

# Bandicoots

## Their Care and Handling

by Norma Henderson ©



Adult Long-nosed bandicoot *Parameles nasuta*

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## Identification

The **Long-nosed Bandicoot** *Perameles nasuta* is the largest of all mainland species of bandicoots weighing 850-1300gms. The largest recorded in North Head, Sydney weighed 1.6kg. It has greyish-brown fur on the body, a creamy white underbelly and a short pointed tail. The muzzle is long and pointed and it has delicate teeth. The forefeet and upper surfaces of the hindfeet are also creamy white. The front foot is well equipped for digging, with a rudimentary first digit, the second and third digits are large and strongly clawed, the fourth short but clawed, and the fifth much reduced and having no claw. The hind foot, its first digit, is rudimentary, the second and third are joined together for most of their length (used for grooming), the fourth is very large and carries a long nail, the fifth though smaller is also armed with a strong nail.

The **Southern Brown Bandicoot** *Isoodon obesulus*, like other members of the bandicoot family has a tapering snout with a naked nose, a compact body and short tail with pointed end. The head has small rounded ears (smaller and rounder than the Long-nosed Bandicoot). It is generally smaller than the long-nosed and the fur colour is dark grey/brown on its back and a much lighter colour underneath. The feet of the Southern are brown as opposed to the Long-nosed which are white.

The **Northern Brown Bandicoot** *Isoodon macrouris* is very similar in appearance to the Southern Brown, One can easily confuse them. However, *Isoodon. macrouris* is found only from the Central Coast area and further north and *Isoodon. obesulus* is found only on the southern coastline of Australia..The fur colour is brownish with speckled black patterns throughout. On the under surface it is solid white. This bandicoot also has short, rounded ears, a short nose, and brown feet



Bandicoot skull Texas Memorial Museum

## Behaviour and diet

Bandicoots can move moderately fast, with a galloping gait, and when afraid make grunt-like sounds and squeaks as they bound away. Generally 1-4 young are carried in the backward-facing pouch. The number raised appears dependent on how many can be nurtured with the quantity and quality of the diet available. Females have been seen evicting the smallest of their young. They have a lifespan of approximately three to four years.

Bandicoots are nocturnal and are opportunistic and omnivorous feeders with a preference for invertebrates such as insects and their larvae, beetles, spiders, earthworms, slugs and snails, occasionally small vertebrates such as frogs, lizards, and mice, and bulbous roots, herbs, seeding grasses and berries. Their diet may vary with the seasons, consisting predominantly of invertebrates in summer but greater proportions of plant and fungal material in winter. Where their habitat has been destroyed, bandicoots have managed to adapt to suburbia by changing their eating habits even further, to include dog/cat food, and vegetable gardens. The stomach is simple, the small intestine short to medium in length, the caecum is small and the large intestine is short.

These animals are generally solitary, with contact between males and females restricted to breeding

events. Gestation is only 12 ½ days and young bandicoots grow at an amazing rate. The first hairs are visible at 40 days and the eyes open at 45-50 days. The young are carried in the pouch for 50-54 days and then left in the nest. Weaning takes place at about 60 days, at which time the young begin to accompany their mother and learn to forage for themselves. Females will be mature enough to breed when they are just 5 months of age, and males at 12 months. They breed prolifically, females producing up to 4 litters a year.

## **Distribution and habitat**

These nocturnal animals shelter by day in concealed nests on the ground, constructed of dry sticks, leaves and grass. This material is formed into a large bundle piled over a shallow depression with no visible entrance hole; the animal pushes its way into the nest then rearranges the nest material so that the opening is not visible. It does the same when leaving the nest. Soil is sometimes kicked over the nest for added waterproofing. Nests are occasionally built in hollow logs. They may use a number of different nests over several nights.

The Northern Brown Bandicoot lives in the generally higher rainfall zones from the east coast of Australia north of the Hawkesbury River to the tip of Cape York in Queensland, and across to the Northern Territory and northern Western Australia. The range of the Long-nosed bandicoot overlaps those of the other two species and can be found all along the east coastal strip of Australia. The Southern Brown bandicoot is almost exclusively restricted to the coastal fringe of NSW from the Hawkesbury River in the north to the Victorian border in the south.

