



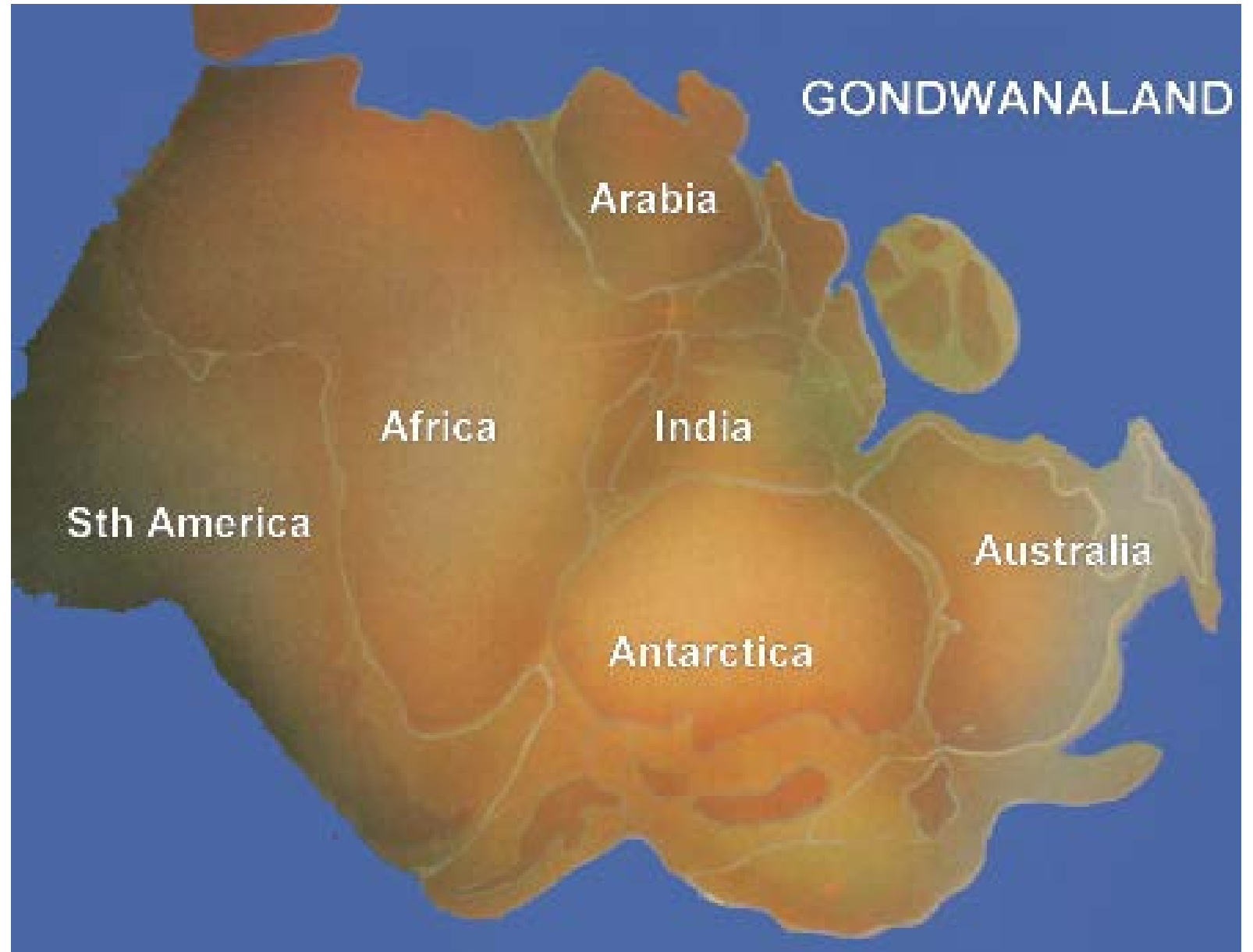
SURVIVING THE  
CHALLENGE :

SURVIVING WITH  
AUSTRALIAN  
NATIVE PARROTS

PROF. em. GISELA KAPLAN, ANIMAL BEHAVIOUR  
(PHD MONASH; PHD VET.SCI. UQ; hon.DSC. UNE).

01

SPECIAL CONTINENT &  
SPECIAL BIRDS



## BIRDS ARE OF EAST GONDWANAN ORIGIN

All modern songbirds in the world are Australian

(East Gondwana) in origin (only avian survivors/lineages after mass extinction events of 65 mill. years ago, were found in East Gondwana/Australia).

Australia has been called the “Noah’s Ark” for the birds of the world

After speciation's, some radiated out to Asia and eventually to Europe about 30 mill years ago and about 4 mill years ago to North America. The origin of all these birds are Australian.

All parrots are East Gondwanan in origin

All parrots are East Gondwanan in origin and have remained in its broad geographical area.





