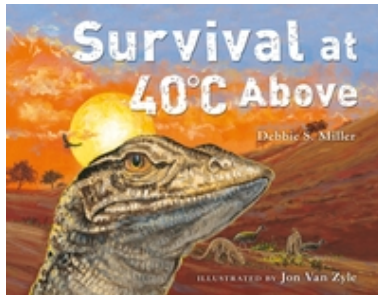


B L O O M S B U R Y

Teacher's Guide *Survival at 40°C Above* by Debbie S. Miller

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TITLE: Survival at 40 Above

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SYNOPSIS

'As the night sky melts away, the Simpson Desert horizon glows like a campfire.' (p3)

The secret life of the Australian desert is evocatively captured in a text which creates an atmosphere of wonder as it also informs young readers. The colours of the sand and sky; the strange habits of the desert creatures including the sand goanna, emu, brown snake, skink, mulgara, dingo and ningai; the idiosyncrasies of the predatory and protective behaviours of these animals is told with a sense of awe and respect; and finally the effect of rain on this environment is lucidly and yet poetically described.

This text might be used as a catalyst for further investigation into this unique environment, and into other texts which have been written about this terrain. It should entice young readers to read, look, and visit this unique landscape.

THEMES

This book is a multi-disciplinary non-fiction text which might be used in relation to each of the KLAS in the curriculum. (www.australiancurriculum.edu.au) Examples include:

English

In this curriculum area various aspects of non-fiction and fiction writing might be discussed. [See also Writing Style and BM1 Comprehension Quiz below.]

Maths

In this curriculum area students might study geographical distance, temperatures, and mathematical facts relative to desert wildlife:

Activity: The titles of this book *'Survival at Forty Above'* refers to 40 Celsius. Discuss temperatures and work out the highest and lowest recorded temperatures in the Simpson Desert and the variance between them.

Discussion Point: How large is the Simpson Desert? What percentage is it of the entire landmass of Australia?

Science

In this curriculum area several sub-topics might be explored:

Biology:

Discussion Point: The biological quirks of nature are often stranger than fiction! Some of the features of various animals, reptiles and birds are akin to what is 'imagined' in science fiction. Examples include: 'Like many lizards, the goanna has a tiny sensor eye on top of its head.' (p 4) 'The world's largest marsupial also has special hair that helps reflect sun rays. Each shiny strand acts like a tiny mirror.' (p 5) 'The skink will grow a new tail, its special adaptation for survival.' (p 9) Discuss with students some of the 'supernatural' capacities of various forms of wildlife in the desert.



Activity: 'Over 34 native animals, 231 birds, 22 amphibians, 13 fish, and 125 reptile species have been observed in the region.' Source:

http://wiki.answers.com/Q/Whatcreatures_live_in_theAustralian_Simpson_Desert#page2.

Research some of these species and make a list of what you discover.

Ecological Diversity

Discussion Point: 'Withered roots welcome the rain like a dry kitchen sponge. Now the desert is really wet!' (p 6) What is unique about desert ecology? Invite students to make a list of features.

Activity: Adaptation is a major theme in this text. Each of the creatures observed has some special capacity to adapt to the extreme conditions in which it finds itself. For example, 'Like many other desert animals, this well-adapted mouse can take enough liquid from its food to survive without drinking water.'(p 14) Research other forms of adaptation mentioned in this text. There is another form of adaptation related to the introduction of species such as camels and feral cats. These have had a profound effect on the environment. Research this topic as well.

Environmental Changes

Discussion Point: The Simpson Desert is said to be one of the hottest places on earth. Visit 'Simpson Desert, Australia' at <http://www.kidscyber.com.au/topics/simpsdest.htm> or 'Simpson Desert facts' Travel outback Australia at <http://www.travel-outback-australia.com/Simpson-Desert-facts.html> for more information on the area. Discuss the challenges of surviving in this environment. Has climate change or global warming had any marked effect on this desert in Australia?

Activity: In 2009-10 some of the heaviest rain in decades fell in the desert and the terrain was transformed into a sea of flowers and wildlife. Research this further and examine photos online of this spectacular transformation.



