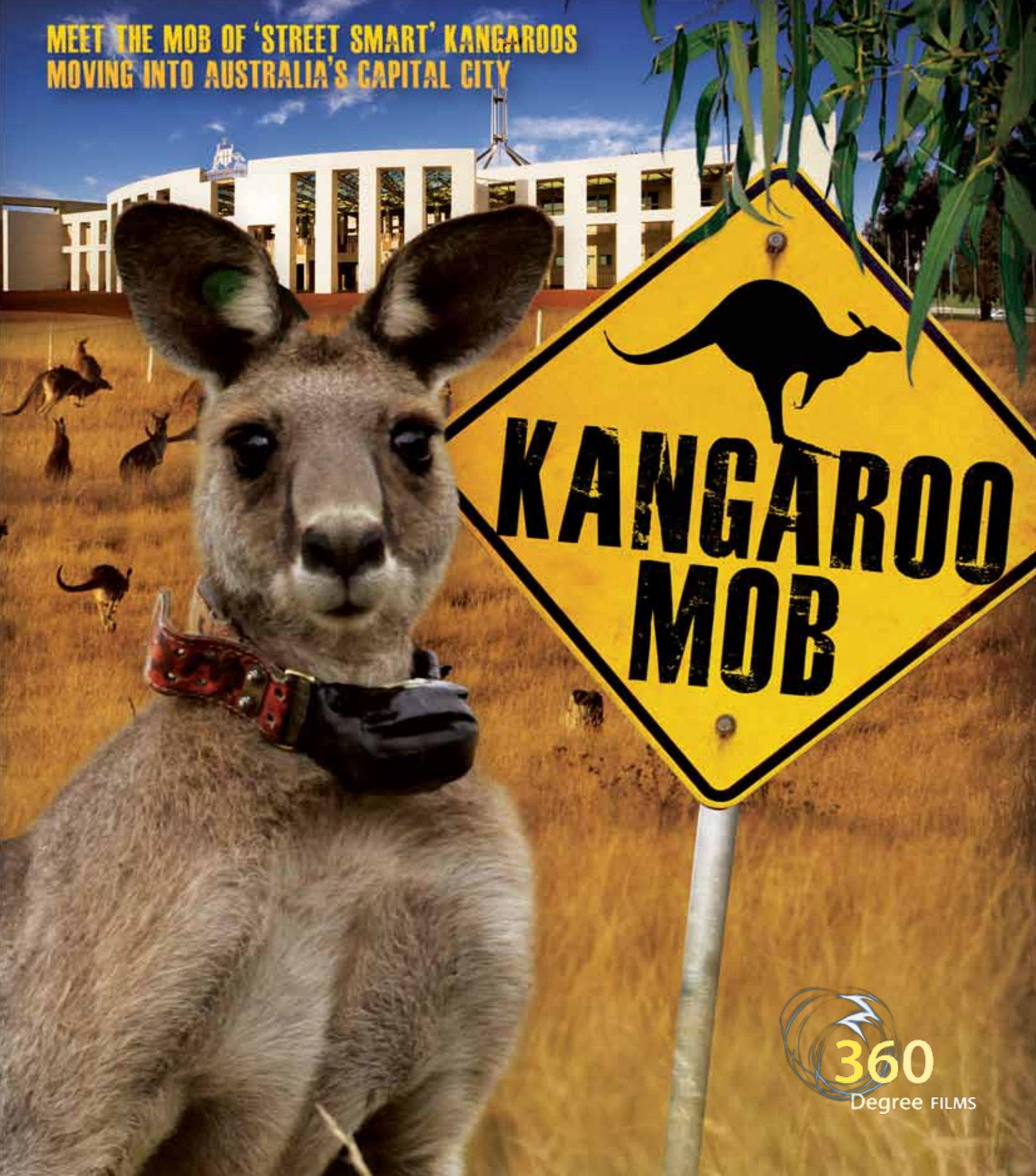


MEET THE MOB OF 'STREET SMART' KANGAROOS
MOVING INTO AUSTRALIA'S CAPITAL CITY



A **STUDY GUIDE** BY ANDREW FILDES AND 360 DEGREE FILMS



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KANGAROO MOB



CURRICULUM RELEVANCE:

Science/Biology – macropod behaviour, data logging, research methodology.

