

Teacher Notes

Themes

- Marine habitats
- Adaptations
- Exploration and field research

Key learning outcomes

- Colossal squid are a type of giant, deep ocean mollusc that belong to the class of animal Cephalopoda
- Having never been directly observed in the wild, little is known about the colossal squid's behaviour
- The deepest parts of Earth's oceans are cold, dark and under immense pressure
- Exploration of Earth's depths could reveal new discoveries and new species

Key curriculum areas

- **Science:** Science Understanding (Biological sciences)
- **English:** Language
- **Mathematics:** Measurement
- **Cross-curriculum Priority:** Sustainability

Publication details

Sid and the Very Hard to Find Squid

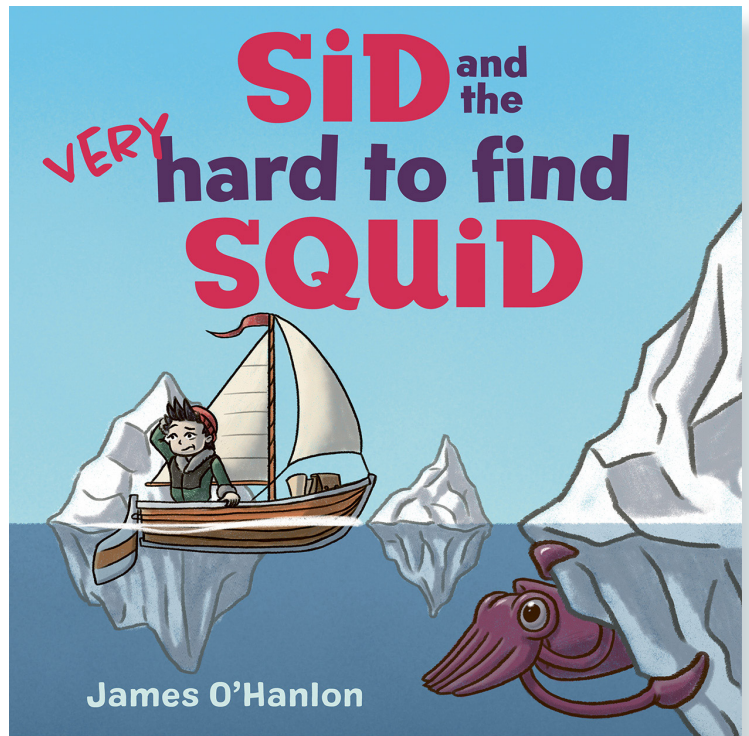
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Sid and the Very Hard to Find Squid

James O'Hanlon

About the book

No one has ever seen a colossal squid in the wild, but Sid is determined to be the first. Join Sid on his exciting quest to find this incredibly rare animal.

Along the way, Sid encounters other strange creatures until he eventually discovers ... that sometimes the joy of exploration is more about the unexpected journey, and not the ending.

Look closely and you might just find a cheeky colossal squid too!

Recommended for

Readers aged 5 to 9 (Years 1 to 4)



Teacher Notes

About the author/illustrator

Dr James O’Hanlon is a scientist, writer and illustrator who has travelled the globe uncovering the secret lives of mysterious animals. If it is hard to find, and lacks a backbone, James has an insatiable desire to find out what it is and what it does.

Pre-reading questions or activities

Ask students to share what they know about squid, cuttlefish and octopuses. Invite them to draw some on a sheet of paper or on the whiteboard, instructing them to label their pictures to describe the different body parts. What colours might they use? Allow them to get creative.

Ask the students to develop a dance to show how these animals, which belong to the class Cephalopoda, might move around. Draw attention to questions of whether they might have bones, or how they could move quickly from one place to another.

Find video clips of cephalopods moving through the ocean and on land and share them with the class. Ask students if they can tell the difference between different types of cephalopod.

Discussion questions

Science

1. Explain to the students that squid belong to a phylum of invertebrate animals (animals without backbones) called Mollusca, which also include snails, slugs and clams. Ask them what squid might have in common with these other animals. How are they different? What do squid and octopuses have in common?
2. Invite students to find and share stories on a mythical creature called the kraken, which was said to be as big as an island. Ask them why they think legends about giant animals are often told. Ask them to find details in the book on the colossal squid’s size, and how it might compare to the size of islands they’ve seen.
3. Present the students with the diagram describing the colossal squid’s body. Ask the students how its unusual anatomy – including two tentacles, eight arms, three hearts, sharp beak, reddish-pink skin and a brain with a hole through its centre – might help the squid live deep down in the ocean.

