

**BBC SPRING SPECIAL ISSUE**

# Wildlife

Spring 2021 | Vol. 39 No. 05

## HEDGEHOG S.O.S.

Why Britain's favourite mammal needs you

**BIRDS' NESTS**

The secrets of construction

**TALKING POINT**

*Should animals be given rights?*

**DEEP-SEA MINING**

*The new threat to ocean ecosystems*



**ST KILDA'S SEABIRD CITY**

Inside Scotland's avian empire

**THE BATS OF MADAGASCAR**

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# A spike in popularity

**B**ack in 2013, *BBC Wildlife* asked readers to vote for which species should become Britain's wildlife icon. It wasn't a close contest – the hedgehog received 42 per cent of the vote, outstripping the badger in second place by almost two votes to one. As our own Ben Hoare put it at the time, "You won't find anyone with a bad word to say about Mrs Tiggy-Winkle."

And yet here we are just eight years later, talking about what we need to do to save this national treasure, which was added to the Red List last summer.

It seems hard to fathom that a mammal we cherish so dearly should be classified as vulnerable to extinction. Find out how to do your bit from p48.

Sticking with garden visitors, this time of a feathered rather than spiked variety, we visit that most mysterious of construction sites this issue, and take a look at how birds build their nests (p41).

As we're starting to enjoy more freedom of movement, there's still so much to fascinate us on our doorsteps.

*Paul*

Paul McGuinness  
**Editor**



Unpick the mysteries of nest building (p41).

Cover: Hedgehog: Alamy; puffin: Annelies Leeuw/Alamy; bat: Joan de la Malla. This page: Terry Andrewartha/FLPA

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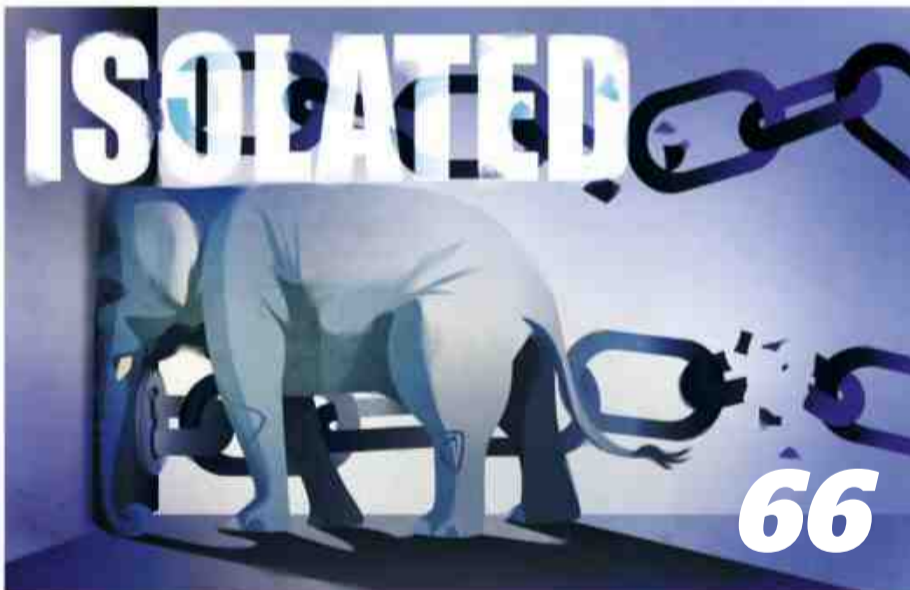
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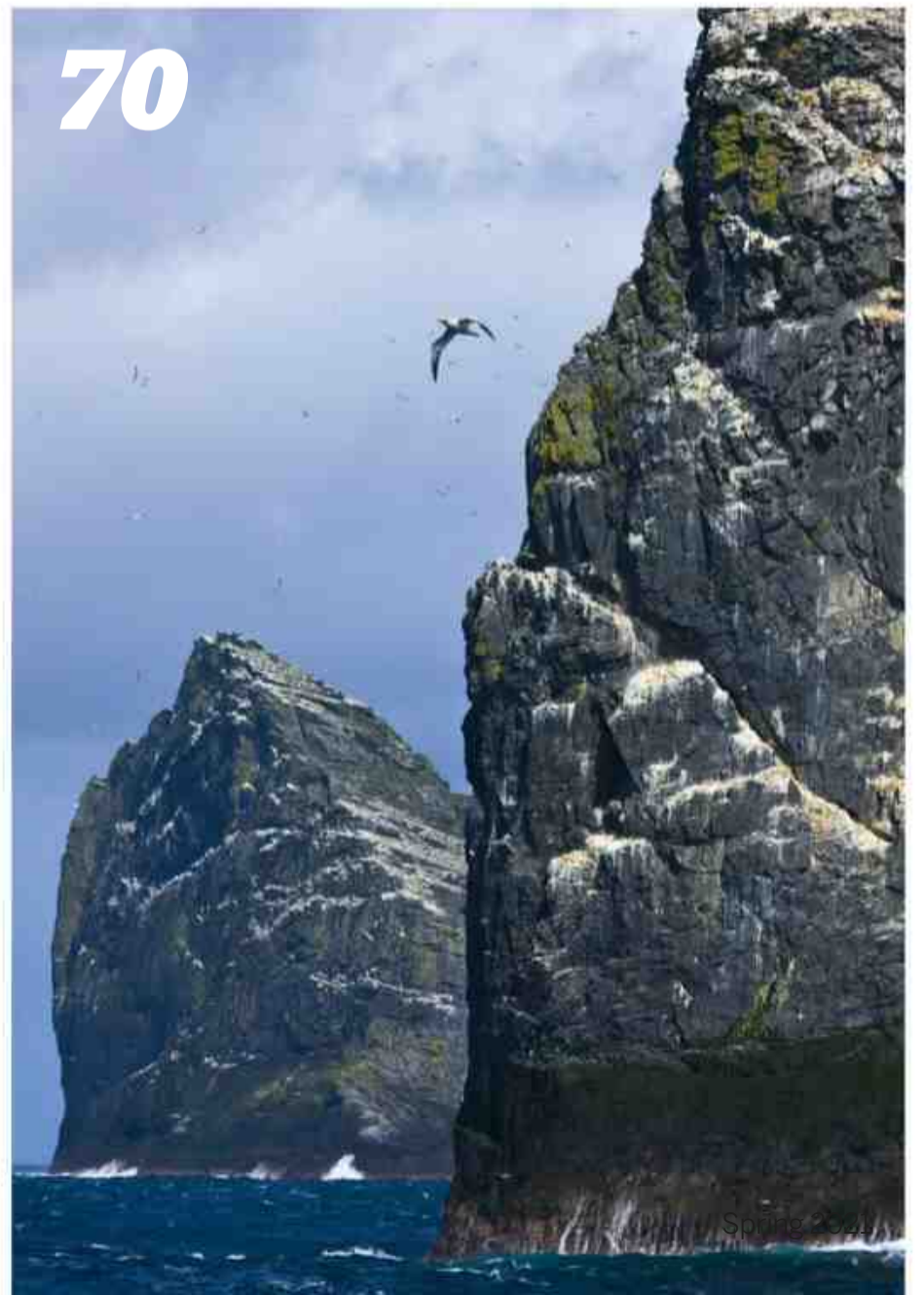
48



66



41



70





12



Spring 2021

IELTS POP

# CONTENTS

## WILD MONTH

- 12 Seven species to spot**  
What to look for in spring
- 17 Nick Baker's hidden Britain**  
Meet the Cornish sucker fish
- 18 Mike Dilger's wildlife watching**  
Discover poppies, plovers, brown hares and more on Britain's shingle beaches
- 22 News**  
How humans are spreading disease to other great apes
- 26 Truth or fiction?**  
Is it safe to airlift a rhino?
- 27 Mark Carwardine**  
The conservationist discusses Jair Bolsonaro's actions in the Amazon
- 28 Meet the scientist**  
Lauriane Suyin Chalmin-Pui reveals why gardening is the key to well-being

## FEATURES

- 32 Deep-sea mining** COVER STORY  
Our quest for mineral resources could have negative impacts on all manner of marine life
- 41 Birds' nests** COVER STORY  
How avian species build their homes and why their choice of materials makes a big difference
- 48 Hedgehog S.O.S.** COVER STORY  
What does the future hold for Britain's favourite animal and what can you do to help the species?
- 58 Photo story: The bats of Madagascar** COVER STORY  
Discover why attitudes towards these winged mammals are changing among Madagascan communities

### 66 **Should animals be given rights?**

COVER STORY Do our current laws go far enough to protect animals?

### 70 **St Kilda's seabird city** COVER STORY

The Scottish archipelago abandoned by humans and teeming with auks

## OUR WILD WORLD

- 82 At home**  
Natural history TV, books and more
- 86 Your photos**
- 89 Puzzles**
- 90 Feedback**  
Your letters and Tales from the Bush

## REGULARS

- 6 In focus**  
Péringuey's adder, Hanuman langur, blue crab and lemon shark
- 76 Q&A**  
Do other animals gamble?
- 98 Wildlife champion**  
Writer and TV presenter Sarah Raven shares her love for grass-of-Parnassus

17



## The people behind our stories



**HELEN SCALES**

The marine biologist shines a light on the creatures that could be impacted by deep-sea mining. "Delayed by the pandemic, plans for deep-sea mines are likely to go ahead in 2021," Helen says. See p32



**HUGH WARWICK**

Want to know how to help vulnerable hedgehogs? Ecologist Hugh takes a closer look at current conservation efforts. "Most people love hedgehogs and want to help – they just need a gentle nudge in the right direction," he says. See p48



**NOËL SWEENEY**

Animals are living beings that are legally classed as 'things'. Barrister Noël asks if it's time that changed. "The fight for animal rights is the last moral crusade of the 21st century," he says. See p66



**SARAH RAVEN**

The writer and all-round gardening guru tells us why grass-of-Parnassus is a particular favourite of hers. "It is like a burst of light and beauty just where you wouldn't quite expect it," she says. See p98

Hedgehog: Patrick Smitzer/Getty; elephant: iustrat on by Eric Smith; great t: Pau Sawyer/FLPA; st: k: da: W. d Wonders of Europe/Muñoz/NPL; large white butterfly: Laurie Campbell; Cornish clingfish illustration by Peter David Scott/The Art Agency; Sarah Raven: Jonathan Buckley



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## IN FOCUS | *On the move*

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Found only in the Namib desert, which sweeps along the coast of Namibia and into southern Angola, Péringuey's adder is a specialist of shifting sands. As it travels up the dunes, the reptile propels itself using sidewinding motion, leaving a distinctive trail of successive 'ticks' in its wake. Sidewinding requires just small portions of the snake to connect with the ground – the rest of the body lifts up and moves laterally. This helps the adder avoid slipping backwards on the ever-moving terrain and means it is less likely to overheat, as contact with the red-hot sand is limited. It's a clever adaptation for coping with life on the go in the desert.