Environmental Studies/Science – urban wildlife management.

Humanities – Social Science (social conflict), Geography.

Media Studies – Natural History Documentary

Age appropriate: Secondary

NB: Includes brief scenes of courtship and mating. Also some scenes of road kill events may be distressing for younger students.

52-minute nature
documentary
360 Degree Films
Producer: Sally Ingleton
Director: Steve Westh



INTRODUCTION

Meet the mob of ‘street smart’ kangaroos moving into Australia’s capital city and the ecologists following their every move.

Over one year, the film follows mob leader Black Spot and kangaroo mum Madge with her two young joeys – Sonny and tiny, pouch-bound Alice.



After fifteen years of drought, Canberra’s Eastern Grey Kangaroos know that the parks and gardens of Australia’s ‘bush capital’ provide a reliable supply of juicy exotic grasses. But learning to be a street-smart urban roo is tough as the kangaroos must negotiate busy roads and avoid cars and dogs.

Inevitably their incursion into human habitat causes problems – damage to property and collisions with cars. It’s costing millions of dollars and thousands of animals are killed each year. The farmers complain that the roos are eroding farmland and damaging their fences. The ACT Government holds an annual cull to ‘manage’ the problem by keeping kangaroo numbers at ‘sustainable levels’.

Confrontations with animal rights activists opposed to the cull make international news. It’s a situation that arouses passions and polarises opinion. Are the kangaroos pests that need to be eradicated or a protected national icon to be saved at all costs?

Two ecologists, Don Fletcher and Claire Wimpenny, hope to provide

some answers in a twelve-month study that uses GPS collars and satellite technology to track the kangaroos’ nocturnal movements.

Amidst the controversy that rages when people are forced to share their backyards with a large wild animal, the scientists discover surprising new behaviour. It appears that the kangaroos are learning to live with people much better than people are learning to live with the roos.

Filmed over a year, *Kangaroo Mob* follows a few remarkable urban kangaroos to provide a warm and entertaining look at what happens when human development encroaches and two very different species are forced to co-exist.

The key concepts explored in the documentary are the problems caused by interaction between humans and kangaroos in urban areas; the social adaptation of Eastern Grey Kangaroos to the built environment; technological developments in wildlife research projects; and controversial issues in wildlife management, such as population control through culling.



MEET THE MOB

The Eastern Grey Kangaroos featured in the documentary are part of the special Urban Kangaroo Movement Study commissioned by the ACT government.

BLACK SPOT is a large male Eastern Grey living in the hills above Canberra. At 73.5 kilos, and fourteen years old, he's the dominant buck in his mob.

Black Spot has survived Canberra's long drought by becoming a frequent visitor to the city's well-watered parks and gardens. Access to this endless supply of lush grass has kept him in good condition.

This year however, time and Canberra's bitter winters have caught up with him. He's slowing down and other males in his mob begin to challenge his power and ultimately mate with his females.

Black Spot's story is a poignant reminder of the fragility of life for older members of the kangaroo mob.

MADGE is a four-year-old mother to two rapidly developing joeys – Sonny, her two-year-old male 'young at foot', and Alice, a tiny female, still pouch-bound. Madge is able to suckle both of them, supplying different types of milk from different teats to meet their different nutritional needs.

Like most juvenile males, Sonny has an adventurous nature and often gets into trouble. Madge must keep a watchful eye on him and it is hard not to be moved by her palpable terror when his life is in danger.

Data reveals that Madge is perhaps Canberra's most 'urban' kangaroo, spending nearly half her winter grazing time in the suburbs. And she may be one of the best-adapted kangaroos in the city too, skillfully negotiating her way through busy traffic areas and passing on her street skills to young Sonny.

