

**Montague
Island Tours**

**Self-guided
tour**

**“Little
Penguins”**



INTRODUCTION

Little Penguin viewing takes place in many locations around Australia, but we believe Montague is special due to the unique setting down by the wharf, the view to the west and the fact that you will have it all to yourselves!

HISTORY OF PENGUIN VIEWING ON MONTAGUE ISLAND

Tours to Montague go way back to the 1920s and 1930s but the boats would all have to head back to their ports (Bermagui, Narooma or Moruya) well before dark due to the slow speed of transport in those days and the dangerous bar crossing through the entrances.

Guests of the Light Keepers would also have enjoyed watching this spectacle for sure, but they were a privileged few.

A few years after the Island became a Nature Reserve, experimental tours were conducted eventually leading to a highly successful, award-winning tour operation which continues in season to this day.

Morning and evening half-day tours operate throughout the year, with Little Penguin viewing a feature of the evening tours.

A purpose-built viewing platform, complete with lights and interpretive signage, is available for you and your group to enjoy this experience.

Half-day tours feature the interpretive skills of a trained guide. We don't believe you can replace a guide, but this booklet is the next-best-thing.

PLANNING FOR YOUR EXPERIENCE:

Penguin landing times vary with the amount of light - you'll need to plan your dinner for after the viewing most likely.

A good rule-of-thumb is the lighthouse lens. Once it comes on, it is time to head down to the viewing platform.

Wear warm clothing and sensible shoes, and take at least one torch.

You will be away for up to an hour or more.

We want Little Penguin viewing to remain a sustainable, low-impact activity. Please observe the common sense rules of:

- *No chasing, handling or bothering Penguins - any injured birds should be reported to the Field Officer on Duty when you return.*
- *No flash photographs with your cameras.*
- *No lights on the Penguins other than the viewing lights.*

Other tips to make it low-impact are given in the first few pages of this booklet. Take this booklet with you and enjoy this unique experience!

FAST LITTLE PENGUIN FACTS:

Numbers on Montague:

Can vary between 3000 pairs and 8000 pairs, with 6000 being the accepted figure for most researchers.

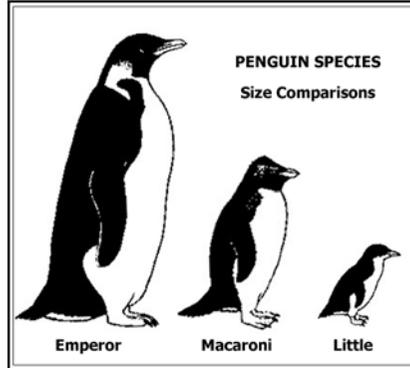
Average Height:

33 centimetres or 13 inches in the old scale.

Weight

Varies tremendously during the year. From as low as 600g to as high as 2000g. Low weights follow energy expensive times such as breeding and even more so after moulting.

Higher weights are common after extensive foraging periods and when the fishing is good.



Adapted from "Little Penguin" book

Aging:

A teenage penguin is considered a good age. However some tagged birds have been recovered still breeding at over 21 years of age.

Difference in sexes:

Almost impossible to tell without a specimen of each sex standing next to each other. Males have a thicker and stronger beak and are usually slightly larger than females.



Penguin pair in nest

Breeding:

2 eggs, roughly five weeks to hatch.

Up to 10 weeks to "fledge" (leave the nest), but usually around 7 to 9 weeks. The average on Phillip Island is 54 days.

Food:

Fish and squid. Krill when available (usually late winter).

Written by Mark Westwood January 2008. Feedback welcome.

SOURCES:

"Little Penguin - Fairy Penguins in Australia" in Australia by Colin Stahel & Rosemary Gales.
New South Wales University Press (Reprinted 1991)

Photos:

Amy Jorgensen, Mark Westwood, Naroma Charters, www.salmon.net.au, and others.

THANKS TO:

Amy Jorgensen, NPWS Narooma for pictures, information and proofing.

Who is watching whom down at the jetty?



BEFORE YOU LEAVE...

Switch off the viewing lights please.

ON THE WAY BACK...