Humanity and social sciences

In this curriculum area several sub-topics might be explored:

History

Activity: Aboriginal people inhabited parts of the Simpson Desert well before explorers arrived on the scene. Teachers might read 'Aboriginal Occupation of the Simpson Desert' at http://austhrutuime.com/simpson_.desert_aboriginal_occupation.htm and encourage students to explore the history of the region.

Discussion Point: Various well-known nineteenth century explorers visited the desert; Charles Sturt (from 1844-1846) is said to be the first European to see it. It was named by explorer Cecil Madigan for an industrialist, philanthropist, geographer and president of the Royal Geographical Society of Australasia, Alfred Allen Simpson. Research this exploration further in the context of the changes it forced upon the region.

The arts

In this curriculum area several sub-topics might be explored:

Visual arts

Activity: Study the style of painting used in this visual text. The artist worked from photos taken by the author during her time in the desert with a group of scientists. Then invite students to choose one of the paintings in this book and create their own rendition of it in any medium (e.g. water colour, oil, gouache, charcoal, collage) or style (e.g. abstract, super-realism, expressionist, etc.) and using any palette of colours you consider appropriate to the subject.

Discussion Point: Consider visual perspective, foregrounding and angle in the composition of images in this book. Discuss the techniques the artist has employed to enhance narrative engagement in this text.

Activity: Create a comic strip based on one of the incidents described in this book. Study the conventions of comic art before embarking on this exercise.

Performing arts

Activity: Encourage students to create a short dramatised mime version of one of the scenes in the book. Design elaborate masks to indicate which animal/reptile or bird they are playing.

Activity: Choose atmospheric music which might enhance the improvised performance. Read the text carefully as it does give an indication of the noises one might hear in the desert which might be added to the 'soundscape' for your performance.

Languages

In this curriculum area, various languages might be discussed:

Activity: Research Aboriginal language place names and terms for wildlife, and Latin scientific names for flora and fauna.

Health & PE

In this curriculum area, the effect of extreme conditions might be discussed:

Activity: Discuss the effects of thirst and dehydration, over-exposure to sun, dangerous venoms or any other ill effects of this unforgiving climate.

Design and Technology

In this curriculum area students might examine the design and use of technology in scientific research in this terrain:

Activity: How does design and technology assist scientists in their research in this region?

WRITING STYLE

Narrative Perspective, Person and Point of View

Activity: This non-fiction text consists of a third person narrative by an omniscient narrator describing the desert over a brief chronological period. Narrative perspective and person are important in conceiving a story. Write a fictional story set in the desert from the perspective of a human being, animal, bird or reptile. Use third, first or even second person to narrate the story [See also BM3 below].

Non-Fiction Writing

Activity: The best non-fiction writing is enlivened by creative fictional techniques such as using humorous or entertaining asides, for example, 'This goo cements the mouth of the nightjar so it can't eat the frog. It's a superglue frog!' (p 11) or 'A ningai (nin-gow-ee) stirs. He feels the cool night air and leaves his underground home. This thumb-size creature, one of the smallest marsupials, weighs as little as six paper clips.' (p 13) Write a sentence describing a desert creature using such humour.

Discussion Point: Creative non-fiction writers also use literary devices such as similes and metaphors. Invite students to consider quotes demonstrating the use of such techniques in this text and then invite students to write a description of desert wildlife or a scene like these examples: ‘This huge, flightless bird looks like a grass hut walking on scaly stilts.’(p 7) ‘Like cresting waves, the dunes rise and fall above green swales and newly formed swamps. The endless ridges of red sand create a land similar to the wavy texture of corduroy.’(p 16)

Uncommon or Scientific Words

Activity: Read the brief Glossary at the end of this book, and then write a list of any other words in the text which you did not recognise, and find a definition for each of them.

AUTHOR MOTIVATION

I've always had a fascination with the unusual adaptations of animals that live in different environments. After writing *Survival at 40 Below* (2010), a book about the winter adaptations of Arctic animals, I decided to study desert animals and learn how they survive in extreme heat and drought conditions. A team of scientists at the University of Sydney invited me to join them on a research trip to the Simpson Desert in Queensland. This was a chance of a lifetime, as I observed many reptiles, marsupials, birds, and amphibians through the eyes of experts. Each day I discovered new species and had the wonderful opportunity to ask questions about animals such as the thorny devil and sand goanna. Visiting the stunning red sand dunes of the Simpson Desert and seeing the amazing diversity of life there truly inspired me to write *Survival at 40C Above*.



