks



Pacific Baza

Photo: Tim Van Leeuwen



Peregrine Falcon

Photo: Tim Van Leeuwen



Feather photos above: Beth Mott

# Other Species

Laughing Kookaburra

Photo: Andrew Silcocks



Gang-gang Cockatoo

Photo: Andrew Silcocks



Glossy Black-Cockatoo

Photo: Diane Peters



Feather photos above: Beth Mott