SONNY is just over a year old when we first meet him. He's at a dangerous age, weaning, being permanently out of his mother Madge's pouch, but still reliant on her for milk. He'll continue to suckle for several more months until he makes the permanent transition to being an independent herbivore.

Until then, when he is strong enough to look after himself, he's at his most vulnerable. 70 per cent of Eastern Greys in the Canberra region don't make it to their second birthday.

Sonny is one of the lucky ones. In the twelve months the crew spent filming him and his mother Madge, he survived a freezing winter, frequent forays across and around Canberra's busy roads, a desperate tangle in a barbed wire fence, separation from Madge,

and the annual cull. When we leave him, he has a better chance than most of survival. He's a truly 'urbanised' kangaroo. His mother has taught him well.

ALICE is barely two months old when ecologist Don Fletcher discovers her whilst he is fitting her mother Madge with a radio-tracking collar. At that age, she is a tiny, hairless joey, pouch-bound and weighing less than 100 grams.

In the course of the film, Alice matures enough to poke her head out of the pouch and see the dangerous world that awaits her. Madge keeps her 'locked in' and safe for more than nine months, during which she grows fur, gains condition and puts on about four kilograms.

In spring, the documentary team returned to film the moment when she and most of the other joeys first leave the pouch and get used to using their long spring-like legs. But Alice is nowhere to be found. It seems she is one of the 70 per cent of joeys that do not survive. Her loss underlines the precarious and fragile existence kangaroos face in the wild.





SCIENTISTS

DON FLETCHER is a senior ecologist working for the ACT Government. His work has focused primarily on the region's Eastern Grey Kangaroos. He ran the Urban Kangaroo Movement Study to monitor the movement patterns of Canberra's kangaroos using GPS tracking collars on twenty-five animals in seventeen locations. Important understandings were gained regarding the animals' adaptation to traffic, particularly their willingness to use pedestrian underpasses below highways and their tendency to avoid the larger, high-speed roads in favour of suburban streets. Part of his job is to discuss animal control strategies with resident communities, often having to face up to groups hostile to any culling – particularly animal rights and wildlife care groups.

28-year-old **CLAIRE WIMPENNY** is a researcher working with Don. She is an expert sniper with the tranquiliser gun and shows us something of the work of a young ecologist in the field, a job that might appeal to many students. Clearly a level of fitness and an empathy with wild animals is essential – Claire develops a special interest and relationship with Madge.

GENERAL WEB RESOURCES

ACT Kangaroo Management Plan

http://www.tams.act.gov.au/play/pcl/wildlife/local/kangaroos/mgt_plan

VIEWING QUESTIONS

During viewing, the following questions could be considered:

- What is the fundamental problem with the kangaroos in the city?
- How old are Madge and Sonny?
- When do urban kangaroos feed?
- What do they eat and how much of it?
- How tall is Black Spot?
- What kind of individual is he?
- Why are the kangaroos darted before their collars are attached?
- When Madge is darted, the ecologists discover a tiny joey in her pouch. How do they determine how old it is?
- How much does Black Spot weigh?
- What do the researchers hope to prove by setting up a motion sensitive camera?
- What sort of data will be recorded by the collars? How will this data be used?
- How do the media react when kangaroos get too close to humans?



- Black Spot is growing old – what problems will he face?
- Which kangaroos are at most risk of road death? Why?
- What is the kangaroo road toll in Canberra?
- What conclusions does the research project reach? How are the kangaroos adapting to the suburbs and humans?
- What is the cost in vehicle damage?
- How should humans adapt their behaviour to urban kangaroos?
- How are kangaroo numbers controlled and reduced?

CLASSROOM RESEARCH

The documentary covers a number of topics that can become research projects for students.

1. LIVING WITH KANGAROOS

Download the ACT government's 'Living with Kangaroos' brochure (2 pages) from http://atom.asn.au/kangaroo_mob/Living_With_Kangaroos.pdf.

Use as a comprehension exercise.