HEADING UP THE TRACK

Some penguins will obviously be on the track as you walk up. It is best to stay back, enjoy watching them walk, until they head off to their burrows.

PLEASE DON'T SHINE TORCHES DIRECTLY ONTO THEM. They become confused quite easily.

However, should it be necessary to overtake them, this can be done by letting them move off to the side, where they will hide, and then move quickly past them. Again, don't shine torches directly onto them.

THANK YOU FOR YOUR COOPERATION IN ENSURING THIS ACTIVITY WILL REMAIN SUSTAINABLE.



HOW TO OBSERVE PENGUIN LANDINGS

Penguin watching must be carried out in a sensitive manner that has no negative impacts on the birds.

Please stay well back from them, on the viewing platform.

Make as little noise as possible and make no sudden movements.

Quiet talking and slow movements will not disturb them.

Remember, these are wild animals and we must keep human interaction with them to as little as possible.



NEVER CHASE THEM, OR TRY TO PICK THEM UP!

USE OF FLASH CAMERAS IS NOT PERMITTED during night Penguin watching.

THE VIEWING AREA

Over near the top of the stairs is a control panel.

The top switch turns the specially-designed viewing lights on. It will be very important that you switch this light off before leaving!

The bottom switch (a push button) turns the walkway lights on, and is for use of Guided Tour groups only.

Turn the lights on and make yourself comfortable.

WAITING, WAITING...

There may already be some birds on the rocks in front. They usually assemble near the mooring rope post.

OR

They may not have arrived yet – enjoy the sounds and the view and be patient

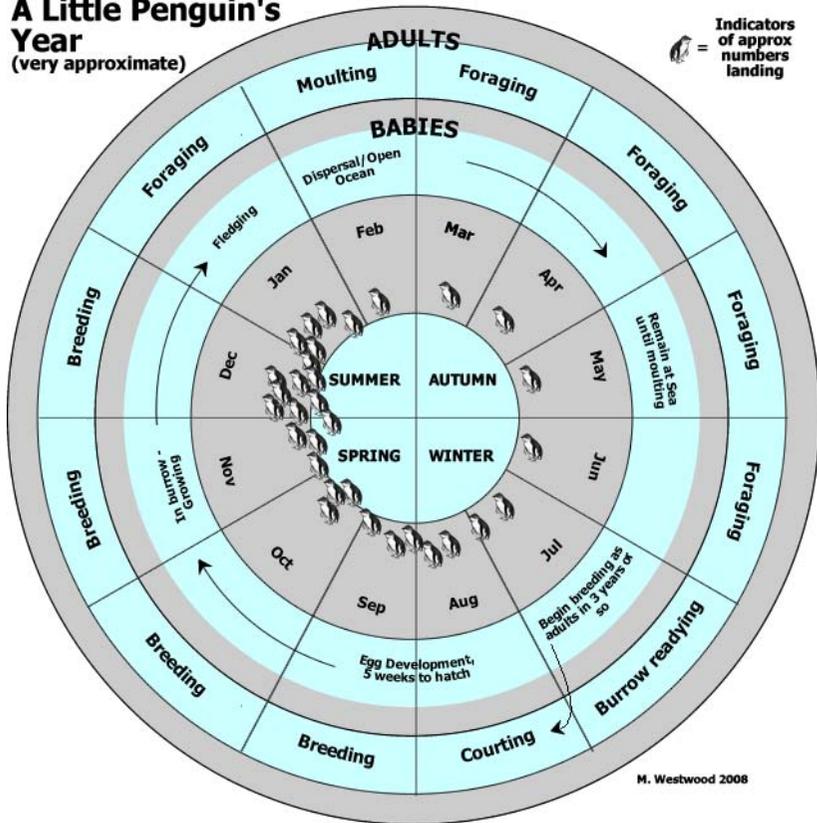
OR

in late autumn and winter, there may be a chance that not a single penguin will come! Sorry, but that's the way it is.

ACTIVITIES:

This chart provides a rough guide to the annual rhythms of a Little Penguin's life on and around Montague Island. The outer ring shows an adult's year and further in the cycle of breeding and chick rearing is outlined.