Heinrich van den Berg



**IELTS POP**







A close-up photograph of a monkey's hand, with long, thin fingers, resting on its chest. The hand is dark brown and appears to be touching or scratching its own fur. The fur is a mix of light brown and greyish tones, with some darker patches. The background is dark and out of focus.

## IN FOCUS | *Sacred simian*

Clinging to its mother, at just a few days old, this newborn southern plains grey langur won't be fully independent for another two years. Found in India, the species is also known as the Hanuman langur, named after the Hindu monkey god, and is considered sacred. Troops typically consist of a dominant male and several females, who share the responsibility of looking after infants. At 13 months old, the youngsters will be weaned and will spend considerably less time with their mothers. While juvenile males will ultimately have to disperse, females will stay with their natal groups into adulthood.







## IN FOCUS | *Feeling the pinch*

While the idea of swimming with sharks may not appeal to those unnerved by films such as *Jaws* and *The Meg*, these predators don't deserve the bad reputation that Hollywood has assigned to them. When photographer Shane Gross set out to get some snaps of lemon shark pups in The Bahamas, his chosen subjects were the least of his worries. It was, in fact, the blue crabs, a main component in the pups' diet, that gave the photographer grief: "They snuck up on me and they have a tendency to pinch!" Shane says. Just when you thought it was safe to go back in the water...

Shane Gross/naturepl.com









# WILD MONTH

As spring casts its rousing warmth across the country, get ready for your wildlife sightings to soar.

By Ben Hoare

## 1 | GOLDEN EAGLE

### Flying high

Fine spring days are at a premium in the Scottish Highlands and islands, but offer one of the best chances of seeing golden eagles. These magnificent raptors, with a head and nape the colour of single-malt, may be glimpsed cresting peaks and gliding along ridgelines, oozing confidence from every primary feather. As the poet Kathleen Jamie notes in her 2019 book *Surfacing*, eagles have a unique presence on the wing: “What marks them out is the way they treat the air: as a resource, a birthright, theirs in never-ending abundance.”

By April, mated females will be hunkered down on a pair of eggs at the eyrie, a commanding rocky ledge sometimes used by generations of eagles. But their mates

will be patrolling the territory and hunting for two, so more visible than usual. If you're lucky, you might see a male 'sky dance'. The rollercoaster series of dives and climbs is part courtship but mostly a signal to other eagles that this area is taken.

Today, Scotland has about 500 breeding pairs and, were it not for persecution, could support rather more. A reintroduction project underway in Dumfries and Galloway might be the first of several that will help these phenomenal birds reclaim their former haunts.

#### FIND OUT MORE

Reintroducing golden eagles:  
[goldeneaglessouthofscotland.co.uk](http://goldeneaglessouthofscotland.co.uk)

Laurie Campbell

ONLINE

SUPER-POWERED EAGLES

Video on BBC Earth's YouTube channel.



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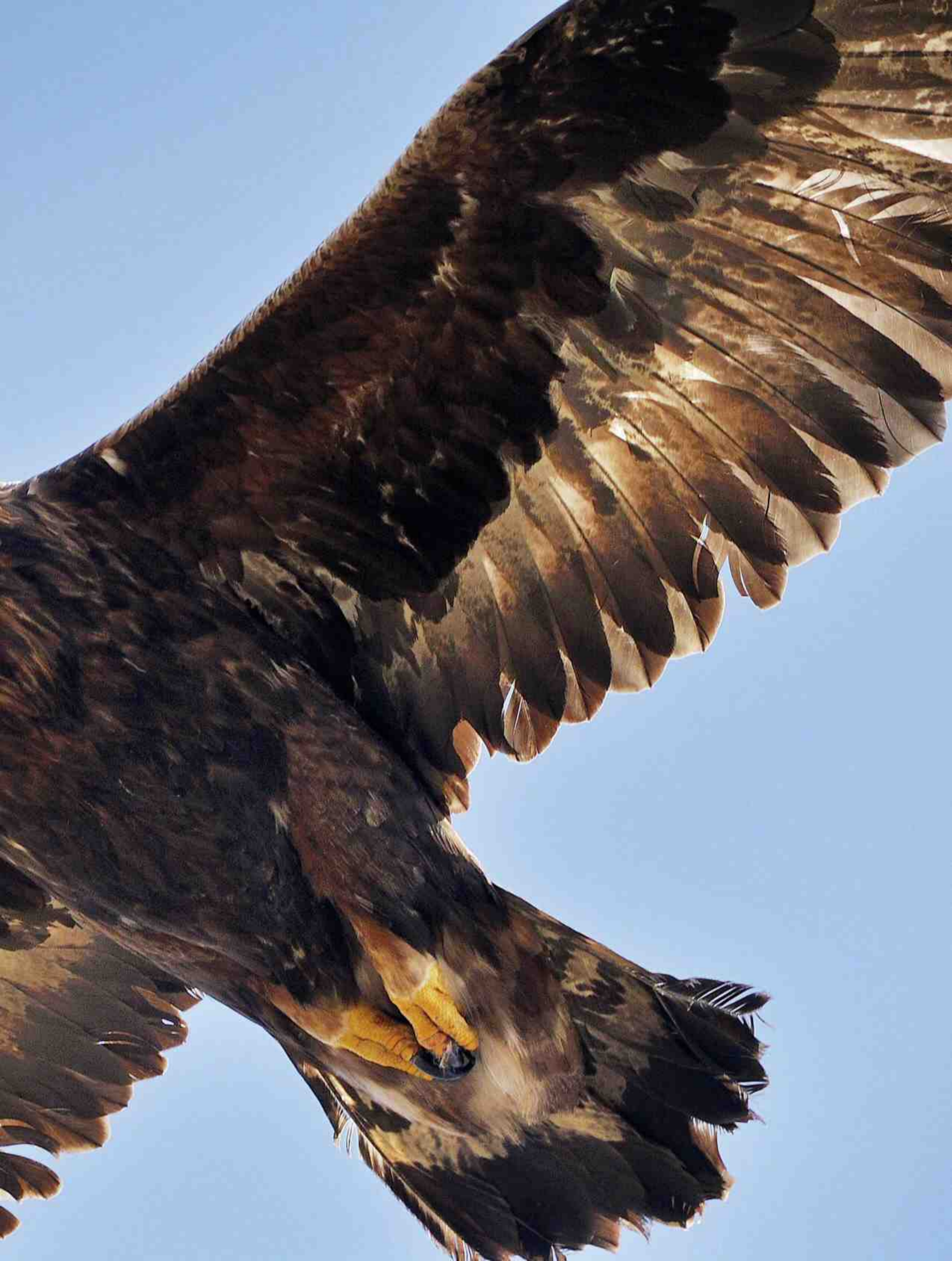
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## 2 | EARLY BUMBLEBEE

### Bumbling about

This common little bumblebee – the smallest species in the British Isles – does what it says on the tin. It not only emerges early, but also starts nesting early. At first, you see only queens, then only female workers, and finally, from mid-April, you start seeing males, too. All have distinctive orange tails, while the males also have a lemon-yellow ‘cummerbund’ across the abdomen and luxuriant yellow facial hair. In *Dancing with Bees*, Brigit Strawbridge Howard observes that males are “small, rotund and kind of scruffy”, compared to females, yet “ridiculously cute”.

**FIND OUT MORE** Our guide to spring bees: [discoverwildlife.com/spring-bees](https://discoverwildlife.com/spring-bees)



Bee: Genevieve Leaper; butterfly: Laurie Campbell; bumblebee: s: Drew Buckley



## 3 | LARGE WHITE

### Solar shields

April and May 2020 were the UK’s sunniest on record, leading to nearly all our butterflies emerging early. Was this a one-off, or part of a trend? Butterfly enthusiasts are eager to find out.

One species that broke records in 2020 was the large, or ‘cabbage’, white. It has two broods: the first traditionally on the wing in April and May, the other in midsummer. New research has shown that big, pale butterflies are better at protecting themselves from high temperatures, by using their wings as solar shields to reflect heat.

**FIND OUT MORE** British butterflies: [ukbutterflies.co.uk](https://ukbutterflies.co.uk) and [butterfly-conservation.org](https://butterfly-conservation.org)



## 4 | BLUEBELL

**Seas of blue**

Many wildflowers are now blooming earlier, and the first flowering of bluebells has advanced by at least 17 days since 2001, according to data from the Nature's Calendar survey. Shimmering seas of bluebells are associated with ancient woodland, especially if the soil is damp and rich, though they also grow along hedges and even on open hillsides. One of the most spectacular displays is on the island of Skomer, off West Wales. The sweet-scented flowers are best appreciated on bright but overcast days – take care not to stray from paths and trample them.

**GET INVOLVED** Join the survey: [naturescalendar.woodlandtrust.org.uk](https://naturescalendar.woodlandtrust.org.uk). Plus, discover amazing bluebell locations: [discoverwildlife.com/find-bluebells](https://discoverwildlife.com/find-bluebells)





5 | BLACKCAP

## Powerful performer

Spring's dawn chorus is not to be missed – the volume and variety of birds singing is so intense and uplifting. Simon Barnes, in his book *Rewild Yourself*, reckons it is the “single biggest wildlife miracle that we have in Britain”.

Aim to be in place by 5am – a woodland or park is ideal, but every habitat has a dawn chorus. Among the multitude of robins, wrens, thrushes and tits, one abundant warbler you are almost bound to hear is the blackcap, whose song is so sweet and sustained that it is often mistaken for a nightingale.

### GET INVOLVED

Set the alarm for International Dawn Chorus Day on 2 May: [wildlifetrusts.org/dawn-chorus-day](http://wildlifetrusts.org/dawn-chorus-day)



6 | CUCKOOFLOWER

## Pretty in pink

With spring's return, thousands of volunteers across the UK have begun collecting data on their local wildflowers, as part of the National Plant Monitoring Scheme (NPMS) run by Plantlife and several partners. This habitat-based survey involves searching for a selection of classic ‘indicator species’.

