

Handraising Orphaned Koalas



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Did you know...

- The koala is a single member species amongst all marsupials
- The name 'koala' has the aboriginal meaning of 'no drink'
- Koalas are nocturnal
- There are three sub-species *P.c Victor* (found in Victoria), *P.c Cinereus* (found in New South Wales) and *P.c. adustus* (found in Queensland).
- The koalas main predator is humans
- The koalas life span today varies due to stress factors with average wild age 8 years for a male and 12 years for a female
- Koalas breed successfully once every two to three years producing one offspring, twins are rare but are known to happen.
- Koalas breed at the age of around 3 years for females and 5 years for males, however this changes in captivity
- The gestation period for a koala is 34-36 days
- Koalas are solitary animals



Introduction

Hand-raising an orphaned koala joey can be both rewarding and heartbreaking. The reality is that around 90% of hand-raised orphans don't survive. It is a fact that in joeys aged between 3 and 5 months of age, the biggest cause of infant mortality is commonly called pouch death syndrome, and it has been described in some institutions as an epidemic. This occurs both in the wild, captive populations and hand-raised joeys. There has been no research done in wild populations for the causes of infant mortality, and little in captive populations and hand-reared joeys to date.

Koalas have a unique effect on humans; they tend to bring out the mothering instinct in most people. The reality is that they are hard to raise and need a huge amount of time and patience. If you don't need to sleep, have no social or love life and can spend a lot of time travelling all over the countryside looking for leaf, then raising a koala might be for you.

As with all orphaned wildlife, we should raise them to survive after release back into their natural habitat and koalas are no exception - there is no other way. It is a complete waste of time raising these infant koalas if you don't practice the best possible policies for looking after these amazing animals. Carting them to shopping centres, getting them out to "show people" passing them from person to person to "have a hold of a koala" is not how we raise to release. To look at it in a practical way and this applies to all wildlife "If their mother doesn't do it why are you?".

While we cannot provide everything the way their natural mother does we should try to duplicate it as near to as possible. And unlike other species of wildlife where it may be possible to get a permit to keep them in captivity, there has never been, nor is there ever likely to be a case, where this happens with a koala.

So if you raise an orphaned koala inappropriately which makes it unsuitable for release, you are most likely sentencing that animal to death especially if it is a male, as zoos do not necessarily want them.

I recommend that all carers that would like to look after koalas begin with the adults, I believe that unless you know what normal and abnormal behaviour is in an adult, you cannot supply the requirements and needs of an infant young. As carers we often get caught up with wanting the infants and while that is great, if we don't want to look after and learn from the adults you have to question the reasons that you chose to care in the first place, to help preserve and protect or for our own egos so we can say 'Guess what I have got?' a good carer is someone who if they were my neighbour I would never know what he or she does.

Good luck and I wish you all the best for the koalas in your care.

Gail Gipp

Licence Requirements

In Queensland, koalas are classified as restricted wildlife, which means that in order to care for them you will need to apply for and be granted a Rehabilitation Permit from the Environment Protection Agency. In order to obtain such a permit you will need to be able to demonstrate that you have undertaken appropriate training with an experienced koala carer and be able to demonstrate an adequate knowledge of koalas and their requirements in care.

In order to care for orphaned koalas, you will need to have a Rehabilitation Permit specifically endorsed to this effect.

Koalas have been declared "Regionally Vulnerable" in Queensland on the 4th of March 2004

Equipment you will need

At least two glass 10ml syringes
25ml bottles
50ml bottles
Aniwarm2
Electric Heat Pad
Artificial Heartbeat
Feather pouches or equivalent
Lots of cotton pouch liners
Sterilizer or steamer
Teats - Possum (pointed and rounded)
Cane basket
Indoor tree
Outdoor Enclosure
Long tree secateurs
Short secateurs
Pots for holding leaf



Initial Assessment When Arriving into Care

When a koala comes into care, whether it is an adult or an orphan, it needs to be seen by a vet or experienced koala carer immediately. Any delay can result in the death of an animal if you are inexperienced in koala care. The law as it exists today allows people to keep a koala for up to 72 hours before reporting it to the appropriate people, koalas that have been in this position on presenting to the vet or carer have had little or no chance of survival, and we owe it to them to give them the best chance possible. If you rescue a koala contact the appropriate person immediately -not in a couple of hour's time.