A Little Penguin's Year
(very approximate)



Swamp Harriers and Peregrine Falcons, as well as Sea Eagles, would be quite capable of taking them from the Island during the day should a penguin be foolish enough to expose itself.



The single biggest threat in the ocean is from pollution. Contact with a petroleum product will cancel the insulating affect of their feathers, causing hypothermia, then death. Entanglement with fishing line or plastic strips (such as the old ring-pull can plastics), or bits of nets. Even a small bit stuck around a penguin's neck results in a slow death due to it reducing their ability to forage effectively.

Competition for their prey from the fishing industry is a real and constant threat.

Some years ago one of their staple diet species - pilchards - had an epidemic of a fatal virus or fungal disease killing millions of them, directly affecting the breeding success of Little Penguins in Bass Strait and Victoria.

On land they face general habitat loss as development increases along the coast. Many colonies on the mainland no longer exist.

Predation by introduced species such as rats, cats, dogs and foxes has resulted in the loss of many mainland colonies forever. Remarkably, Sydney Harbour still has a small surviving colony!

On Montague Island, Kikuyu Grass has affected their habitat negatively through entangling penguins and blocking access to burrows, as well as choking out the preferred vegetation for penguin nests.

See our **Self-Guided Tour 3** for information on our Seabird Habitat Restoration Program (SHRP) which is directly concerned with keeping Montague Island as a Little Penguin sanctuary and providing a secure home for them to return to after a long day fishing.

BREEDING PROBLEMS

By having 2 eggs and 2 chicks, Little Penguins are using a strategy called "brood reduction" whereby in a good year both chicks will fledge and go to sea. However, in ordinary years, one chick will have become the dominant one and received most of the food. The other will waste away.



7-8 weeks. Most down gone, huge appetites.
Almost ready to head to sea!

In bad years, both chicks will not receive enough food and both may waste away.

One of the breeding pair may die, increasing the pressure on the single parent. Breeding success will be low.

Breeding season occurs during spring and early summer and the threat of bushfire through lightning strikes can be a factor in breeding success, as was recorded in the 1950's following a disastrous December fire on the southern end.

THREATS

There is no predator that hunts specifically for Little Penguins. However, a meal of a Little Penguin would be an opportunistic feed for sharks, seals and killer whales if they happen upon an unwary bird.

At sea a school of bait fish can have everything attracted for a feeding frenzy - from big fish to penguins to dolphins to sharks to seals to Orcas - and it is no time for any of them to lose their wariness!

Sea Eagles can snatch a Little Penguin from the water - penguins are not safe from the skies!

LITTLE PENGUINS

Montague Island is home to around 6000 pairs of Little Penguins. *Eudyptula minor* is their scientific name from the Greek for "good little diver". As the name suggests, these are the smallest of the world's 16 species of penguin.

With this population, Montague Island ranks as the third-largest colony of Little Penguins in Australia, behind Gabo Island (some 23000 pairs) and Phillip Island (some 15000 pairs).

Little Penguins are the only species to live and breed permanently in Australia. Some other species are occasionally found resting on southern beaches or washed ashore during a gale.

New Zealand has the same species as here, as well as several other "sub-species" over which there is some debate as to whether they are in fact sub-species at all.

In Australia you can expect to find Little Penguins around the southern parts of the continent from roughly Port Stephens in NSW right around to Fremantle in Western Australia.



Montague from the north.
Ideal Little Penguin habitat!

You'll find them all around Tasmania and the Bass Strait islands. In fact in Bass Strait they are one of the most abundant resident seabird species.

LITTLE OR FAIRY?

It's generally "Little" Penguin in NSW and "Fairy" Penguin elsewhere, but some people love the "Fairy" for its magical connotations. *Eudyptula minor* to those in the scientific world.

WHY ARE THESE PENGUINS LANDING HERE?