## **Rescue**

Bandicoots are often encountered with large scars resulting from close encounters with predators. They are vulnerable to being attacked by dogs, scratched by cats and run over by cars. In backyard gardens the whipper-snipper is taking over as a lethal weapon and swimming pools are disastrous if they have no overhanging rope or plank as an emergency exit ramp.

As wildlife carers we must try to persuade people to provide exit ramps to their pools, keep pets indoors after dusk and drive carefully at night. A hard call to make.

If a bandicoot needs to be trapped, the best sized trap is 20cm x 20cm x 56cm and works best with a platform to trigger the front closure. This one is made by Mascot Wireworks in Sydney. Trapping should only be necessary where an injured animal needs to be caught. Relocating is seldom advised as they are territorial animals. However, if exceptional circumstances make this necessary the animal(s) should be taken to a safe suitable environment where territorial aggression is unlikely to be encountered.

Always note the exact location of the rescue so that the animal can be returned (if it is suitable) to its home territory. Juveniles and hand-reared young are a different matter and can be released in a suitable area where bandicoots are known to live.



Cover the back section of the trap to minimise stress to the animal. Place sack over the front of the trap before opening it. Bread and peanut butter is a very attractive bait.

## Handling and transport

Bandicoots should be grasped firmly around the neck and shoulders. However, beware of those back legs which have a very strong kick and sharp claws. Handling a bandicoot is like dealing with an unexploded hand grenade - quiet bandicoots can go off in a blur of lashing hind claws, clods of flying skin and fur.

Always use a towel or blanket that can be thrown over the animal before handling it. They do not usually bite, their hind legs being used for fighting other bandicoots. Never hold one by the tail in case of degloving nor hold it by the hind legs as they can easily be dislocated. They will also shed fur if held too tightly.



The animal should be transferred to a box for transport as soon as possible. The box should have a bunched-up towel in it so that the bandicoot can hide, and is held secure during transport. If it does not feel secure the stress it suffers can severely affect successful rehabilitation, as they are known to drop dead very suddenly for no apparent reason.

Another alternative is to use a pillowcase like a glove. With your hand inside the pillowcase, grab the animal, turn the pillow case inside out with the animal inside, then tie off the top securely. Place this in a towel-lined rescue container so that it doesn't roll around during transportation. An unlined wire rescue basket is not suitable as the bandicoot can damage its sensitive nose if it pokes it through the wire.

Pouched young or small juveniles will also require some additional heat depending upon their age and size. Unfurred or just furring young should be placed in a beanie that is secured with a tie or elastic band at the neck. This beanie should be placed alongside a suitable heat source - warm hot water bottle, warmed wheat bag or whatever heat source you use. Remember - not too hot, just warm enough. It is better to err on the cool side than overheat the animal.



30g, skin no longer tacky. Eyes closed.  
Can be hand-reared by experienced carer

## Stress

These animals are very easily stressed. It is very important, therefore not to leave them in a vet surgery longer than is absolutely necessary. Some things to avoid are:

- Noise from children, music, slamming doors, barking dogs
- Smells from cats, dogs, cigarette smoke
- Over handling
- Heat - too much or too little. It is best to err on the cool side do not overheat the animal

## Housing very young bandicoots



At 20 grams these joeys would still be in the mother's pouch. They will therefore need warmth (approx 32C) and be housed in a snug lined beanie that is tied at the top.



A 40 gram joey who is just opening its eyes should be housed in a beanie with a side opening and kept at a temperature of 27-28C.

Housed in a wine cask/cardboard box in an incubator (or suitable heating arrangement) with the beanie pinned to the corner. Do not overheat young bandicoots.



At 95 grams they will be housed in a small box with beanie suspended to allow for level side entrance, and given insect laden mulch night and morning.

When they reach 250 grams they can be housed outside in a rabbit hutch type cage with their beanie suspended in the covered section into which dry leaf litter is placed for construction by them of a nest.

Bandicoots and pouch  
97g - 100g

## Injuries

Check carefully for injuries:

If ***by the side of the road*** and still alive there may be broken bones or concussion. Check the sex. If a female, check the backward-facing pouch for young or signs of recently fed young. If in doubt check the vicinity for any young that might have left mother and wandered away.

