

The koala

Some facts about the koala from the Australian Wildlife Society

The koala (*Phascolarctos cinereus*) is an arboreal herbivorous marsupial native to Australia, and the only extant representative of the family Phascolarctidae. It is classified in the suborder Vombatiformes within the order Diprotodontia, and its closest living relatives are the wombats.

It is easily recognisable by its stout, tail less body, round, fluffy ears and large, spoon-shaped nose. The koala has a body length of 60–85 cm and weighs 4–15 kg. Colour ranges from silver grey to chocolate brown. Koalas from the northern populations are typically smaller and lighter in colour than their counterparts in the more southern populations.

Koalas have a long history, probably evolving on the Australian continent some 45 million years ago, but since European settlement, the numbers have declined so severely that extinction may be imminent. Koalas are a flagship for the plight of Australia's wildlife and the need to change the direction of the way we impact the land.

The koala is listed 'vulnerable' in Schedule 2 of the NSW *Threatened Species Conservation Act 1995*. Its habitat therefore is not listed as critical habitat but it is afforded some protection by *State Environmental Planning Policy No 44 – Koala Habitat (SEPP 44)*.



Photo: Sheree Grace

As koala numbers continue to dwindle towards extinction, a history of hardship shows it is amazing they have survived this long.

Koala habitat

Over 80 percent of remaining koala habitat is on private land and what is traditionally the koala's most abundant region in south east Queensland and north east New South Wales is also prime real estate for Australia's booming development industry. The relentless fragmentation of their habitat and irresponsible urbanisation (resulting in threats such as dog attacks and car accidents) are proving devastating for koalas. Local extinctions and the isolation of populations are reducing genetic diversity and therefore drastically reducing the long term viability of the species.

Koala diet

Koalas are herbivorous, and while most of their diet consists of eucalypt leaves, they can be found in other tree genera, such as *Acacia*, *Allocasuarina*, *Callitris*, *Leptospermum* and *Melaleuca*. Although the foliage of over 600 species of *Eucalyptus* is available, the koala only shows a strong preference for around 30. They tend to choose species that have a high protein content and low proportions of fibre and lignin. The most favoured species are *Eucalyptus microcorys*, *E. tereticornis*, and *E. camaldulensis*, which, on average, make up more than 20 percent of their diet. Despite its reputation as a fussy eater, the koala is more generalist than other marsupial species, like the greater glider. Since eucalypt leaves have a high water content, the koala does not need to drink often; its daily water turnover rate ranges from 71 to 91 millilitres per kilogram of body weight. Although females can meet their water requirements from eating leaves, larger males require additional water found on the ground or in tree hollows. When feeding, a koala holds onto a branch with hindpaws and one forepaw while the other forepaw grasps foliage. Small koalas can move close to the end of a branch, but larger ones stay near the thicker bases.

Because they get so little energy from their diet, koalas limit their energy use and sleep 20 hours a day; only four minutes a day are spent in active movement. They are predominantly active at night and spend most of their waking hours feeding. They typically eat and sleep in the same tree, possibly for as long as a day. On warm days, a koala may rest with its back against a branch or lie on its stomach or back with its limbs dangling. During cold, wet periods, it curls itself into a tight ball to conserve energy (it also abstains from eating during this time). On windy days, a koala will find a lower, thicker branch to rest on. While it spends most of the time in the tree, the animal will descend to the ground to move to another tree, walking on all fours. The koala usually grooms itself with its hind paws, but sometimes uses its forepaws or mouth.

Koala reproduction

Koalas are seasonal breeders, and births take place from October to May. Females in oestrus tend to hold their head further back than usual and commonly display tremors and spasms. However, males do not appear to recognise these signs, and have been observed to mount non-oestrous females. Because of his much larger size, a male can usually force himself on a female, mounting her from behind, and in extreme cases the male may pull the female out of the tree. A female may scream and vigorously fight off her suitors, but will submit to one who is dominant, or who is more familiar. The bellows and screams that accompany matings can attract other males to the scene, obliging the incumbent to delay mating and fight the intruders off. These fights may allow the female to assess who is dominant.



The koala has a gestation period lasting 30-35 days, and gives birth to a single young (although twins occur on occasion). As with all marsupials, the young or joey is born while at the embryonic stage, weighing only 0.5 grams. However, it has relatively well-developed lips, forelimbs and shoulders, as well as functioning respiratory, digestive and urinary systems. The joey crawls into its mother's pouch to continue the rest of its development. A female koala has two teats; the joey attaches itself to one of them and suckles for the rest of its pouch life. This species has one of the lowest milk energy production rates in relation to body size of any mammal. The female makes up for this by lactating for as long as 12 months. At seven weeks of age, the head grows longer and becomes proportionally large, pigmentation begins to develop, and the joey's sex can be determined (the scrotum appears in males and the pouch begins to develop in females). At 13 weeks, the joey weighs around 50 grams and its head has doubled in size. The eyes begin to open and fine fur grows on the forehead, nape, shoulders and arms. At 26 weeks, the fully furred animal resembles an adult, and begins to poke its head out of the pouch.