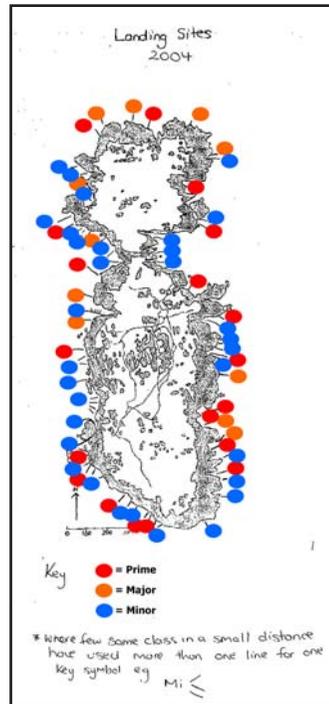
You are witnessing one of nature's true "commuters" returning from "work" to go "home".

Little Penguins eat fish, squid and a few other marine creatures such as krill and even sea-horses. They don't eat anything found on land, so they have to go foraging in the ocean to catch their food to meet their energy requirements. This may involve just a one-day trip, especially in breeding season (during Spring and early Summer) when they will need to feed their chicks each night. It may also involve weeks or even months at sea during the non-breeding season when fish may be hard to find or the penguin doesn't feel the need to go home.

No-one is certain as to why they come ashore at all during non-breeding times. It may be they are nearby. It may be they feel an urge to check their burrow. Maybe they want to see if their mate has been home... We'll probably never know.

To get to and from the water, the penguin will have a "landing site" on the Island, as well as a regular route to the burrow from the landing site. The burrow, the track and the landing site will be instinctively ingrained into their memory. It is rare for a penguin to change burrows without good reason, and even rarer to change landing sites.

This event is happening right around the Island at around 85 documented landing sites. The landing sites range in usage from just a few birds at the smaller sites to hundreds of birds at the major sites. Our viewing platform may come close to one hundred landing penguins in the breeding season, and may have none at all landing during the non-breeding season.



Researcher sketch of landing sites

One parent will stay with them at all times for around 3 weeks - on guard duty and keeping them warm through their brood patch (a bald area on their belly with a rich blood supply).

After this time, the babies will have their "secondary down" and both parents leave them in the burrow and go foraging all day. Each night on their return, they will feed their ever-hungry babies.

The babies get their food by raising their bill and the parent will regurgitate semi-processed food into their gape for swallowing.

As the babies grow, so does their confidence. In their last weeks with their parents they will be waiting impatiently outside the nest and can be fed some distance away from it.

After around 7 to 9 weeks, the babies will leave "home" one night and find their own way to the sea and learn the ways of their world.

For males, their nest site, the way to the water, and the landing site will be ingrained into their mind. They will return for breeding to the same area when they are 3 years old or so, and join in the noisy battle for the best burrow and to woo the best partner!

The parents are now "empty-nesters" and can go foraging to sea as they must gain weight for energy for the moulting season is not far away!



2-day olds! First thin layer of blackish down, eye slits showing but not open, wobbly heads.



3-4 weeks. Brownish down, some has gone from around eyes revealing true feathers.



6 weeks. Some down still showing, but true feathers revealed on lower back, belly and face.

BREEDING

It is not proposed to give a detailed account of penguin breeding strategies here. Just an overview.

Males renovate their burrows between June and August. Some males will be trying to steal burrows and it is a time of intense fighting. Some males will have to build a new nest in the ground or in cracks in the rocks or in unoccupied nesting boxes.

Add to this their vocal displays when courting females and it results in a very noisy Montague Island at night!

Many penguins will have the same mate for many seasons.

After mating the female will lay 2 eggs, up to 4 days apart. The eggs weigh about 55g, and are somewhat rounder than a hen's egg, and pearly white in colour. They soon become discoloured with excrement however!



The pair then take turns sitting on the eggs for around 36 days or 5 weeks.

The eggs will rarely hatch at the same time, usually there's a day or so between them.

The babies hatch by using their "egg tooth" to break their way out. This can take a day or two.



Young chicks need the constant presence of at least one parent for warmth and protection. These two know where to stay!

They hatch with a deep black downy covering and are blind and very weak and dependent. They have wobbly heads for a day or two, and their eyes take about a week to fully open.

Now begins the hard work for the parents... they must catch enough food to feed themselves AND their young.

IS IT ETHICAL TO BE HERE?

These birds will definitely be aware that the light is on, and may be aware of your presence behind the lights.