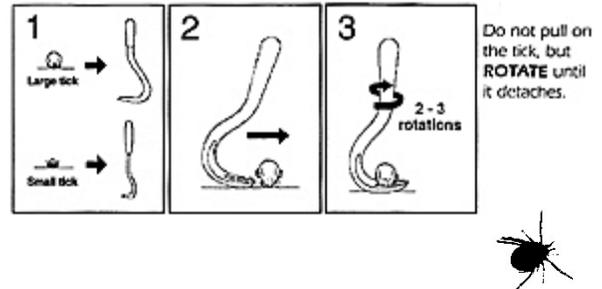
If ***'brought in by the cat'*** check for puncture wounds. There are always two sets of teeth marks from the top and the bottom teeth. If puncture marks or even small scratches are seen, clean them with saline water and give the bandicoot antibiotics immediately. Prompt injection of long-acting penicillin with subsequent daily injections of .01ml Baytril per 100g for five days have ensured the survival of some bandicoots suffering cat puncture wounds. Your vet should be able to help here but try not to leave the bandicoot in the surgery where it might be close to the very species that caused the injuries in the first place.

If ***'brought in by the dog'*** check for crushing injuries. The bite marks and scratches are not as toxic as from a cat but antibiotics must still be administered. Unfortunately there is little that can be done if the crushing of the dog's jaw damages internal organs.

***Toxoplasmosis*** Is caused by the parasite *Toxoplasma gondii*, a blood protozoan disease, which damages body tissues. Toxoplasmosis, a disease associated with this parasite, can be contracted by Australian marsupials through indirect contact with the domestic cat *Felis domesticus*. Invertebrates such as

earthworms, snails, flies and ground beetles are known to act as mechanical transport hosts for Toxoplasma oocysts, either through ingestion of cat droppings or of soil contaminated with cat fecal material. Once exposed bandicoots rapidly develop an acute and fatal infection. Neurological signs, disorientation, appearance during the day-time or respiratory system problems are the usual signs, with death following soon after.

**Ticks.** A wide range of native and introduced animals are hosts for the paralysis tick, and bandicoots are one such animal. Generally they are able to harbour a number of ticks with few ill effects but occasionally an overburden may compromise the animal. Research has shown that bandicoots harbouring ticks have a lower weight for age than those clear of these parasites. Large ticks can be physically removed with a patent tick remover (squeezing it when removing it by hand can make the tick inject more toxin into the animal), and smaller ticks can be killed and subsequently removed after a spray with Frontline spray or even a small amount dabbed onto the back of the neck as with dogs.



**Mites.** Sick animals or the young of sick animals may harbour mites. These are generally obvious when you pick up the animal and feel the 'tickly' feeling as they crawl on your hands. To reduce their numbers, powder the animal lightly with Pyrethrum powder (as in cat and dog flea powder) and rub it gently into the fur. Change the bedding daily and if mites are still present after a few days give the bandicoot a further powdering.

## Hospital accommodation for juveniles and adults

After rescue and assessment the juvenile or adult bandicoot should be housed in a secure box with a small bunched-up towel and plenty of clean leaf litter taken from an area that is not visited by cats. Even if it has some open wounds the animal will heal best if it is comfortable and not stressed. This box must be placed in a quiet part of the house - no TV noises for example. The box should be small enough so that each time the animal needs to be caught for a check-up it is not chased around wasting energy. Food and water will also be close to hand.

Once past the danger period the animal (weighing upwards of 250g) can be housed outside in a rabbit hutch type or cage, furnished with dry clean bedding material in the covered end, and insect laden leaf litter with a small dish of fresh water and a dish of food in the open section.



## Problems arising with young while in care

### Ascites “Bloat”

Young bandicoots can be a challenge to hand rear. They apparently succumb to ‘bloat’ for no apparent reason. The bloated abdomen is in fact filled with fluid and the condition is called Ascites. It is not air (as in possums) and therefore the animal should not be given medications for the relief of gas.