In damp grassland and meadows, cuckooflower, or lady's smock, is one of the species people will be looking for. It's a beautiful, delicate plant, with pale-pink flowers on top of a spindly stem. Two common butterflies lay their eggs on it: the green-veined white and orange-tip.

**GET INVOLVED** Find more about the scheme at [npms.org.uk](http://npms.org.uk)

7 | BROOK LAMPREY

## Primitive life

In his memoir *A Curious Boy*, palaeontologist Richard Fortey calls the brook lamprey “a fugitive from deep time”. It's an apt description, because this weird and wonderful creature is one of the most primitive types of vertebrate alive today.

The proto-fish is silvery and eel-like, with a body slightly thicker than a human index finger, though its strange, sucker-like mouth is hard to see in the wild. Look for its sinuous form in clear, gravelly streams or ditches. In spring, groups of adults can sometimes be seen spawning in writhing groups.

### FIND OUT MORE

More about fresh waters: [freshwaterhabitats.org.uk](http://freshwaterhabitats.org.uk)



Blackcap: David Tipling; cuckooflower: Drew Buckley; lamprey: Jack Perks



# Hidden BRITAIN

**D**raw back a curtain of bladderwrack, and you may reveal a fish that looks like it was designed by Dr Seuss. This cartoonish blob doesn't look or behave like any other fish I know. Deep purple blotches, a red tail fin, yellow lips and electric turquoise spots usually convince the finder that it is something special, but there's more to the Cornish sucker (or Cornish clingfish, *Lepadogaster purpurea*) than meets the eye.

This fish has to be one of my favourite UK weirdos and, as ever, when an animal looks so peculiar, it has a good ecological backstory. Clearly, it's designed for something other than free swimming – more for creeping about on the bottom or over rocks. Here, it feeds on any small creature it can find, from snails to crustaceans.

The sucker fish has a strange flattened profile that is rather tadpole-shaped, with an almost duck-shaped head. There are no scales, just slimy smooth skin, and it lacks a dorsal fin. In fact, other than the tail, none of the usual 'finny' protuberances are obvious in this species.

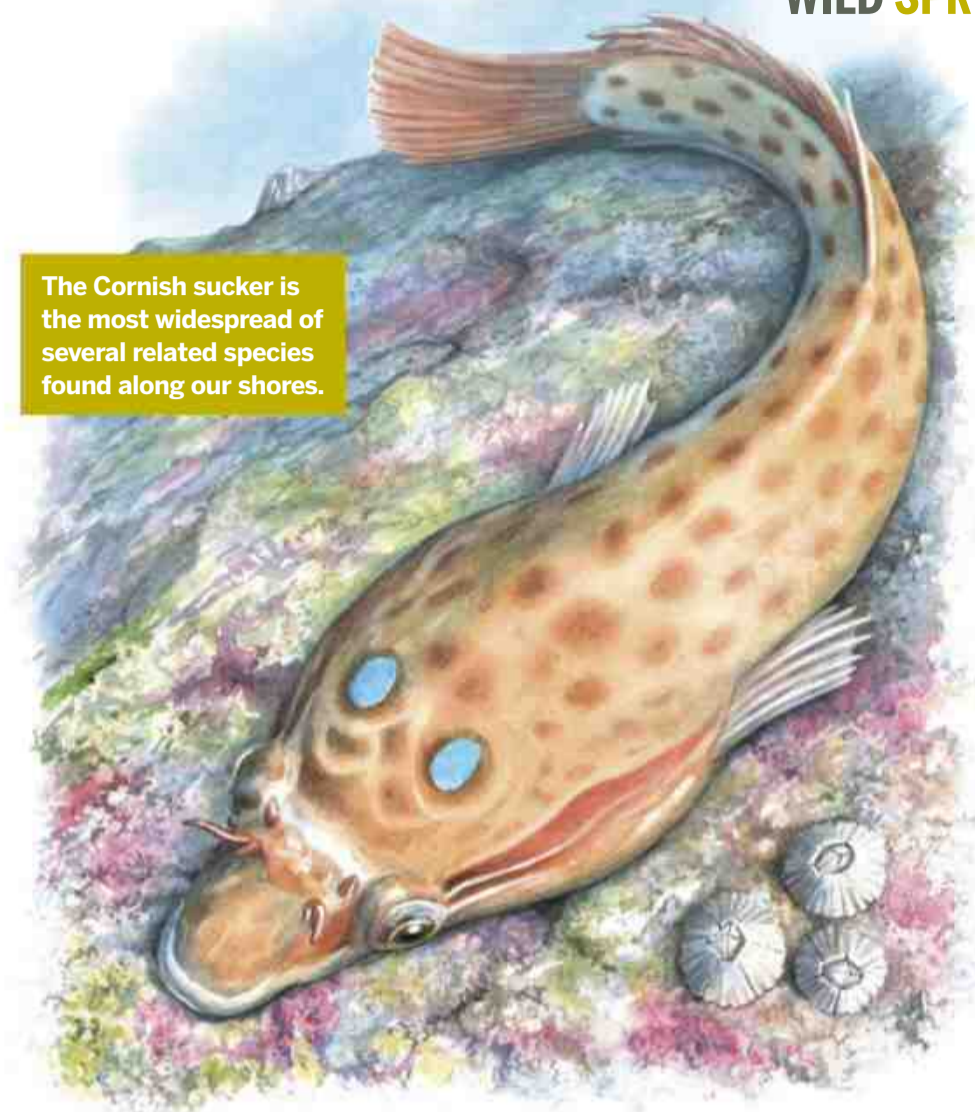


## NICK BAKER

Reveals a fascinating world of wildlife that we often overlook.

## CORNISH SUCKER

The Cornish sucker is the most widespread of several related species found along our shores.



This fish is found mainly along rocky shores in the south and south-west, sticking to the intertidal zone – a harsh place to make a living. Here, the species is exposed by receding tides twice a day and, when submerged, frequently takes a violent beating from the swirling waves. It must be like living in a washing machine on a particularly high spin cycle.

When rockpooling, you'll find that this fish is both slippery and sticky. You will struggle to get it out of a crevice or off a rock or weed, only to find it sticking to your hands like chewing gum. If you were to place one into an observation tank, it's likely to obligingly attach itself to the tank's transparent side. Then you'd get to see the magic in action – the sucker that gives this fish its name.

On the fish's underside, the paired pectoral and pelvic fins don't look like fins, but have become fused into a continuous disc. For those of us who've been frustrated with the sucker discs used to attach mirrors, sat-navs or bird feeders to perfectly smooth windows or bathroom tiles, this achievement is miraculous.

What the clingfish is able to do in a glass tank, it can do just as well on uneven, pitted rocks.

A sucker is quite a simple device. It creates a seal, then produces a negative pressure by expanding the volume of the sucker cavity (the fish does this with muscular contractions). This only works as long as the friction seal between the disc's edges and the surface remains intact. Suckers fail when the edge slips, the seal breaks and water from outside gets in.

The sucker works on any surface due to the disc's microscopic structure. The whole organ is flexible, and its rim is effectively a fin under the muscular control of the fish. Close scrutiny reveals the surface of the sucker edge is made of hexagonal knobs, each covered with microscopic hairs. These find and fill the tiniest imperfections in the surface of the rock, creating the frictional force that holds the disc edge firmly in place.

If you remove one of these fish from the water, in order to take a closer look, make sure you put it back exactly where you found it – especially from spring to summer, during the species' breeding season. 🐾

**NICK BAKER** is a naturalist, author and TV presenter.

### DID YOU KNOW?

A Cornish sucker's sucker can support more than 300 times the weight of the fish.

## STICKING TOGETHER

Nature-inspired innovations that really suck.

Engineers have investigated the design of the sucker fish disc, and are imitating it to create 'super suckers' that can do what our simple plastic or rubber suckers have until now struggled to achieve.

There could be many uses for this technology,



from sticking a shower caddy to wet bathroom tiles (with no risk of it failing, even when straddling a grout line) to attaching sensors to the skin of whales.

Perhaps most remarkably, the super suckers may be strong enough to enable a human to scale a cliff face.





## MIKE DILGER'S WILDLIFE WATCHING

### ON SHINGLE BEACHES

In his series of great places to watch wildlife in the UK, the star of BBC One's *The One Show* this month heads to our pebble-strewn shores to spot the species that thrive on shingle beaches.

Despite being tricky to walk on and nigh-on impossible to build a sandcastle from, shingle beaches are nevertheless a treasured and familiar part of the UK's coast. On the worldwide stage, this habitat is also surprisingly rare. Away from the 'shingle stronghold' of north-west Europe, Japan and New Zealand are the only countries with large numbers of shingle beaches.

Ecologists classify shingle beach as being composed of deposited sediment ranging from 2mm to 200mm. This definition puts about 30 per cent of the UK's coastline within this category. However, a significant proportion is composed of little more than simple fringing beaches within reach of powerful storm waves.

At these sites, the constantly moving shingle means that colonising vegetation is unable to gain a foothold, ultimately resulting in a habitat of minimal interest to naturalists. It is generally only along the more extensive stretches – where perennial plants have begun stabilising the shingle – that the specialised invertebrates, birds and mammals so characteristic of this habitat are able to settle.

The most important shingle structures often take the form of spits, barriers or barrier islands, and tend to be produced by a process called 'longshore drift'. This phenomenon, so beloved of A Level Geography students, occurs when waves approach the coastline from

an angle, causing the movement of shingle in the same direction up the beach. As the retreating waves then carry the shingle back seawards, via the shortest route, this zig-zagging effect sees the incremental drift of material in one particular direction, leading to a small number of select sites accumulating vast banks of shingle.

#### On the seashore

The origin of this coastal shingle also varies according to the beach's location. Certainly, in southern England, much of the shingle is composed of flint eroded from chalk cliffs. In northern and western Britain, shingle may have originated from deposits transported to the coast, either by rivers or as a result of glacial outwash.







**Clockwise from top left:** a colony of grey seals hauled out on shingle; a ringed plover picks its way over pebbles; Anglesea's Cemlyn Bay; little terns incubate their eggs on the beach; surprisingly, the brown hare is found increasingly near the shore; the golden glow of the yellow-horned poppy can be found along shingle banks.



The best shingle beaches for wildlife tend to have a distinct profile, with a seaward-facing beach often steeply rising to a ridge crest, which invariably drops off down a landward-facing 'back-slope'. The section closest to the sea is the most inhospitable environment, but even here, just beyond the highest tides, pioneer plants such as sea kale and yellow-horned poppy will soon proliferate, given the chance.

