



**Prize Winner**

# Science Writing Year 5-6

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# Bioluminescence – Ghost Mushrooms

## An Information Report

### Introduction

This Information Report discusses bioluminescence and the native bioluminescent fungus, or Ghost Mushroom found in many parts of Australia. The report will describe what bioluminescence is, what makes a ghost mushroom bioluminescent, where they live and how ghost mushrooms grow and emit light.



Ghost Mushrooms

[Just glow with it: local photographers snap 'ghost mushroom' while they can | About Regional](#)

### What is bioluminescence?

Bioluminescence comes from the latin word *bio* meaning life and *lumen* meaning light. Bioluminescence is light produced by a chemical reaction within a living organism. The chemical reaction consists of combining a luciferin compound with oxygen which causes oxidisation. The reaction causes an intermediate state which decays to produce oxyluciferin and light. Organisms on land normally emit a yellow-green light. Ghost mushrooms give off a soft green light.

### What is a ghost mushroom?

A ghost mushroom is a phosphorescent fungi.

The Latin name of ghost mushroom is *omphalotus nidiformis*, meaning natural nest shape. Ghost Mushrooms are a bioluminescent fungus that gives off a soft green glow at night. In the day light they look cream in colour but in the dark they glow softly.



Ghost mushrooms in the day light

[The glowing ghost mushroom looks like it comes from a fungal netherworld \(theconversation.com\)](http://theconversation.com)



Ghost mushrooms at night

[Ghost fungi: Chiltern's patch of science-fiction heaven | The Weekly Times \(weeklytimesnow.com.au\)](http://weeklytimesnow.com.au)

## Where do ghost mushrooms live?

The ghost mushroom is native to Australia and can be found growing on decaying plant material such as stumps left behind in the forests after pine tree harvesting.

Ghost Mushrooms live in dark and damp forests around Australia. The ghost mushroom was first found and described by James Drummond in 1842 who found it glowing near a tree stump near a jetty at Perth, Western Australia. In 1867, botanist James Hamlyn Willis said that their glow was bright enough to read by.

The Ghost Mushroom has been found living in the far north of Queensland and down to Tasmania and Southern Australia.

In South Australia they can be found at Ghost Mushroom Lane, located approximately 500kms from Adelaide in a pine forest just outside of Mt Gambier near Glencoe. These forests host one of the largest concentrations of Australian native glow in the dark Ghost Mushrooms.



Ghost Mushroom Lane

[Ghost Mushroom Lane | ForestrySA](#)

## **When do ghost mushrooms grow?**

In South Australia, Ghost Mushroom season is open between May and June. They need dark, damp conditions to grow. The mushrooms emerge following good rain and continue into winter, reaching a size of up to 20cm.

Ghost Mushrooms only survive for up to 8 weeks.

Ghost Mushrooms glow as a result of a chemical reaction caused between an enzyme, called luciferase, that the mushroom produces and the air (or oxidation). There are a couple of hypotheses to explain why the mushrooms glow. One is that the glow might attract bugs to help spread its spores and its survival. Another is that it has nothing to do with insects as a control study undertaken at Kangaroo Island showed that it did not attract any more insects than the control.

It is possible that bioluminescent organisms use their glowing potential as a warning sign to predators that they are toxic and to leave them alone. However it has been proven that ghost mushrooms aren't toxic to slugs or millipedes, however they can make humans sick if they eat them.

Some scientists believe that their glowing is part of a circadian rhythm. Okert Le Roux (photographer of South Australian ghost mushrooms) confirmed his hypothesis when he failed to prove that the ghost mushrooms glowed during the day when he placed them in a dark environment.

Today the reason why ghost mushrooms glow is still not really understood. Philip Weinstein says that there may be no biological reason for why ghost mushrooms glow, that it might be completely accidental.

## **How are ghost mushrooms different to normal mushrooms?**

A mushroom is a type of fungus that grows in a park, an oval, your backyard or even wide outdoor spaces. Ghost Mushrooms are also a fungus but grow in damp, dark forests. You need to be careful around mushrooms you find on your adventures outside. Some of these mushrooms are not like the mushroom we buy at the shop and put on our pizzas as they may be poisonous and make you sick if you eat them. Ghost Mushrooms are poisonous if eaten.