Questions:

- What alternatives to culling are discussed? Are they reasonable?
- What happens to the kangaroo movements when the drought finally breaks?
- What are the main threats to kangaroos in the wild?
- What may have happened to Alice? Why would Madge have done this?
- What percentage of kangaroo joeys survive to adulthood?
- What is meant by a 'hot spot'?
- Why did they place collars on kangaroos?
- Why is the research being done?
- What should you do if you find injured wildlife?
- Why is Canberra called the 'Bush Capital'?



- Which aspect of the city encourages kangaroo invasions?
- What is a 'forb'?
- Why is overpopulation of kangaroos a problem? What can happen?
- What grassland species are threatened in Canberra?
- What time of day and year is the greatest risk on the roads for kangaroos and motorists?
- What can you do as a driver to reduce the risk?
- What should you do if you hit a 'roo?
- Why exactly are dogs a problem for kangaroos? What can you do to help?

2. AUSTRALIA'S KANGAROOS

Kangaroo Mob is about a population of Eastern Grey Kangaroos living in and around Canberra. Eastern Grey Kangaroos are just one of many species of kangaroos that inhabit Australia.

- Prepare a research assignment, poster or PowerPoint presentation that covers the following:
- Describe the variety of kangaroo species living in Australia. Map



the distribution of Eastern Grey, Western Grey and Red kangaroos.

- Describe how kangaroos rear their young from birth to independence (How are joeys born? How often can a female kangaroo produce a joey? How do joeys feed inside the pouch? When do they leave the pouch?)
- The kangaroo has evolved some unique characteristics in adapting to the Australian environment. What are they? How does it differ from the Tree Kangaroos of New Guinea, for example?

Behaviour and range information:

<http://museumvictoria.com.au/discoverycentre/infosheets/eastern-grey-kangaroo/>

Note: Night feeding is an adaptation common to kangaroos in suburban areas when they are trying to avoid human usage of parks and sport grounds.

3. WILDLIFE LIVING IN URBAN AREAS

The documentary looks at how in Australia kangaroos are moving into urban areas.

Research what other species of wildlife currently live in urban parts of Australia and explore what are the

problems and solutions to this situation e.g. possums, camels, crocodiles, dingoes.

- Research how communities in other countries have dealt with the invasion of wildlife species into urban areas, e.g. bears, wolves, polar bears, raccoons, deer.
- Design a Wildlife corridor network for your community/school/university. How can they be used to protect both animals and humans?

4. POPULATION CONTROL OF WILDLIFE

The ACT Government argues that the population of Eastern Grey Kangaroos has increased to the point where their numbers are no longer sustainable – they are damaging the ecology of the city grasslands and causing unacceptable problems for residents.

- Research the reasons why the population has increased, what damage they may be causing and argue either for or against the need to reduce the population.
- What are the options for population control?
- Arrange a class debate on the topic 'Culling is the most humane way to manage wildlife populations'.



5. WILDLIFE RESCUE

Many cities and communities have active wildlife rescue operations.

- Contact your local wildlife rescue service and spend a day with them. Write a diary of their daily activity or a profile of their work.
- How do volunteer rescuers compare with organisations like the RSPCA?

6. WILDLIFE DOCUMENTARIES

Kangaroo Mob is a nature documentary commissioned by ABC TV.

- Choose 3 or 4 nature documentaries and compare their storytelling styles, e.g. David Attenborough's *Life* series; *Meerkat Manor*; *Big Cat Diary* or *Spy on the Ice*.
- How can new technology such as GPS devices or miniature cameras assist filmmakers to capture unusual behaviour?

7. WORKING WITH WILDLIFE

In the documentary, we see two ecologists working with the kangaroos and a volunteer wildlife carer. There are many jobs that involve working with wildlife.

- Investigate what kinds of careers involve work with animals or the environment?
- How can new technology assist us to understand animal behaviour?
- Find out who in your community is working with wildlife and research what their job involves.
- Imagine you are the Environmental Planner for your community. What would you do to both attract and protect wildlife in your neighbourhood?
- Contact and interview the Environment Officer of your local council – report on the tasks that person carries out to protect wildlife and reduce problems in your area.