This broken terrain, consisting of clumps of hardy, drought-tolerant plants, is also frequently the strip used by coastal birds such as little tern, ringed plover and oystercatcher to hide their camouflaged clutches out in plain sight. On top of the ridge, and where soil is able to slowly accumulate, the vegetation is ▶

© cckw/se from top left; Martin Brown/Alamy; Alan Watts/naturepic.com; Photo Smith/Alamy; Getty; Amy Lewis; David Osborn/Alamy



characterised by a slightly different suite of halophytic (or salt-tolerant) plants, such as sea mayweed, sea campion and thrift. And finally, as the back-slope is usually more protected from the sea and the prevailing winds, a less specialised but generally more diverse vegetation begins to hold sway. Brackish lagoons are a common feature.

Unsurprisingly, the main threats to this specialised habitat come from humans,

**Historically, the main damage to this habitat came from extraction of shingle to use in sea defences elsewhere.**

as feet and vehicles are capable of easily damaging the stabilising vegetation, while also causing disturbance during the birds' breeding season. It is therefore important to keep to any designated footpaths and steer clear of cordoned-off areas throughout spring and summer.

Historically, the main damage to this habitat came from extraction of shingle to use in sea defences elsewhere, or as aggregate for the building industry. Today, we know more about the importance of vegetated shingle for rare and localised species – the real worry now is climate change. With sea levels projected to rise and storms increasing, this could see our shingle barricades battered or breached, as this most dynamic of habitats becomes a little too dynamic for comfort. 🐾

## SPECIES TO LOOK OUT FOR

### Ringed plover

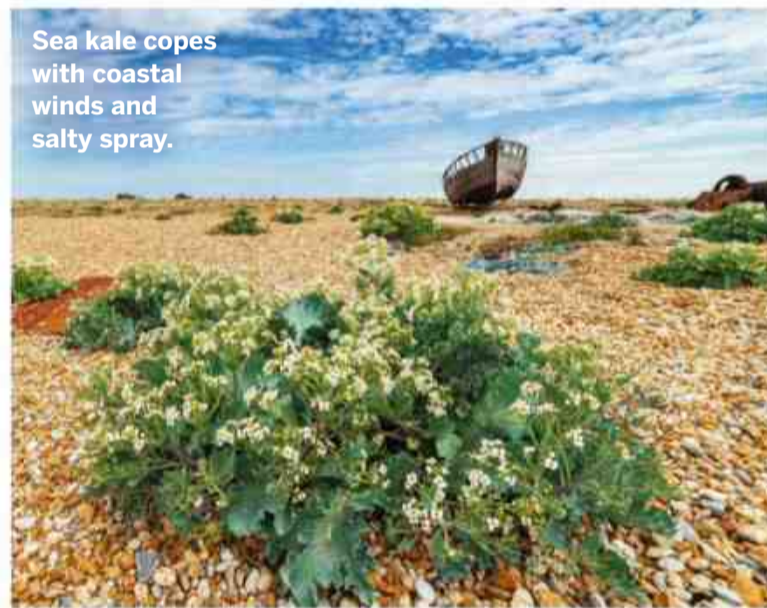
The ringed plover is a diminutive, sandy-brown wader, with a white chest, black breast-band, and dinky orange-and-black bill. It could only be confused with the little ringed plover, its inland cousin. It nests on seashores, often among shingle. In April, it lays three or four eggs that are well camouflaged. There may be two more clutches over the summer.

### Yellow-horned poppy

This is a showy and conspicuous plant of shingle banks, with silvery-grey, fleshy leaves and golden-yellow flowers that appear in late spring. Once the flowers fade, they are replaced by long, slender curling seed pods. These can grow up to 30cm long – the longest of any British plant.

### Sea kale

This is the UK's only white member of the crucifer family with big, cabbage-like leaves. It always



Sea kale copes with coastal winds and salty spray.

forms large, tight clumps, which look like outsized cauliflowers when well established. The culinary delights of the fleshy, blue-green leaves are also well known.

### Little tern

Our smallest tern, with a white forehead and bright yellow bill, is a species that will spend its entire life out at sea, when not breeding on shingle beaches at a few choice locations. Little tern colonies are sensitive to disturbance, with pressure from tourists, dog-walkers and

development blamed for what appears to be a declining population.

### Brown hare

The hare prefers a life above ground, in contrast to the largely subterranean rabbit. The hare's longer legs and black-tipped ears should easily distinguish it from its cousin. With lowland farms increasingly becoming less suitable, vegetated shingle ridges have become a surprise habitat hit for the species, which is thought to have been first introduced to Britain by the Romans.

## CHOICE LOCATIONS



**1 Spey Bay** on the Moray Firth and Culbin Bar, just to the west, are the two largest stretches of shingle in Scotland. Look out for the rare Scots lovage growing in the shingle, and bottlenose dolphins just offshore.

**2 Blakeney Point** is a spit of shingle and sand dunes that extends over 6km along the North Norfolk coast. It is home to a thriving grey seal colony and one of the largest little tern colonies in Britain.

**3 Orford Ness** on the Suffolk coast is around 16km long, making it Europe's largest vegetated shingle spit. Previously used by the military for conducting secret tests, it is also one of the best places in Britain to see brown hares.

**4 Dungeness** is an RSPB reserve on the Kent coast that includes huge expanses of shingle. It is of international importance for its geology and unique plant and invertebrate communities.

**5 Cemlyn Bay** on Anglesey's north coast is managed by the North Wales Wildlife Trust. The shingle ridge supports a wide range of shingle plants and also separates the bay from a large tern colony in the lagoon behind.



**Don't go without taking good, sturdy footwear – striding across mobile shingle can be tough going, when compared to a sandy beach.**





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## PRIMATES

# Gorillas in the midst of a pandemic

Close encounters with tourists may be exposing great apes to COVID-19.

**N**ew research shows that encounters between tourists and wild mountain gorillas are close enough to risk the transmission of infectious diseases – including COVID-19.

The current pandemic hadn't hit when Magdalena Svensson and colleagues from Oxford Brookes University started monitoring photographs of wild gorilla encounters on social media. Their aim was to gauge how well tourists adhere to guidelines designed to minimise the risk of infecting the apes with human diseases.

The team found that in only 3 per cent of 858 photographed interactions was the recommended 7m distancing respected. It was discovered that 86 per cent of photos showed people approaching within 4m of the great apes, and there were 25 instances of physical contact. Face masks, which are also encouraged, were worn in 65 per cent of encounters.

Disease can be spread from humans to other great apes. Below: some tourists get too close for comfort.



But early last year, the research took on extra significance. "When COVID-19 hit, we were in the middle of writing it up," Svensson explains.

It emerged that non-human primates are also susceptible to coronavirus. Indeed, macaques have been used by scientists to investigate immune responses to infection. Then, in January, it was announced that gorillas in San Diego Zoo had tested positive for COVID-19. Some showed mild symptoms, and all have now recovered. But Svensson points out that this was with the benefit of veterinary care.

"We know too little about how it affects primates, especially wild ones – it's not worth risking it," says Svensson. "We have just over 1,000 mountain gorillas left."

"We do know that respiratory illness is a leading cause of morbidity and mortality in mountain gorillas, after trauma," says Kirsten Gilardi, chief veterinary officer at Gorilla Doctors, based at the University of California, Davis. "In some cases we have determined that the initial infection was a human virus that led to a secondary bacterial pneumonia."

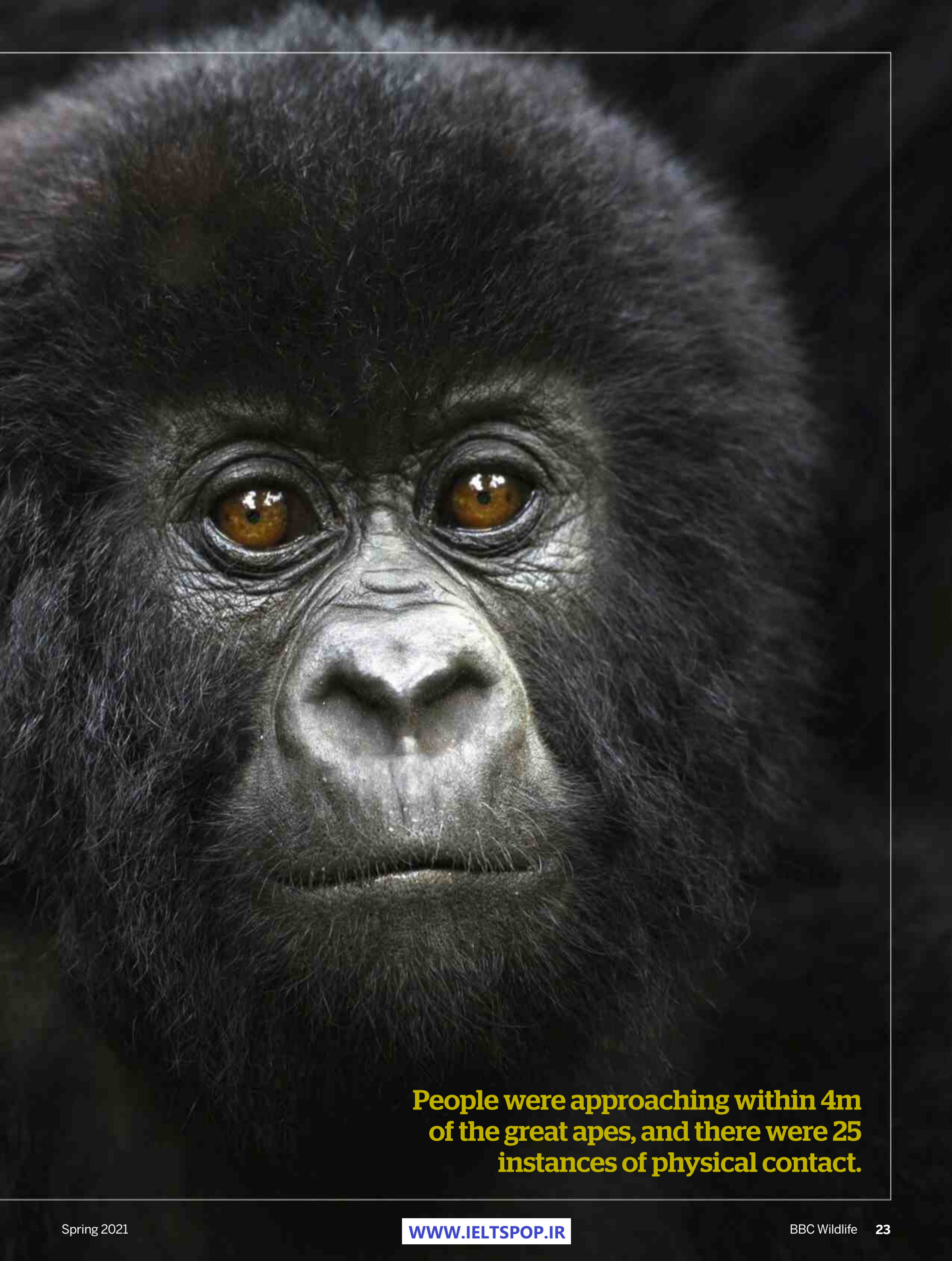
Gladys Kalema-Zikusoka, CEO of Conservation Through Public Health in Uganda, goes further. "A majority of the infections that have caused mortality in gorillas come from people," she says.