The fluid collection is associated with a stagnation of blood in the veins of the abdomen and peritoneum, whereby an oozing of the fluid constituents of the blood into the peritoneal cavity can occur. This stagnation may be caused through a faulty heart action, or through some obstruction to the free flow of blood in the abdominal veins. When an excessive amount of fluid collects in the abdominal cavity, it causes fluctuating swelling and results in disturbances of digestion, nutrition and heart action, and sometimes respiration.



Bloated 45g bandicoot

### Symptoms

As the fluid collects, the abdominal wall swells to accommodate it. The abdomen becomes slowly more pendulous. After a time, however, the fluctuation of the fluid amount becomes obvious. Breathing may be laboured on account of the fluid pressing the diaphragm forwards, limiting the action of this structure and compressing the chest cavity. Later still, the affected animal starts to lose condition, and in a short while the spines of the vertebrae become prominent. Food is taken, but without relish. At times there may be attacks of diarrhoea but these usually pass off without treatment. Less and less desire for exercise, or even movement, is shown. Afterwards, exhaustion, and death occur.

Autopsies have found that the animal dies from drowning as the fluid enters the lungs and causes them to collapse. The heart also shows signs of damage.

### Treatment

Some of the fluid (no more than 2mls at a time) can be withdrawn using a needle, and this is customary practice in larger animals. However, the improvement is nearly always temporary, as the fluid simply collects again. Environmental temperature, humidity, and air movement should be controlled to prevent excessive body heat loss.

### Prevention

It is possible that stress at the time of coming into care might precipitate this condition. It is therefore of critical importance that the animal be handled and housed in as stress free a way as possible. A heat source should be placed alongside the beanie as they appear to want contact warmth, but they should also be able to crawl away from this heat source should they feel uncomfortably warm. They should be housed in a quiet area and fed by the same person each time.

When the young first come into care offer diluted formula for the first 24 hours, make the milk a little thicker for the next two feeds then give the animal normal strength formula.

Bloat can also result from the bladder not emptying properly. Be sure to stimulate the joey to defecate after each feed.

## Hind leg paralysis

This is a disease of the muscle and nerve endings of the legs, usually the back legs. It can be first noticed in sluggish movements or a stiffening of the back legs. This disease is a result of a vitamin E deficiency and is often combined with stress or capture myopathy. University studies have shown that animals suffering from stress have low levels of vitamin E. The contents of a vitamin E capsule can be squeezed into the mouth of the affected animal and a drop placed in the milk each day for a few subsequent days. This works so quickly that the sick animal is fully recovered in a couple of days. Weak legs can also result from tick paralysis.

## Sore cloaca

Occasionally the cloaca becomes red and inflamed. This is usually caused by sucking either by the joey itself or, if there are a number of animals, by one of the others. Also over zealous stimulation can cause a soreness. Usually this only requires a little gentle cream lubrication but should it not clear up after a day or two some antibiotic cream might be needed.

## Thrush

Thrush is a fungal infection that can develop in joeys that have had antibiotic treatment. Other causes include poor hygiene, sudden dietary changes and stress. It results in runny yellow droppings and a sweet strong smell to the urine. Antifungals are very effective and treat the animal with Nilstat at a rate of 1 drop daily for 7 days, added to the milk. Vetfarm also make a suitable product called Megabac-S that can be used according to the instructions on the packet.

## Adults in Care

If receiving treatment in a hospital cage make sure the animal has a box, a towel and some scrunched up paper towel to hide in at all times.

An adult in care will need space in which to dig and a sheltered area in which to build its home. It will use leaf litter, soil, seeding grass, paper and anything else in the cage to conceal itself during the day time. Never use hay or straw in wildlife housing as it can harbour fungal spores. If all you can see during the daytime is a huge pile of this and that then your bandicoot is alive and well!

The ability to dig burrows can significantly reduce stress. In the wild they shelter in a shallow depression in the ground lined with grass and leaves and when the bandicoot is at home the entrance is closed and hard to see.

Aviaries need to have firm flooring otherwise the animal will dig its way out very rapidly. Concrete or brick flooring can be covered with artificial grass that is itself covered with a deep layer of dirt and leaf litter. The soiled litter can be changed every few days but care must be taken not to interfere with the area in which the animal has constructed a mound. It is also advisable to place a barrier on the lower section of the aviary wire so that the animal does not damage its nose attempting to find a way through.



