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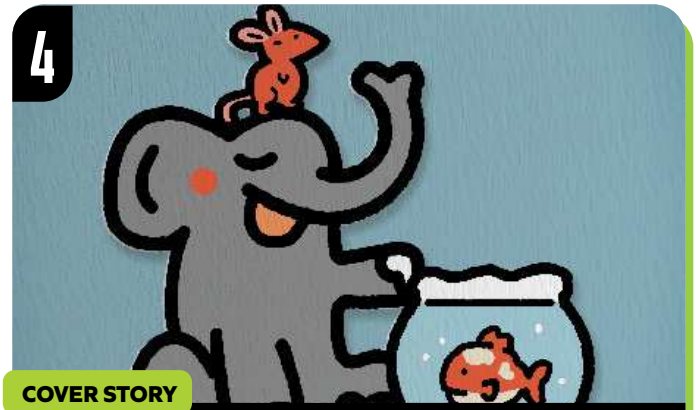


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MAY 2026

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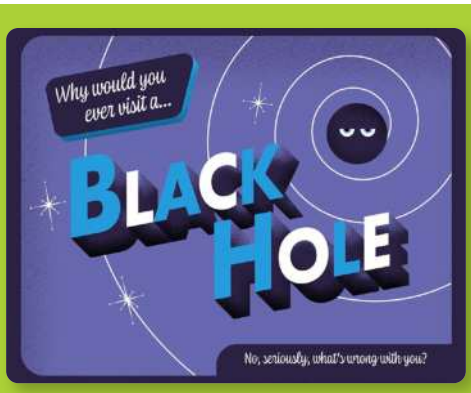
EDITORS
Katy Evans
Rachael Funnell

CONTRIBUTING WRITERS
Holly Large
Rachael Funnell

ART & DESIGN
Greg Brewer

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NEWS BITES:



Black Hole Week

NASA's annual Black Hole Week is all about celebrating these mysterious but iconic cosmic objects, from afar, very far (no one wants to get spaghettified by being too close). Every May, NASA blows our minds with new discoveries and visualization of how they look or what it might be like to experience one – if we could survive its gravitational pull. We inch closer to the first ever footage of a black hole, but until then, enjoy NASA's incredible demonstrations of what they **look like** and even what it would be like to **jump into one.** Now in its sixth year, Black Hole Week will be held on May 4-9, 2026. Check out **NASA's website** for downloadable posters, postcards, "field guides", and more.



Happy 100th, Sir David!

On May 8, Sir David Attenborough, a voice that has shaped how humanity views and understands the natural world, turns an incredible 100. For decades, he has brought the wonders of nature into our homes, revealing the beauty, complexity, and fragility of life on Earth. Not just entertaining and educational, his storytelling has inspired generations to care about conservation, from the cutest animals to the strangest plants. Even at 100, his message remains urgent: the planet is changing, and our actions matter. Attenborough's legacy will not just be the voice of natural wonders but inspiring an environmental responsibility to preserve their future. His century of life stands as a testament to curiosity, dedication, and, vitally, hope for the future of our shared world. To celebrate, the BBC – home of many of Attenborough's iconic natural history series – is airing three new special programs that honor his life and his work, which will be available on the BBC and PBS in the US.



First Permanent Victims Of Pompeii Exhibition

One of the reasons the 79 AD eruption of Mount Vesuvius, and the subsequent tragedies that unfolded across Pompeii and Herculaneum, resonates is the powerfully emotional casts of the victims in their final moments – frozen in fear and desperation. These casts were created by pouring plaster into the spaces left by decomposed bodies in hardened ash, preserving details like expressions and posture. Now, for the first time, a permanent exhibition showing at least 20 of these casts has opened at Pompeii. The exhibition includes scientific insights into the victims' lives, such as age, health, and diet. Designed to be both respectful and educational, it helps visitors understand the human tragedy behind one of history's most devastating natural disasters.

Jurassic Creatures From The Deep

Dinosaurs are pretty famous, and rightly so; fierce, fascinating, and coming in sizes unfathomable to us. If you like the prehistoric monsters of ancient Earth, then you need to meet the ones from its oceans. Luckily, you can in the Natural History Museum, London's new blockbuster exhibition, *Jurassic Oceans: Monsters of the Deep* – the safest way to explore the oceans 200 million years ago. *Jurassic World* may have introduced you to the mosasaur, the "*T. rex* of the sea", the fiercest apex predator to rule the waves. How about the giant pliosaurs or speedy hunters, the ichthyosaurs? Don't forget sharks – they are, after all, older than even dinosaurs.

"The Jurassic oceans were home to some of the most extraordinary and terrifying creatures ever to exist," said Museum Director, Dr Doug Gurr. "These colossal creatures that once ruled the oceans can help young minds bring big ideas such as extinction, adaptation and biodiversity thrillingly to life." The exhibition is from May 22, 2026, to January 3, 2027. Find out **more here**.



Image Credit Left: BBC/Passion Planet/Joe Loncraine, **Top Right:** NASA's Goddard Space Flight Center, **Middle Right:** Jebulon via Wikimedia Commons (Public Domain), **Bottom Right:** Trustees of the NHM London

Get That Da Vinci Glow

May is the ideal time to witness Earthshine, also known as "da Vinci glow." This subtle effect is best seen in the days just before and after the new Moon on May 16. During this period, instead of only spotting a thin waxing or waning crescent, you can also make out the Moon's usually dark side, faintly illuminated by a gentle, silvery light. Once known as "ashen glow," this phenomenon occurs when sunlight reflects off Earth and softly lights up the Moon's shadowed portion. While the bright crescent is directly lit by the Sun, the dimmer glow comes from Earth's reflected light. Leonardo da Vinci worked out this explanation centuries ago (well, mostly; he thought the reflection was from the Moon's oceans) – an impressive insight considering that Copernicus's heliocentric model of the Solar System wouldn't be published until 24 years after da Vinci's death.



Intelligent Animals

You're waiting to get your fix of talking animals and suddenly, two movies come out on the same day – May 8. First up, Netflix releases its adaptation of Shelby Van Pelt's novel *Remarkably Bright Creatures*. Starring Sally Field and a CGI Marcellus the giant Pacific octopus (voiced by Alfred Molina), it's a delightful tale of love, lost and found, and extremely smart and observant cephalopods. Second is the Amazon MGM Studios movie *The Sheep Detectives*, an adaptation of *Three Bags Full* by Leonie Swann. Starring Hugh Jackman and a lot of sheep (voiced by everyone from Bryan Cranston to Bella Ramsey), it follows a shepherd who reads murder mysteries out loud to his sheep every night. When he turns up dead, who is going to solve his murder? You guessed it.

WHAT'S UP?



BLUE MOON

Well, sort of.

Name: Blue Moon (if that song from *Grease* wasn't stuck in your head before, we bet it is now)
Appearance: Definitely the Moon, but not blue. It's giving fake news.
Location: The night sky, about 384,400 kilometers (238,855 miles) from Earth.

What's a Blue Moon?

There's the traditional definition, which characterizes it as the third full Moon in an astronomical season containing four full Moons. For those of us who don't work in astronomical seasons, there's a handy second definition that labels it as the second Full Moon in a calendar month. That definition actually came about as a mistake, but it's stuck.

How does that happen?

Because a full lunar cycle isn't the same length as a calendar month, which means there are 12 full Moon cycles in only 354 days. That means, eventually, you'll end up with a month where there's a full Moon near the beginning and a second near the end. That's what's happening this month, with the first full Moon on May 1, and the second Blue Moon on May 31.

Is a Blue Moon really all that rare?

Nope – clearly whoever came up with the phrase "once in a Blue Moon" didn't know all that much about astronomy. Blue Moons are actually pretty common, occurring roughly every 2-3 years. Slightly rarer is a super Blue Moon, a Blue Moon that coincides with the Moon being at its closest to Earth, which occurs once every 10 years on average (but can be as many as 20 years). Rarer still is to get two Blue Moons in a year – the last time that happened was in 2018, and it won't happen again until 2037.

Now for the burning question – does this process somehow actually turn it blue?

Unfortunately not.

Why is it called a Blue Moon then?