In this respect, says Svensson, COVID-19 presents an opportunity to reassess the risks of transmission of all infections. Stuart Blackman

### FIND OUT MORE

People and Nature:  
[bit.ly/3t9AcDo](https://bit.ly/3t9AcDo)





**People were approaching within 4m of the great apes, and there were 25 instances of physical contact.**



## CONSERVATION

# Theme park could go ahead despite site's protected status

Swanscombe peninsula is designated as an SSSI but campaigners fear it is not enough to save the wildlife haven from proposed development.

**A**n area of wetlands and grassland described by the Government as “abundant in wildlife and with huge benefits for people” is still not safe from being turned into a theme park, despite being recognised as a Site of Special Scientific Interest (SSSI), campaigners are warning.

Natural England announced in March that 250ha of the Swanscombe Peninsula, near Gravesend in Kent, had been designated as an SSSI because of its rare invertebrates.

These include more than 200 species considered as being of conservation importance, most notably the distinguished jumping spider – only found in two places in the UK. The peninsula is also home to breeding marsh harriers and bearded tits as well as rare plants.

But a coalition of wildlife groups – Buglife, the RSPB and Kent

Wildlife Trust – says this diversity and richness of wildlife does not guarantee the site's future.

That's because a planned development, The London Resort – which calls itself a “sustainable, next generation entertainment resort” – has been deemed a Nationally Significant Infrastructure Project (NSIP), the wildlife groups say, allowing the application to “bypass the normal planning process”.

Buglife chief executive Matt Shardlow said it was ridiculous that the Government was treating a proposed “funfair” as if it were nationally important.

“The ministerial power that can turn a commercial project into a fast-tracked NSIP on a whim is a massive loophole in the legislation, abuses democratic principles and is an invitation to corruption,” he added.

The London Resort issued a statement saying it has shown how the development will deliver a net gain in biodiversity and its commitment to managing and enhancing habitats.

“We are the ones who have found and identified every species,” the statement said. “We have shared our reports and we are working closely with Natural England to identify the right ecological solutions to deliver this grand project.”

Natural England said SSSI designation “enables the special interest of the features to be considered in decisions regarding future development”, and would not stop any development from taking place. **James Fair**

**FIND OUT MORE** Rationale for the SSSI designation: [bit.ly/3vuk6X1](https://bit.ly/3vuk6X1)



Swanscombe peninsula is a haven for the reed bunting (left) and the distinguished jumping spider (top left), among many other species.



Common cranes are making a comeback.



## UK WILDLIFE

# Cranes becoming more common

**R**ecord numbers of common cranes bred in the UK last year, with 64 pairs producing 23 chicks. Seven of these pairs were in north-east Scotland, where cranes have only recently recolonised. Crane experts are now suggesting that significant further expansion could be imminent.

Hunting and wetland drainage drove common cranes to British extinction in the 1500s. They returned to England in 1979, and the population has grown

slowly for much of the time since then. Most pairs are in East Anglia, the Somerset Levels and Gloucestershire, with records in Wales but no breeding yet confirmed there. Expansion has now accelerated, boosted by releases of hand-reared birds. More chicks have fledged since 2015 than in all previous recolonisation years combined.

Cranes first bred in Scotland in 2012, and though COVID-19 restrictions hampered survey

work there in 2020, reports from local people and farmers helped to create a picture of what happened. This included pairs nesting on peatland recently restored through partnership work by RSPB Scotland, NatureScot and others.

“Restoring more of these key areas would bring myriad benefits,” says Hywel Maggs, RSPB Scotland’s senior conservation officer, “and could ultimately lead to many more of these elegant birds gracing Scotland’s skies.” Kenny Taylor

### FIND OUT MORE

The Great Crane Project: [bit.ly/2PPoBv8](https://bit.ly/2PPoBv8)

## NEW SPECIES DISCOVERY

# *Stegonotus aplini*

**WHAT IS IT?** If snakes were hot drinks, *Stegonotus aplini* would be a latte macchiato. It’s the seamless transition from milk-white to coffee-brown along its length that sets this serpent apart from its closest relatives, which tend to be a uniform shade of grey or brown.

**WHERE IS IT?** In the region of southern Papua New Guinea where *S. aplini* hunts on forest floors at night, local people are highly fearful of the species – even though it is apparently harmless to humans. Perhaps this is because of its superficial resemblance to a more distantly related, venomous snake that also occurs in the region.

**Stuart Blackman**



*S. aplini*: a snake of two halves.

### FIND OUT MORE

Zootaxa: [bit.ly/314kjeF](https://bit.ly/314kjeF)

## IN NUMBERS

# 180 years

after the last sighting, a black-browed babbler bird has been found in Bornean rainforests.

# 70-year-old

Laysan albatross ‘Wisdom’, the world’s oldest known wild bird, has hatched a chick at a refuge in the North Pacific Ocean. It is thought she’s had at least 30–36 chicks in her lifetime.

# 50+

nature organisations are calling for the prime minister’s commitment to reverse nature’s decline by 2030 to be made legally binding.





CONSERVATION

## Norway's star wolf moved for safety

Norway's most famous wolf has been captured and moved south with a female companion to protect him from licensed killing. Known as the Elgå wolf, after an area north-east of Lillehammer where he once roamed, he is believed to carry more genes from the large Finnish-Russian wolf population than any of the other 90 or so wolves in Norway. This makes him valuable for reducing inbreeding, according to the country's Ministry of Climate and Environment.

A previous attempt to relocate the Elgå wolf (first seen in 2019 and now thought to be four or five years old) failed when he homed quickly to his old haunts.

Now he and his mate have been taken – by helicopter and car – to a semi-rural area south of Oslo and closer to the border with Sweden.

The move has been welcomed by farmers in the area where the wolves were captured, but it has been criticised by others in the wolves' new home, with concerns raised in the Norwegian parliament about perceived risks to livestock and people.

At the same time as the pair was transported south, other wolves were being hunted and shot in areas outside Norway's 'wolf zone'. Kenny Taylor

**FIND OUT MORE**

International Wolf Center: [bit.ly/3qBa82x](https://bit.ly/3qBa82x)

The grey wolf is often a source of controversy across its European range.

## TRUTH OR FICTION?

### It's perfectly safe to airlift a rhinoceros

*Flying rhinos upside-down looks ungainly but is it harmful, too? New research set out to find the answer.*

IN SOUTHERN AFRICA, white and black rhinos are often translocated to avoid inbreeding or overpopulation of an area. Previously, rhinos were moved, fully awake, in crates or on pallets, but there were problems, including the possibility of injury to the huge herbivores. When lifted by helicopter, the crates also had a tendency to swing around dangerously.

Over the past 15 years, the preferred technique has been to dart rhinos with anaesthetic from the air, then blindfold the immobilised pachyderms and airlift them in a giant sling, suspended by their ankles. After a short flight, the animals are transferred to a truck. Now a new study in Namibia, published in the *Journal of Wildlife Diseases*, has for the first time examined the risks involved.

The researchers compared the breathing and circulation of sedated rhinos lying on their side and hanging upside-down. They were surprised to find that the latter position improved the animals' ventilation, so was marginally better. More research is needed, because the study only considered brief periods of sedation. But, for now, it seems that, while every anaesthetic carries a certain amount of risk, flying upside-down is the best translocation method available – at least for quick flights of 10–15 minutes.

**Ben Hoare**



Up and away: this could be the best way to move rhinos.



**WANT TO COMMENT?** Email [wildlifeletters@immediate.co.uk](mailto:wildlifeletters@immediate.co.uk)



MY WAY OF THINKING

## MARK CARWARDINE

The conservationist discusses Jair Bolsonaro's actions concerning the Amazon rainforest and invites your thoughts on the subject.

It's shocking to realise that, no matter how many campaigns are fought, treaties signed or protected areas established, the future of life on Earth rests, to a large extent, with a handful of irresponsible, irrational and ignorant individuals.

Environmental decisions that are critical to the entire planet are made on a whim. Donald Trump did it for climate change (just for starters) and now Brazil's President Jair Bolsonaro is doing it for the Amazon rainforest.

The Amazon is home to the largest rainforest on Earth. Covering 40 per cent of the South American continent, it spans no fewer than eight countries (nine, if you include French Guiana, a department of France). The most species-rich biome on Earth – with one in ten of all known species – it's also a critical carbon storehouse.

Yet this life-support machine has been plundered and destroyed for decades. Clearing to make room for cattle and crops, logging for timber and paper, mining, dam construction, road building and urban expansion are all to blame.

Destruction peaked in the late 1990s and early 2000s, when an area the size of Israel and Palestine combined was being cleared every year. The devastation never stopped, but it did slow down for a decade or so, following international pressure and a concerted effort by the Brazilian government (Brazil controls 59 per cent of the rainforest).

Then along came Bolsonaro, in January 2019. The man dubbed 'Tropical Trump' seems to show nothing but contempt for the environment and he

promptly dismantled environmental regulations, reduced environmental law enforcement, stripped protection from conservation areas and indigenous territories, and actively encouraged the expansion of mining, logging and other damaging industries. Rates of deforestation have soared in the two years since.

By the Brazilian government's own estimates, 17–18 per cent of the Amazon rainforest has gone already (not including large swathes that are more or less intact, but degraded) with 1 per cent more being cleared every three years. We are hurtling towards an irreversible tipping point – predicted to be about 20–25 per cent destruction – when the region will enter what one expert describes as “a sustained death spiral”.

