

# Teacher Notes

## Themes

- Fire
- Ecosystems
- Adaptation

## Key learning outcomes

- Learn about the role of planned fire in Australian ecosystems
- Understand how animals and plants can respond to fire
- Identify key animals and plants in two Australian ecosystems

## Key curriculum areas

- **Science:** Science Understanding (Biological sciences, Earth and space sciences); Science as a Human Endeavour
- **English:** Language; Literature; Literacy
- **Cross-curriculum Priority:** Aboriginal and Torres Strait Islander Histories and Cultures; Sustainability

## Publication details

*Alight: A Story of Fire and Nature*

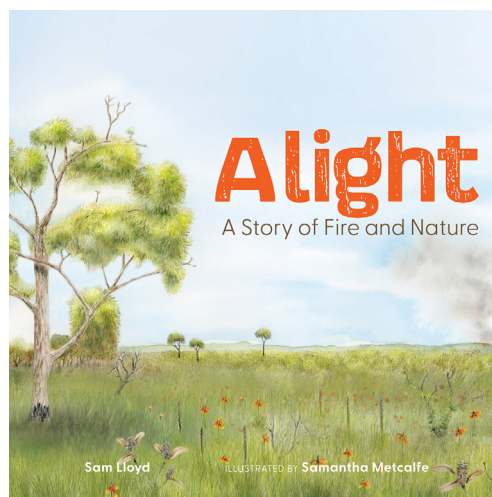
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# Alight

*A Story of Fire and Nature*

Sam Lloyd and Samantha Metcalfe

### About the book

Fire is a natural part of the Australian bush. This is a story about that relationship – fire that breathes life back into nature.

*Alight* shares the story of Australian native plants and animals during a planned fire. Discover how the fire helps Christmas Bells grow new flowers and Wallum Banksia to open its woody seed capsules. Follow Antechinus and a tiny Wallum Sedge Frog as they face the danger of the fire – and the challenges that come after. See how the bush recovers and flourishes after the fire, all under the watch of Old Eucalypt.

With engaging text by Sam Lloyd, and stunning illustrations by Samantha Metcalfe, *Alight* is a gentle exploration of the importance and benefits of healthy fire in the bush.

### Recommended for

Readers aged 6 to 9 (Years 1 to 4)



PUBLISHING

## About the author and illustrator

Dr **Sam Lloyd** is a scientist, fire ecologist and writer with a passion for the Australian bush and children's literature. Through storytelling, art and a love of books, Sam strives to engage children in the world of science and nature. Sam lives in Brisbane with her husband, children, dog and some chooks.

**Samantha Metcalfe** is a Natural History Illustrator who finds inspiration in the unique biodiversity of the Australian bush. Working primarily in colour pencil, her realistic and detailed illustrations often focus on capturing Australia's native flora and fauna. Samantha has illustrated several children's picture books including *The Voyage of Whale and Calf* (CSIRO Publishing, 2022), and she was also shortlisted for the 2019 Children's Book Council of Australia Award for New Illustrator.

## Pre-reading questions or activities

### What is an ecosystem?

Ecosystems are the plants, animals and microorganisms that live in a particular area and the environment they interact with (such as soil and weather). Show the students examples of both a food chain and a simple food web, showing the interactions between food (both plants and animals) and consumers (animals) in an ecosystem.

Visit or prompt the students to think about different ecosystems (such as a local park or wetland) and their characteristics. Observe or brainstorm what plants and animals live in the area and what the environment is like. For example, it may be dry or wet, cold or hot, shaded or light. Compare and discuss the results for different ecosystems.

### Planned fire and cultural burning

First Nations peoples in Australia have practised cultural burning to nurture the Australian landscape and culture for tens of thousands of years. Non-indigenous land managers also manage the land with fire, using planned fires to reduce the risk of dangerous bushfires and improve the health of ecosystems. Typically, planned fires, whether cultural or not, are smaller than unplanned wildfire and the land is burned in patches, leaving some areas unburnt. Also, the fires are not super hot, so many plants and animals survive them. This type of burning is quite different to unplanned wildfire that can't be controlled and burns thousands of hectares of land unintentionally. Discuss the different characteristics of cultural burning, planned fire and bushfires.

## Discussion questions

### Science

1. The book *Alight* describes many different habitats within the ecosystem. What are those different habitats, and what animals or plants live in each?
2. Discuss how plants in the book have adapted to survive fire, or even need fire to reproduce. What would happen to the habitat if it remained unburned for many years? What would happen if the area burned too often?

### English

1. Some of the words in the text are in bold type. These are defined in the glossary at the back of the book. Looking at the definitions of the words, discuss how **adaptation**, **germinate** and **seed bank** relate to fire in an ecosystem.
2. The five main characters in the book are plants or animals. Who are these main characters? For each character, what words are used to describe how they feel about the fire as it is coming closer? Do they need to take any action as it approaches?

### Aboriginal and Torres Strait Islander Histories and Cultures

1. What have non-Indigenous land managers learnt about fire management from First Nations peoples? How does following traditional Indigenous practices help care for the bush?

## Activities

### Science

#### *Diversity in the ecosystem*

*Alight* mentions lots of different organisms. Using the worksheet on page 6, students can list the different organisms from the book under the following categories: plants, mammals, birds, amphibians, reptiles, invertebrates, fungi. One example is already listed in each category on the worksheet to help the students get started.

#### *Surviving fire*

##### **You will need:**

- Banksia seed capsule specimens
- Paper
- A pen or pencil

Ask students to examine the banksia seed capsule specimens and to draw an example of what they see. Discuss why the banksia seeds aren't simply burnt in a fire.