THE CULLING ISSUE – KANGAROOS VS. GRASSLAND

Culling is a highly controversial strategy. It is important to draw a distinction here, especially if teaching ecology, between control measures and social considerations. Where ecologists consider wild animal population to be essential, the measures used by them may seem heartless. In particular, the killing of a kangaroo's pouch young is highlighted by protesters. It is claimed that, if done properly and quickly, this is the most humane method available to a scientist but it may be unacceptable to many people.

Scientists argue that if they do not cull the population the native grassland can become seriously degraded – to the point where other species lose their habitat and suffer. The grassland can only sustain a set number of kangaroos so, if there are too many, some kangaroos may die of starvation. This was once a natural cycle but now the subsequent regrowth may

be weed grasses and the lost species often do not return. Other population control methods include contraception. At present an oral contraceptive is being trialled which to date has revealed promising results. Relocation is another option. This can be stressful on the animals and logistically hard to manage as they would need to be individually darted and sedated prior to moving them. Attempts to relocate in the past have been disastrous as kangaroos panic when herded. This was attempted in the Hattah Kulkyne National Park (Vic.) in the 1990s and was a conspicuous failure. Finding suitable release areas is also a consideration.

Eastern Grey, Western Grey and Red Kangaroos are very efficient breeders and their numbers will increase rapidly when circumstances allow, possibly causing ecological damage through overgrazing. However, many of these problems have been caused by humans who have cleared forests for grazing land and built man-made

waterholes. These modifications to the natural environment have created perfect kangaroo habitats. But now as the urban environment continues to sprawl and suburbs encroach onto kangaroos' grazing land, conflict is inevitable. Many farmers do not want kangaroos eating their pastures or destroying their fences.

Kangaroos have been hunted by indigenous Australians and settlers since before recorded history and are still eaten widely across Australia and in other countries. The leather is widely used in quality runners. Unlike Emus, they have proved impossible to farm for meat and skins. To many people, protecting an animal in one place while exploiting it in another may seem absurd.

Some details of the kangaroo meat industry can be found at <http://www.kangaroo-industry.asn.au/morinfo/BACKGR1.HTM> including the claim that the population has increased since colonial times.



Kangaroos are probably Australia's most internationally recognised native animal. They are important for tourism and many Australians welcome them as neighbours.

A measured objection to the cull can be found at <http://www.crikey.com.au/2009/03/06/another-roo-cull-there-must-be-a-better-way/>.

The ecological justification for the ACT cull can be found in this document: http://www.envcomm.act.gov.au/_data/assets/pdf_file/0010/169255/ocse_actgrasslandreport_0309_full.pdf.

Pages iv to viii of the Executive Summary at the beginning (key Recommendations 21 and 15) recommend the conservation of critically degraded grasslands by weed control, different mowing practices, removal of cattle, rabbit and kangaroo control.

The report could be used as a comprehension exercise for senior Environmental Science students. Reading the first pages of the summary, ask:

- What animals and plants are endangered by overgrazing of the grasslands?
- What is the local and national status of each of these species (vulnerable, endangered, etc.)?
- What do those status indicators mean in terms of the survival of the species?
- Why is the control of kangaroos the most difficult and controversial measure to implement?

SENIOR TASKS

The logic of a cull

The ACT document represents a detailed and logically argued strategy to protect the grasslands at the expense of some kangaroos and by using a number of other measures. Search online for 'Canberra Kangaroo Cull' and examine some of the objections by the protest groups. For instance:

<http://www.kangaroolives.com>

<http://www.kangaroo-protection-coalition.com/canberrakangarooocull.html>.

- What is the basis of the objections?
- Are the arguments logical and valid?
- What is the tone of the protest statements?
- What language is used – are terms like 'murder' employed?

Using the material from the ACT report and the protest sites, set up a debate in class between 'government' and 'anti-cull' positions.





Endangered Grasslands

Construct a research project on Australian native grasslands as a critically endangered habitat. Profile typical southern Australian native grasslands – ecosystem, etc.