The whole world has a stake in the future of the Amazon rainforest, and Bolsonaro needs to be held accountable.

The good news is that two indigenous chiefs in Brazil clearly agree. Almir Suruí and Raoni Metuktire have asked the International Criminal Court (ICC) in The Hague to investigate

“The world has a stake in the future of the Amazon rainforest.”

Bolsonaro for crimes against humanity. The UN-backed court recently added environmental crimes to its remit (along with genocide and war crimes), though if this isn't a crime against humanity, goodness knows what is.

I understand that ‘owning’ a significant portion of the Amazon rainforest is both a blessing and a curse. If the rest of the world wants it to be safeguarded, it wouldn't be unreasonable to expect the rest of the world to contribute financially. But I feel Bolsonaro's conduct is inexcusable.

The ICC opens a monumental window of opportunity. Bolsonaro isn't the only world leader who could be accused of ecocide (deliberately causing serious and lasting damage to the environment).

Next in the dock, I'd put China's President Xi Jinping for, among many other things, continuing to allow trade in wild animals on a staggering scale (a global risk to wildlife and human health alike – as we've learnt to our cost in the past 18 months).

It's got to be better than campaigning and cajoling – which takes too long and clearly doesn't work. It seems as though the Trumps, Bolsonaros and Jinpings of this world don't care about anything but themselves. Making these enemies of the environment personally responsible for their crimes might make them think twice before causing irreversible damage that affects us all. 🐼

**MARK CARWARDINE** is a frustrated and frank conservationist.

**WHAT DO YOU THINK?** If you want to support Mark in his views or shoot him down in flames, email [wildlifeletters@immediate.co.uk](mailto:wildlifeletters@immediate.co.uk)



Jair Bolsonaro has caused controversy since becoming president of Brazil.





**MEET THE SCIENTIST**

**Lauriane Suyin Chalmin-Pui**

*Well-being fellow, Royal Horticultural Society and postdoctoral researcher, University of Sheffield*

Regular exposure to even a tiny patch of nature can make a world of difference to our overall health and well-being, as Lauriane Suyin Chalmin-Pui set out to demonstrate.

**Y**ou would think that people would jump at the chance to have someone plant up their front garden in exchange for filling in a few questionnaires and sending off some saliva samples. But when geographer Lauriane Suyin Chalmin-Pui began recruiting Salford residents for her study into the impact of front gardens on health and well-being, she found the exact opposite to be the case.

“I knocked on a lot of doors – I think it was about 300. A lot of people told me to go away,” she says.

Chalmin-Pui wasn’t necessarily surprised by this response. “It does kind of sound like a scam,” she acknowledges. She persevered, explaining that she wanted to find out if residential planting might offer city dwellers similar therapeutic effects as those demonstrated by urban green spaces such as parks. To do so, she would be planting flowers in previously bare front gardens



Chalmin-Pui has been testing the impact of garden greenery on people's well-being.

**“I knocked on about 300 doors. A lot of people told me to go away. It does kind of sound like a scam.”**

and asking residents to report how stressed they felt, as well as collecting saliva samples in order to measure levels of the stress hormone cortisol.

Some residents were concerned that the plants would be stolen. Others were worried that results from the saliva samples would end up in their medical records. Several said they were no good at gardening, so any attempts would be pointless.

“We did have to convince the residents [at the same time] as we convinced ourselves. This was a trial run,” says Chalmin-Pui.

But, in the end, it worked beautifully, with perceived stress levels falling by 6 per cent after the introduction of the plants. All residents reported that their health or well-being had improved as a result of their new front

garden, and 52 per cent said that their front garden helped them to feel happier. Furthermore, while saliva samples taken before the intervention revealed healthy cortisol patterns in only 24 per cent of residents, this rose to 53 per cent of residents following the planting.

“The plants were giving people a more positive outlook on life,” Chalmin-Pui says. “It felt like we were pioneering a new method to quantify the impact of plants on stress, but on a very small scale.”

She hopes that these findings might “help policymakers, especially at local levels, to make more informed decisions about the value of gardens”. That could be in terms of planning, offering guidance around paving gardens, or health strategy, with GPs able to prescribe gardening in the same way that they might prescribe physical activity. It has applications for urban planning, too, she says – greener streets are more walkable streets.

According to Chalmin-Pui, “We need more integrative thinking between the environmental green space, the built environment and the health sectors.” **Jo Caird**

**FIND OUT MORE**

Read Chalmin-Pui’s front garden research in *Landscape and Urban Planning* [bit.ly/3cFc1b6](https://doi.org/10.1016/j.landurbplan.2020.101366)

Could Chalmin-Pui’s research have an impact on policy and urban planning?







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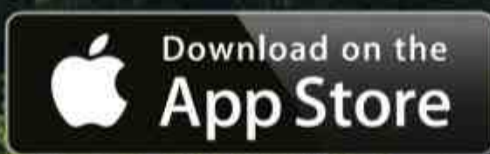


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# DISTURBANCE IN THE

# DEEP

With land resources rapidly depleting, eyes are turning to the seabed as a whole new source of metals. But at what cost to marine wildlife?

*Report by* Helen Scales

**G**iant, electric mining machines, thundering across the deep seabed miles under water, may seem the stuff of science fiction – like the idea of mining asteroids, or the moon – but they could soon become a reality. Plans paving the way towards the first deep-sea mines were delayed by the pandemic but are likely to move ahead in 2021. If they do, this could give the green light to a brand-new way for humans to exploit the planet's resources.

Interest in deep-sea mining began in the late 1960s, when corporations explored the possibilities of gathering metal-rich rocks scattered across abyssal plains. Resembling lumps of coal, these nodules take millions

of years to form as dissolved minerals in seawater settle onto a hard nucleus, such as a fragment of ancient shark tooth or whale ear bone. The mix of metals usually includes about one-third manganese, plus smaller amounts of cobalt, nickel and rare-earth metals. Several tonnes of nodules were brought up in the 1970s, demonstrating that the industry was technically possible. Nevertheless, following a crash in global commodity prices, the first wave of deep-sea mining didn't take off.

Wind forward several decades and a second wave of mining interest is underway, with some key differences. Abyssal nodules are still in the picture, especially with the anticipated metal demand for electric car batteries and

some types of wind turbine. But where previously abyssal plains were thought to be little more than mud and rocks, scientists now know the nodules create unique habitats for all sorts of species, including long-lived corals and sponges. "These are organisms that can only live on hard substrates," says Sabine Gollner, a deep-sea biologist at the Royal Netherlands Institute for Sea Research. "And of course, if you remove these nodules, they will not grow back for millions of years."

A diverse array of species directly relies on nodules. Tardigrades and nematode worms live right inside the rocks. Ghostly white octopuses brood egg clutches fixed to the stalks of sponges. Roaming the soft sediments in between nodules are herds of sea cucumbers, sea anemones, starfish ►



**If deep-sea mining goes ahead, this could give the green light to a brand-new way for humans to exploit the planet's resources.**

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**'Black smokers' are hydrothermal vents that could be targeted by deep-sea mining machines (inset).**



and brittlestars. How mining will impact these mobile animals is yet to be fully understood, but it will undoubtedly transform their quiet, slow-paced environment. As Gollner points out, organisms living in the abyss are not used to swift change.

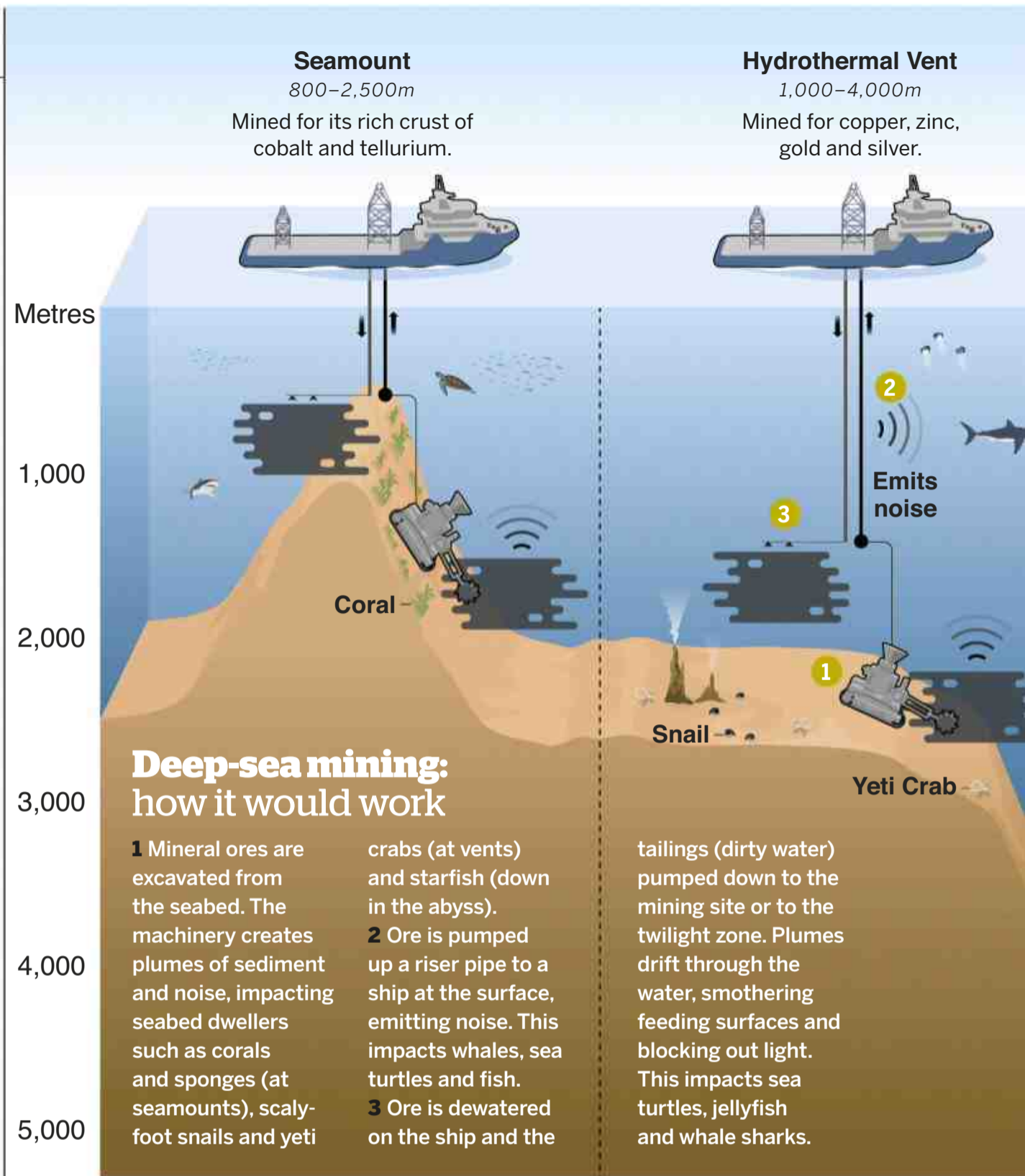
**Seamounts and smokers**

Aspiring deep-sea miners are now setting their sights on two additional deep-sea features – underwater volcanoes (known as seamounts) and hydrothermal vents or ‘black smokers’. Cobalt-rich crusts settle onto seamounts – in a slow process similar to nodule formation – while black-smoker vents contain metals that precipitate from scorching-hot fluids gushing through cracks in the seabed.