---

## ADDITIONAL FACTS (ABOUT NATIVE AUSTRALIAN COCKATOOS)

95

MILLION YEARS

Cockatoos have a  
95 mill. year  
history in Australia



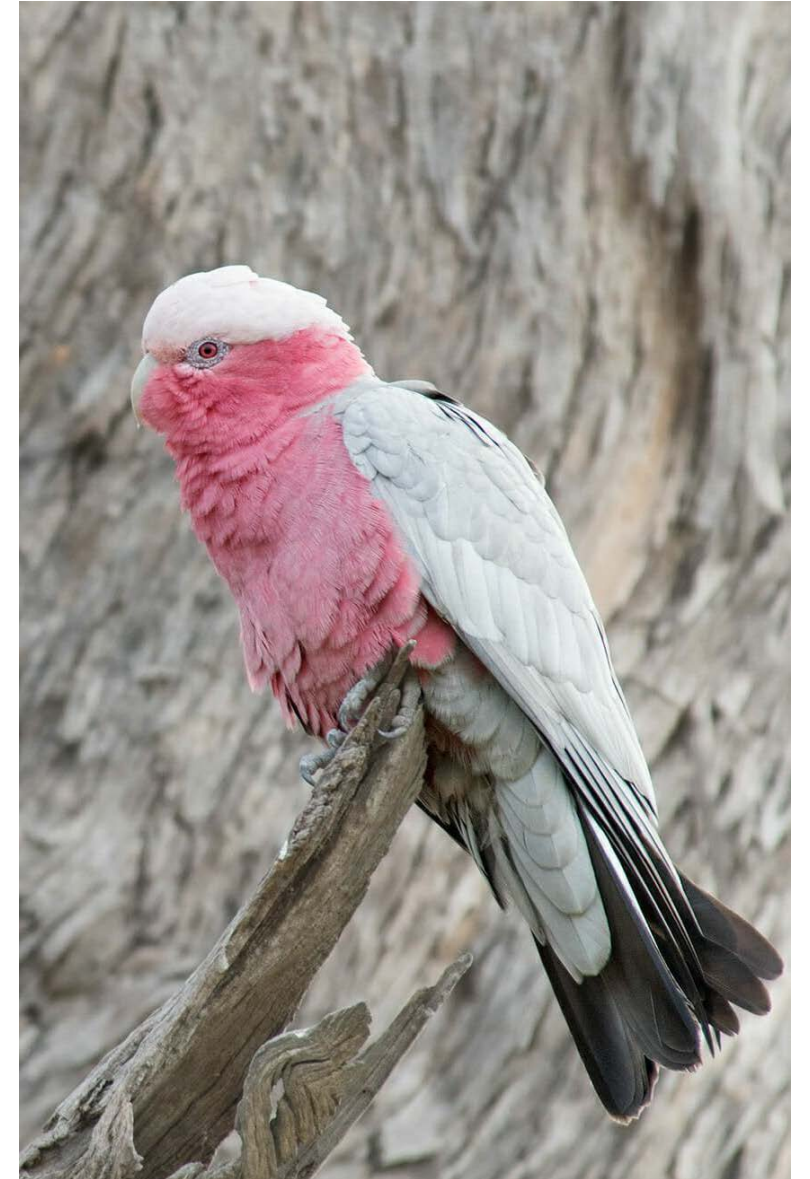
Australia is the only western  
civilised (?) country that  
occasionally regards its own  
wildlife as pests



Australia is the country with the  
highest rate of extinctions of  
wildlife in the world despite a  
population to landmass ratio  
(density) that is frivolously  
favourable (3 people per square  
km in Australia versus 300 per  
square km in Europe)

ALL COCKATOOS AND MANY NATIVE  
PARROTS ARE IN  
DECLINE OR ON THE ENDANGERED  
LIST.

(See book title: *Extraordinary and Endangered*.  
published 1April 2022 by *Australian Geographic*)



## FURTHER TO THESE FACTS

A 95 mill. year history in Australia means that cockatoos are resourceful enough to have managed to adapt to all the substantial climate changes to this day BUT are at risk today because of their worst adversary: late settler immigrant human population.



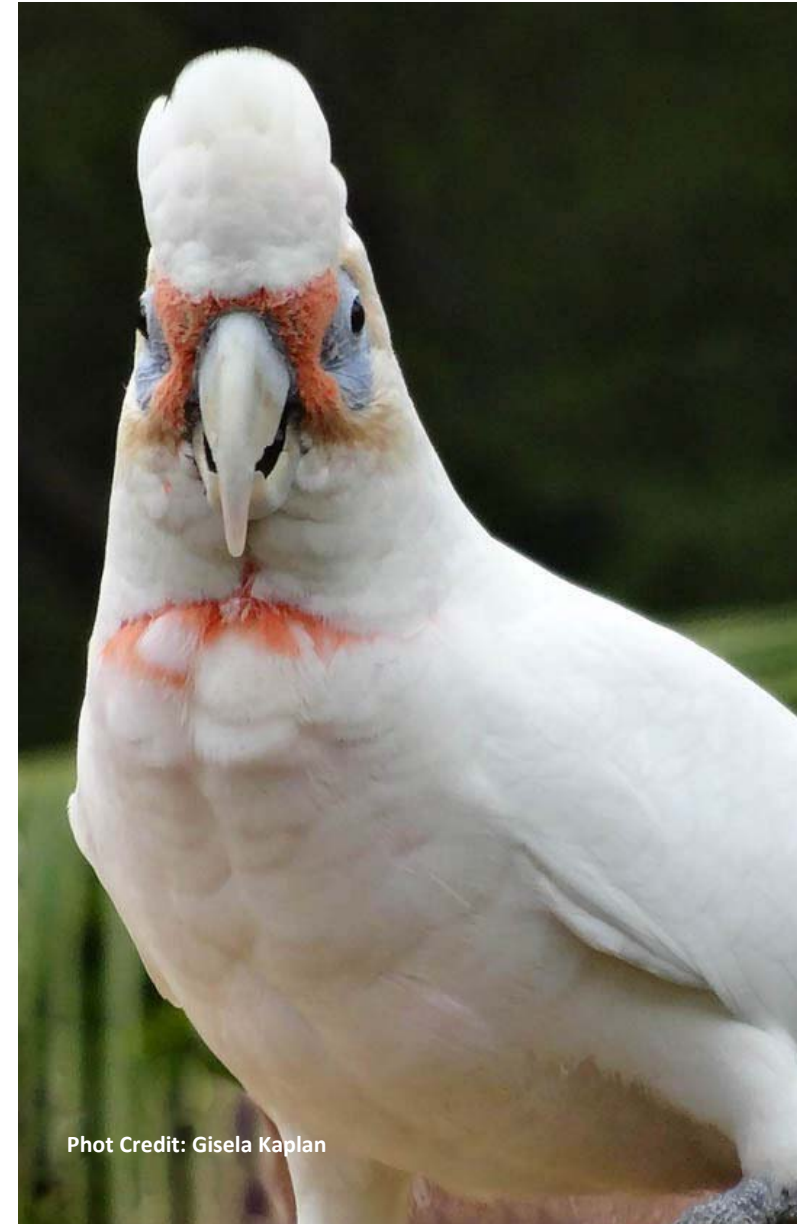
02

REPRODUCTIVE SYSTEM  
OF COCKATOOS



LONG-BILLED CORELLA  
2 days old; Right Insert: adult

Slow lane but quality breeding  
(perhaps 4 offspring in a lifetime)



Phot Credit: Gisela Kaplan



THE MOST EXTREMELY  
UNDERDEVELOPED AT  
BIRTH/HATCHING (BIRDS AND  
HUMANS ARE ALSO THE ONES WITH  
THE MOST ADVANCED COGNITIVE  
ABILITIES).