### English

The beginning of the book shows two land managers who are lighting a planned burn in the grassy woodland and wallum heath. As described in the 'Fire in the Australian bush' section at the back of the book, all fire is potentially dangerous so planned burns require detailed planning, permission and safety measures to be in place. Imagine you are one of the land managers in the book. Write a journal entry that describes your activities on the day and what you observed in the bush as the fire went through.

# Teacher Notes

## Sustainability

### *Food and consumers*

Using the worksheet on page 7, have students draw lines to link the food item in column 1 to the animal that eats it in column 2. Refer back to the story if you are not sure.

*mosquito* → *microbat*

*Christmas bells* → *honeyeater*

*eucalypt leaves* → *koala*

*fungi* → *bandicoot*

*insects* → *antechinus*

*antechinus* → *barn owl*

Discuss why antechinus occurs in both columns.

In the 'Food chain' box on the worksheet, write a food chain that shows antechinus as both consumer and food.

*insects* → *antechinus* → *barn owl*

Read the book again to see what other food and consumer relationships you can find. For example, Christmas bells also provide food (in the form of nectar) to ants and bees. These nectar-feeding insects will also feed from flowers of the wallum banksia. Write the various pairings you find in the book into the 'More food and consumer relationships' blank table.

In the 'Food web' box (or on a new sheet of paper) draw a food web showing some of the relationships between different plants and animals in the ecosystem that you have listed in the previous table.

## Worksheet: Diversity in the ecosystem

Refer to page 4 for instructions on this activity.

Plants	Mammals	Birds	Amphibians	Reptiles	Invertebrates	Fungi
Sedge	Fox	Whistling kite	Wallum sedge frog	Frilled lizard	Ant	Fungi

## Worksheet: Food and consumers

Refer to page 5 for instructions on this activity.

Food	Consumer
mosquito	antechinus
Christmas bells	bandicoot
eucalypt leaves	barn owl
fungi	honeyeater
insects	koala
antechinus	microbat

### Food chain

### More food and consumer relationships

Food	Consumer	Food	Consumer

### Food web

# Teacher Notes

## Australian Curriculum links (version 8.4)

Year level	Learning area: Science	Other learning areas
Years 1/2	<p><b>Science Understanding: Biological sciences</b></p> <ul style="list-style-type: none"> <li>Living things live in different places where their needs are met (<a href="#">ACSSU211</a>)</li> </ul> <p><b>Science as a Human Endeavour: Use and influence of science</b></p> <ul style="list-style-type: none"> <li>People use science in their daily lives, including when caring for their environment and living things (<a href="#">ACSHE035</a>)</li> </ul>	<p><b>English: Literature</b></p> <ul style="list-style-type: none"> <li>Discuss how authors create characters using language and images (<a href="#">ACELT1581</a>)</li> </ul> <p><b>English: Language</b></p> <ul style="list-style-type: none"> <li>Know some features of text organisation including page and screen layouts, alphabetical order, and different types of diagrams, for example timelines (<a href="#">ACELA1466</a>)</li> </ul>
Years 3/4	<p><b>Science as a Human Endeavour: Use and influence of science</b></p> <ul style="list-style-type: none"> <li>Science knowledge helps people to understand the effect of their actions (<a href="#">ACSHE051</a>)</li> </ul> <p><b>Science Understanding: Biological sciences</b></p> <ul style="list-style-type: none"> <li>Living things have life cycles (<a href="#">ACSSU072</a>)</li> <li>Living things depend on each other and the environment to survive (<a href="#">ACSSU073</a>)</li> </ul> <p><b>Science Understanding: Earth and space sciences</b></p> <ul style="list-style-type: none"> <li>Earth's surface changes over time as a result of natural processes and human activity (<a href="#">ACSSU075</a>)</li> </ul>	<p><b>English: Literature</b></p> <ul style="list-style-type: none"> <li>Discuss how language is used to describe the settings in texts, and explore how the settings shape the events and influence the mood of the narrative (<a href="#">ACELT1599</a>)</li> </ul> <p><b>English: Literacy</b></p> <ul style="list-style-type: none"> <li>Plan, draft and publish imaginative, informative and persuasive texts demonstrating increasing control over text structures and language features and selecting print, and multimodal elements appropriate to the audience and purpose (<a href="#">ACELY1682</a>)</li> </ul>
All	<p><b>Cross-curriculum Priority: Aboriginal and Torres Strait Islander Histories and Cultures</b></p> <ul style="list-style-type: none"> <li>Ol.2 Aboriginal and Torres Strait Islander communities maintain a special connection to and responsibility for Country/Place.</li> </ul> <p><b>Cross-curriculum Priority: Sustainability</b></p> <ul style="list-style-type: none"> <li>Ol.2 All life forms, including human life, are connected through ecosystems on which they depend for their wellbeing and survival.</li> </ul>	



# Teacher Notes

## Related books from CSIRO Publishing

- *Life in a Hollow* (<https://www.publish.csiro.au/book/8076>)

For readers aged 9–12:

- *A Hollow Is a Home* (<https://www.publish.csiro.au/book/7729>)

## Double Helix magazine

Packed with fun, exciting and quality articles, Double Helix magazine is created to inspire young readers. It covers a range of topics across science, technology, engineering and maths.

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There is plenty of free content that can be used at school or home to support learning.

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## Other CSIRO resources

CSIRO has developed and delivered a broad range of high-quality STEM education programs and initiatives for nearly 40 years. Our programs aim to inspire the pursuit of further STEM education among students and the community, to equip the emerging workforce with tomorrow's skill sets, and to strengthen collaboration between industry and classrooms across Australia. For more information visit: <https://www.csiro.au/en/Education>