- Can you identify an example near where you live?
- Examine why this habitat is one of the most endangered ecosystems on the continent.
- What percentage is left and what is its condition?
- Recommend a conservation strategy for grasslands in your area.

Adaptive Behaviours

All animals that live in urban areas have made a number of adaptations to survive in an unnatural and often hostile environment. They have adapted their diet and behaviour to fit into the artificial, built environment. Rats in sewers, bats and possums in roofs, seagulls on tips and city build-

ings, the Redback spider on the toilet seat. There is even a particular type of mosquito that lives only in the London Underground where it can survive the winter and feed on the passengers. Some people see wildlife as pests, while others enjoy their presence.

The kangaroos of Canberra have not changed physically but have made a number of behavioural changes to adapt to urban life.

- How have the kangaroos of Canberra changed their diet and behaviour to suit the available food sources in the city? Make a list.
- What changes are revealed by the conclusions of the research study?
- Are there any physical adaptations?
- Could these changes be regarded as ‘evolutionary’? If so, what is the selection process?

TRACKING THE KANGAROOS – ECOLOGY AND TECHNOLOGY

During the research study, the kangaroos wore collars that recorded their movements by GPS. This information was recovered and collated at the end of the study and can be viewed on Google Earth. This is an ideal activity for use with a data projector.

You will need to have Google Earth installed on your computer and/or the students’ computers. The program is free, and if you do not already have it, you can download it from <<http://earth.google.com>>.

You will also need the following KMZ file, which will open in Google Earth:

http://atom.asn.au/kangaroo_mob/EGK_Urban_Movements_Data.kmz

Open up the KMZ file from within Google Earth or by double-clicking the file (which will launch Google Earth).

If you intend to open the file by double-clicking, you may need to make sure that the ‘.kmz’ file exten-

sion is associated with Google Earth on your computer. Your operating system may attempt to open the file in Adobe Photoshop if you also have that program installed on your computer.

Please see these links for instructions on how to alter file associations on the most common operating systems:

For Windows 7:
<http://windows.microsoft.com/en-us/windows7/Change-which-programs-Windows-uses-by-default>

For Mac OS X:
http://www.fileinfo.com/help/mac_change_program

When the file opens, you will see groups of green and red symbols. Each group represents a collared kangaroo during a pilot study in 2009. Zoom in on one of these groups for details. Green symbols show the kangaroo's daytime locations, with red symbols for night. Stars are points of the highest precision, triangles are unreliable, and circles are of intermediate quality. Straight lines join successive locations, but do not necessarily show the route used by the kangaroo.

More information is available on research into fertility control at <http://www.tams.act.gov.au/play/pcl/wildlife/local/kangaroos/research/fertility_control>. You may also be interested in the recently released ACT Kangaroo Management Plan <http://www.tams.act.gov.au/play/pcl/wildlife/local/kangaroos/mgt_plan>.

Zoom out in Google Earth to see the whole of the ACT.

In what areas of the Australian Capital Territory were the collared kangaroos? Why might these areas have been chosen for the study?

Zoom in on the cluster just south of Lake Burley Griffin. What is the large, circular structure next to this cluster? Zoom in close. Click on the symbols themselves for the kangaroo's name and the time and date it was at that location. What is the name of the kan-

garoo in this study zone? What is the name of the area? What conclusions can you draw about the movements of the kangaroos during day and night?

Zoom in on the large cluster to the east of the city of Canberra (between Ainslie and Reid). Why would this area be chosen as a major component of the study? (Note the proximity of a large park zone and the suburbs). Click on some data points – what are the names of the kangaroos studied here and what is the name of the park area? What conclusions can you draw about the movements of the kangaroos during day and night? What might account for this movement? How does it differ from the movements of the kangaroos in the central study zone? What is the spread of dates of the readings? Do the kangaroos tend to be found in the same areas at the same times over several months or do they tend to roam at random? What conclusions can you draw about the behaviour of these kangaroos over a period of time?