Apologies if you're after a definite answer – because there isn't one. Some people believe it might have originated with the mispronunciation of the Old or Middle English word "belewe", meaning "to betray" – the Moon having betrayed us by having gone against the standard one full Moon a month. How dare it.

Could it ever turn blue?

Yes, although it's not likely to happen very often. It would require certain tiny particles – **like volcanic ash** – to be kicking about in the atmosphere, scattering away red wavelengths of light to leave us with blue.

Image Credit Left: Kevin M. Gill via Flickr (CC BY 2.0), **Right:** Lukasz Pawel Szczepanski/Shutterstock.com

DO OTHER ANIMALS HAVE PETS?

Humans bow down to their animal companions. Are we the only species that pet-parent for pleasure?

By Rachael Funnell



Image Credit: Yueh Chiang/Shutterstock.com, modified by IFLScience

I am currently typing to the backing track of my cat licking his paws. Ralph, a Burmilla, used to reside on the table next to my desk. It was decided (by Ralph) that this position wasn't central enough, and so he promoted himself to the 40 percent of desk space where I used to be able to place things like mugs and snacks.

Does it make the working day easier because he raises morale like a warm, fluffy, emotional support paperweight? Yes. Is it convenient? No, but then so little of pet ownership is.

As pet owners, we gather poop. We scoop litter trays, clean ears, and scrub uncooperative teeth. We use up our own resources – time, money, emotions – making sure they are well fed and safe and happy. It's a bit like parenthood, really. Only without any of the evolutionary benefits.

A child is a wonderful gift to those that want one. It involves buckets of generosity, but it also carries out a selfish function: the continuation of our genes. There was a time when that desire was the leading motivation for every early human. It makes sense, then, for so many to be willing to risk all that time, money, and emotion on their kids. But why on Earth do we do it for other animals? And are we the only species that does?

Humans' best friends

Traditional pet ownership (and by that, I mean living with things like cats and dogs rather than having a local goose you've claimed is your pal) began with domestication. We only recently discovered the world's **oldest domesticated canine**. Its remains were retrieved in Türkiye and date back 16,000 years.

Palaeolithic hunter-gatherers treated these canines as if they were humans, sharing food and even burying them after death, as they would a family member (though it's worth noting the same goes for funerary cannibalism, which they also did to their family).

It began as a kind of passive symbiosis that saw the friendliest wild canines getting humans' scraps and developed into a tighter bond as they established their value. Canines could warn that predators were close by. They could improve humans' hunting success and provide companionship – something a socially-thirsty species like ours values highly.

The same goes for **cats**. It's thought their domestication aligned with the advent of agriculture. Large grain stores lured in rodents, which in turn attracted wildcats. The humans might have initially viewed them as just another pest until they realized that more cats meant fewer rodents. A nice bit of security for the humans, and a profitable buffet for the cats. I may be biased, but once a cat enters your life, it's a short trip before you're crooning over their fluffy bellies even as they rip your furniture to shreds.

BY LIVING TOGETHER, EVERYBODY EATS AND EVERYBODY'S HAPPY.

From sidekick to soul mate

At some point in the ~16,000 years that have passed since we started domesticating animals, our relationship changed. We no longer expect our furry companions to pay rent in the form of services. So, why do it? As associate professor of anthrozoology at the University of Windsor, Beth Daly, told **Live Science**, it's thought there are four key benefits:

- Parenting practice – Having a pet can prepare us for parenthood. As the rule goes: plant, pet, person.
- Good mate material – Demonstrating that you can care for something may increase your odds with prospective mates.
- Preventing loneliness – You're never alone with a cat. Not even when you pee.
- Joy – Enough said.

Do wild animals have pets?

We are by no means the only animal species that lives in close association with other animals. Not only are there many other examples, but some of them are utterly delightful.

A personal favorite is the tarantula and the frog. Flip over a rock in the right part of the world and you might disturb the nest of a burrowing tarantula (*Xenesthis* genus). Perhaps a bit of a fright if you weren't expecting eight hairy legs but look a little closer and you'll see something even stranger: a tiny frog, just chilling.

It's easy enough to imagine how that massive spider provides protection for the frog, but why doesn't it eat its amphibious roommate? Because the frog protects its eggs by feeding on insects like ants that are attracted to the spider's leftovers. By living together, everybody eats and everybody's happy.

It's often shared online as "tarantulas keeping frogs as pets," but the truth is a little more transactional.

Is having a pet just symbiosis?

I probably spend more time with Ralph than I do any other living thing (I don't live alone, but my fiancé – thankfully – doesn't insist on sitting on my desk throughout the working day). I can say with some confidence that ours is a relationship that's mutually beneficial. I feed him. I give him medicines to prevent parasitic infection. I keep him warm and safe and stocked up on tummy rubs. In turn, I receive companionship as well as stress relief and all the **physiological benefits** that come with that.

Does that make it a form of mutualistic symbiosis? No, and here's why: Symbiosis is a long-term biological interaction between two species. Think of **boxer crabs** that use live anemones like pom-poms. The crab gets protection, the anemone gets more food, and it's a relationship that's become an ingrained characteristic of the species.

I choose to live with a cat, but my mother didn't. Neither did hers. The association between me and my domesticated feline

is an individual choice motivated by companionship.

Are we the only animals that keep pets?

At time of writing, there are no confirmed examples of an owner-pet relationship between unrelated wild animals. The closest thing we have observed are a few rare examples of what's known as cross-species or -genera adoption.

> THE COST IS YOU MAY ACCIDENTALLY RAISE SOMEONE ELSE'S BABY, BUT THE BENEFIT IS THAT YOU'LL DO A SMASHING JOB.

In 2006, a paper published in the **American Journal Of Primatology** documented the case of a marmoset that appeared to have been adopted by a group of capuchins. It was first spotted with the group in March 2004 and seen frequently and informally over the years, looking as if it had socially integrated with the group. It's a notable adoption not just because it spans genera, but also because of the significant size difference between marmosets and capuchins.

In 2019, a paper published in **Ethology** described another unusual adoption – again, spanning genera – where a female dolphin was seen with a melon-headed whale calf. The female appeared to have offspring of her own, though the paper notes her biological calf disappeared meanwhile the melon-headed whale hung around.

Then in 2020 came an even more astonishing example published in **Ecosphere** that described the sighting of an Asiatic lioness with three cubs: two of her own, and a third leopard cub. This marked the first known example of cross-species adoption between two animals that are in direct competition with each other.

Pet or parent of the year?

A common theme among these cases is that the adoptive parent was a female (except in the case of the marmoset, who had two adoptive "mothers"). The dolphin and lioness were known to be already raising offspring of their own, raising the suspicion that maternal hormones and instinctive nurturing behaviors may have been driving their association with these apparent orphans.

"Lion females are often on their own in the first few months after giving birth," wrote the authors of the Ecosphere paper. "We believe that the distinct sociobiology of Asiatic lions coupled with the reproductive state of the lioness facilitated the absence of other adult lions around her immediate vicinity, which otherwise would possibly have recognized and killed an alien cub."

"This association also likely indicates that the proximate cues from cubs such as sounds, body postures, begging for milk, and the presence of spots (lion cubs have prominent leopard-like spots on their foreheads and the underside of limbs and bellies) that evoke 'mothering' tendencies might be similar across lions and leopards."

They liken the cub's integration into the family to brood parasitism, which is facilitated by birds' evolution favoring instinctive parental care over offspring recognition. The cost is you may accidentally raise someone else's baby, but the benefit is that you'll do a smashing job – biological or otherwise.

So, as far as pets go? It seems for now, at least, that remains a uniquely human quality. Now, if you'll excuse me, I know a cat who needs their tummy rubbed.



