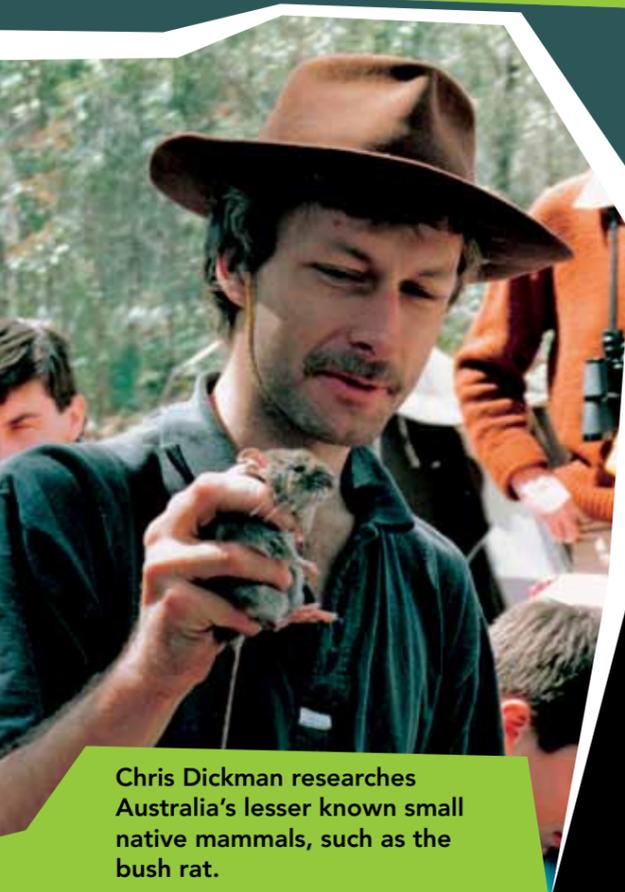


CHRISTOPHER DICKMAN



Chris Dickman researches Australia's lesser known small native mammals, such as the bush rat.

Looking out for little native mammals

Most Australian marsupials, such as bilbies and koalas, do not live anywhere else on Earth apart from Australia. This is one reason why Christopher Dickman's research is so important. As a leading expert on marsupials and other **native** Australian mammals, Chris has studied the threats these animals face, especially in dry, inland regions. By helping to protect our native mammals from becoming **extinct**, Chris is making a significant contribution to **conserving** Earth's **biodiversity**.

fact file

Born: 25 May 1955

Schooling: (London, United Kingdom)
Adamsrill Primary, Forest Hill School

Selected achievements:

Troughton Memorial Medal, Australian Mammal Society, 1980

Fellow, Royal Zoological Society of New South Wales, 2001

C. Hart Merriam Award, American Society of Mammalogists, 2008

Finalist, Australian Museum Eureka Prizes, 1997, 2006, 2009

Boyhood curiosity about animals

Christopher Richard Dickman was born and brought up in London. From about the age of seven, he lived with his family on the second floor of his father's butcher's shop. Even though he had a tiny backyard, Chris was always curious about the small creatures in his environment. He would take little bits of meat from the shop freezer and bury them in the backyard. He then watched in fascination as flies appeared, and beetles carried off the meat and laid eggs in it.

An unexpected marsupial

After he completed secondary school, Chris studied science at the University of Leeds. Visiting the Peak District, a national park in England, he observed a **feral** Red-necked Wallaby. This unexpected sight inspired Chris to do further research on marsupials.



MARSUPIALS AND OTHER MAMMALS

Mammals have back bones, breathe air, and grow hair or fur. Female mammals produce milk for their young. There are three main types of mammals – placental mammals, marsupials and monotremes. Each type reproduces differently.

Placental mammals

Placental mammals, such as humans, have young that do much of their development inside their mother's womb, attached to an organ of her body called the placenta. Placental mammals are born with well-developed bodies. In Australia, the only native placental mammals are bats, mice and rats.

Marsupials

Marsupials give birth when the organs of their young are still undeveloped. A newborn marsupial is only as big as a grain of rice. It journeys across its mother's belly to her nipples and completes its development in a pouch or protected by a fold of skin. Marsupials are native only to the Americas, to Australia, and to New Guinea and nearby islands.

Monotremes

Monotremes are unusual mammals because they lay eggs. There are only two families of monotremes – platypuses and echidnas.

Discovering a new species

Chris travelled to Canberra, and in 1978 began a **PhD** at the Australian National University, researching the antechinus group of marsupials. During his field **surveys** in the bush, he discovered a new **species** of antechinus. He named it 'Agile Antechinus' because it climbed trees so nimbly.

Did you know?