HIGH PARENTAL QUALITY CARE FOR SEVERAL  
YEARS PLUS FAMILY PROTECTION



Photo Credit: Cockatoos of Australia  
by natureaustralia.org.au

PARENTS STAYING  
TOGETHER FOR A LIFETIME  
AND BEING PROTECTIVE OF  
EACH OTHER.

A loss of a partner is a  
substantial loss and many do  
not choose to partner up  
again.



Photo Credit: Max.Curtis Flickr

03

## SOCIAL SYSTEM OF COCKATOOS

Preferred travelling size:  
several families (20-30 max.)



Red-tailed Black  
Cockatoo (rb)  
Photo Credit: Robyn Burgess



Photo Credit: Robyn Burgess



Little Corellas  
Photo Credit: Gisela Kaplan

CONCLUSION :

Large flocks are abnormal and are formed mainly for two reasons:



Fear of dying



Lack of food and water  
(Risk of starvation and  
dehydration)

## LITTLE CORELLA FACT FILE

LOCATIONS:	Australia
CLASS:	Aves
SCIENTIFIC NAME:	Cacatua sanguinea
KINGDOM:	Anamalia
GENUS:	Cacatua
FAMILY:	Cacatuidae

WHAT DO THEY EAT?	Herbivorous: Seeds, Wheat, Barley, Corn, Shrubs, Grass
AVERAGE CLUTCH SIZE?	2-4 Eggs
HOW MUCH DO THEY WEIGH?	370-623g
HOW LONG ARE THEY?	35-41cm
WHAT ARE THEIR MAIN THREATS?	Humans

What is their conservation status?

- *Least concern*

Where you'll find them:

- Urban Areas
- Coastal Plains
- Agricultural Farmlands
- Arid Desert



Little Corella

Photo Credit: Gisela Kaplan

04

SOCIAL PLAY...

...Is linked to intelligence and long life.