Image Credit: Yueh Chiang/Shutterstock.com, modified by IFLScience

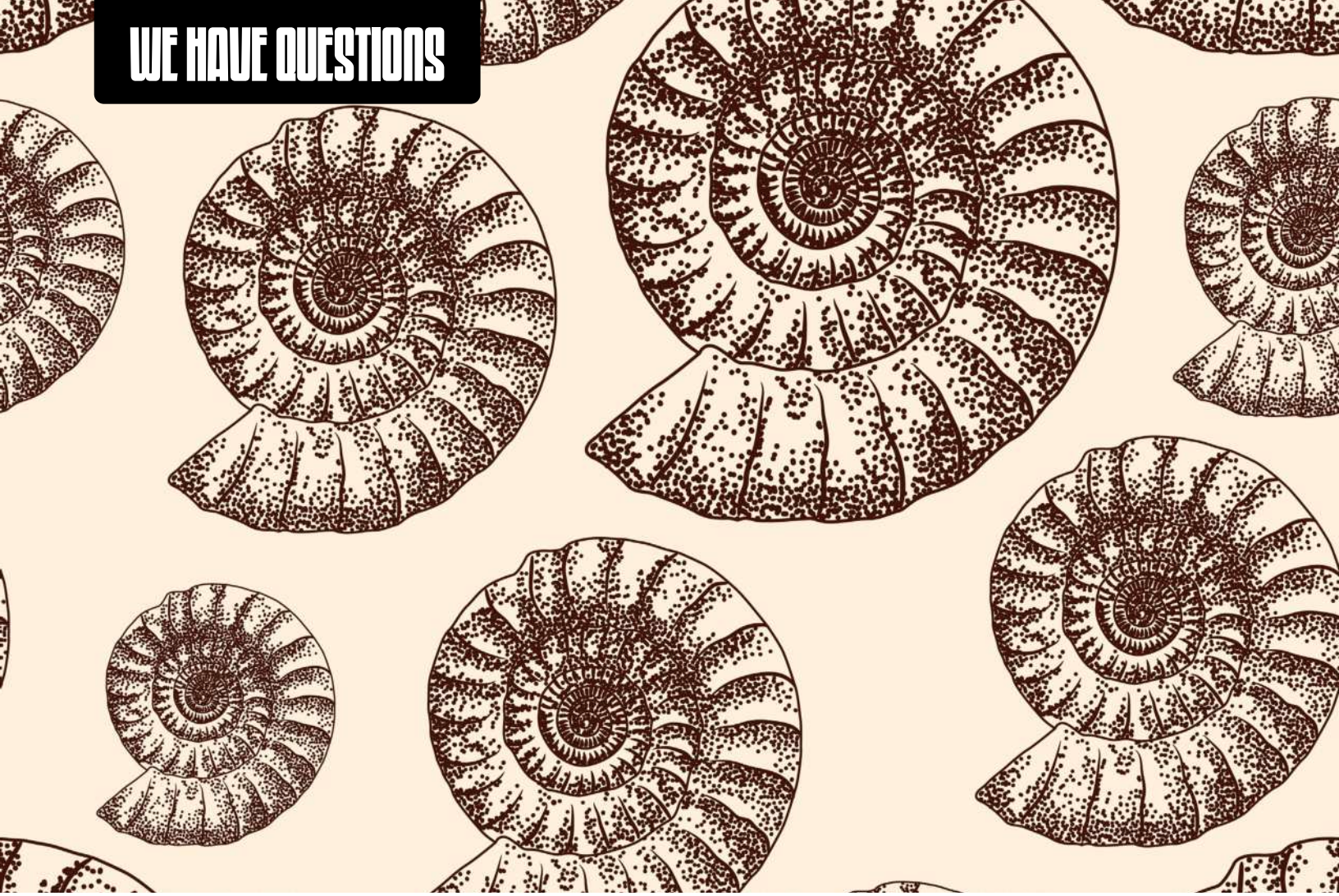
WHAT ON EARTH



BLUE MANDARIN DRAGONET

Meet one of the Indo-Pacific Ocean's most psychedelic residents. The blue mandarin dragonet is so splendid in color they named it *Synchiropus splendidus*. With a funky blue coloration that's rare in vertebrates, they've swapped out scales in favor of a mucus coating and prefer to "walk" on the seabed with their fins rather than swim. Catch this remarkable creature at the Tennessee Aquarium's new **Scuttlebutt Reef gallery** – open now.

Image Credit: Doug Strickland/Tennessee Aquarium



WHAT IS A FOSSIL?

Minerals? Bits of animal? Or something else?

Q&A

By Rachael Funnell

My house is full of fossils. Big. Small. Some sparkly, but mostly chalky. If I pick up an ammonite, I can run my finger over the grooves of this creature's "shell" – but what am I actually touching?

It's a question I took to palaeontologist **Professor Steve Brusatte**, someone who's handled more fossils than I've had hot dinners. As he explains, the definition of what's classified as a fossil has changed over time, but new discoveries are reshaping what we know of their potential.

What does "fossil" even mean?

SB: It means something like "to dig up". It's a word that's been used for several hundred years. In fact, many hundreds of years ago – before it was really understood that the Earth was billions of years old, and that life has changed over time, and that evolution is real – I'm talking about the 1400s, 1500s, 1600s, "fossil" *was* used to refer to things like petrified seashells and carbonized fern leaves and shark teeth embedded in rocks, but it was also applied to other oddities. Weird stuff that people found in rocks, whether it was interesting mineral crystals or precipitates or concretions or just other structures that can form in rocks.

Over time, as it was understood that the Earth is *old* and that evolution happens, the word "fossil" became restricted to any remnant of ancient life. Something that used to be a part of a plant or an animal. A shell, a tooth, a bone, a leaf, a root, a tree trunk, or something that an ancient creature left behind. A record of their behavior, like a footprint or a drag mark from their tail or a coprolite.

Image Credit: Juan Alejandro Bernal/Shutterstock.com



Is there anything of that ancient life left?

SB: There can be. There's great variation in what a fossil is as far as down to its microstructure and what it's actually made of. Let's forget for a moment about things like footprints. Let's think about bones or teeth or shells, the actual parts of animals or plants that lived long ago.

Usually, these fossils are made because that animal or a part of that animal or that leaf or that stem or that tree trunk gets buried in sand or in mud and then is petrified – it gets turned to stone over time. Sometimes that process can be fairly rapid, but usually it takes quite a long time.

What usually happens is the original material in that bone or in that tooth is replaced by minerals. So, it's not like it's the exact same stuff that was part of the body of that dinosaur 100 million years ago that is in the dinosaur bone, generally.

But sometimes you do get fossils that are entrapped instantaneously in tree sap that turns to amber or something that's buried really quickly by a volcano and essentially locked in stone. In those circumstances, you can get some of the original material preserved.

There is DNA in some fossils. Not super old fossils like dinosaurs, but there's DNA that's lasted for well over a million years that you can find inside of fossils. People are finding more and more of that the more sophisticated the tools become for locating that DNA and removing it from the fossil.

There are other things like proteins and other organic tissues that can be preserved, too. Sometimes even in very, very, very old fossils like dinosaur fossils, people have pulled out little, microscopic soft tissues.

There's not a one-size-fits-all situation for how a fossil is made. Generally, it's not the original stuff that was in the animal or the plant, but sometimes you do get some of that original material preserved. That's where it gets very exciting because there is DNA that can tell us a whole lot about what that fossil was related to and where it fits in the family tree.

You can use it basically like a paternity test – the DNA, pinpointing which group this fossil belongs to. Some of the proteins, for instance, might be able to tell us about metabolic rates, growth rates, how the animal actually lived, and so on. That field, molecular paleontology, is getting more and more sophisticated. Some of the brightest young paleontologists today are basically people who are chemists, or biologists who are studying these microscopic soft tissues. So, watch this space. I think that's one of the most exciting areas of research today.

How do footprints become fossils?

SB: If there's a situation where a dinosaur is walking in mud or in sand and there's not a wave that comes and washes it away, if it's baked in the sun – even just over the course of a few hours – it hardens. Then something comes and covers it. Some more mud, some more sand. There's a little bit of a storm, let's say, but not a big storm that's enough to just wipe it all away. And then once it's buried, it can petrify and it can turn into a fossil. The odds are astronomical. Maybe this happens one out of every billion times an animal's foot touches the ground.

My former student, Paige dePolo, has studied [dinosaur] tracks on The Isle Of Skye. She's the real expert on them, and when we look at these tracks she often says, "Every fossil is a miracle," and it really is.

These are super rare glimpses into the past, and I think we need to cherish them for what they are and just how unusual they are.



Image Credit: Juan Alejandro Bernal/Shutterstock.com

DEEP DIVE

SCIENCE FACT OR FICTION:

CAN YOU TRAIN ANIMALS TO BE SPIES?