## **Conclusion**

In conclusion, ghost mushrooms are a native Australian wonder. How they glow remains a mystery. If you are lucky enough to visit the South East of South Australia during the early winter months, you might be lucky enough to capture a unique part of this magic and enjoy the wonder of ghost mushrooms. How they glow is still a mystery, but until we know, they are wonderful to see.

## Reference List

Bioluminescence - [www.education.nationalgeographic.org](http://www.education.nationalgeographic.org)

Photographing the Ghost Mushroom –  
[www.forestrysa.com.au/photographingtheghostmushroom/](http://www.forestrysa.com.au/photographingtheghostmushroom/)

Ghost Mushrooms - [Just glow with it: local photographers snap 'ghost mushroom' while they can | About Regional](#)

Ghost Mushrooms at night - [Ghost fungi: Chiltern's patch of science-fiction heaven | The Weekly Times \(weeklytimesnow.com.au\)](#)

Ghost mushrooms during the day - [The glowing ghost mushroom looks like it comes from a fungal netherworld \(theconversation.com\)](#)

Ghost Mushroom Lane, Forestry SA - [Ghost Mushroom Lane | ForestrySA](#)

How do ghost mushrooms glow - [The glowing ghost mushroom looks like it comes from a fungal netherworld \(theconversation.com\)](#)

Cool, wet start to summer - [Cool, wet start to summer causes unseasonal blooming of huge ghost mushroom cluster - ABC News](#)

Glencoe Ghost Mushrooms

[Glencoe's Ghost Mushroom Lane begins to flourish after heavy rainfall - ABC News](#)

Signage at Glencoe, Ghost Mushroom Lane



Assistance was provided by my Mum, Rebecca O'Reilly, with some typing and editing due to participants special needs – ASD with speech and language disorder.

2022 Science Writing Entry – Flynn Wroniak

Year Level 5-6

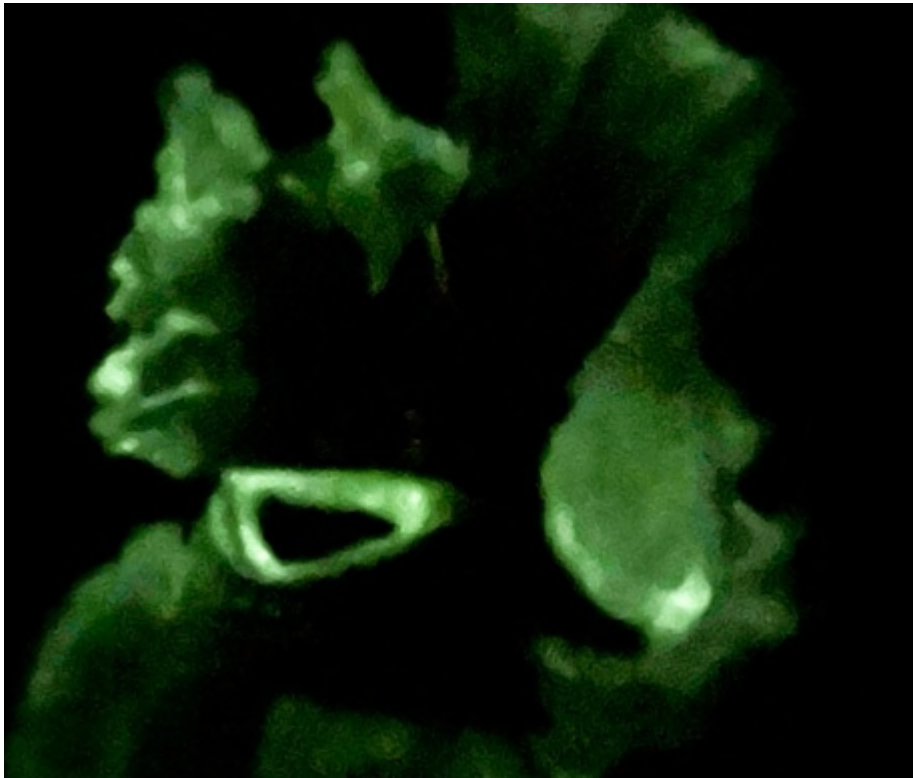
**Attached:**



Me at Ghost Mushroom Lane, near Glencoe



Ghost mushroom in the light (taken by F. Wroniak)



Ghost Mushroom at night with lights out (taken by F. Wroniak)