As the young koala approaches six months, the mother begins to prepare it for its eucalyptus diet by pre-digesting the leaves, producing a faecal pap that the joey eats from her cloacum. The pap is quite different in composition than regular faeces, resembling instead the contents of the caecum, which has a high concentration of bacteria. Eaten for about a month, the pap provides a supplementary source of protein at a transition time from a milk to a leaf diet. The joey fully emerges from the pouch for the first time at six or seven months of age, when it weighs 300-500 grams. It explores its new surroundings cautiously, clinging to its mother for support. By nine months, it weighs over one kilogram and develops its adult fur colour. Having permanently left the pouch, it rides on its mother's back for transportation, learning to climb by grasping branches. Gradually, it spends more time away from its mother and at 12 months it is fully weaned, weighing around 2.5 kilograms. When the mother becomes pregnant again, her bond with her previous offspring is permanently severed. Newly weaned young are encouraged to disperse by their mother's aggressive behaviour towards them. Females become sexually mature at about three years of age and can then become pregnant; in comparison, males reach sexual maturity when they are about four years old. Males begin to produce sperm, but they have limited reproductive success until they are large enough to stand against a mature rival. Although the chest glands can be functional as early as 18 months of age, males do not begin scent-marking behaviours until they reach sexual maturity. Because the offspring have a long dependent period, female koalas usually breed in alternate years. Favourable environmental factors, such as a plentiful supply of high-quality food trees, allow them to reproduce every year.

The koala is a threatened species

In 2008, the International Union for Conservation of Nature listed the koala under "Least Concern" for the following reasons: "its wide distribution, presumed large population, and because it is unlikely to be declining at nearly the rate required to qualify for listing in a threatened category".

Australian policy makers declined a 2009 proposal to include the koala in the Environment Protection and Biodiversity Conservation Act 1999. In 2012, the Australian Government listed koala populations in Queensland and New South Wales as Vulnerable, because of a 40 percent population decline in the former and a 33 percent decline in the latter. Populations in Victoria and South Australia appear to be abundant; however, our Society believes that the exclusion of Victorian populations from protective measures is based on a misconception that the total koala population is 200,000, whereas it is probably less than 100,000.

Threats to koalas are:

- loss and degradation of habitat (main threat)
- urban and semi-urban development

- fire, drought and disease
- road deaths and predation by dogs
- climate variability.

The most significant disease in koala populations is *Chlamydia*, a highly infectious bacterial disease. Koalas in New South Wales carry *Chlamydia* pathogens but do not always show clinical signs of disease. They have symptoms such as conjunctivitis and urogenital tract infections when they are stressed by:

- loss of habitat
- harassment by predators
- starvation or malnutrition
- overcrowding.

The disease weakens koalas, making them more vulnerable to death from other causes, particularly dog attack and severe weather conditions. Trials are under way in Queensland to test whether a recently developed vaccine can protect koalas from *Chlamydia*.

As koalas give birth to a maximum of one young a year, their populations can only increase very slowly. Local extinctions are possible where:

- there is loss of fertility due to *Chlamydia*
- there is habitat fragmentation.



What can be done to conserve koalas?

The only way to fully protect the koala is to lobby the federal government to list the koala as Vulnerable under the EPBC Act and legislate true protection of koala habitat. It is vital that the federal government change policy at legislative levels in order to encourage the preservation and effective management of the animal and its habitat.

To ensure the survival of koalas in the wild, conservation areas of large tracts of land with suitable habitat need to be purchased and anyone with acreage or grazing properties should be required to protect eucalypt woodlands or plant eucalypts before it's too late. Field studies show that koalas can easily exist on grazing land with the presence of a few trees; these remaining trees do not affect the grazing quality of the land. It is estimated that more than 80 percent of the remaining koala population occurs on private land that is not protected.

What can I do to protect koalas?

Koalas in the wild face a series of threats to their continued survival. A major threat is the continuing urbanisation of their habitat and associated threats like cars and dogs. Over 4,000 koalas are killed each year by dogs and cars alone. In addition, stress caused by the loss of their habitat causes symptoms of diseases like *Chlamydia*. Approximately 80 percent of original koala habitat has already been destroyed. This has forced koalas to live alongside people in urban areas, and means that property owners have a special responsibility to take the particular needs of koalas into consideration in their lifestyle.

Because most koala habitat is on private land, people living in areas with koalas can have a great influence on whether koala populations in their area survive or become extinct. It is their responsibility, along with government at all levels, to assist in preserving this precious resource. Because much of the koala's habitat is zoned residential, or is in farming areas, their future is largely dependent upon the attitude of property owners.