And should you? Holly Large investigates.

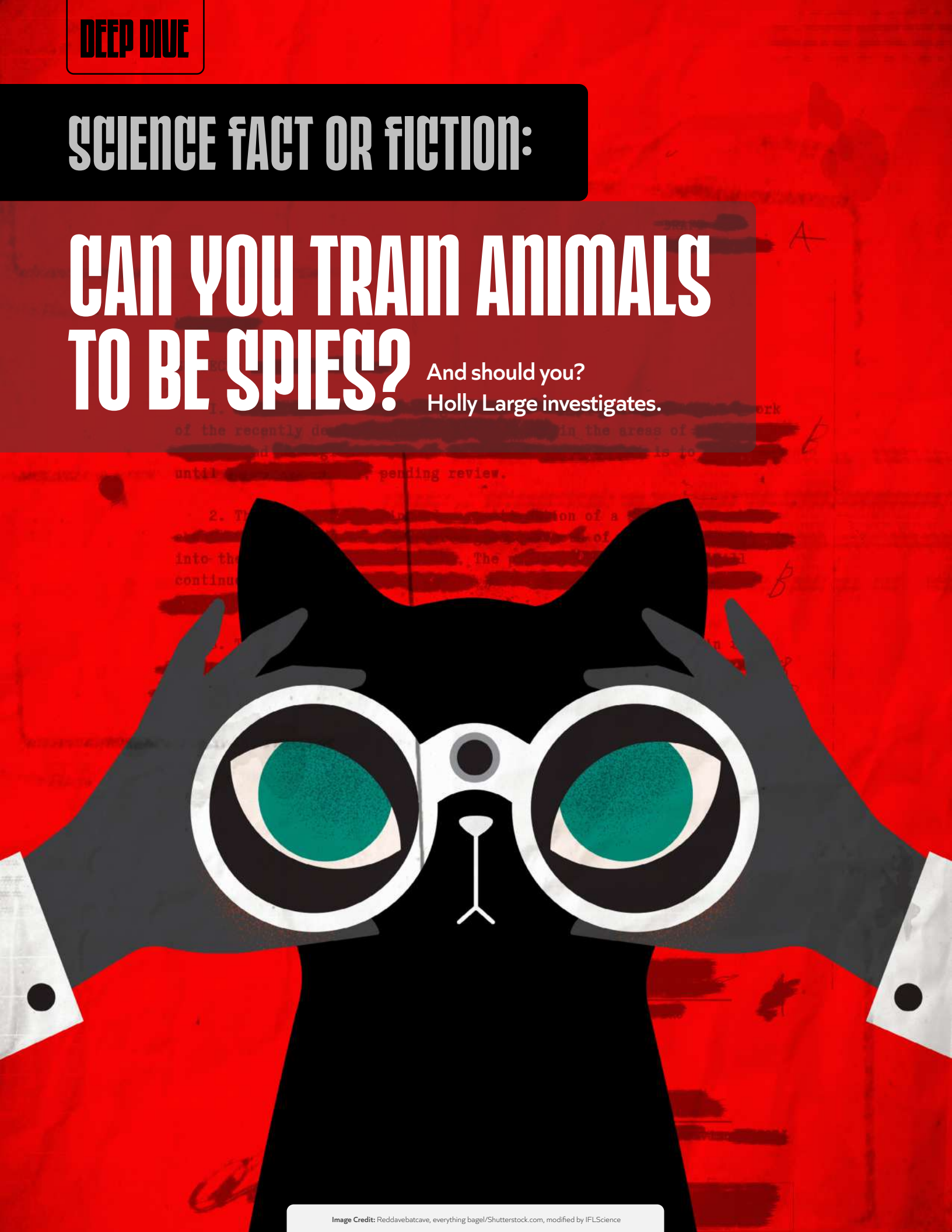


Image Credit: Reddavebatcave, everything bagel/Shutterstock.com, modified by IFLScience



I recently became the owner of a puppy. Is he wonderful? Yes, very. Would I trust him with information upon which the fate of the world rested? Absolutely not. But, with a bit of training, could I? Is it possible to train animals as secret agents, or masters in the art of espionage? And has anyone ever tried – and succeeded?

Project Acoustic Kitty

Also being the servant of two cats, I already had my doubts before researching for this story that our feline friends are capable of such deeds. If they could talk, mine would probably give up state secrets at the mere whiff of a Churu. Granted, cats are pros at sneaking around and hiding in all sorts of seemingly unreachable places – but getting them to do something if they don't want to do it? Mission Im-paws-ible.

And yet, in 1964, someone at the CIA thought it would be a great idea to train cats up as covert operatives – although the idea for using animals in this way was born much earlier than that.

Inspired by the use of animals during World War II, "the [CIA's] Director of Science and Technology and their Office of Technical Services had created a program that specifically was looking at the animal kingdom and how we could use real animals, but also be inspired by animals to kind of help us with intelligence collection," a CIA spokesperson told IFLScience.

> "THE PROBLEM WITH CATS IS THEY KIND OF JUST GO WHERE THEY WANT. AND SO IT BECAME FAIRLY OBVIOUS EARLY ON THAT IT WAS HARD TO CONTROL THE PATH OF THE CAT."

That became particularly important during the Cold War, when it wasn't always feasible to drop a human agent in the middle of somewhere like the Soviet Union.

"Sometimes you can't put a human near things, but an animal might go unnoticed. And the thought was, well, there are stray cats in certain areas we are very interested in," the spokesperson explained. "If we could get a listening device onto a cat and it wandered around and could pick up conversations for us, that would be incredibly helpful because it'd be too dangerous for our people to go do something like that."

And so, Project Acoustic Kitty began. With the help of vets, a microphone was implanted in a cat's ear, with a tiny transmitter placed under some loose skin and an antenna into its fur. Add in some training, and they were ready to go.

So how did Acoustic Kitty fare out in the big, wide world? If you listen to the rumors, not that well. In the 1987 book *The Agency: The Rise and Decline of the CIA,* Victor Marchetti, former special assistant to the Deputy Director of the CIA, alleged that the cat had met an unfortunate demise on its very first field test.

"They took it out to a park and pointed it at a park bench and said, 'Listen to those two guys. Don't listen to anything else – not the birds, no cat or dog – just those two guys!' They put him out the van, and a taxi comes and runs him over," Marchetti claimed. "There they were, sitting in the van with all those dials, and the cat was dead!"

"That is not accurate," the CIA spokesperson told IFLScience. "Our cat did not get hit by a taxi on the first mission."

But ultimately, a life of espionage just wasn't to be for the cat involved.

"The problem with cats is they kind of just go where they want," said the CIA spokesperson. "And so it became fairly obvious early on that it was hard to control the path of the cat."

"Our final examination of trained cats for use […] convinced us that the program would not

Image Credit: Reddavebatcave, Tartila/Shutterstock.com, modified by IFLScience

lend itself in a practical sense to our highly specialized needs," reads a declassified **1967 CIA memo**. While it continues to say that it "was indeed possible" to train a cat to go short distances (read into "short" what you will), it states that "the environmental and security factors in using this technique in a real foreign situation force us to conclude that, for our purposes, it would not be practical."