Photo Credit: Gisela Kaplan



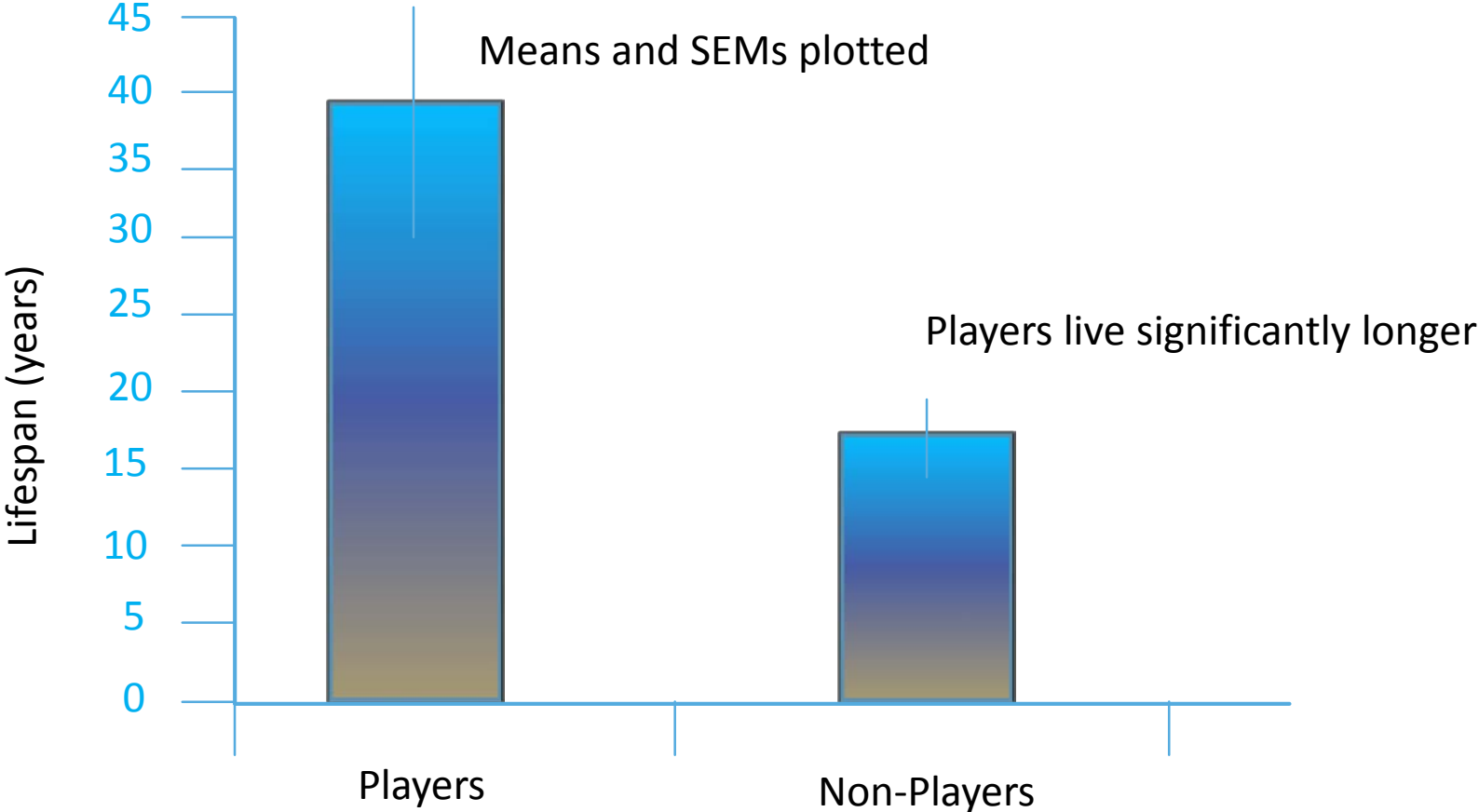
Photo Credit: Gisela Kaplan



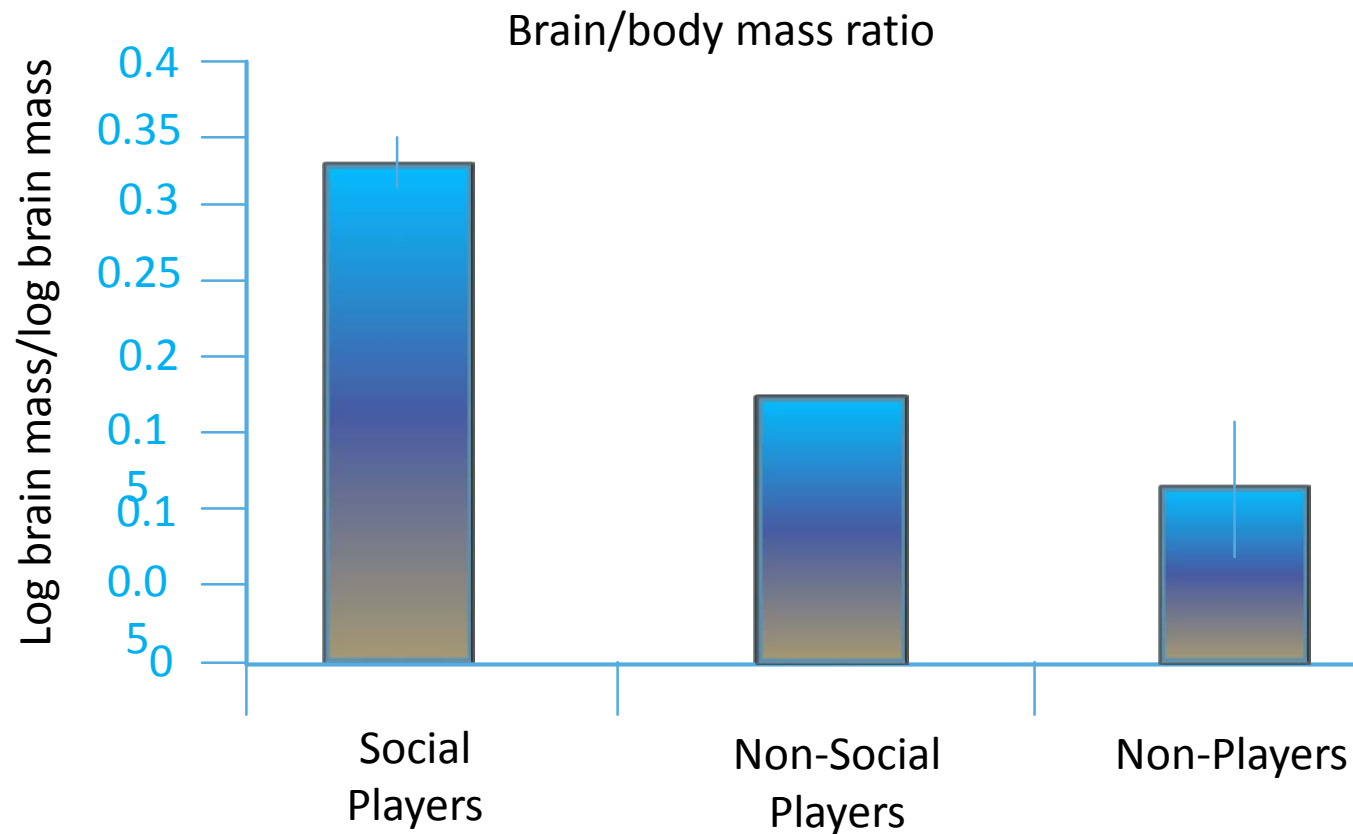
Photo Credit: Gisela Kaplan



# RESULTS: LIFESPAN VS PLAY



## RELATIVE BRAIN SIZE VS PLAY TYPE



Any form of play significantly increases brain ratios relative to type of play.

SOCIAL players have substantial larger brains than object or solitary players who in turn have larger brain ratios than any non-players of whatever body size.

THE LARGEST BRAIN  
IN THE BIRD WORLD  
BELONGS TO:

Parrots and Cockatoo.



Photo Credit: sylv1rob1: Freepik

## LONGEVITY

Australia has a large number of highly evolved and clever birds.