To make sure we have no negative impact by being here, CSIRO researchers have compared penguin behaviours here with a crowd and lights to other

Island sites with no lights and no crowd and found behaviours to be only slightly different in the time they take to come ashore and walk up to the burrow. The researchers also compared



breeding success between birds from this site and other sites and found no statistical differences.

Penguins will be landing all around the island and heading back to the sea well before dawn.

This means we are able to know that we are not disturbing them much, if at all. That is as long as you and your group DO THE RIGHT THING as outlined at the start of this booklet.

WHAT ARE THEY GOING TO DO?

The birds will come ashore in dribs and drabs or you may see a group arrive at once. They will be completely safe from any predators once they are ashore here, and so they don't have to rush off straight away.

You will most likely be able to observe them as they race away from the surge to a central place - usually near the mooring-line post.

They could then go about their business of adjusting to dry land which could be for anything from a few minutes to more than half an hour.

WHERE HAVE THEY BEEN?

Depending on time of year and availability of food, these birds may have travelled up to 30 to 40 kilometres away from Montague, or they may have travelled hundreds of kilometres away over several weeks and this could be their first night home for some time.

It is believed that they rarely travel further than 10 km or so out to sea from the coast.

WHY ARE THEY WAITING AROUND ON THE ROCKS?

The amount of light most likely triggers the landing of the birds onto the shore.

However, once ashore, no-one knows what triggers the movement from the landing site to the burrow.

One or two birds may head off on their own, leaving the group down near the mooring line post.

The birds may stay there as a group preening, stretching, and shaking heads for some time. Occasionally you'll see that the arrival of one extra penguin will trigger a mass movement for the track.

Some may be waiting for their partner before they head off.

Some may get halfway up and then turn around and return to the group.

Don't try and work it out, just enjoy it and marvel at it....



Penguin pairs may breed together for many seasons in a row.

VOICE

If you arrive early enough at the landing site you may hear their "sea" voice – nicknamed a "bark" – which is a simple little "quack" sound. It carries a long way over the water, and can be heard up at the houses if the wind is gentle. This is their "contact" signal when out on the water, and you may hear many of them exchanging contacts in the moments just before they make their landing and immediately after.

However on land at night their full range of voices becomes very noticeable, particularly during the breeding season when burrow defending, courting, feeding chicks, and being tough and aggressive will all have an associated voice.

You may hear their sounds on the way back to the houses, or you could make a point of coming outside after dark to listen – well worth it!

Some of the sounds are produced using great movements of their bodies – standing on their toes, waving their flippers and lifting their beaks up into the air – all using so much energy that it can sometimes lead to an individual penguin losing its voice for a time.

This variety of "song" (if you can use this word for these sounds) on land may reflect the Little Penguin's nocturnal land habits, as visual signals would not be of very much use in the dark.

Even baby chicks have a voice - a "cheep"!

You may sometimes hear an aggressive-sounding growl when walking around the Island during the daytime. This is most likely coming from inside a nearby burrow and is a clear warning to other penguins (and us) that "someone is home".



A lot of penguin talk on land is accompanied by vigorous body movements.



This youngster, just a few days old, is telling the researcher to "Leave me alone!"

Wings have short, stiff feathers covering them but these feathers are not waterproof like the feathers on the body.

To help keep them warm in cold water, the blood supply to the wings is reduced. To help them cope with hot days on the land during breeding season, blood supply to the wings is increased and the heat is shed to the air.

The blood supply works the same way in their feet and lower legs, which have no feathers at all.

Inside those wings the bones are very solid and flat, helping make the wings into stiff paddles.

In fact all penguin bones are solid and not hollow as with flying birds, as they don't require the weight-savings that flying birds do.

Their upper and lower spine however is extremely flexible and allows them to be so manoeuvrable in the water as to spin and catch a passing fish in around a third of their body length.

EYES

Penguins, as far as is known, have no other organs to help find prey other than their eyes. As with most birds, their eyes nearly touch within their skull.

They keep their eyes open when diving.

When we do that, everything is blurred and we need the aid of a mask to trap air to see.

By having a specially shaped cornea, penguins seem able to see quite as well on land as in the ocean.