Spy dolphins

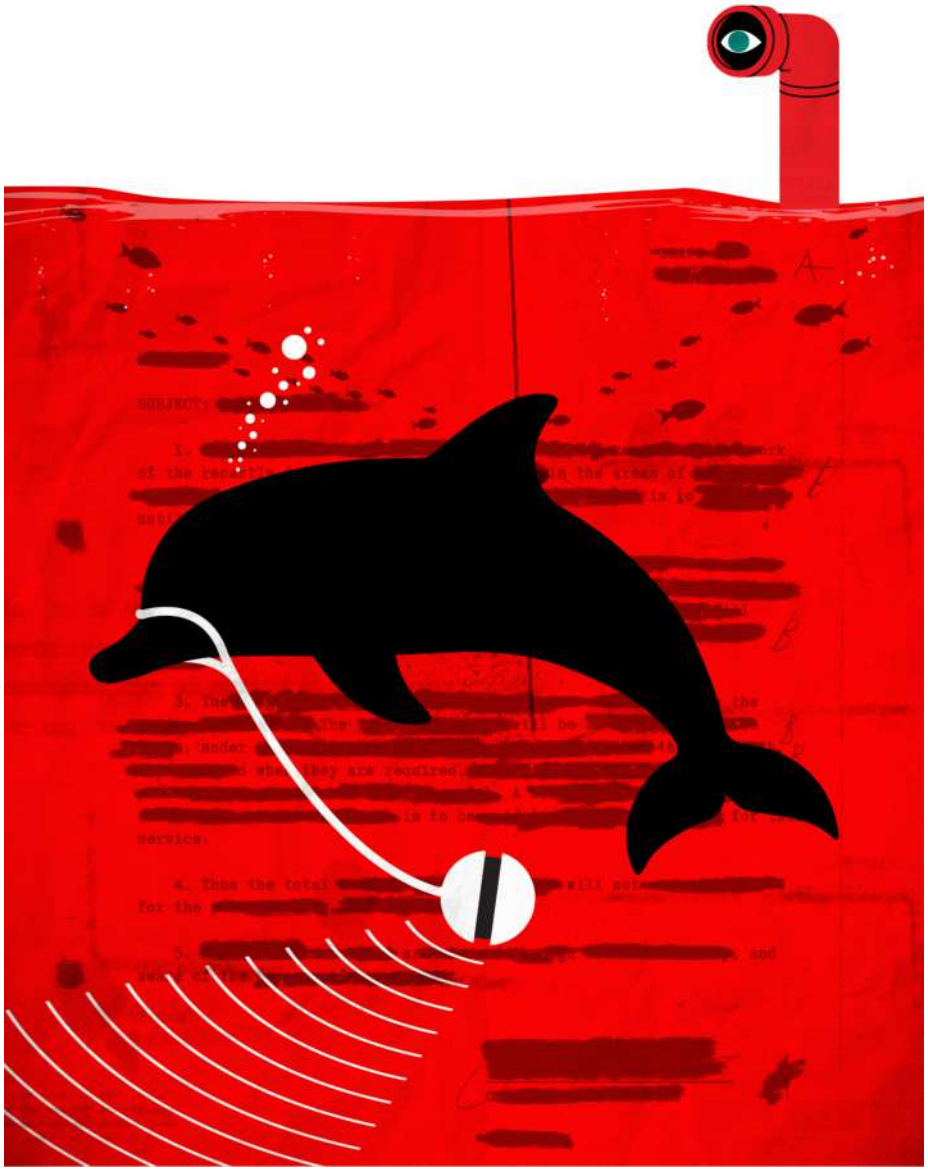
If movies are to be believed, it's not just park bench conversations where there's valuable information to be found; fictional spies end up in (usually life-threatening) underwater shenanigans on a concerningly regular basis. It's this that takes us to one of the CIA's more successful ventures into animal espionage: Project OXYGAS, a.k.a. the one with the "spy dolphins".

"Our life science division here at CIA started studying the feasibility of using dolphins as marine targets. The idea was they wanted to see if they could train a dolphin to put a listening device or a tracker on a boat," the CIA spokesperson told IFLScience.

"Not explosives," they clarified, dispelling one of the popular myths about the project seen floating around the web. "They definitely had ideas at first about [whether we could] use dolphins to sink enemy ships, then they very quickly pivoted away to an emphasis towards covert harbor penetration."

The dolphins were given harnesses, with a cone placed on their beaks containing whatever it was that was to be deployed on their target. They were trained to identify boats based on things like color, coming in from the open ocean and planting the devices while the boats were in harbor. Seeing if they could retrieve objects left in shallow water by human agents was another avenue of exploration.

The project was quickly successful. "Quite frankly, this project has progressed more rapidly than we anticipated," reads a declassified **1964 CIA memo**. But there were still issues to overcome in these early stages, including the potential operational range of the dolphins, and communication problems between the dolphins and handlers. There was also a question of how well they might work when the dolphins had to be handed over to field agents.



> "ONE DISTINCTIVE FEATURE OF THIS PARTICULAR SITUATION IS TURNING CATS INTO RECORDING DEVICES; IT POTENTIALLY MAKES CATS (ALL CATS) INTO LEGITIMATE MILITARY TARGETS."

OXYGAS was still considered feasible, but by 1970, the CIA decided to cease its own funding for it. The program was handed over to the US military, said the CIA spokesperson, which continued to work with the same dolphins and build upon the agency's research and files.

Something must've gone right, because the US military **continues to use dolphins to this day** as part of the Navy's Marine Mammal Program, utilizing their remarkable sonar and underwater vision capabilities to detect mines, track targets, and even help to detect and apprehend potential enemies diving in nearby waters. Ethan Hunt, eat your heart out.

Just because you can, does it mean you should?

There are certainly some hurdles to overcome, but it seems fairly safe to say that yes, some animals can be trained as spies to some degree. But there's also another important question we should be discussing – and perhaps it's the first one that anyone planning to turn an animal into a spy should consider. Sure, there's a chance that we might be able to use animals for espionage, but *should* we?

Let's take the example of Acoustic Kitty. "In principle, we could imagine ways to 'wire up'

Image Credit: Reddavebatcave, Esgoty/Shutterstock.com, modified by IFLScience



cats that aren't particularly harmful to them. We could also imagine, in principle, that these cats would have good lives outside of their use in espionage," **Dr Josh Milburn**, Senior Lecturer in Political Philosophy at Loughborough University, and an expert in animal ethics, told IFLScience.

"Presumably, however, if the handlers of these cats had any kind of control over their activities, the cats would have to undergo some quite rigorous training, which may be very bad for them – not only because it might involve pain or frustration for the cats, but also because it involves denying their agency and shaping their will around our purposes."

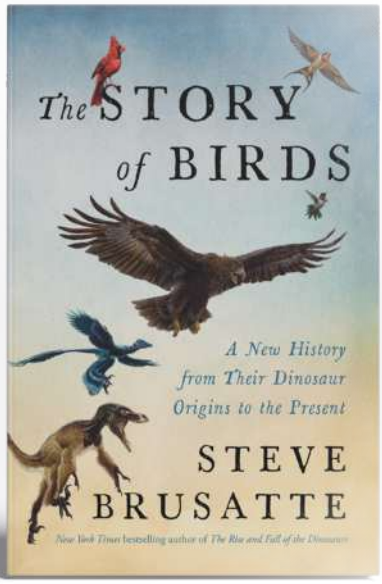
That's an ethical conundrum faced in animal training in general – but there are espionage-specific issues too.

"One distinctive feature of this particular situation is turning cats into recording devices; it potentially makes cats (all cats) into legitimate military targets," Milburn explained. "We wouldn't, I hope, have any problem in recognizing that individuals hurting or killing cats for fun are behaving in a morally problematic way. But when cats become potential espionage devices, those with something to hide have a plausible argument that they're justified in hurting or killing cats, just in case these cats are 'listening in'. All cats are thus put at risk by this programme."

These are far from the only potential ethical issues surrounding the use of animals in espionage – their continued use when we have ever-more sophisticated spy tech springs up many – but the difference between the early days of spy animals and today is that it seems much more likely that they'll be acknowledged and discussed – even if it's just a matter of trying to avoid negative press. "The public often responds badly to military experiments on animals, especially dogs and cats," said Milburn.

Whether feasible or not, there's plenty to think about before you sign little Pebbles up for a life in the shadows.

Image Credit: Reddavebatcave, Mooi Design/Shutterstock.com, modified by IFLScience



THE BIRDS THAT RETURNED TO EARTH

In this excerpt from *The Story Of Birds,* author and palaeontologist Professor Steve Brusatte makes the case for why giving up the coolest superpower on Earth makes sense.

Flying is hard. If it were easy, we'd be doing it. I'd much rather glide into the office each morning than struggle up and down Edinburgh's hills on my bike. But flying cannot be accomplished by a wish; it must be earned through evolution.

Remember all those things birds needed to evolve before they could fly, developed over millions of years from their dinosaur ancestors: air-foil wings repurposed from display billboards, made of feathers originally used for insulation, powered by huge chest muscles anchored to a refashioned chest and shoulder, which is just one part of an entire body totally transformed into a rigid and light flying machine, controlled by an enormous brain, underpinned by fast growth and high metabolism. Flying may look easy; as I'm watching the gulls and pigeons outside my window, their flapping appears effortless.