Vents and seamounts both form the basis for rich ecosystems. On hydrothermal vents, about eight out of ten species are endemic and live nowhere else. They include such oddities as giant tube worms, hairy-armed yeti crabs and scaly-foot snails, which make their unique shells from iron. Recently, the scaly-foot (which has highly specific habitat across a small range in the Indian Ocean) became the first animal to be added to the IUCN’s Red List of Endangered species due to the threat of deep-sea mining.

Many seamounts are covered in forests of sponges and corals that create habitat for other species. As Astrid Leitner from the Monterey Bay Aquarium Research Institute explains, mining the crusts from seamounts will destroy everything living on them. “It will probably scare away the mobile animals, too,” she says. Fish use seamounts as spawning grounds; while humpback whales, sharks, sea turtles and other migrating animals feed at seamounts and use them as waypoints (see Q&A, p77).

“Mining needs to be very carefully regulated if we’re going to go through with it,” Leitner says. “We need to know specifically how these ecosystems will react, so that we can figure out a way to manage it. I don’t think we know enough about seamount communities



**Deep-sea mining: how it would work**

**1** Mineral ores are excavated from the seabed. The machinery creates plumes of sediment and noise, impacting seabed dwellers such as corals and sponges (at seamounts), scaly-foot snails and yeti

crabs (at vents) and starfish (down in the abyss). **2** Ore is pumped up a riser pipe to a ship at the surface, emitting noise. This impacts whales, sea turtles and fish. **3** Ore is dewatered on the ship and the

tailings (dirty water) pumped down to the mining site or to the twilight zone. Plumes drift through the water, smothering feeding surfaces and blocking out light. This impacts sea turtles, jellyfish and whale sharks.

at this point to be able to do that with the least possible harm.”

**Managing mining**

Deep-sea mining is much more organised than it used to be. The International Seabed Authority (ISA) is an intergovernmental organisation established by the UN in 1994, to oversee activities on the seabed in the high seas (anything further than 200 nautical miles from shore). ISA officials are drawing up regulations for deep-sea mining, which need finalising before commercial-scale mines can open. It’s expected that this ‘Mining Code’ will be released this year.

In the meantime, the organisation has granted 30 exploration permits to mining contractors, covering 1.5 million square kilometres of seabed, an area roughly equal to Germany, France, Spain and Portugal combined. Contracts for hydrothermal vents and seamounts are held by countries including France, Poland, Germany, South Korea, China, Russia and India. Eighteen contracts are in the Clarion Clipperton Zone (CCZ), which is an enormous abyssal plain in the central Pacific, with high concentrations of nodules.

Belgium-based Global Sea Mineral Resources (GSR) has some of the most advanced plans for nodule extraction and is developing prototype mining equipment. In 2021, GSR is launching tests in the CCZ of the second version of its nodule collector – Patania II, which resembles a huge combine harvester on caterpillar tracks. It will be operated remotely from a ship at the surface and gather nodules with a suction device.

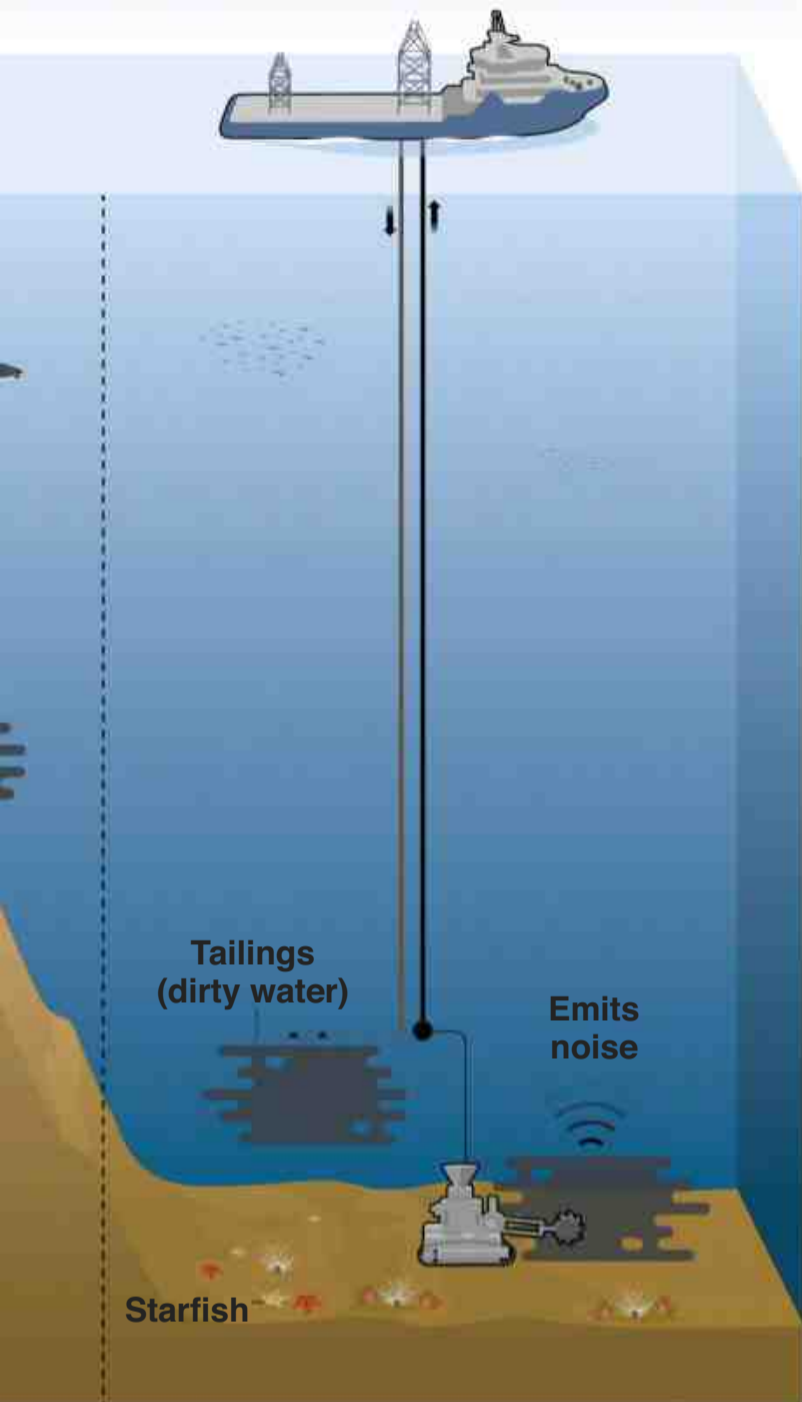
**Of particular concern are sediment plumes that would likely smother animals such as corals and sponges.**



**Abyssal Plain**

4,000–6,000m

Mined for nodules containing cobalt, nickel and copper.



**Clockwise: coral on seamounts could be destroyed by mining; deep-sea corals could become smothered in sediment from mining; sediments may also impact gelatinous creatures.**



A third phase of testing will follow in 2023 or 2024, with a larger device – Patania III, which will dispatch nodules to a ship at the surface using riser pipes.

In order to get a mining permit from the ISA, contractors would have to carry out baseline studies, conduct an environmental impact assessment of the likely effects of mining, and write an environmental management and monitoring plan – all details that will be laid out in the Mining Code. Of particular concern, besides the immediate footprint of the mines, are sediment plumes that would be stirred up and likely smother immobile animals, such as corals and sponges. How big these plumes would be and how far they

would spread are questions that need answering. “We have models that predict what will happen,” says GSR’s head of sustainability Samantha Smith. “And now we can do a field trial to demonstrate how well we can make those predictions.”

**When the sediment settles**

Scientists partnering with GSR, together with an independent consortium of European scientists, will be gauging the effects of Patania II, using current meters, turbidity sensors and underwater cameras, and gathering biological samples. Smith and her team are also working out whether these sediment plumes could be directed back over areas

that have already been mined, to limit their impact. “Part of the reason I’m working with GSR is I think they’ll be first,” Smith says. “The hope is that it would be hard for somebody to follow and not to do it as well.”

More plumes would be created as seawater is separated from the mined ore on support ships and returned to the sea, together with sediments and potentially heavy metals released from the crushed ores. These ‘tailings’ could be released back to mined sites or into the open waters of the twilight zone, about 1,000m down, where experts predict the plumes would impact gelatinous animals, including various jellyfish and siphonophores whose feeding surfaces and gills could become clogged.

“We don’t know how they will be affected,” explains Gollner, “but in the crystal-clear waters in the deep sea, the animals may not have the ability to deal with this kind of stress. This is something we need to find out.” ▶



**Sea turtles could be harmed by mining activity**

Corals & jellyfish: NOAA/Flickr/Creative Commons; green sea turtle: Pete Oxford/naturepl.com; illustration by Acute Graphics





Humpback whales congregate around the seamounts deep-sea miners hope to target.

## Next-generation technologies are in development that would need far less of the metals available in the deep sea.

Sediment may block the bioluminescent lights that many twilight zone animals use to communicate and defend themselves. Midwater plumes could also contaminate plankton with heavy metals, then pass through the food-web to larger animals, including tuna, turtles and whale sharks.