86 days old. About 300g Leaf litter and rotted wood with insects such as beetles, wood lice etc.

## Feeding adults in care

The diet is opportunistic and omnivorous. The dedicated carer can be seen digging over the garden by day, collecting worms from underneath the litter in the gutters and spotlighting for snails at night. Home grown live food will include mealworms, mealworm beetles, earthworms and crickets. Friends and neighbours may need to be called in to help with continual supplies.

Aside from a large supply of insects and creepy-crawlies, the bandicoots can be fed insectivore-coated minced meat, small pieces of apple, banana, sweet potato and other fruits and vegetables. They can also be offered soaked good quality dog kibble, VIP chicken and rice dog roll (or similar) and pinkie mice. They will drink water when it is available, especially if they are fed dry food, but in the wild, will maintain water balance without access to free water.

## Feeding young joeys

### Milk formulas

Carers often have preferences for one type of milk product over another. Wombaroo, Biolac and Di-Vetelact have all been used with success by various people. I have used Di-Vetelact with success but have added High Protein Baby Food and Insectivore to the mixture to give the added protein that is needed for these very fast growing/developing animals. I make a slurry of equal quantities of High Protein Food and Insectivore Mix and add a little of this slurry to the milk formula.

### Initial feeding methods with a very young animal

- Make up sufficient milk formula, and put warm water in a bowl for washing
- Tear off a number of sheets of toilet tissue for cleaning faces and toileting
- Take the joey out of the beanie and wrap in a small towel with its nose poking out
- If very young it may need to be given milk with a teat or dropper but should be taught to lap as soon as possible.
- To teach to lap, the baby's head is held very gently between finger and thumb and the mouth (not the nose) is laid onto the liquid. After a short time it should start to lap.
- When this activity is over and joey refuses to drink any more, a piece of tissue is dipped into the warm water and the face, mouth and feet gently washed. The animal is then gently toiletted. A stroking action is used rather than a dabbing one. Stroking should start in the middle of the tummy and smoothed down to the cloaca. It is then placed in the warm beanie.
- This is a five times a day activity. Don't force the joey to drink and if it only takes a little give it a further feed an hour later.
- As soon as the animal has learned to lap try to handle the animal as little as possible.



65g. Lapping milk from bottle top

### Feeding quantities

At about 35 grams the joey should be drinking about 2 ml of milk (1 scoop Di-Vetelact to 50ml water or equivalent), five times a day.(i.e. 10ml of formula).

By about 50 grams young bandicoots will be self-feeding with the quantities increased as they grow. The slurry is thickened as the animal matures and mashed banana added. This is put on the side of a dish and the milk mixture on the other half of the lid/dish. The joey will often lap the slurry first before the milk. Feeding is now 4 x day and toileting still needed after each feed.



At about 65 grams some leaf litter is placed in the cage and the joey is still given new dish of formula 4 x day, but toileting is now only needed 2 x day.

By 75 grams joey will be starting to eat small mealworms, maggots and garden worms as well as milk formula 3x day. Handling to be reduced to occasional weighing only. From now on quantities of insects should be given and if they are consumed overnight more added in the morning. Add insects to dirt and compost as soil is needed to aid digestion. This should be changed daily as it is also used as a toilet medium. By 150 grams reduce feeding to evening only. At 250 grams they are ready to be caged outside.

## **Release**

Hand-reared young will be released at about 300g weight. As they are nocturnal animals they should always be released at dusk. If they have been in care for a while they will have made themselves a nest of grassy materials. The bandicoot should be carefully lifted keeping the nest intact and when the release site is reached they should be removed with their nest, and placed carefully in a sheltered spot.

Alternatively, soft release if in a bandicoot area, with support-feeding until bandicoot has moved on. This happens quickly with males but females tend to stay in the release area.

Adults should always be released back into their territory.

Nearly all the bandicoots at North Head, Sydney have been marked. They have ear markings and most have microchips. Should a bandicoot come from this area the microchip should be recorded and National Parks notified.

*Norma Henderson* ©

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