But a lot went into evolving flight, and a lot goes into maintaining it.

Flying is so hard that some birds don't bother doing it. Ostriches and emus are prime examples today, as are those recently extinct giant moas of Zealandia. It's not just that these birds don't fly. It's that they, or their ancestors, once flew but gave it up. As an ostrich sprints across the savanna, its muscular legs churning and its head darting back and forth, it gives off *Velociraptor* vibes. You may think it is primitive – a ground-bound half dinosaur half bird that hasn't yet gotten over the threshold of flying, the type of intermediate ancestor that proper flying birds evolved from. But that's not the case. Ostriches had forebears that flew. And then quit. Freed from constraints imposed by flight, they renovated their bodies, and their behaviors, and in many ways barely seem like birds any longer. And ostriches are far from alone: More than 60 modern bird species have taken the same backward journey, renouncing the aerial superpowers that their dinosaur ancestors took such pains to achieve.

It's stupefying. Birds forsaking the essence of birdness, as if Superman would hand in his cape, a queen abdicate her crown, an athlete retire after finally winning the championship.

Why did some birds relinquish life in the air? Flying has many benefits, but also drawbacks. Fundamentally, the capacity to fly is a very expensive feature to maintain. It requires a high-wire lifestyle: super-charged metabolism, powered by enormous amounts of energy, which must be obtained with a voracious appetite for food and oxygen. Much of that energy is used as the raw fuel to power the engines: the chest muscles that flap the wings. Recall that around 20 percent of the entire bodyweight of an average bird is made up of its flapping muscles, which are anchored to a massive breastbone. When you compare some flying birds to their flightless close cousins, the metabolic rate of the flying species is an astounding 38 percent greater than the nonflying ones. This is largely because the nonfliers have shrunk their chest muscles, no longer needing them to beat the wings. In essence, flightless birds have downsized their vehicle from a gas-guzzling, high-maintenance sports car to a reliable, fuel-efficient sedan.

And why not? If you don't need to fly, if you have a lifestyle that doesn't demand it, or live in a place where it is no longer strictly necessary or more cost effective than other forms of locomotion, then why keep all of that expensive hardware? And, in some situations, there may be reasons why flying is not merely a costly annoyance, but actively detrimental. Let's say that an ecological niche is available, but it necessitates large body size. Good luck seizing that opportunity if you are a flying bird. ✺

Excerpted from the book ***THE STORY OF BIRDS: A New History from Their Dinosaur Origins to the Present*** *by Steve Brusatte. Copyright © 2026 by Stephen (Steve) Brusatte. From Mariner Books, an imprint of HarperCollins Publishers. Reprinted by permission.*

Image courtesy of Mariner Books



Q&A WITH PROFESSOR STEVE BRUSATTE

AUTHOR OF: *THE STORY OF BIRDS*

It's easy to forget that we still live with dinosaurs. In his new book *The Story Of Birds: A New History from Their Dinosaur Origins to the Present,* palaeontologist Prof. Steve Brusatte tracks how they survived when their ancestors died.

A palaeontologist? Writing a book? About birds?

I'm going to make the clear statement: birds are dinosaurs. The birds you see around us today are dinosaurs. By that, I mean they are part of the dinosaur family tree. They evolved from other dinosaurs.

The difference, of course, is that birds are the only dinosaurs that have survived the gauntlet of time and mass extinctions to reach the present day.

How did birds survive when the other dinosaurs died?

This was one of the most fun parts of writing the book – talking about that moment in time. It really was a moment. An instant in the 4.5-billion-year history of the Earth where everything changed. This is what allowed birds to be what they are today.

That moment was 66 million years ago. Just one morning this asteroid fell out of the sky, and this was a piece of space junk. It was a leftover crumb from the origin of our Solar System. It was hurtling through the emptiness of space at more than 10 times faster than a speeding bullet. It could have gone anywhere, but it just so happened to smash right into the Earth.

It hit what is now the Gulf Coast of Mexico. It released more than a billion nuclear bombs worth of energy when it hit. It punched a hole in the face of the Earth over 100 miles [161 kilometers] wide. This was the biggest asteroid to hit the Earth in at least the last half a billion years. That morning before the asteroid hit, this was the age of dinosaurs. *T. rex* was there. *Triceratops* was there. There were duck-billed dinosaurs. There were armored dinosaurs. There were all types of small meat-eating dinosaurs and insect-eating dinosaurs and omnivorous dinosaurs. There were giant long-necked dinosaurs, some of the biggest ones ever, the size of jet planes. They were there when the asteroid hit.

There were birds there as well, because birds had already evolved from their raptor dinosaur ancestors many tens of millions of years earlier. Some of those birds still had teeth. Still had sharp claws on their hands, and long tails.

Then the asteroid hit and 75 percent of species died out because the carnage was so overwhelming. That asteroid triggered earthquakes and tsunamis and wildfires. All the dust and grime from the collision, the soot from the fires, went up into the atmosphere and blocked out the Sun for many years.

The Earth went dark and cold. Plants couldn't photosynthesize. They couldn't make their own food without sunlight. So, the forests collapsed and ecosystems then collapsed like houses of cards, the plant eaters, the meat eaters. If you were a big animal and you had to eat a lot of food to survive, you were in trouble. There wasn't much food around. And anything bigger than a Labrador dog on land died. Totally died. Extinct.

If you had a really specialized diet, you were in trouble. If it took you a long time to grow from a baby to an adult, you were in trouble. You had to navigate many years of the fires and the darkness and the cold and so on. If you couldn't hide away very easily, if you couldn't dig a burrow, if you were too big to find easy shelter, you were in trouble.

So, the dinosaurs had been on top of the world for tens of millions of years. Almost all of them died… except for this one type of bird.

The modern birds that we know.

What gave them the advantage?

They were small, they grew fast. Really fast. They could fly well, so they could move away from danger really easily. They could hide away easily because they were small. They could eat seeds with their beaks, which is important because if the forests collapse and the trees are dead, if you eat leaves, if you eat flowers, if you eat fruits, there's nothing there.

Seeds can stay in the soil for a long time. They can get you through, at least for a little while. So, being able to eat seeds with those beaks gave those birds an unlikely source of nutrition to get through the darkest and coldest months or years. That's why birds were able to make it through, and no other dinosaurs were. It really came down, in large part, to chance.

Then as the sunlight came back and the world recovered and plants started to grow again, *T. rex* was gone. *Triceratops* was gone. It was a new world. A world of abundant opportunities, and those birds that survived now had the opportunity to evolve and blossom in new ways. This is really where almost all of the major groups of birds that we know today were establishing themselves soon after the asteroid in that ecological vacuum that came from the death of all of the other dinosaurs.

The Story Of Birds is published by Mariner Books and available now in the US. The UK edition will be published on June 11 and is available for pre-order.