While landowners have certain rights, the koalas and other wildlife which live there also have rights – the right to live in a safe environment with adequate food and shelter and the right to freedom of movement. Remember, koalas do not live in OUR backyards. We live in THEIRS!



Where can I see a koala?

Koalas today are found in Queensland, New South Wales, Victoria and South Australia. Their range extends from the Atherton Tableland west of Cairns in Queensland to islands off the coast of Victoria and South Australia in the south, and west to central and western Queensland, New South Wales and Victoria. However, populations today are fragmented throughout this range and many populations are seriously at risk.

The distribution of the koala is dependent upon the distribution of suitable habitat. It is difficult to know the distribution of koalas prior to the time of European settlement. However, it is known that at that time eucalypt forests covered much of the east coast of Australia and they would have provided a large habitat resource for koalas. While present knowledge of the koala's ranging behaviour tells us that they would not have been evenly distributed over that range, their potential distribution would have been far greater than that of today.

Studies show a grim picture of the status of koala populations in all regions that have been studied. Available habitat was found to be fragmented and degraded, and in many areas of suitable habitats, no evidence of koalas has been found. It is believed the national wild koala population could be less than 80,000, a far cry from the millions which were shot in the early part of the last century for their fur.

History of the koala and the Australian Wildlife Society (Wildlife Preservation Society of Australia)

The Wildlife Preservation Society of Australia has been fighting to protect the koala since they were being shot for their fur in the early 1900s. Since that time koala numbers have decreased dramatically across Australia. It is sad that those agencies charged with protecting our native wildlife are slow to act and must continue to be ‘pushed’ by groups such as the Wildlife Preservation Society of Australia and the Australian Koala Foundation.

The preservation of the koala and the re-establishment of the animal in at least some of its native haunts in the eastern states of Australia were among the major objectives of the society since its inception in 1909. The society was successful in obtaining official protection for the koala, first in 1911 and 1912, in New South Wales.

David Stead always insisted that ‘koala’ should be pronounced ‘k’ola’; he also frequently referred to it as the ‘native bear’, which of course is a misnomer as the koala is not a bear.

Although the battle to save the koala began as early as 1909, action was still being taken in the 1920s and 1930s.

‘The Story of the Great Slaughter’ was the heading to an article by David Stead accompanying the Annual Report for the year 1927. In 1927 the Queensland Government declared an open season of one month during which the koala could be killed for its skin. No less than 584,738 koalas were actually recorded as being killed during that time, although many of the skins would have been collected earlier, in expectation of a new open season. Although the koala had been protected in Queensland by law from 1919, by 1927 there was an illicit accumulation of hundreds of thousands of koala skins. During that declared open season of one month, the dealers were able to openly sell and export their myriad bales of skins. Also, there was over the years a considerable export of ‘wombat’ skins from the port of Sydney. No woman would want to wear a coarse wombat skin and as suspected the so-called wombat skins were in fact koala skins. Probably about 2,500,000 skins had been sent out of Australia in this way.



At a meeting of the executive of the Wild Life Preservation Society of Australia on 5 September 1927 it was decided to appeal to the Prime Minister to enforce the *Federal Proclamation of 1923*, which prohibited the exportation from the Commonwealth of the skins of native animals ‘unless the consent, in writing, of the Minister of State for Trade and Customs has first been obtained’. The Society was not aware, however, that permission to export koala skins had been granted by the Minister (Hon. Herbert Pratten) as early as 13 August 1927, understandably the fact that this permission had been granted was not publicised.

In the Wild Life Preservation Society of Australia’s Annual Report for the year 1927-28, page 4, is an extract from a letter written by D. G. Stead to the Prime Minister of Australia, Hon. S. M.

Bruce, dated 8 September 1927. 'In effect,' he contended, 'it was simply an invitation to the dealers to get their stock of skins out as quickly as possible and even to add to them in the meantime'.

In 1930, the Wild Life Preservation Society of Australia, under David Stead's presidency, informed the United States President, Herbert C. Hoover, that koala skins, usually labelled 'wombat', were still being imported into North America and implored him to prohibit the importation of both koala and wombat skins into the United States. Hoover acceded to this request and, in doing so, effectively brought to an end the export of koala fur under the guise of other species. This action, perhaps more than any other, ensured that the koala was given some hope of survival. In 1933, Australia's federal government showed its support for state government initiatives in koala conservation by passing laws.

In his article, 'The Story of the Great Slaughter', David Stead claimed full credit for the Society in this matter of the koala:

'There appears to be no doubt now that had it not been for the ultimate action taken by this Society, the abominable traffic in koala skins might have gone on indefinitely - all skins exported being "traced" to the one short open season of one month, and the experience of several years ago (in the case of the export of the alleged wombat skins) would have gone on and on till the last poor koala had made his final bow to the world.'

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