Teacher Notes

4. Explain to the students that colossal squid are known from their bodies, which have washed up on shore or been collected in fishing nets. What more might we learn about the squid by recording it on camera?
5. Ask the students why they think Sid might not have been able to find the colossal squid as he swam through the ocean. Do they think squid might really be able to secretly survive on land?

English

1. The author uses exclamation points at the ends of many sentences throughout the book. Ask the students what they think exclamation marks mean. How should they read those sentences? What is Sid feeling at those moments?
2. Instruct the students to close their eyes as you read the text again, without them seeing any pictures, and then again with them seeing the pictures. Ask them how the pictures in the book change or build on the text. Do pictures tell more of the story? Is the story better with pictures, or better with just their imagination?

Mathematics

1. Sid uses a variety of comparisons to describe the size of the colossal squid and its body parts. Discuss with the students how big they think the squid is, as well as its arms and eyes. Invite them to use their own bodies to demonstrate. Why might Sid use comparisons, and not units such as centimetres or metres?

Sustainability

1. The author explains that scientists have only explored around 5 per cent of the world's oceans. Ask the students whether they think that things humans do, such as dropping plastic waste or emitting pollution, might affect life at the bottom of the ocean. Could living things vanish before we've had a chance to ever record them?

Activities

Science

Diving deep

You will need

- Medium plastic soft-drink bottle
- 1 x empty plastic soy sauce 'sushi fish'



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Teacher Notes

- Plasticine
- Bowl
- Water

What to do

1. Wash any remaining soy sauce from your plastic 'sushi fish' and replace the cap.
2. Place a small amount of plasticine around the cap to add weight.
3. Fill a bowl with water.
4. Place the weighted sushi fish into the bowl with the plasticine pointed down. If it sinks to the bottom, remove some of the plasticine. It should float tail-up near the surface.
5. Fill the plastic soft-drink bottle to the top with water.
6. Remove the sushi fish from the bowl and place it into the opening of the bottle, replacing any water that spills out. Secure the cap tightly.
7. Squeeze the sides of the plastic bottle firmly. What happens to the sushi fish?
8. If the sushi fish doesn't sink, remove it from the bottle and add a little more plasticine to provide more weight, and try again.

What's happening?

The sushi fish floats in the water thanks to a force called buoyancy. When fluids like water surround the fish, it 'pushes' on all sides, including from below. If the volume of an object in the water weighs the same as the volume of water it displaces, it will stay in place. If it is lighter, it will be pushed up. If it is heavier, gravity will pull it down.

Squeezing the bottle adds pressure to the water, which in turn squeezes the air inside the fish, making the volume slightly smaller so it displaces a little less water. The tiny change means its weight is now more than the water it displaces, allowing it to sink.

Many marine animals – especially those in the depths, such as squid and whales – have ways to cope with high pressure in the ocean, some of which allow them to move safely up and down through the water column.

Squid anatomy

Safety: This activity requires handling raw biological material. While it is considered food-safe, seafood can contain pathogens that can contaminate foods and cause illness if not cooked appropriately. Ensure proper hygiene, displaying the items in an area removed from food items. Dispose of the material responsibly.



Teacher Notes

Some students may not be comfortable with an activity involving animal remains, even fish and seafood. Discuss with the class and parents prior to the activity to determine whether to proceed.

You will need

- From a fishmonger: A variety of sea life, including 1 x squid and 1 x octopus
- Plastic bin bags
- Plastic gloves
- Soap, sink and towel
- Paper towel
- Disinfectant
- Newspaper and butcher's paper

What to do

1. Place one or more plastic bin bags flat on a surface such as a large table for protection. Lay newspapers on top of these, and then a layer of butcher's paper.
2. Place gloves on your hands for hygiene.
3. Prior to allowing students to observe the seafood, instruct them they are not to touch any of them without appropriate gloves. Any who do touch are to be gentle with the specimens on display, showing respect.
4. Neatly place a variety of sea life on the butcher's paper. Ask the students to note any similarities or differences between them. Invite them to discuss why the animals all have different features. How might they use them to survive?
5. Ask them if they would look the same while alive in the ocean. What might have changed since removing them from their natural environment?
6. Dispose of the seafood responsibly, using the newspaper and plastic bin bags. Ensure you wipe down surfaces with disinfectant and paper towel, and wash all hands that have come into contact with the seafood.