Photo Credit: Athena Georgiou

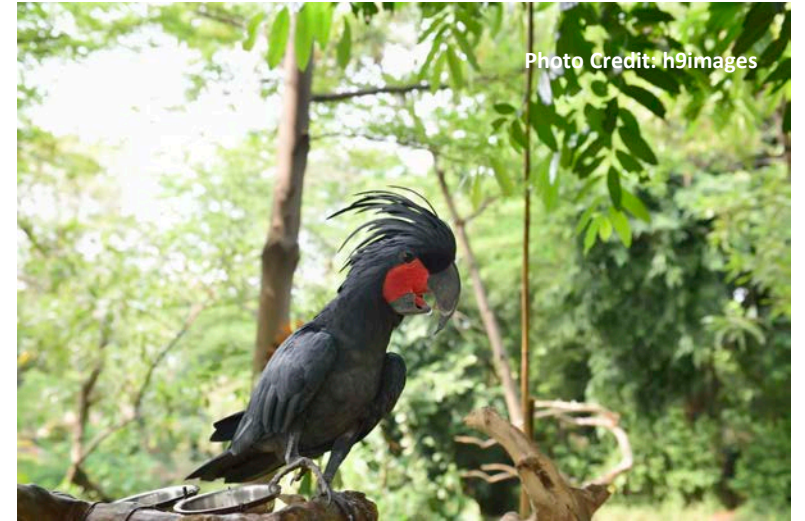


Photo Credit: h9images



Photo Credit: Albert Wright



Photo Credit: Sasimoto. iStock



Photo Credit: dwiputras



Photo Credit: Andrew Haysom

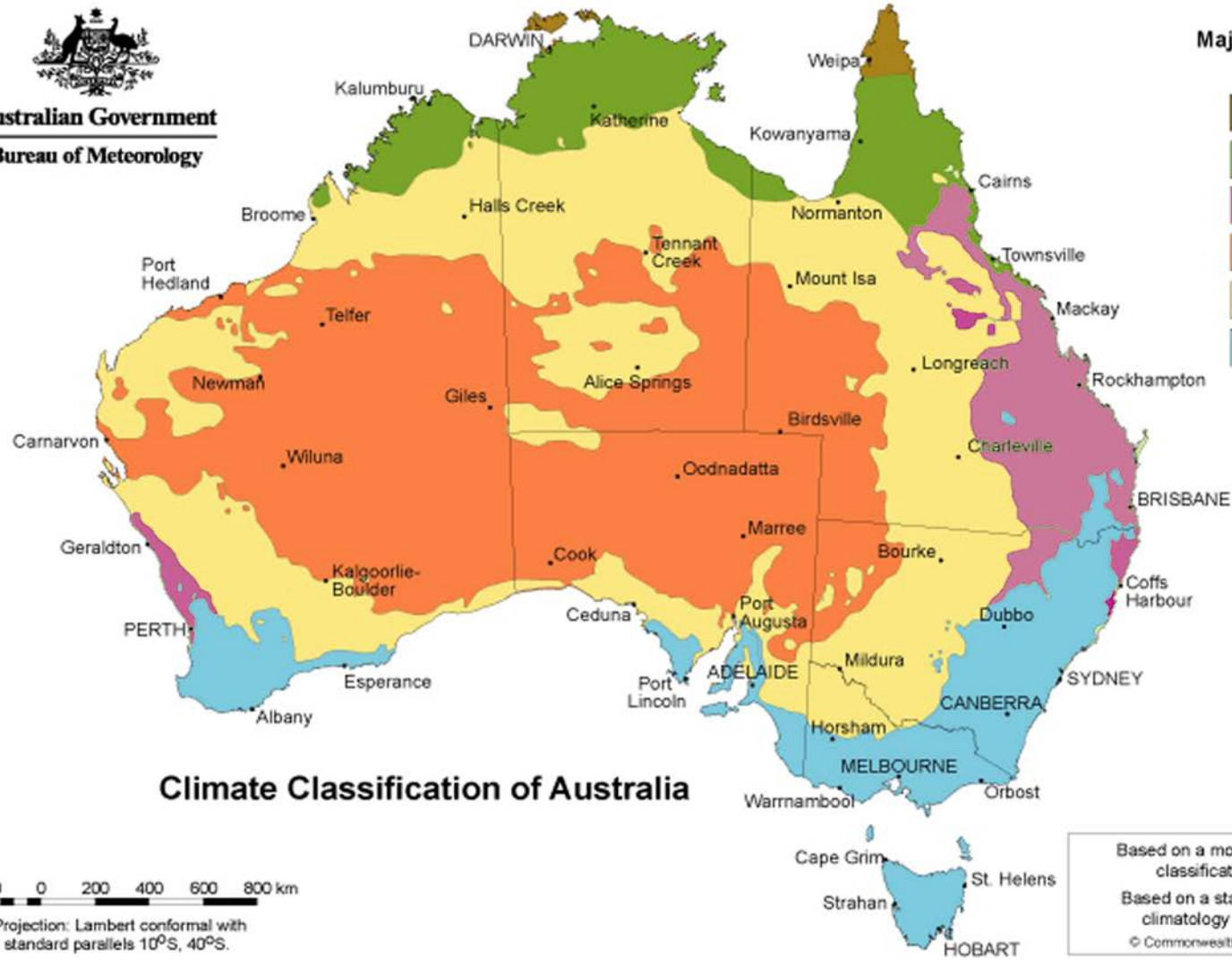
05

CURRENT GEOLOGICAL  
AND CLIMATE  
CONDITIONS





**Australian Government**  
**Bureau of Meteorology**

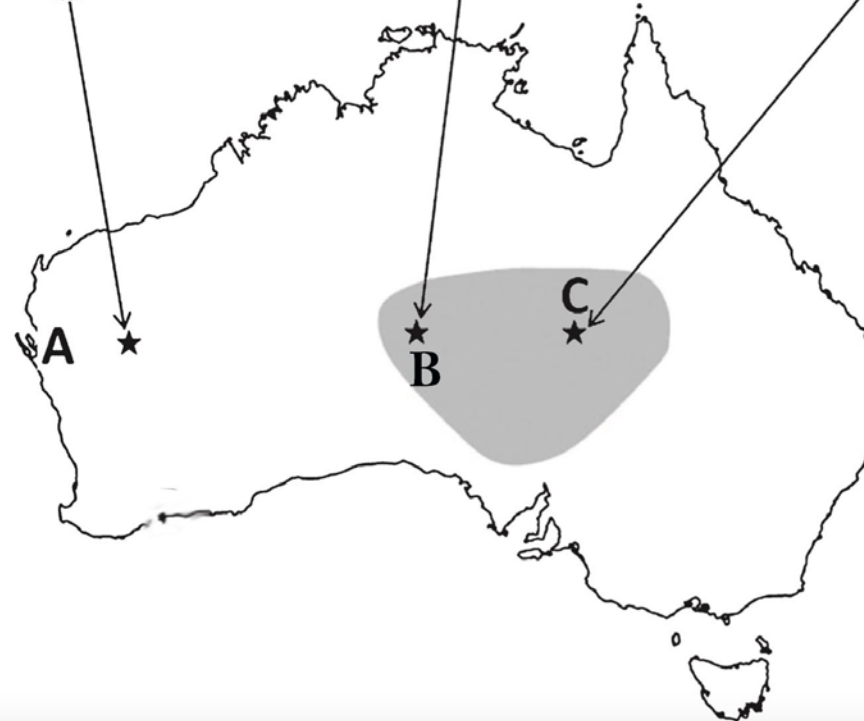
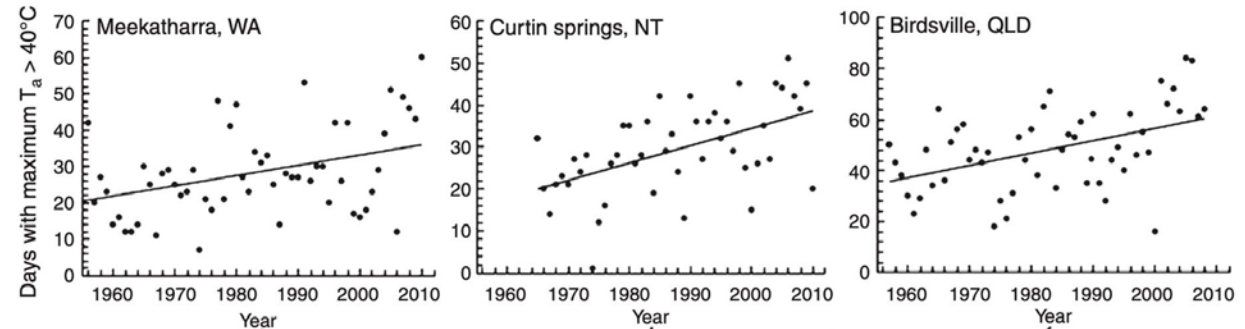