Further north, around the suburb of Hackett, you will find some recordings for Madge. Describe the area in which Madge lives. What proportion of her time would you estimate that she spends in a suburban area and how much in a bush zone? Students should click on individual points, try and identify one day's track for Madge and map it roughly on a sheet of blank paper, including the basic features of the area. A basic map could be pre-prepared. Different students should take different days – there's a 'treasure hunt' element to finding their own day's data points. This will take some time as some points have data for more than one day or time. How much ground does she cover in one day? She seems to be more sedentary at night (moves around less). Is this a valid statement for this day?

DATA LOGGING

Many forms of biological and ecological research involve data logging. It is also used in other physical and social sciences.

With wildlife, this is usually done with sophisticated equipment such as the GPS transmitter units attached to Madge and others by collars. It is beyond the resources of most schools. Data from some laboratory devices such as pH monitors can be uploaded to laptop computers and then graphed. Used in the field, these may be used to profile a local creek by senior students. Help in this may be available from teacher's subject associations, local councils, water boards and similar authorities which may have equipment to loan. The most basic and easily available data stream is probably the weather station logs for local areas, available through Google. These can be used to develop basic skills for senior students.

Data logging techniques can be modelled in a school by simple techniques such as using class members to make high volume observations of student movements. It would be possible to ask students to record student movements at lunchtime as if they are grazing animals:

- how many visit the canteen;
- how many eat lunches brought from home and where;
- how many eat alone; in small groups or large groups;
- how many sneak off to the local shops?

This type of project can be adjusted to suit older primary students through to middle secondary students.

Data should be based on pure observation and then interpreted appropriately – not by interviewing, for instance. You can't interview kangaroos!

Appropriate tally sheets and techniques could be developed by the students in response to the task objectives. Recording data on approximate age, position, grouping and food choices could yield genuinely useful information



and offers opportunities for graphing and mapping results so that good conclusions can be reached.

URBAN WILDLIFE

Problems with Human/Wildlife interaction

A comprehensive discussion of the problems caused by urban wildlife in Australia can be found at <http://www.cals.arizona.edu/pubs/adjunct/snr0704/snr07041d.pdf>.

While some of these impacts are familiar, others are less understood. This is written at a level suitable for senior Environmental Science students and could be used 'as is' as a resource for a research project on wildlife management in urban areas. Either an overview could be attempted or the selection of an individual animal such as possums or cockatoos. Interestingly, kangaroos are not mentioned – Canberra is a rather unusual case.

The documentary mentions the blocking of wildlife corridors as one of the problems. Kangaroos are locked into the urban area and cannot move to fresh bushland which, as the research demonstrates, they actually prefer. There is a detailed definition of corridor types and effects at <http://www.urbanecology.org.au/topics/wildlife/corridors.html>.

Students could investigate whether the provision of corridors in Canberra would allow kangaroos to leave the city area or simply give them better access!

FILM AS TEXT

The documentary begins in a rather unusual way, mimicking the style of a rather different type of production. For the first few minutes, terms like 'plague' and 'invasion' are typical and the atmosphere is more like a crime drama than a wildlife documentary.

- What is the first impression that you get of the problem in Canberra?
- Is this style consistent throughout the documentary? Why/why not?
- Where might you see a similar style employed? (Current affairs? Action drama? Reality crime series?)
- What is the filmmakers' purpose in this approach? (Reflecting the attitude of some residents?) Create a dramatic context or introduce the controversial aspects of the story.

Later in the documentary we see samples of television news stories based on a single incident of a panicked kangaroo entering a house through the window.

- How is this event distorted factually to make it newsworthy? (Note the 'Ninja Roo' graphic!)
- Do you think that this is common practice in news stories?
- Can you find other examples from newspapers or television where a wildlife story has been exaggerated or distorted to make the animal seem far more dangerous than it is. Why would the media do that?
- Search online for keywords like 'kangaroo attack' or 'crocodile attack' and see what appears in terms of media stories. 'In the wild' style television reality shows might also provide examples.



 **FILM VICTORIA**
AUSTRALIA



SCREEN
AUSTRALIA

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YLE



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