What's happening?

Seafood markets have long been places researchers have visited to find new species. The rich variety of sea life on display can be easily traced back to the habitat in which they were caught by fishers. While a lot of information can be collected this way, nothing is better than observing animals in their natural environment. Bringing specimens up from depths can change how they look, for example, damaging delicate parts of their bodies as the pressure changes. Watching them while alive can also reveal how they behave.

Teacher Notes

English

Sid the sequel

Imagine Sid finally succeeds in his quest! He becomes the first person to ever see a colossal squid with his own eyes.

Ask students to think of a way they can describe Sid's next story. Is it a poem? A picture book? A newspaper article?

What might Sid be thinking? What facts might he need to share about his discovery? Who would be interested in hearing about it?

Invite the students to write and illustrate a new chapter for Sid's life as he finally finds the colossal squid he's been searching for.

Mathematics

Squid to scale

You will need

- Chalk
- Large concrete space that can be drawn on in chalk
- Tape measure

What to do

1. Find a large concrete area that can be drawn on.
2. Use the book to determine the total length of a colossal squid.
3. Use the tape measure to measure out this distance in centimetres. Mark the beginning and end in chalk.
4. How long are the two tentacles on a colossal squid? Write this as a fraction of the overall length, with the tentacles number on top and the total length on the bottom. Put a line between the two numbers.
5. Measure out the tentacles using the tape measure, marking the concrete with chalk.
6. Make measurements for other parts of the squid's body if you can, including the eyes and the width of its mantle.
7. Once it has been marked on the concrete, draw the features using chalk. Ask the students whether the squid feels bigger or smaller than they imagined, now that they can see it.

Teacher Notes

Australian Curriculum Links (Version 9.0)

Year level	Learning area: Science	Other learning areas
Years 1/2	Science Understanding: Biological sciences <ul style="list-style-type: none">Identify the basic needs of plants and animals, including air, water, food or shelter, and describe how the places they live meet those needs (AC9S1U01)	English: Language: Text structure and organisation <ul style="list-style-type: none">Explore how repetition, rhyme and rhythm create cohesion in simple poems, chants and songs (AC9E1LA04) Language: Language for expressing and developing ideas <ul style="list-style-type: none">Understand that images add to or multiply the meanings of a text (AC9E2LA08) Mathematics: Measurement <ul style="list-style-type: none">Measure and compare objects based on length, capacity and mass using appropriate uniform informal units and smaller units for accuracy when necessary (AC9M2M01)
Years 3/4	Science Understanding: Biological sciences <ul style="list-style-type: none">Compare characteristics of living and non-living things and examine the differences between the life cycles of plants and animals (AC9S3U01)Explain the roles and interactions of consumers, producers and decomposers within a habitat and how food chains represent feeding relationships (AC9S4U01)	English: Language: Language for expressing and developing ideas <ul style="list-style-type: none">Identify how images extend the meaning of a text (AC9E3LA09)Explore the effect of choices when framing an image, placement of elements in the image and salience on composition of still and moving images in texts (AC9E4LA10) Mathematics: Measurement <ul style="list-style-type: none">Measure and compare objects using familiar metric units of length, mass and capacity, and instruments with labelled markings (AC9M3M02)
All	Cross-curriculum Priority: Sustainability <ul style="list-style-type: none">Systems: All life forms, including human life, are connected through Earth's systems (geosphere, biosphere, hydrosphere and atmosphere) on which they depend for their wellbeing and survival (SS1)	

Related books from CSIRO Publishing

For younger readers:

- *Oceans at Night* (<https://www.publish.csiro.au/book/8104>)
- *Our World of Wild Wonders* (<https://www.publish.csiro.au/book/8176>)
- *The Great Southern Reef* (<https://www.publish.csiro.au/book/8042>)

For older readers:

- *Ocean Animals: The Weirdest, Smartest and Sneakiest Sea Creatures* (<https://www.publish.csiro.au/book/7881>)
- *DoubleHelix* ultramarine special issue eBook (free download from: <https://cosmosmagazine.com/earth/oceans/free-marine-ebook-makes-a-splash-with-kids/>)

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>