AUTHOR BACKGROUND

A former teacher, Debbie S. Miller has lived in the Arctic all her life. Her passion for nature inspired her to start writing nature books for young readers, which fuse gentle narrative arcs with incredible facts about the natural world. The author spent a month living in the Australian desert with a team of scientists, bringing both passion for the subject and scientific authenticity to the book. Visit her website <<http://www.debbiemilleralaska.com>>

ILLUSTRATOR BACKGROUND

Jon Van Zyle is a noted children’s book illustrator with an equally strong passion for the natural world. He has worked on a number of illustrated children's titles. Like the author, he resides in Alaska. Visit his website: <[http:// www.jonvanzyle.com](http://www.jonvanzyle.com)>

EDITORIAL COMMENT:

I have worked with Debbie Miller for over a decade, and she always approaches her projects with scientific curiosity and a sense of wonder about our natural world. Most writers are told to write what they know and Debbie certainly took that to heart in her successful list of titles about Alaska and the Arctic ecosystem where she lives. But she has followed up those books by writing about what she doesn’t know—which gives her the chance to ask questions and work with scientists to

find out the answers. And like the Alaskan wilderness, the Australia bush is a land of extremes and extremely unusual adaptations that Debbie was excited to learn about and share with readers in *Survival at 40C Above*. Young scientists will be thrilled to accompany her on these journeys of discovery!

TEACHER ACTIVITIES/NOTES

1. Conduct a unit of study and research on the Australian desert.

2. Read other fiction books about this terrain such as:

- *Baby Bilby, where do you sleep?* Narelle Oliver (Omnibus Books, 2011)
- *In the Deep Red Desert* by Angie Lionetto-Civa and Christina Booth (Windy Hollow Books, 2010)
- *The Story of Rosie Dock* by Jeannie Baker (Random House Australia, 1995)

Read other non-fiction books about this terrain such as:

- *Sand Swimmers: the secret life of Australia's dead heart* by Narelle Oliver (Walker Books, 2013, Lothian, 1999)
- *Endangered Animals of Australia's Deserts* by Greg Pyers (Echidna Books, 2000)
- *The Living Desert* by Les Hiddins (Puffin, 2000)
- *Desert Animals and Plants* by Jane Pearson (Echidna Books, 2008)
- *Hoosh! Camels in Australia* by Janeen Brian (ABC Books, 2006)
- *Of the Deserts (Dangerous Creatures series)* Helen Bateman and Jayne Denshire (Macmillan Education Australia, 2005)
- *Discover and Learn about Australian Deserts and Aridlands* by Pat Slater; photographs Steve Parish (Steve Parish Publishing, 2011)
- *Animals of the Desert* by Thomas Perry, Magda Russell; Illustrations by Lorenzo Van Der Lingen and Ross Payne (Macmillan Education Australia, 2007).

Compare them to this title. Consult websites such as those listed in these notes as well.

3. Watch any video of life in the desert that you can uncover, to give students an insight into its terrain and wildlife.

4. People who live in these tough climates and terrains or travel through them develop special skills as well. Kristin Weidenbach's story *Tom the Outback Mailman* illustrated by Timothy Ide (Hachette, 2012) details the many years he spent travelling from Adelaide to Birdsville via the Birdsville Track through the Sturt Stony Desert, and how important he was to those on his run. What special skills might you need to survive in the desert?

5. Have fun with students creating a list of interesting 'facts' about desert life. E.g. 'The thorny devil can eat as many as three thousand ants in one day.' (p 8) 'Standing in a patch of wet sand, the thorny devil reveals it's drinking secret. Through capillary action, this lizard can drink this water from its feet.' (p 8) Make up quizzes and test each other with the knowledge you've gleaned from this book and other research. [See also BM1 and BM2 below.]