Hygiene

Your hygiene must be impeccable. You must sterilize everything including feeding implements and pouches. You must change your joeys pouch when it becomes soiled or if you spill milk formula on it. You must also sterilize and wash the joey's basket periodically.

Bottles and teats must be scrubbed with hot water and detergent, rinsed well and then sterilized. Remember, if using Miltons Sterilising solution; make sure that you rinse your bottles and teats with warm PRE-BOILED water before feeding your joey.

Most importantly, wash your hands before and after you handle your koala joey.

Feeding

Koala joeys need to have replicated the near to exact way that they would be raised by their mothers, and it is up to the carer to do this. They are not difficult to feed but you need to have experience with a number of macropod and possum joeys before you attempt a koala joey.

In young unfurred koala joeys, feeding is often every hour around the clock spacing out to three hours. I have found that to feed joeys on demand rather than by the clock is the best way to obtain a healthy koala joey, their growth is around 30gms a day once they have reached the pap stage of development, their demeanour and overall health appears nearer to the young of the same age being reared by their natural mother.

I prefer to use a glass syringe for feeding small koala joeys and then to progress them onto a glass bottle once they are taking more than 10mls per feed. The use of a glass syringe is an art in itself but once you have mastered it you will not want to use a bottle again. If you have a strong sucker or a poor feeder, it gives you greater control over the flow of milk which leads to little or no chance of them inhaling milk which gives you a whole set of new problems.

I like to use the pointed possum teats up to 6 months of age and then progress to the rounded possum teat. Make sure you have the smallest hole possible, I have found with strong suckers you should cut a small "V" shape with sharp nail scissors instead of a hole, thus when they suck the "V" opens, when they don't suck the "V" stays closed reducing the risk of drowning them in milk.

Milk Replacers

Koalas need to be fed a low lactose milk formula, such as Divetelact or Wombaroo Koala Milk Replacer. Over the years koala joeys have been successfully raised on human infant soymilk formulas such as Prosobee and Portagen but these were removed from the Australian market several years ago. We now use Infasoy, a human soy based formula, but I prefer to use either Wombaroo or Divetelact.

Wombaroo Koala Milk Replacers come in three stages - Early, Mid and Late. This should be made as per the directions provided by Wombaroo. Do not be tempted to make it up stronger as you will upset the infant koalas stomach. Feed as per the quantities by weight on the back of the pack.

Divetelact comes in only one stage. The standard directions of 1 scoop to 40mls of water are used when raising koala joeys they need to consume a minimum of 20% of their body weight each day if feeding Divetelact.

Impact (a colostrum replacer manufactured by Wombaroo) can also be used and I recommend that you do, the overall results in weight, demeanour and growth are more on par with what they would be when raised by their natural mother. I use Impact from the day they come in to the day they are weaned.

Koala joeys raised by their mother would receive colostrum throughout their entire nursing period, the formulas that we provide, while adequate, do not contain colostrum so we need to add it separately and supply it for the amount of time their mother would. Over the years I have modified the way I use Impact which differs from the manufacturers instructions. I seem to get the best results by making up 120mls of milk and adding 6 level spoons of Impact to the made up formula and then mixing well. I use this method for all milk formulas.

I have liked the results of Wombaroo Koala Milk Replacer compared to Divetelact in older joeys over 6 months of age. I have in the past preferred to use Divetelact with Impact for pre-pouch emergence joeys, but have over the last year had just as good results with the younger stages of the Wombaroo formulas, but it is up to the carer to monitor the individual joey and be aware of what is working for each individual animal. If you get good faeces, good weight gain and fur development, stick with what you are doing. Remember, the idea is to duplicate the joeys growth to that which it would have with its natural mother.

If your koala joey is dehydrated when it comes into care, offer it warm plain pre-boiled water.

Toileting

Once your koala joeys start producing pellets they will no longer require toileting. They will in fact will climb out of the pouch, turn their little bottoms around and urinate down the side of the pouch. This is very cute and endearing but creates lots of washing!!!

Handling

While your koala joey is at the pre-emergence stage, you should keep the joey in its pouch, it should be fed and toileted in its pouch.