They also have a membrane (third eyelid) that is used to clean the eye and may also cover it while underwater, though it doesn't actually assist vision.

Penguins may have high sensitivity to light, as they are adapted to seeing in the dim depths and also have a very active life at night.

We use low-wattage lights to illuminate the viewing area and that is also why we request you to NOT use flash photography.



Some early biologists thought Little Penguin wings were covered in scales not feathers!



WHAT CAN YOU OBSERVE AS YOU LOOK AT A LITTLE PENGUIN?

If you look carefully you can learn much from just watching penguins landing and their behaviours once they are safely ashore.

LEGS AND FEET.

Compare the legs of a penguin with any other bird... short and stout compared to longer and much thinner best describes them! Penguin legs are built stout and strong to assist with landing on slippery rocks, battling the surge of the swell that seems to constantly want keep them in the water.

Long, sharp talons help with grip. A quick sprint helps as well. So as you watch them land, you'll see them ride the surge, magically appearing in the standing position and then running across the rocks before the next swell gets them.

Don't be afraid of them getting injured if they are swept back over the rocks and into the ocean again, as this is their world and they are totally at home in it!

If it was a rough swell, the birds would come ashore much earlier and use the available light to help them even more.

A Little Penguin's upper thighbone is horizontally positioned up and out of sight for us onlookers.

We are actually only seeing their lower leg and feet. If this were not the case, they would tip forward when on land as their centre of gravity when standing is directly between their legs.

However, there's more to the legs than just that!

In the water, the legs are swept backwards with the soles of the feet pointing upwards. These feet together with their tail form their rudder for changing course rapidly in the water.

Their feet are not used for swimming, though they will paddle with them at the surface. It's their wings which drive them through the water.

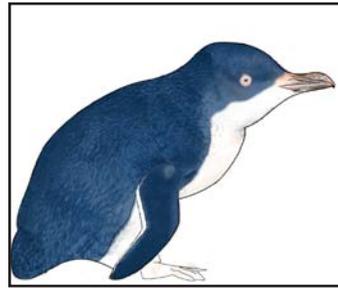


*Strong and sturdy!
You can only see the leg below the knee - the thighbone is hidden.*



COLOURING.

Almost all penguin species are light underneath and dark on top. This is simple camouflage called “counter-shading”. Remember that in the water the bird is lying down, with their dark-blue back facing skyward and their white belly facing downward.



Little Penguin “Counter-shading”

Therefore, it is difficult to see from above against the dark ocean. This is important for their protection, as Sea Eagles will prey on penguins!

From below the animals they hunt such as fish and squid will have difficulty spotting them against the light from above.

Some marine predators such as sharks and Orcas will have some trouble seeing them as well.

You can observe many marine animals with similar counter-shading - even fish have it.

FEATHERS

Remember that the penguin is a bird. It is covered with feathers over its body with the exception of its legs, its eyes and its bill.

Even its “flippers” have a covering of tiny feathers, similar to the scales of fish.

Penguins depend upon their feathers for insulation. While not strictly “waterproof”, they are so designed as to hold a “loft” or layer of air next to their skin.



Wing tip feathers

This is warmed by their body and protects them in much the same way as an eiderdown or a down parka will insulate us from the cold.

HEAD

You may see the penguins shaking their head quite often. This is how they get rid of excess salt from their systems.

Little Penguins do not usually drink fresh water. All their liquid needs are met from their diet, which is loaded with salt.



Close-up of a chick's beak showing the nares (nostrils) through which excess salt finds its way out.

How can they get rid of excess salt?

Firstly, some of it is excreted via their kidneys and then through their single external opening – the cloaca – in their urine and faeces.

However most of it is excreted in little droplets from their salt glands located beneath the skin just above and between their eyes.

The droplets make their way down through the nares (nostrils) and eventually a shake of the head gets rid of the drops and its salt content.

WINGS, BONES AND THINGS.

Remember, a penguin is a member of the bird family and still has wings! They've just adapted these wings into flippers to “fly” through the water rather than through the air. It's the wings which drive them the water.

Interestingly, it's a similar motion to the way seals swim!