Image Credit: Royal Society of Edinburgh

WHERE ON EARTH

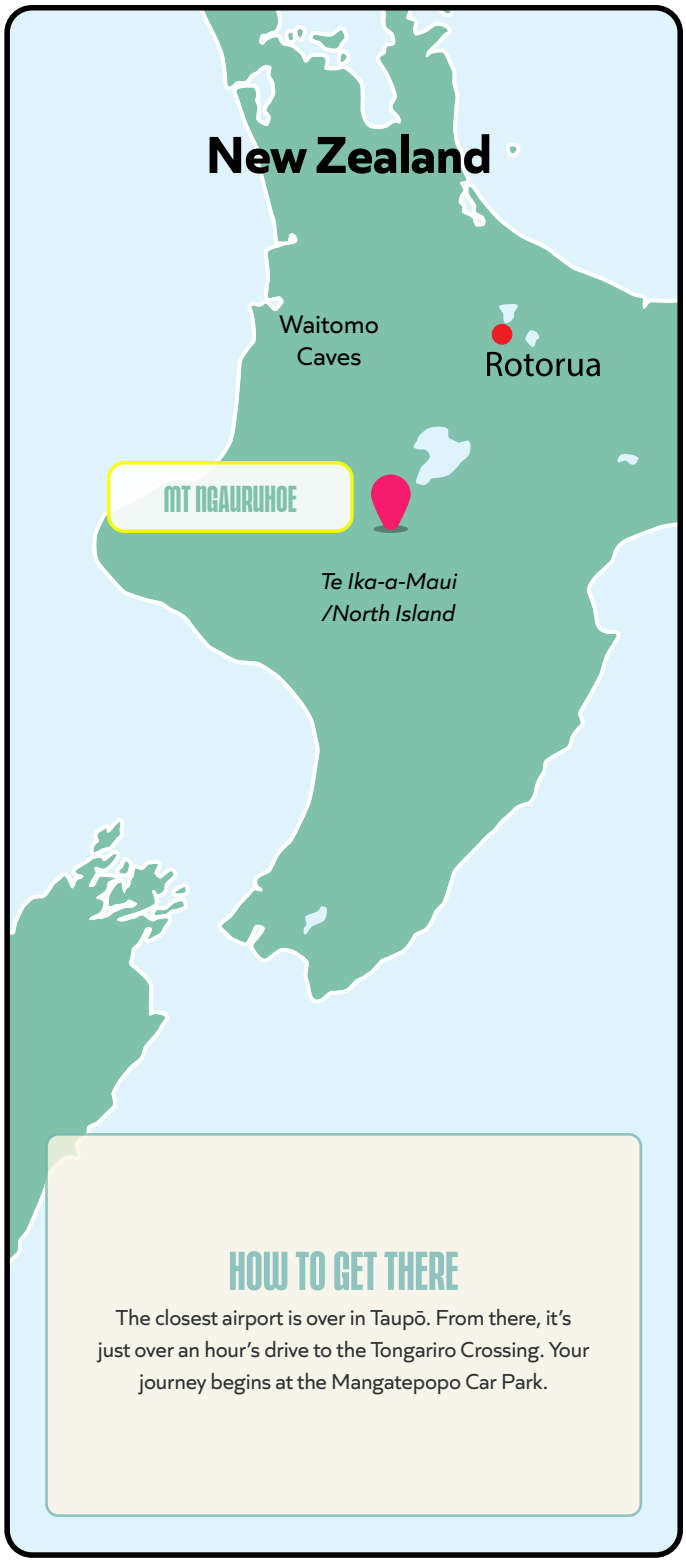
In Aotearoa New Zealand's Tongariro National Park you can find the country's newest and historically most active volcano. Towering in the heart of the North Island, it caught the eye of Sauron when director Peter Jackson decided it would play the part of Mount Doom in *The Lord Of The Rings*.

By Rachael Funnell



Image Credit: Iryna Shpulak/Shutterstock.com

ONE *CAN* SIMPLY WALK INTO MORDOR



HOW TO GET THERE

The closest airport is over in Taupō. From there, it's just over an hour's drive to the Tongariro Crossing. Your journey begins at the Mangatepopo Car Park.

Throw a stick in Aotearoa New Zealand and you're bound to hit something of outstanding natural beauty. It's hardly surprising, then, that the location scouts for *The Lord Of The Rings* had such a field day when it came to finding the locations for Peter Jackson's ambitious trilogy.

They struck gold with Ruapehu, which became the Forbidden Pool where Frodo and Faramir capture Gollum. Then again, when Dry Creek Quarry became Helm's Deep and Minas Tirith. Best of all, however, was the allocation of Mordor and Mount Doom.

For that film set the camera crews had to journey to Tongariro National Park where New Zealand's newest and most historically active volcano can be found. Known as **Mount Ngauruhoe,** it's been active for at least 2,500 years and produced over 70 eruptions since 1839.

Don't go packing your rings of power, however. Anyone seeking to throw their cursed trinkets into the fiery pits of Mordor is going to find only disappointment at the summit.

Mount Ngauruhoe can be climbed in around two to four hours. You'll scrabble over 2,000 meters (6,500 feet) to get to the top, but there'll be no convenient doorway to lead you over its bubbling magma. Oh no. You see, Mount Ngauruhoe hasn't gone bang since 1975.

In fact, this volcano's fumaroles in the crater floor have been steadily cooling since 1979. It's quite possible the main vent is becoming blocked.

Frodo and Sam should be thankful, then, that they made the journey from The Shire to Mordor when they did. Imagine surviving **6 months and 3 days** of peril (a journey that, all told, apparently amounted to nearly 2,900 kilometers, or 1,800 miles) only to find your fiery furnace had gone out.

So, no Dark Lords to be smote at Mount Ngauruhoe, but it has a far more interesting history of its own. According to Māori legend, the high priest Ngatoroirangi was climbing the summit when he got caught in a blizzard.

He prayed and his sisters in Hawaiki answered, unleashing flames that first ignited White Island in the South, then Rotorua and Taupo, before lighting up Ngauruhoe and saving their brother's life. This is credited for the volcanic activity that surges across the North and South Islands, shaping them into the staggering landscapes we enjoy today.

Image Credit: Rainer Lesniewski/Shutterstock.com



LISTEN

WE HAVE QUESTIONS

Podcast from IFLScience

Plants are incredible. They've made it possible for almost all life on Earth to exist because they happily live off sunlight and pump out precious oxygen, all while using up that yucky carbon dioxide. It's a miracle we've named photosynthesis, but it has its limits. This episode we're asking are there plants that can photosynthesize by moonlight? While species living under the ice at the North Pole have been found to do something near-unprecedented in the face of low light, Head of Living Collection Support at the Royal Botanic Gardens, Kew, Tom Freeth, explains why even plants have constraints.

Available May 25.



WATCH

FOR ALL MANKIND

TV series from Apple TV

Seen the series? Our Space & Physics Editor went to find out more about the science. "*For All Mankind* is a fascinating look at an alternative history view of the space race and the Cold War," said Dr Alfredo Carpineti. "It's full of scientific ideas, and it was fun to chat with the executive producers about their motivation for including them." **Read the interview.**

Available now.



READ

UP

Book by Dr Lucy Rogers

A bubble scientist takes you on a journey upwards through the sky and into space, taking the time to pause and point out the things we often miss. Across her career, Rogers has traveled to Borneo to watch bats at dusk, to India to witness a kite market, to Tornado Alley to chase storms, to the Vatican's observatory to see its collection of meteorites, and to Jodrell Bank to look at Venus. Now she's offering you a guided tour through it all from the comfort of your home.

Available now.



WATCH

STAR WARS: THE MANDALORIAN AND GROGU

Film from Disney

Pedro Pascal returns as the Mandalorian ready to take on a new adventure with his tiny green sidekick. If you thought John Wick took badly to people being mean to his dog, you can only imagine what happens when Rotta the Hutt threatens his sweet Grogu.

In cinemas May 22.

READ

THE 21ST CENTURY BRAIN

Book by Dr Hannah Critchlow

Modern life is hard, and by the looks of it the future has plenty of challenges in store. **Neuroscientist Dr Hannah Critchlow** explores how we can harness cutting-edge science to lean into human strengths and flourish in the face of global challenges. From raising resilient children to keeping up with AI, our brains can rise to it all.

Available now.



READ

WHEN THE FOREST BREATHES

Book by Professor Suzanne Simard

Prof. Suzanne Simard has dedicated her life to showing the world that forests are not collections of individual trees but living communities. In her latest book, she delves deeper into our relatedness and kinship with forests, exploring how they share resources, communicate underground, and even sustain one another across generations.

Available now.

READ

THE POWER OF PLANKTON

Book by Vincent Doumeizel

In *The Power of Plankton: How Plankton Made Life On Earth Possible and Why It's Key To Our Future*, Senior Adviser on the oceans to the United Nations Global Compact Vincent Doumeizel makes the case for why plankton is one of the most underappreciated ecosystems on our planet.

Available May 21.

Image Credit Left: IFLScience, **Center:** Disney, **Right:** Allen Lane

Good Times At The Creature Cantina

"Fist my bump!"

It's not something Rachael Funnell would usually feel comfortable shouting in front of a group of strangers, but what else are you supposed to say when fist-bumping an Eridian?



"The Rocketeers" in action.

Starstruck meeting Rocky.

"Rocky" actor James Ortiz and designer Neil Scanlan.