The Gilbert's Potoroo and the Northern Hairy-nosed Wombat are Australia's most threatened marsupials. Scientists estimate there are only 30 to 40 Gilbert's Potoroos left in the wild, and 138 Northern Hairy-nosed Wombats.

Female Agile Antechinuses usually have between six and ten young.

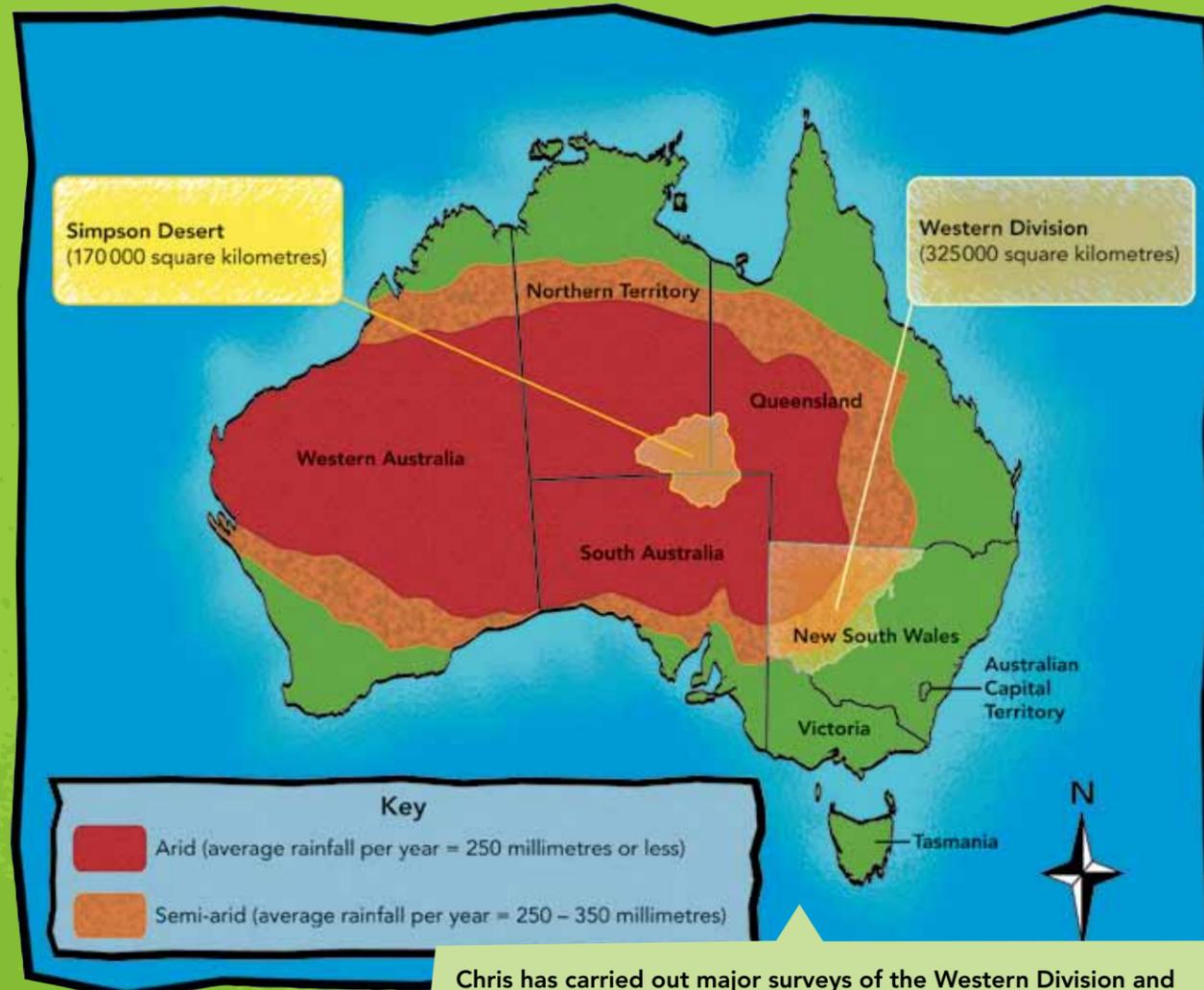


Chris is introduced to the dry country

Chris married an Australian and in 1984 moved to Perth where he lectured at the University of Western Australia. On field trips, Chris explored the outback. He became interested in the **biodiversity** of Australia's **arid** inland. After moving to the University of Sydney in 1989, Chris searched to the west for an arid area where he could study **native** wildlife.

Chris surveys the Western Division

In 1991, Chris joined with three colleagues to produce a major **survey** of an area called the Western Division, which is the dry western third of New South Wales. The scientists gathered together the results of many field surveys, consulted other scientists, and examined museum **specimens** and historical records. They found that since Europeans had first arrived in Australia in 1788, 71 **species** of native mammals had been recorded in the Division. However, in 1992 only 44 species remained. Of these remaining species, the populations of 28 were so small their survival was threatened.