Young chick's wing. Note the white trailing edge, typical of Little Penguins in Australia.

BEAK

Remember, birds do not have teeth!

How do penguins catch, hold and swallow slippery food such as squid and fish?

Firstly you'll be able to see that the upper beak has a strong hook at its end. That'll help with holding prey.

When they "yawn" you may be able to see the rows of backward-pointing projections that will further help hold prey.

Finally, their tongue and their palate are also covered with backward-pointing projections.

To help with eating, along the inside edges of their beaks are also sharp edges that can act as cutters.

All of these features help them to catch squirming prey, turn it, and swallow it in a rapid series of movements.

If you can see a few penguins standing side-by-side you may be able to see that some have stouter beaks than others. Males have a stouter beak in general, while a female's is more slender and may have a less-noticeable hook.

If you see the birds "yawning", you may be able to judge the size of the prey they can eat – the gape of the beak determines this. Little Penguins have a wide gape, allowing them to swallow quite large items of prey, Some have been known to swallow fish up to 19cms long - almost two-thirds of their total body length!



Close up of the beak. Note the hook.

They have roughly 12 feathers per square centimetre, more than 3 times the density of a similar sized flying bird.

You are only seeing the topmost hard tips of each feather, lying over the lower parts like a protective coat. This outside layer helps stop the air being squeezed out from their feathers when they dive underwater.

Underneath this outer layer are ever-fluffier layers until right next to the skin is the fluffiest layer of all.

The waterproofing of their feathers is improved even further by adding oil secreted from a gland on their back just above their tail.



Little Penguin Back Feathers

To care for their feathers, penguins need to "preen". They use their beak, their claws and their flippers to arrange and straighten the feathers, oil them and clean off any items picked up during their swimming.

They can preen at sea as well, as on land as they are positively buoyant and can float and preen at the same time.

On land, penguins also "allopreen". This refers to them helping each other out by preening each other, especially with the hard-to-reach places.

This is particularly the case with a mated pair.



Close-up of belly feathers

BABY PENGUIN FEATHERS

Baby penguins go through two stages of down before getting their full plumage.

Immediately after hatching their down is quite black and fairly thinly spread.

Adults must sit on them in the nest using their “brood patch” (a bald area on their belly with a rich blood supply) to keep the babies warm. At this stage the chicks are particularly vulnerable.



Penguin Chick showing secondary down and some mature plumage around the eyes.

After a week or so their secondary down develops and is a deep chocolate brown in colour.

Eventually their full plumage emerges and they can go to sea.

MOULT

All members of the bird family lose and replace feathers as they wear out or are lost. Most bird species lose just a few feathers at a time progressively during the year.

Penguins depend on their feathers to such a degree that they have developed a different pattern of feather replacement to that of other birds.

All species of penguin experience an annual period of enforced starvation ashore while they “moult”.

In most species, including the Little Penguin, moult occurs not long after breeding.



Penguin in moult showing the old feathers on its back ready to fall out, with the fresh new suit around the head.

Not every bird will moult at exactly the same time, and moulting birds will shed feathers all over the place. We see these piles of feathers on Montague from January through to March and even April.

Old feathers lose their shine and become a dull brownish colour instead of their clean white or bluish sheen.

Moulting usually takes place in the burrow, and pairs may often moult together. However some birds may not make it back to the Island. NPWS frequently receives rescued birds from the mainland and take them out to Montague where they are safe from predators during this vulnerable time.



Penguin pair in moult. The bird on the right has just started. The bird on the left has almost finished. Notice the difference in colour between the two. Also notice the pile of feathers in the nest.

New feathers gradually push out the old ones for around 16 days. The process involves a tremendous energy cost to the bird.

To get the energy required to moult in just a short space of time after breeding means that foraging at sea is continuous until moult begins. The penguins may even double their body weight.

Birds come out from moulting with shiny new feathers but they are emaciated and will have to recover lost weight through long periods of foraging at sea - weeks or even months - away from Montague.

In terms of viewing Little Penguins on Montague, this may mean we have few or no birds coming ashore from around late January right through to July when burrow-preparation heralds the start of breeding season.