Last month, ahead of the release of ***Project Hail Mary***, I was invited to the Creature Shop at Pinewood Studios. Tucked among the warehouses and film sets, it looked like nothing more than another big building in a matrix of big buildings from the outside. Step through its doors, however, and the mind boggles.

The Creature Shop is home to a specialized team of creatives behind the curious critters and lovable robots you've seen in *Star Wars, Jurassic World*, and *Beetlejuice Beetlejuice*. Now, the cast of characters inside the cantina includes a one-of-a-kind alien and some first-of-their-kind robotics.

I'm let loose on the mechanical version of Rocky, the helpful Eridian Ryland Grace (Ryan Gosling) befriends during his mission to save the stars. If you're thinking it must be difficult to operate a multi-legged, spider-like alien with no face and cute tarantula-like toes, it is! Fortunately, it's crewed by "The Rocketeers" – a group of women joined by puppeteer and actor James Ortiz, who plays Rocky.

When I first watched the film I remember thinking, "Wow, Ryan Gosling sure had to riff off a lot of greenscreen". How wrong I was. Incredibly little VFX was used in fulfilling the role of Rocky, who was actually there in the Eridian-flesh all throughout filming.

The Rocketeers were dressed as ninjas trying to stay out of the shots (easier said than done when you have highly reflective Xenonite everywhere). Much of post-production centered around erasing their existence and making sure Rocky never developed anything looking close to a face. Depending on who you ask, Eridians have none, but Rocky has several potential options across his carapace. The Rocketeers figured it would be in Rocky's character to pick up on the fact that Grace sought visual contact when communicating, and so did its best – as Rocky always does – to be helpful.

Puppet number two was a more technical affair. One that could be remotely controlled using an exact replica: everything Rocky 1 was manually shifted to do, Rocky 2 repeated. To visit the workshop was an incredible opportunity to witness the intersection of art, science, cinema, psychology, and sci-fi that goes into creating these remarkable creatures.

And did I swipe any mementos on my way out the door? That's for my lawyers' ears only.

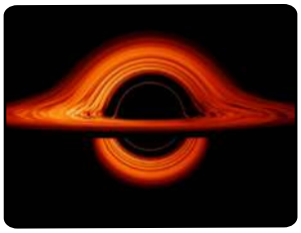
Image Credit: Amazon MGM Studios

DATES TO REMEMBER

2026 MAY

This month, get inspired by icons David Attenborough and Alan Shepard and enjoy some skywatching, including the relatively rare "once in a Blue Moon".

4
STAR WARS DAY
May the fourth be with you.



4-9
BLACK HOLE WEEK
Take a deep dive into everyone's favorite astronomical abysses with NASA's week dedicated to celebrating and educating about these awesome cosmic objects.



5
NATIONAL ASTRONAUT DAY
On May 5, 1961, Alan Shepard became the first American in space. Now that we are space explorers once again, the day is to inspire people to "reach for the stars".

5-6
ETA AQUARIDS PEAK



8
DAVID ATTENBOROUGH'S 100TH BIRTHDAY
Happy centenary, Sir David!



16
NEW MOON



15
ENDANGERED SPECIES DAY



25
NEW WHOS PODCAST EP!
Are there plants that can photosynthesize by moonlight? It's a good question, and who better to ask than the people at the Royal Botanic Gardens, Kew in London, UK.



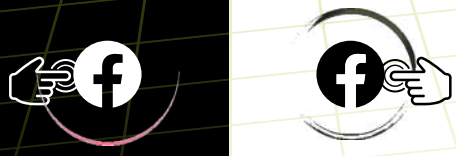
29
NEW BREAK IT DOWN EP!
Head over to our **YouTube channel** to catch up on the latest news and IFLS behind-the-scenes.

31
BLUE MOON
Get a load of this one, we're not getting another until December 31, 2028.

Image Credit Top Left: NASA's Goddard Space Flight Center/Jeremy Schnittman, **Bottom Left:** Sergey Nivens/Shutterstock.com, **Center Left:** lev radin/Shutterstock.com, **Center Right Top:** CameraObscura82/Shutterstock.com, **Center Right Bottom:** Andy Dean Photography/Shutterstock.com, **Top and Bottom Right:** IFLScience

ARE YOU DRAWN TO THE DARKER OR LIGHTER SIDE OF SCIENCE?

Choose how you end each issue. For those who prefer the darker side, Holly Large explores the science behind an ancient grape seed discovered in a grim location. If you like your science lighter, discover how a pair of googly eyes could save your beach day takeaway from seagulls.



EXPLORE YOUR SIDE ON FACEBOOK

MEDIEVAL TOILET WINE

A recent **study** has brought new meaning to the term "toilet wine" after researchers discovered a 600-year-old grape seed in the toilets of what was once a medieval hospital.

The pip was uncovered as part of research into the deep-rooted history of viticulture – the formal term for grape cultivation, usually for the purposes of winemaking – in France, which today stands as one of the largest winemakers in the world.

This search took the research team to the northern French town of Valenciennes. Back in the 15th century, it was home to a hospital named "Hôtel-Dieu", the remains of which were excavated in 2016 to reveal the main hospital building – including a large patient ward with a cesspit attached, and within it, a waterlogged grape seed.

Of course, we don't *really* know how the grape seed ended up in the toilet. Perhaps someone was making some questionable hooch, perhaps someone pooped it out. The latter seems more likely, if what else was found in the cesspit was anything to go by.

"As is typical of latrine contexts, the archaeobotanical assemblage from the cesspits reflects dietary waste, with an abundance of fruit remains," wrote the researchers. "In addition to grape pips, seeds of fig and strawberry were common, alongside those of blackberry, mulberry, medlar, cherry, plum, and peach and stones." No wonder they needed the toilet.

Whether of poop or alcoholic origins, what's really interesting is what the DNA held within the pip can tell us. Genomic analysis of the seed revealed it to be genetically identical to the grapes still used to this day to make the famous Pinot Noir variety of wine.

Not only does this suggest that people have been enjoying a glass of pinot so much that they haven't felt much need to change it for the last 600 years, but also that people have been successfully using a technique called clonal propagation – where new, genetically identical plants are grown from cuttings of the "parent" plant – to keep it that way for all that time too.

Who knew you could learn so much from a toilet?

EYES OFF MY FRIES

Tucking into a hefty portion of fish and chips is an essential part of the British seaside experience, and it should be an enjoyable part too. But alas, seagulls just have to go and ruin it, divebombing towards your dinner and flying off with it before you've even realized what's happening.

Maybe we should just accept our fate and eat our chips indoors. Or maybe, we could put googly eyes on them. That's not just us trying to create a sense of whimsy about the situation – that's the genuine conclusion of a recent **study** from researchers at the University of Exeter who've been busy trying to find ways to reduce human-seagull conflict.

They were working off the basis that eyes appear to play an important role in animal behavior, with many known to respond defensively upon seeing a threatening pair of peepers.

To test out whether that also applied to seagulls, Laura Kelley and colleagues headed to six coastal towns in southwest England during the spring and summer of 2022. There, one of the team located a herring gull *(Larus argentatus)*, and then sat around 5 meters (16.4 feet) away with two types of closed takeaway box: either a plain one, or one with two googly eyes attached to the outside of it.

Once the gull had shown interest, some bread was gently thrown towards it, and the two takeaway boxes were left on the ground around 2 meters (6.6 feet) apart. The team member then walked away, while another started recording what happened next; which of the boxes would the seagull choose?

Around half of the 30 gulls tested consistently avoided the box with the googly eyes, and even over time, didn't seem to catch on to the fact that the eyes weren't really a threat. The other half, however, seemed thoroughly unbothered, quickly approaching either box and giving it a good ol' peck.

It seems to come down to the individual seagull as to whether or not whacking a pair of eyes on your food packaging will make for an effective deterrent – but hey, a chance is a chance. We'll definitely be taking a pack of googly eyes to the beach if it means there's even a slightly possibility of saving our chippy tea.

CURIOUS

IFLSCIENCE

WHAT IS A FOSSIL?

CAN YOU TRAIN ANIMALS TO BE SPIES?

MAY 2026

DO OTHER ANIMALS HAVE PETS?