**Climate Classification of Australia**

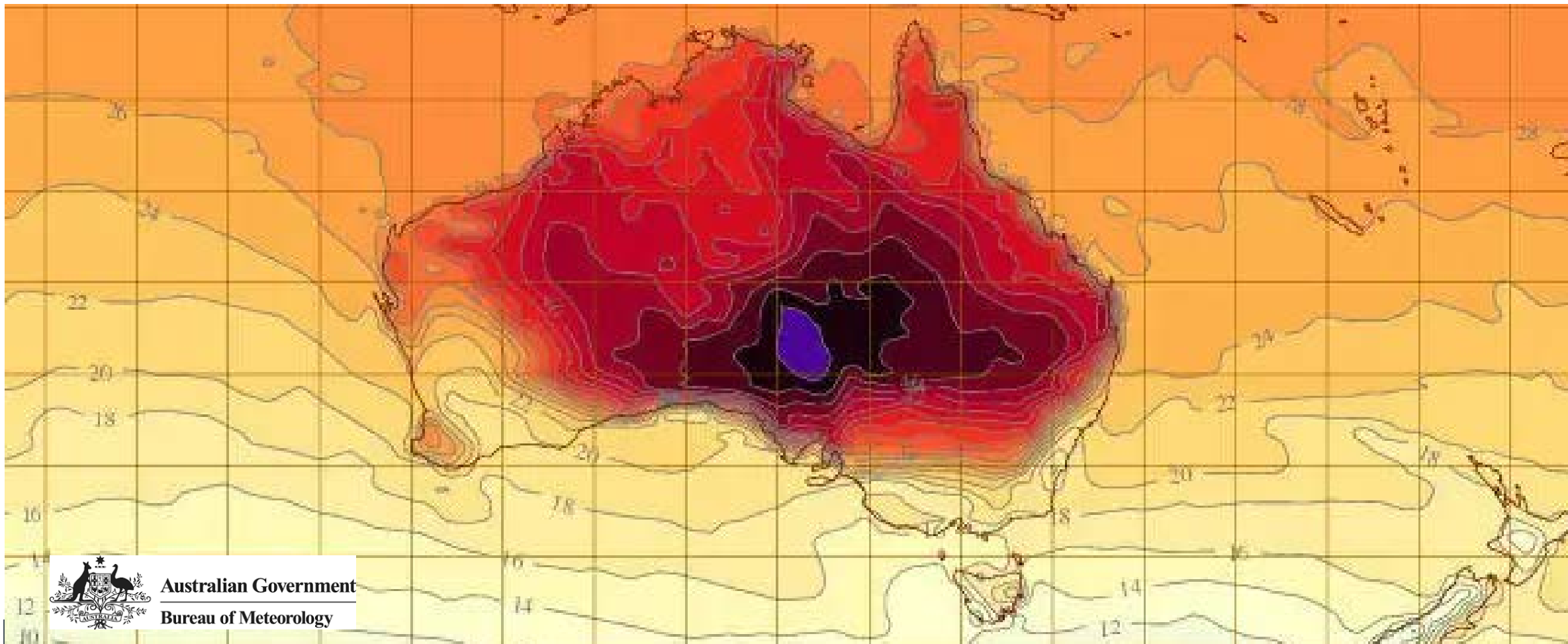
200 0 200 400 600 800 km

Projection: Lambert conformal with  
standard parallels 10°S, 40°S.

Based on a modified Koeppen  
classification system  
Based on a standard 30-year  
climatology (1961-1990)  
© Commonwealth of Australia, 2005



Andrew E. McKechnie<sup>A,D</sup>, Philip A. R. Hockey<sup>B</sup> and Blair O. Wolf (2012)  
**Feeling the heat: Australian land birds and climate change**  
*Emu*, 2012, **112**, i–vii;  
[http://dx.doi.org/10.1071/MUv112n2\\_ED](http://dx.doi.org/10.1071/MUv112n2_ED)



**Australian Government**

**Bureau of Meteorology**



## MAGPIES

Edwards and colleagues undertook a study on heat tolerance in magpies and found that temperatures merely exceeding 27°C resulted in a significant decline in foraging.



Photo Credit: Warren Howe.

Edwards EK, Mitchell NJ, Amanda R, Ridley AR (2015) The impact of high temperatures on foraging behaviour and body condition in the Western Australian Magpie *Cracticus tibicen dorsalis*. *Ostrich* **86**(1–2), 137–144.