Chris has carried out major surveys of the Western Division and the Simpson Desert. His research has focused on understanding the arid inland regions of Australia, where rainfall is low.

Threats to native mammals

Chris's survey highlighted the threats to native mammals in the Western Division. The clearing of trees meant shelters, such as tree hollows, were being removed. Cattle and sheep were eating native shrubs and grasses that provided food for native mammals, and their hard hooves were destroying burrows. **Feral** rabbits were also competing with native mammals for food, and feral cats and foxes were preying on them.



Chris has studied the impact of **introduced species**, such as feral cats and foxes, on native mammals. Feral cats kill millions of native animals each year.

more about...

FERAL ANIMALS

If animals that have been kept by humans as pets, on farms, for hunting, or in a zoo are released or escape into the wild, they may breed and become feral. Because they do not belong in an area, feral animals often threaten native plants and animals.

Nature's everywhere. Just get your hands dirty. Roll over the logs; look in the leaf litter. You can find surprising and beautiful things, if you look hard.

– Chris Dickman

A new national park

The report on Chris's survey was published in 1993, and had a major influence. The New South Wales Government conducted further surveys in the Division, and within a couple of years had set aside several nature reserves to protect some of the threatened species described in the report. In 1996, the Government established the Gundabooka National Park near Bourke. Amongst the threatened mammals it protects are the Little Pied Bat and the Kultarr.

Surveys in the Simpson Desert

The Simpson Desert in central Australia is home to more species of insect-eating mammals and lizards than any other desert. Since 1990, Chris Dickman has led a team of scientists conducting surveys at sites in the northeast of the desert. Assisted by volunteers, Chris is studying how living things affect one another and are influenced by climate.

For his wildlife surveys in the Simpson Desert, Chris sets pitfall traps, such as the one shown here, to monitor the presence of small mammals. Over 1000 volunteers have helped Chris with his work in the Simpson.



Discoveries in the Simpson

Chris has made remarkable discoveries in his surveys of the Simpson Desert. For instance, he has found that in areas where a marsupial called the mulgara lives, the variety of smaller **native** mammals increases. This is because mulgaras reduce the number of dunnarts by eating them or competing with them for food. Dunnarts in turn compete with smaller native mammals, such as ningaus and planigales. So, when dunnart numbers fall, smaller mammals thrive and **biodiversity** increases.

A long-term study

Chris has studied the Simpson Desert for more than 20 years, and has observed the long-term effect of climate on biodiversity. As in many deserts, rain falls rarely in the Simpson, but every few years it can be very heavy. Chris has observed that heavy rain causes rapid growth of plants such as spinifex grass. With more food available, the numbers of insects and other **invertebrates** increase. This means there is more food for native mice and rats, so their numbers increase too.

Rain, then drought – a path to extinction

However, rain isn't always good news for small mammal **species**! Chris has also observed that they may face **extinction**, since drought typically follows heavy rain in the climate cycle. The native grasses, which have flourished from the rain, then become very dry. This adds to the ferocity of wildfires, which occur naturally, ignited by lightning. Once the grasses are burnt, there are fewer places for animals to hide. **Feral** cats and foxes find it easier to catch small mammals and invade new areas.

Did you know?

Mulgaras, dunnarts, kultarrs, ningaus, planigales and antechinus are sometimes called 'marsupial mice'. They are all small marsupials. The smallest is the planigale, which can weigh less than a ten cent coin.

Lessons for the future

By analysing how plants and animals in the Simpson Desert respond to heavy rainfall followed by drought, Chris is contributing to our understanding of how plants and animals elsewhere will respond to extreme weather associated with **climate change**. His research suggests that in **arid** regions, the most effective time for land managers or governments to carry out poisoning of foxes and control of feral cats is following wildfire.



The Sandy Inland Mouse is a small mammal, native to the Simpson Desert. It thrives after heavy rain, until fire occurs and predators arrive.

Teaching and writing

Chris became a professor at the University of Sydney in 2004. He has supervised many students who have gone on to make their own contributions to conservation. Chris also shares his knowledge through writing. He has written over 200 scientific articles and several books, including a major reference book called *A Fragile Balance: The Extraordinary Story of Australian Marsupials*.

CHRIS'S CONTRIBUTION TO CONSERVATION SCIENCE

Chris Dickman's research has given scientists a better understanding of Australia's unique mammals and desert ecosystems. Today, Chris continues to highlight the threats faced by our native animals. His work is helping prevent any more species from becoming extinct.

web watch

Watch this segment from the ABC's *Catalyst* program to learn more about Chris's work in the Simpson: <http://abc.com.au/catalyst/stories/3251977.htm>