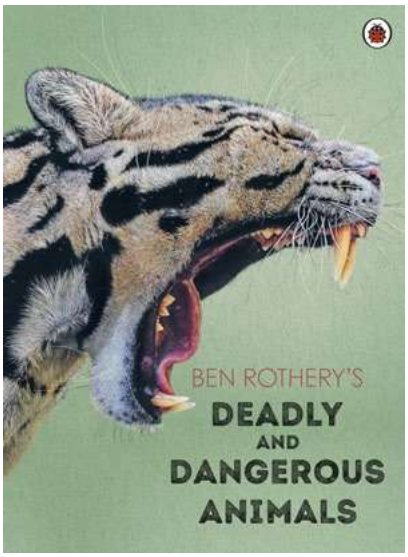
BEN ROTHERY'S DEADLY AND DANGEROUS ANIMALS

Pupil activity sheet

CENTRE *for* INDUSTRY EDUCATION COLLABORATION

This is one of a series of six activity sheets to use alongside the books which have been shortlisted for the Royal Society Young People's Book Prize 2023.



A beautiful collection of deadly and dangerous animal profiles carefully researched and stunningly illustrated by animal-loving, detail-obsessed artist Ben Rothery who grew up wanting to be a shark, a dinosaur, or David Attenborough crossed with Indiana Jones! Ben brings those relatable fantasies to life on paper with his unnecessarily large collection of very sharp pencils.

"When we think of deadly and dangerous animals, we often imagine the biggest hunters with the longest claws and the sharpest teeth. But there's much more to it than that."

Deadly and Dangerous Animals

Create a critter

Thinking about your observation station, design an animal that would be adapted perfectly to live in that environment. Would it be tall or short? Would it benefit from excellent eyesight to hunt its prey? Does it hunt at night or during the day? What does it eat? Does it need to be able to climb, fly, swim, or something else?

Now you have your predator characteristics decided, what would it need to do to protect itself from being the prey of another animal? Can it move quickly? Can it see in the dark? Does it mimic another more dangerous animal or have markings to confuse its hunter?

You might decide to draw your animal on paper or digitally. You could use photo editing tools to bring a collage image together using other animal parts. Perhaps consider making your creature out of plasticine, Lego, or junk modelling items.

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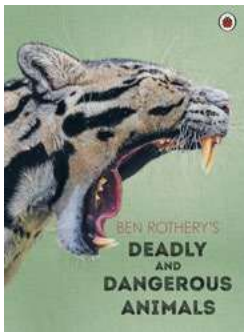


BEN ROTHERY'S DEADLY AND DANGEROUS ANIMALS

Pupil activity sheet (continued)

Comparing creatures

Make a list of 10 – 12 animals from those you have observed in your activities so far which capture your interest. Make sure there is a good variety of animal types such as mammals, invertebrates, birds, and amphibians.

Gather animal facts including their average height, length, weight, speed, and the type of diet they have (herbivore, carnivore, omnivore) and turn your findings into fact cards including an image of the animal and their key facts, a bit like a top trumps card.

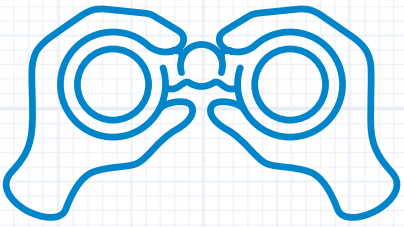
Compare the animals based on the facts. Can you see any patterns? Do smaller animals have anything in common? Do carnivores share any features? Are taller animals always longer? Do animals with more legs move quicker?

If you want to research a little further, you could also include gestation periods (how long it takes babies to grow) and their heart rates based on beats per minute (bpm).

Mathematics challenge

Pick a wildlife watching area. You can use your observation station or select a different type of habitat. This can be as big or as small as you like. Watch for half an hour to see which animals are visiting regularly and make a list. You could use animal identification books, search online, or download apps to help you name each animal.

What investigation questions are you already working on? Can you collect more data to make your results even better? You may decide to answer another question if your new observation area is very different to your first one. Try to spend some time observing your wildlife area each day. You may also wish to record temperature, rainfall, and other weather conditions each time you observe to see if they have any effect.



How will you present your findings? This could be a results table, photo diary, poster, presentation, or anything else you think might work well.

Scientist profile

Meet Dr Tanesha Allen, a zoologist and behavioural ecologist who studied at the University of Oxford. Zoology is the study of the behaviour of animals in their natural environment making observations and gathering information like what they eat, where they find shelter, and diseases they might have.

Tanesha has done a lot of research about badgers in the wild, asking questions about their behaviour and designing experiments to answer her questions. She says loving animals, getting messy, and being creative are all essential skills for a zoologist.

As well as her own studies, Tanesha is a passionate science communicator and has been involved in community outreach work, taking part in a Royal Society Partnership Grant, teaching school pupils how to monitor the wildlife on their school grounds.