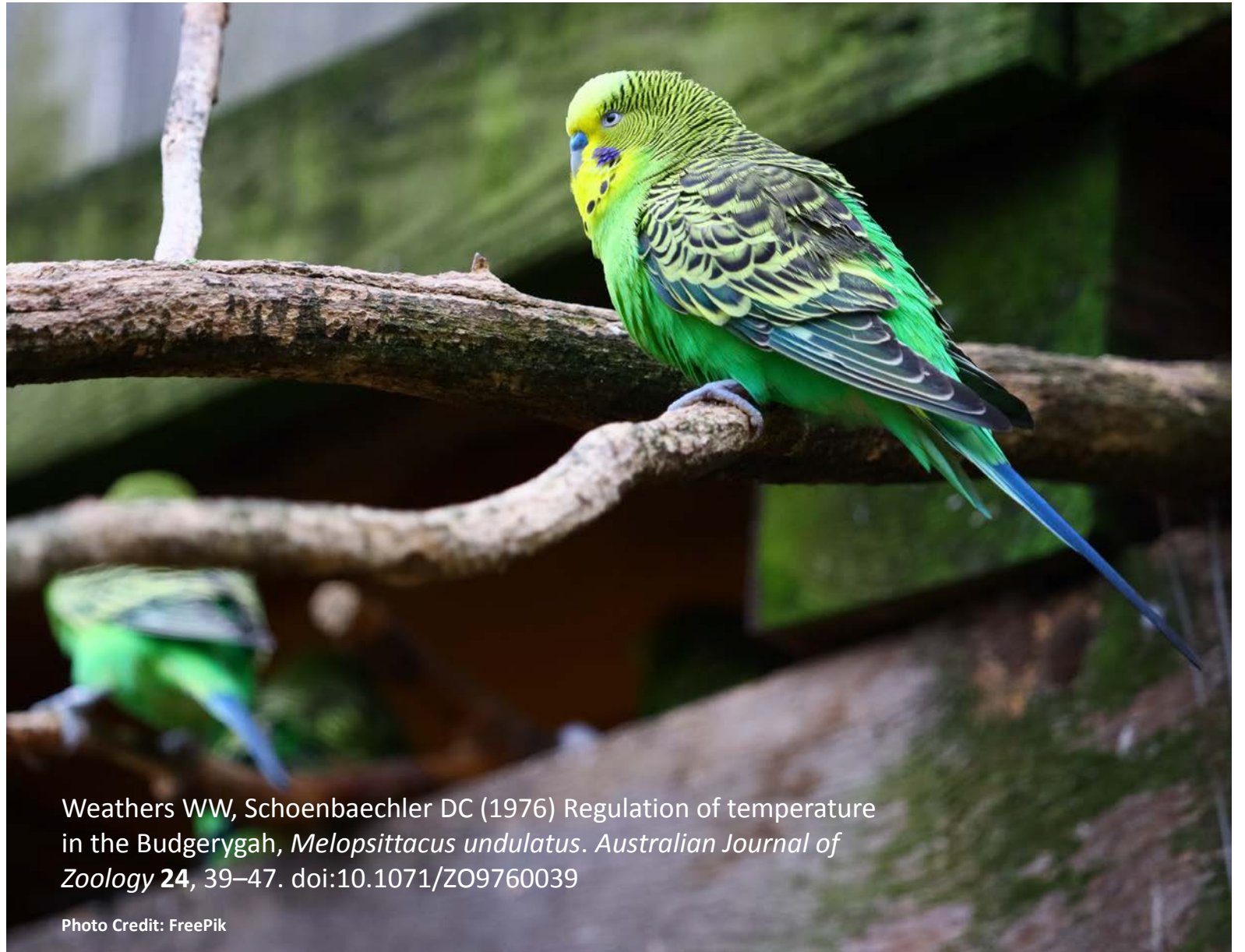
## BUDGERIGAR

AT 30° C : 50 breaths per min

AT 40° C: 100 breaths per mi

AT 42°C: 200 breaths per min

AT 43° C : 300 breaths per min



Weathers WW, Schoenbaechler DC (1976) Regulation of temperature in the Budgerygah, *Melopsittacus undulatus*. *Australian Journal of Zoology* **24**, 39–47. doi:10.1071/ZO9760039

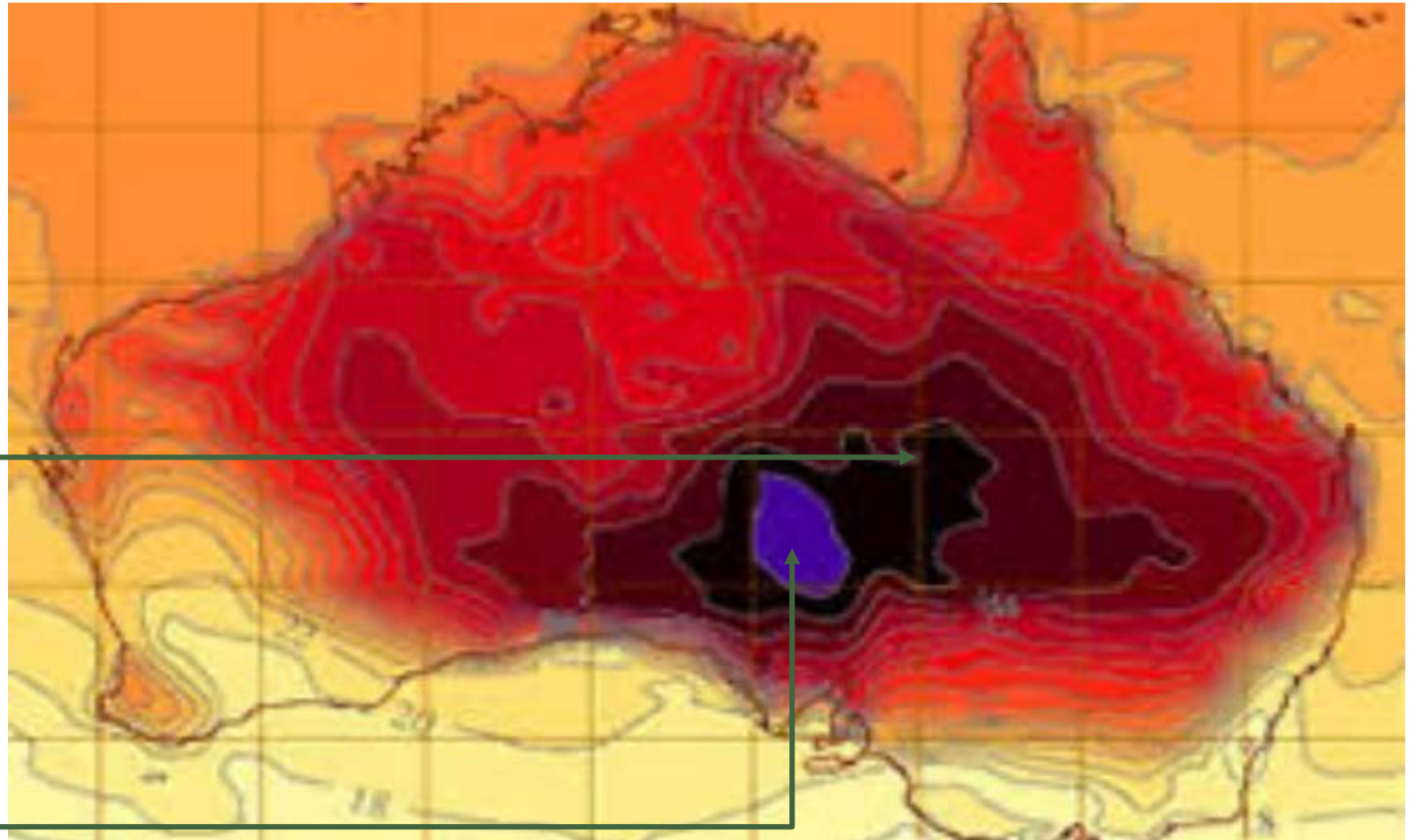
Photo Credit: FreePik

## CLIMATE CONDITIONS

Some heat zones are lethal for birds – BOM:

Dark mauve, black and new purple category:  
(Over 42°C In ambient temperature; translated into sun-exposed soil: 60° – 80°C).