When the joeys is at the emergence stage, you should handle your joey by cupping one hand under its bottom and supporting its upper body by placing your other hand across its chest between its forearms.



Stages of development

The following chart is a guide to when you would expect to see certain behavioural changes in a koala joey.

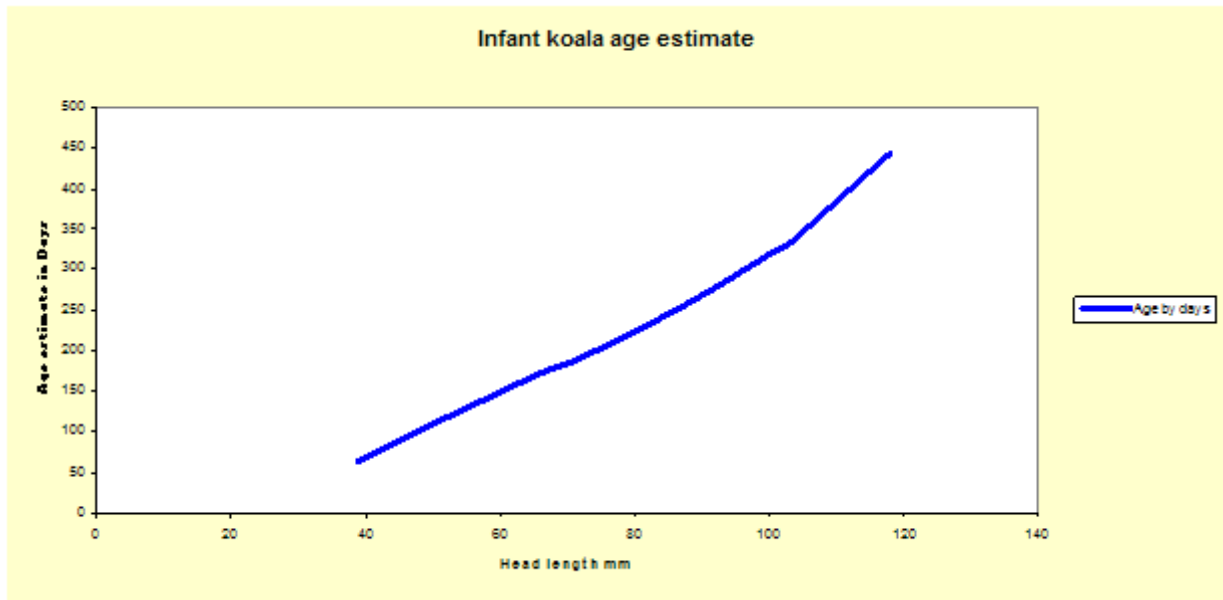
Head out of pouch	164 - 203 days
First total pouch emergency	186 - 211 days
Pap eaten	172 - 213 days
Eucalyptus leaves eaten	201 - 232 days
First seen off mother	219 - 275 days

The list below gives a fairly accurate estimate of the changes you would expect to see, given the age of the koala joey.

Physical changes in growth to pouch emergence

- 6-13 days Skin including nose pink, no colouration in claws or pads, eyes and ears closed.
- 26 days Dorsal part of nose light brown, eyes closed ears open, pads lightly pigmented, extremely fine hair on nose only, and the mouth open to the centre of each nostril.
- 33 days Faint grey pigmentation on parts of the face, hands and feet.
- 62 days Pads are now distinctly dark, grey skin pigmentation.
- 68-79 days Nose incompletely pigmented, eyes closed, mouth open to the outer edge of each nostril.
- 84 days Grey skin pigmentation fading skin is returning to pink, except on the nose and pads.
- 53-125 days Eyes beginning to open.
- 61-126 days Tip of penis splits in males.
- 91-123 days Long pale wisps of hair on chin, and fine sparse hairs on forehead and nape and possible on shoulders, arms and hands.
- 105-140 days Claws are amber brown.
- 163-182 days Darker hair on the head, nape and shoulders, very fine pale hair on lower body, thicker hair on hind legs.
- 184-189 days Dense smooth fur over lower half of body, longer fur over shoulders and nape.
- 180-204 days Coat is fluffy all over.
- 189-212 days Whirls of fur still apparent over shoulders and a persistent caudal to cranial inclination persists over the lower body.