6. Camels have been used as a form of transport in the Australian desert for over two hundred years. Read *Hoosh! Camels in Australia* by Janeen Brian (ABC Books, 2006) and discuss how they have adapted and thrived despite the fact that they are not native to Australia.

7. This book demonstrates that predators are often out-witted by much smaller prey. For example the skink's ability to shed its tail and grow a new one or the thorny spikes of the thorny devil. Discuss the many ways in which nature equips wildlife with adaptive and protective skills.
8. Which of the creatures in this book would you most like to know more about and why?
9. Create a three dimensional model or diorama of any creature depicted in this book. Be inventive with materials and try to achieve as lifelike a creation as possible.
10. Create a classroom display of the materials generated in this unit, and include relevant books, photographs, maps, artwork, writing, and 3D sculptures or dioramas created by your students.

BLACKLINE MASTER 1 COMPREHENSION QUIZ

Fill in the answers from the text in this book.

Questions:

1. What is a sand goanna?
2. What type of plant is spinifex?
3. What are virga?
4. What are triops?
5. What is an emu?
6. What does a thorny devil look like?
7. What is a mulgara?
8. What is estivation?
9. What is a ningai?
10. What is a crepuscular animal?

Answers:

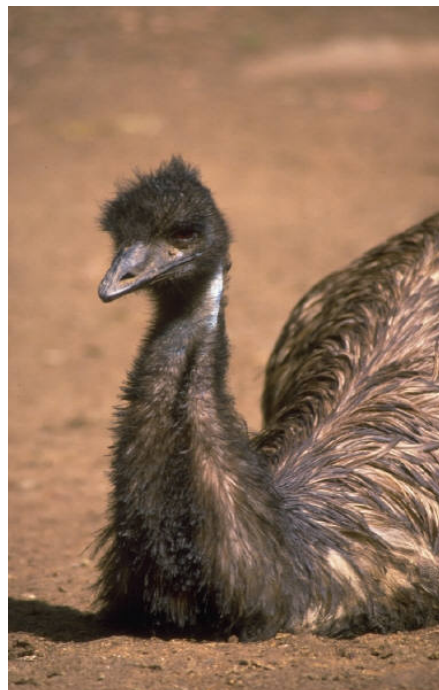
1. 'Its two-foot-long tail cuts S-turns into the velvety sand of the dune. A maze of black patterns decorates the tan skin of this large lizard.' (p 4)
2. 'blends in with the dry grasses of the spinifex.' (p 4)
3. 'These misty curtains of rain, known as virga,' (p 6).
4. 'These minnow-like crustaceans grow domed shells that look like tiny horseshoe crabs.'(p 6)
5. 'huge, flightless bird' (p 7).
6. 'this unique lizard looks like a miniature ankylosaurus dinosaur.'(p 8)
7. 'hamster-size marsupial' (p 10).
8. 'After many dormant months of rest, known as estivation, desert spadefoot frogs explode from the ground.' (p11)
9. 'This thumb-size creature, one of the smallest marsupials,' (p 13).
10. 'Creatures that like the twilight are crepuscular animals.' (p 15)

BLACKLINE MASTER 2 MATCH THESE WORD PAIRS

From this list, fill in the pairs of words in the table below: feral, devil, goanna, nightjar, fairy, wedge-tailed, snake, blue-tailed, red, owl.

Sand	
	Eagle
Brown	
	Kangaroo
Thorny	
	Skink
Spotted	
	Cat
Boobook	
	shrimp

ANSWERS: Sand goanna/Wedge-tailed eagle/Brown snake/Red kangaroo/Thorny devil/
Blue-tailed skink/Spotted nightjar/Feral cat/Boobook owl/Fairy shrimp



Bonus Questions:

Q. Which of these animals is the odd one out?

A. Feral cat because it is not a native animal.

Q. Is the image above one of the creatures described in this quiz? Yes/No.

A. No. (It is an emu.)

BLACKLINE MASTER 3 STORY STARTER

Use this image as a story starter and invite students to begin a short story with this sentence:

'Last night I heard something strange in the night'.

Encourage them to be inventive with narrative perspective, voice and style.