Latter (Purple) called the Death Zone: Unless a living organism can bury themselves or flee in time, then there is no chance of survival.



## EFFECTS ON BIRDS



### EXTREME HEAT WAVES

- Water loss
- Hyperthermia
- Death
- Lethal dehydration/hyperthermia
- Increased frequency of catastrophic mortality events

### PROTRACTED HOT WEATHER

- Loss of condition
- Increased risk of predation

### REPRODUCTION

- Embryo thermal limits– death
- Nestling hyperthermia/dehydration
- Nest abandonment/ failures
- Reduced investment in breeding

Andrew E. McKechnie<sup>A,D</sup>, Philip A. R. Hockey<sup>B</sup> and Blair O. Wolf (2012)

**Feeling the heat: Australian land birds and climate change.** *Emu*, 2012, **112**, i–vii; [http://dx.doi.org/10.1071/MUv112n2\\_ED](http://dx.doi.org/10.1071/MUv112n2_ED)

BIRDS AS REFUGEES:  
ADDITIONAL PROBLEMS:

- The best locations are occupied by humans
- The landscape is transformed to suit human needs
- Roosting and feeding are compressed into smaller spaces
- Large flocks are no indication of larger populations but of flocking behaviour in case of crises

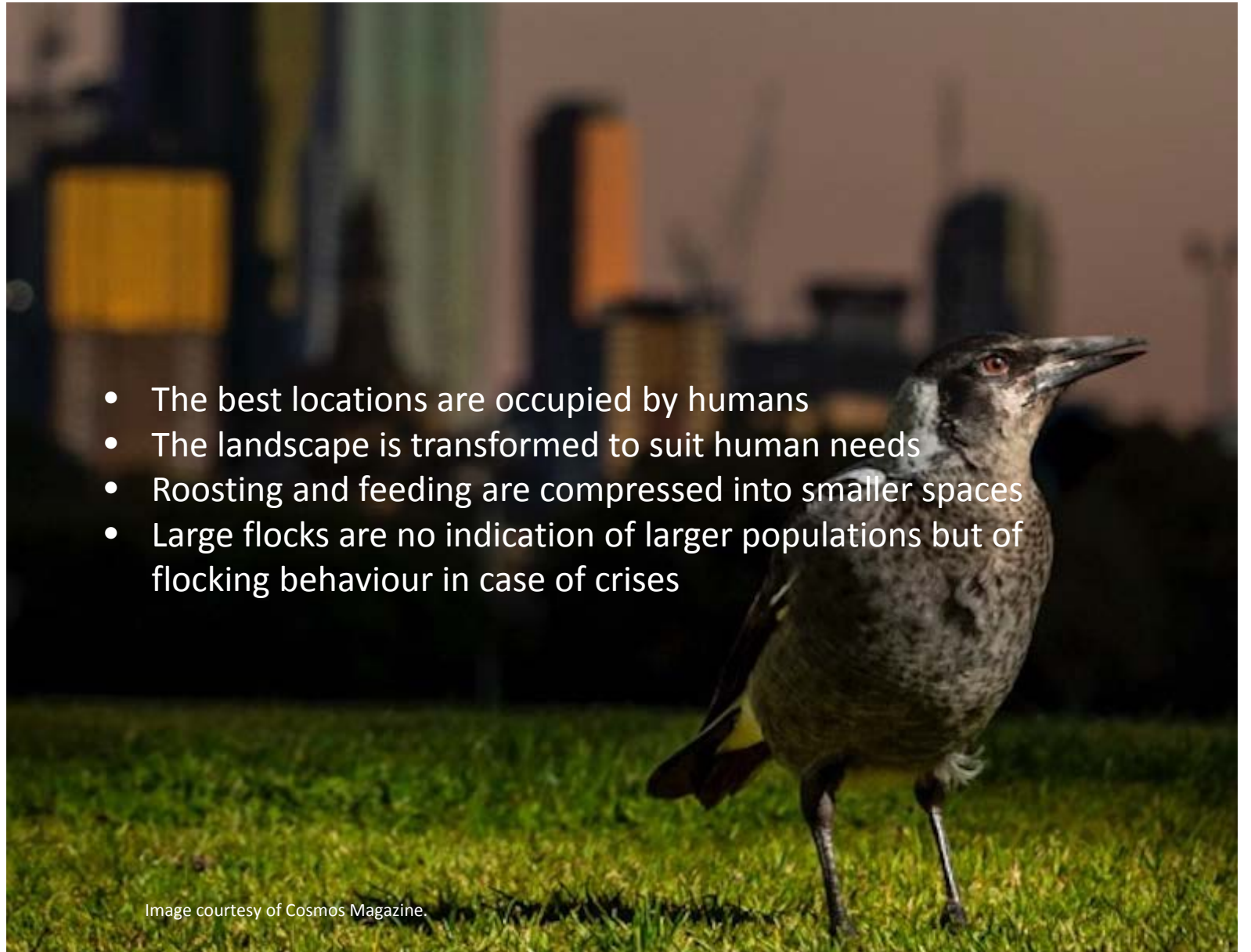


Image courtesy of Cosmos Magazine.

## HOW CAN WE HELP?



Feeding station in India  
Photo Credit: timesofindia.indiatimes.com

Ensure that our most glorious, extraordinary and ancient avian wildlife can survive.

Create viable alternatives to reduce clashes between human and bird populations. (i.e., food, water, roosting away from people and agricultural areas).

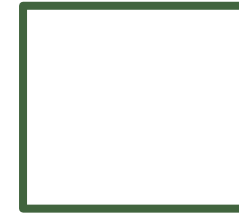


Photo Credit [collections.museumsvictoria.com.au](https://collections.museumsvictoria.com.au)

ALTERNATIVES



Me time



Alternatives for  
feeding and  
roosting







Playground, e.g. Steel cable



THANK YOU