Trying to establish an accurate age for a koala joey can be difficult as there is often different stages and gaps in development. The following chart with which you compare head length from the end of the nose to the back of the head, or just past the ears to where it curves down to the neck is the best way to establish the age of the joeys.



Development of the Koala Joey

Age in mths	Characteristics	Requirements
5	Weight - 200 to 250 grams Unfurred, eyes close to opening.	Feeds - every two to three hours around the clock or around eight feeds per day. Temperature - 34° (pouch temperature at this age is 35.8°) Faeces - custard and will vary in colour depending on milk formula. Housing - Feather pouch, pouch liners and basket, electric heat pad and Aniwarm2
6	Weight - 300 to 450 grams Short sleek fur. Joey starts to emerge from pouch. Starts to feed on 'pap', a soft green fluid produced by the female as a result of the koala joey nudging the mother's cloaca. Pap is the evacuated contents of the caecum.	Feeds - 7 per day, every 3 to four hours or on demand. Temperature - 34° Faeces - still custard firming up to pellets around 300 grams Housing - Feather pouch, pouch liners, basket, electric heat pad and Aniwarm2 and soft teddy to cling to. Introduce leaf from this age on. Must find a pap donor to imitate pap feeding from mother. Pellets are not sufficient for the nutrients they require. Needs to spend half an hour outside in basket each day.
7	Weight - 450 to 700 grams Lightly furred with whirls of fur going in all directions and often with fluffy fur on their shoulders. Joey may climb out of pouch and cling to the belly of the mother.	Feeds - 6 per day, on demand Temperature - 32° Faeces - Pellets Housing - Feather pouch, pouch liners plus teddy The amounts of leaf they consume vary but always offer old leaf and tip.
8	Weight - 700 to 1100 grams Fluffy fur all over. At this period a rapid growth phase happens and the joey is too large to return to its mothers pouch. Joey clings to mothers back and is known as 'back young'. At this stage the mothers pouch shrinks and the teat that the joey was feeding from protrudes from the pouch.	Feeds - on demand Temperature - No artificial heat required Faeces - Pellets Housing - Feather pouch, pouch liners plus teddy Eating around 100gms of leaf a day Tree required with forks and teddy tied to it, short trips only, will cry.
9	Weight - 1100 to 1500 grams Joey becomes more adventurous and playful and will start taking short trips away from its mother and will start to slowly extend this time.	Feeds - on demand Temperature - No artificial heat required Faeces - pellets Housing - Basket, teddy and blankets Consumes around 150 grams of leaf per day Spending more time in tree. Outside for a few hours each day
10	Weight - 1500 to 2000 grams Joey growing more independent. Mother koala may display signs of fur loss on back as a result of the joey clinging to her back.	Feeds - on demand. Teddy in tree, basket hanging in tree with teddy in it Consumes around 200 grams of leaf per day Outside for a few hours night and day
11 +	Weight - 2000 to 2500 grams Joey weans from mother. This is a prolonged process, which evolves over a 4 to 5 month period. Joey may stay close to mother for up to a further 6 months.	Teddy in tree Eating a fair amount of leaf Milk intake is reducing to around 1 or 2 feeds a day but on demand Outside day and night. Weaning around 2500 grams from the basket and teddy.

Young koalas are emotionally and physically dependant on their mothers until they weigh around 2 to 2.5 kgs and this can vary greatly, boys in particular can be dependant till over 4kg (Queensland koalas only) and carers need to provide the same kind of support.

Most joeys come into care at around 700 to 800 grams as back young. New carers should never attempt to raise joeys younger than this. Once you have become familiar with an older joey and their behaviour and feeding, you can then move onto younger joeys.

At around 8 to 9 months, joeys start to feed best at night, often refusing to feed at all during the daylight hours. They like to spend prolonged time playing and feeding between 11pm and 4am when they are most active thus the reason why you get little or no sleep until they move into an enclosure at around 1.5 to 2kg - after all you are their mum and that's who they want to play with! They will often refuse to eat all the beautiful fresh tip you have spent hours scouring the countryside for, instead choosing to let all the leaf fall to the floor and eating just the stems.