DEADLY AND DANGEROUS ANIMALS

Teacher activity sheet

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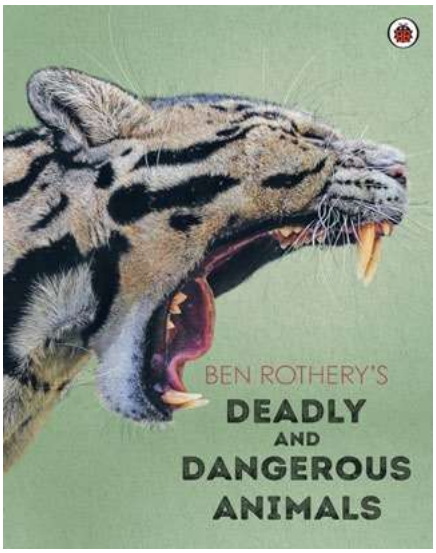

Each activity sheet contains ideas for experiments to do with your pupils, provides information relating to careers, and has a maths focus to help pupils understand the importance of mathematics education across the curriculum.

These investigations can be done as standalone activities or carried out as an in-depth sequence to develop pupils' disciplinary and substantive knowledge. The pupils' deeper learning and their science capital development would be more memorable if they were able to collaborate with a scientist such as a conservationist or ecologist. If you work with a scientist in this way you could also consider applying for a Royal Society Partnership Grant of up to £3,000. For more information and to apply, visit: **royalsociety.org/partnership**

Observation station

Identify an area in your school grounds or local park that you will use for wildlife observation depending on the type of animals you would like to study. This might be a bug hotel, a bird box, a butterfly feeding station, a bird feeder, a solitary bee house, a bird bath, a hedgehog highway, a wildflower patch, a plant pot pond, a bat box... the list is endless.

Set up a long-term wildlife monitoring project. Ask the pupils what they would like to find out and to design investigations which would allow them to answer their questions. You might consider the following:

- How many different animals visit?
- What time of day is a specific animal likely to visit?
- Do different animals visit at different times of the day / year?
- What attack or defence strategies do the animals use?
- What food chains can be seen in action?
- Which class of animals visit most often? Eg mammals, invertebrates, birds

A camera trap can be a great addition to allow round the clock observations.

You might choose to visit different habitats over the course of your project in order to compare results, such as ponds, rivers, seaside, woodland etc.

Scan the QR code to watch this two-minute video segment from the Royal Society's Summer Exhibition (starting at 54:36), to find out how older school pupils carried out a similar project in their school grounds.

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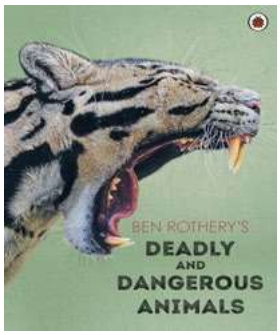


DEADLY AND DANGEROUS ANIMALS

Teacher activity sheet (continued)

Are all animals deadly and dangerous?

This incredible collection of deadly and dangerous animals has the potential to leave pupils feeling like there are animals to be feared hiding around every corner. The reality is, most animals we encounter day-to-day do not pose a threat to us, but all animals are deadly to something, even if that something is some seriously nibbled leaves resulting from a seasonal boom in the caterpillar population.

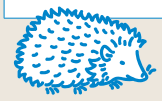
Predator / prey

During your wildlife observation project, the pupils will see various predators and prey in action. Take time to carry out some secondary research into the different animals which visit your observation station to find out more about them. The more pupils know about the wildlife around them in their local environment, the more likely they are to act as responsible conservationists in their daily lives.

A few defence strategies were highlighted earlier but let's take some time to dig a little deeper to get a fuller picture of the range of defence and attack strategies which might be used by the animals in your observation station, the book, and beyond.

Here are some you might consider:

Predator attack strategies
ambush, pursuit, stalking, venom, claws, web trapping, senses (eg echo-location) extending limbs/tongue
Prey defence strategies
Foul smells, confusing sounds, warning colours, playing dead, mimicry, large numbers of young, camouflage



Caterpillar camouflage

To defend themselves against predators, prey animals deploy a fascinating array of survival strategies like burrowing underground, emitting foul smells, and camouflage.

Explore the evolutionary benefit of disguise with this fun Caterpillar Camouflage game to kickstart a sequence of activities that will enable pupils to become more aware of the incredible wildlife in their natural surroundings.

Career links

- **Naturalists** study the natural world and the patterns of each species within their environments and in captivity. They work to understand how different species interact with each other, and the world around them. David Attenborough and Michaela Strachan are naturalists you may have heard of or seen on TV.
- **Ecologists** observe the relationship between plants and animals, and between living things and their environments. They work to discover how different species depend on each other and their surroundings.
- **Conservationists** dedicate their time to actively protecting biodiversity (the variety of life on Earth), single species, or habitats. This could be in your local area or anywhere in the world. Not all conservationists are trained scientists; anyone can get involved.