When the joey is ready to be moved into an enclosure, if you have adult female koalas in care at the same time I have found it better for the joey to be placed in with the adult. In fact I have placed joeys from 600 grams on the backs of obliging females, I have found that their weight gain and overall health seem to be much better and the carer just needs to supply a bottle. This of course will depend upon the health of the adult female; for example, you would not place a healthy koala joey with an adult suffering from Chlamydia.

Over all as cute as they are and as much as we fall in love with them, we should never lose sight of the reason we try to save them, and that is to place them back where they belong.



Common Diseases of Koala Joeys

When raising a koala joey, anything even minor, that brings about a change in behaviour such as sleeping longer, refusing a feed, or even taking less in a feed must be treated seriously and the joey taken to an experienced koala vet. Often a few hours can make a difference.

Typhlocolitis

Typhlocolitis is a common cause of mortality in hand-raised koala young that come into care, prior to or around their first pouch emergence. Paintbrush or petechial haemorrhages on the serosa of the caecum and an accumulation of gas within the lumen are found on post mortem. It is assumed that the hindgut not yet inoculated with a balanced population of normal bacteria may be overwhelmed by a single species.

This is often the most common cause of death in hand-raised koala joeys. The onset can be sudden and because koalas of all ages are masters at displaying no outward signs of illness, it is often too late to save them. Symptoms include refusing a feed, or taking a reduced quantity at each feed, failure to gain weight, sleeping excessively, tooth grinding and lethargy.

Stress, hygiene and inappropriate handling can all contribute to the onset of Typhlocolitis, but I believe the milk formula's we have to feed them are the major contributors of the onset of this disease. We have had great success since we accepted that we could not treat the disease but started to look at preventative measures. We have trailed over the past two and a half years using a combination of antibiotics and Nilstat and have lost no more pre-pap young. It is however early days yet and we will keep looking at this disease.

If you receive a pre-pap koala joey, in order to give it the best chance possible you must, if you choose to use this treatment, follow it without adjustments. It must start the day the koala comes into care.

The antibiotic that we have been trialing is the human infant antibiotic Trimethoprim and Sulfamethoxazole trading as Septrin or Bactrim, you will need your Vet to write a prescription for this. The dose rate is calculated by multiplying the weight of the joey by three then dividing by eight, which is then administered to your joey twice a day. You must adjust the dose as your joey gains weight. For example; the joey weighs .200grm multiplied by three = .600gm divided by eight = 0.07 of a ml twice per day. Remember that your joeys weight calculations must be in kilos.

The dose for Nilstat is 0.5ml per kilogram, so you will again need to work out the dose rate on your koala joeys weight and adjust it as your joey grows. You will need to give Nilstat twice times per day (so for a 1kg joey, you would administer 0.5mls two times a day, so a total of 1mls per day).

Both Septrin and Nilstat must be given between feeds but may be given together.

You will need to continue with the Septrin and Nilstat on a daily basis until your joey pap feeds. Most koala joeys give a clear indication when they require pap but others don't, so you will need to go by weight. I prefer not to pap feed till they give all signs of looking for it as I believe feeding pap to a gut that is not prepared for it can cause its own set of problems, most joeys will refuse to feed but be otherwise bright and alert, be actively searching for something and push and suckle on you, these are all indications of wanting pap.

Faecal pellets from another koala are a very poor substitute and give little of the bacteria found in pap, if your joey is getting to the age of requiring pap put the word out everywhere for a fresh koala body and remove the caecal contents this will store in the bottom of the fridge in sterile containers for two weeks. Finish the Septrin on the day you start pap, but continue the Nilstat for another month.

You will need to have your vet perform regular faecal smears on your joey. The faecal should indicate normal gut bacteria still alive and well. If there is any increase in bacteria you might need to give oral Clavulox for three days on the advice and dose rate advised by your vet. A faecal smear on the day your joey comes in will give you a great indication of what normal gut flora look like in a koala joey of their size and in particular their own normal gut flora.

What we have noticed is that the joeys retain normal gut flora and varies little from the day they come into care, as they get older ingest pap and start to eat leaf we see the growth of the normal koala yeast that is present in all koalas, thus the reason we chose to use these drugs as the idea would be not to destroy the normal gut flora but to prevent any nasty bacteria from establishing.