### Safeguarding the future

Mining plans will incorporate areas that would be designated as non-mining zones. “Set-aside areas are the key, so we can preserve habitat and biota [animals and plants] representative of what could be lost through mining,” says Smith. A big question is where to locate these areas and what size they need to be, to allow ecosystems to continue functioning. Gollner explains that protected areas must be as similar as possible to the mined areas, but that information is not always available. In the CCZ, there are nine protected areas identified by the ISA, but scientists have so far visited only a few. “Typically, we simply don’t know what’s living there,” she says.

Undoubtedly, a great deal is at stake over the issue of deep-sea mining. Many mining companies are claiming that certain metals will be vital for a low-carbon future, such as rare-earth metals for offshore wind turbines and cobalt for electric vehicle batteries. Known land-based reserves of

these and other elements are predicted to become scarce and more expensive to extract in the years ahead, making deep-sea mining an attractive prospect. But there are alternatives. Various car companies are already working on cobalt-free batteries, partly due to price volatility and concerns over unethical cobalt from dangerous, hand-dug mines on land.

Rechargeable battery and solar technology currently in use has changed very little over the decades. Next-generation technologies are in development – such as spray-on solar inks and wind turbines with superconductors, which would require far less or even none of the metals available in the deep sea. “Should we take the risk to destroy parts of the ecosystem in the deep to get minerals?” Gollner asks. “Or should we invest more in other technologies that reduce the use of those minerals?”

### Deep-sea minefield

Ultimately, it will be up to the delegates representing 168 member states at the ISA to decide on whether deep-sea mining will go ahead, as well as when and how. As Smith says, deep-sea mining would diversify the world’s metal supply options. “We still have some research to do to definitively say ‘yes, this is 100 per cent the way we should go’.”

## Testing times

For some time, it seemed likely that the world’s first deep-sea mine would open on hydrothermal vents off Papua New Guinea. Canadian mining company Nautilus Minerals obtained a mining licence from the Papua New Guinean government to operate in national waters, and built three mining machines that would excavate the tall chimneys of black smokers. But in 2019, facing spiralling costs and repeated financial setbacks, the company went into administration.

Other countries have conducted test mines within their national waters, which, unlike areas in the high seas, don’t fall under the purview of the ISA. In 2020, a Japanese state-backed mining company extracted cobalt and nickel from a seamount 400km east of Tokyo.

Black smokers emit a fluid rich in metals.

Many uncertainties surround the likely impacts of seabed mining and there are calls from NGOs, the European Parliament and various Pacific island leaders to introduce a moratorium. A pause in the seabed mining industry would give scientists more time to get a handle on what lives in these remote regions and how important these intact ecosystems are for the health and functioning of the entire planet. The ocean provides food and inspiration for powerful new medicines, it absorbs huge amounts of heat and carbon – including in abyssal sediments that mining could disrupt. “We shouldn’t forget that the ocean is our big buffer,” says Gollner. “The deep sea matters to us all.” 🐾



**HELEN SCALES** is a marine biologist, writer and broadcaster. Her latest book, *The Brilliant Abyss* (Bloomsbury, £16.99), is out now.



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# The backside

Is there any more room for another book on climate change and the future of the planet beyond Covid19? Yes, there is, and this is it. Refreshing, original, positive and amusing here and there. This book is particularly about nature and biodiversity, in fact it's a unique combination!

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Tick birds



More food chains



"A bigger job than usual, Dave."

Two dung beetles



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A photograph of a bird, likely a reed warbler, perched on a green reed stem. The bird is looking down towards a nest of three chicks. The nest is built from dry reeds and is situated between two reed stems. The chicks are dark-colored with bright yellow beaks. The background is a dense thicket of reeds and leaves.

# Nesting instincts

Birds' nests are familiar structures, yet we know surprisingly little about them. Research is starting to reveal how these homes function.

*By Charles Deeming*





Spring is the busiest time of year for the birds in my garden. In my nestbox, a female blue tit has just taken up residence. She has been building her nest by collecting moss and grass, and piling it into the box until it is about half full. She has left a space in the corner, away from the entrance hole, where she will construct the nest cup. Soon, she will switch to collecting hair and feathers to heap on top of the moss – then she will lay her first, delicately speckled, white egg, which she will hide in the feather-filled hole. Only when her clutch of 10 eggs is nearly complete will she fashion the hair and feathers into a neat little cup within the space in the moss layer, and start the process of incubation.

Over in the ivy, a female blackbird has already finished building her nest, which she has carefully hidden in a secluded corner. She created a scaffold from a loose collection of robust twigs, plastered these together using mud collected in her beak,

then shaped it into a cup with her breast. She then pushed moss and leaves between the sticks, for camouflage, and finally lined the cup with dry grass. She has been sitting on her clutch of four brown-speckled, blue eggs for a few days now.

Two extremely familiar garden birds, but two very different nests. Given that a bird's nest is something so commonplace, it is strange that we don't really understand how or why they are constructed. With recent research, however, we are beginning to understand what causes such variation, and how nests function.

### Engineers, architects, designers

Birds build their nests in many different places. Terns and plovers, for instance, scrape a rudimentary hollow into the ground, relying on the markings of their eggs for camouflage. Kingfishers and sand martins excavate burrows in sandy banks, laying their eggs safely out of sight. Warblers weave grass and plant material into neat cups, deep in the vegetation.





## Nest structure: **The goldcrest**



**1** Using spider silk, the bird secures a clump of moss to a twig on the underside of a branch, then stretches the silk between adjacent twigs.

**2** She adds moss along the twigs, repeatedly stretching the silk between them to create a framework. Then, she creates an outer cup layer of moss and lichen.



**3** She adds a middle layer of moss and lichen to bolster the cup wall, then lines it with feathers and hair. She uses her body to shape the cup.

Blue tit: Konrad Wothel/Minden/FLPA; blackbird: Lammers/blickwinkel/Alamy; plover: Mike Powell/Getty; great tit: R. Sturm/blickwinkel/Alamy; illustration by Mike Langman

**Structure is as varied as location. The finch family in particular illustrates just how diverse nests can be.**

Many nests are discretely hidden from predators; others are glaringly obvious. The vast platforms of sticks built by ospreys in the treetops, for instance, are hard to miss, particularly as they are re-used and added to over the years. Grebes build conspicuous floating nests in large ponds and gravel pits (their eggs are incubated half-submerged in the water, yet somehow still hatch), while house martins plaster their familiar, semi-circular cups under roofing eaves by the countless muddy mouthful.

Nest structure is as variable as location, and the finch family in particular illustrates just how diverse a domicile can be. The larger members, such as the hawfinch and bullfinch, rely on loose aggregations of sticks fashioned into an open cup lined with a few roots or lichen, while smaller goldfinches and chaffinches build neat cups of moss and lichen lined with hair and feathers. Linnets opt for a simpler structure, weaving grass cups lined with roots.

But even similar-sized birds use contrasting materials when building nests. Great tits build a moss base and line the cup with hair. If a nest is mainly moss and leaves, then a pied flycatcher is at home. ▶



**Top left: blue tits usually start nesting in late March or April. Far left: blackbirds prefer to nest in trees, shrubs and climbers such as ivy. Above: little ringed plovers nest on the ground, out in the open. Left: great tits are 'cavity nesters'.**



Tree sparrow nests are almost all feathers, while the elusive nuthatch builds its nest almost entirely using flakes of bark.

It is often possible to identify a bird species from a nest, yet construction is not a fixed behaviour. Birds are adaptable and build homes that vary considerably in size, shape and – in particular – composition. Some of this variability depends on what materials are on offer. Pied flycatchers across Britain rely on leaves and moss to build the bulk of their nests, but are not fussy foragers – they utilise whatever leaves are most common in their neck of the woods. Similarly, blue tits often line their nests with feathers, but will readily use wool if sheep are grazing nearby.

### All for the eggs

Irrespective of variation in form and content, all bird nests are designed for one thing: egg incubation – and, in many species, chick rearing. A nest enables an incubating bird to maintain the correct temperature and level of humidity for her developing eggs, as well as providing protection from the elements and predators. If my blackbird is successful, her nest will comfortably hold four fully grown fledglings later this spring, each the same weight as an adult, and the dwelling may be used at least twice this year. Likewise, if she has a good year, my blue tit will raise her single brood of an eye-popping 10 youngsters.

## The blackbird and blue tit have to carry more than twice their own bodyweight to build their nests.

So, why do birds vary so much in their nest-building behaviour? And why use such different materials? Does all this effort really keep the eggs and chicks warm, safe, and secure – and, if so, how?

Nest building and egg formation require lots of energy – both the blackbird and blue tit have to carry more than twice their own bodyweight to build their nests. The clutch of 10 eggs laid by the blue tit weighs as much as she does. Thus, anything that can minimise heat loss from the nest will help the adult to conserve its energy stores. The incubating adults will remain in good condition and be able to successfully forage to feed their impending hatchlings.

Nonetheless, a nest is not a simple egg-container. The walls can be complex in structure and comprise a surprising range of plant and animal-derived materials that vary according to the prevailing climate. In the north, where springs are colder, ►







An avocet uses its long, curved beak to turn its eggs.

## Turning the tables

Incubating birds turn their eggs but not, as is commonly thought, to prevent the embryos from sticking to the shell, or to warm the eggs evenly. Instead, turning is to ensure that the embryo can use all of the albumen (egg white) during development. Albumen-rich songbird eggs need to be turned five times an hour, whereas albumen-poor waterfowl eggs are only turned once an hour.

Bottom left: ospreys may alter the shape of their nests as their chicks develop. Left: common kingfishers lay their eggs within burrows excavated in riverbanks. Right: though tree sparrows, as their name suggests, tend to nest in tree cavities, they will also use nestboxes and may even nest within buildings.



## Nest structure: The song thrush

**1** A female song thrush selects a site, often a triple branch fork, on which she constructs a base platform of twigs. This is then filled with moss.



**2** She constructs a cup from grass stems, tucking and then twisting them into each other. Finer grasses are woven into the rim for strength.



**3** She adds moss and a few leaves to the outer cup for camouflage, before lining the nest with wood pulp and mud, using her body to smooth it down.

Osprey: Mike Lane/Alamy; kingfisher: Charlie Hamilton James/naturepl.com; avocet: David T. p. ng/2020VISION/NPL; tree sparrow eggs: A. amy; illustration by Mike Langman



**Moss sucks up water like a sponge, and a moss-heavy nest will take a considerable amount of time to dry.**

blackbird and tit nests are more effectively insulated than in the warmer south. Yet, despite this variation, research has shown that a range of small garden bird species build nests that provide, on average, similar levels of insulation.

Insulation seems to relate to the proportion of moss and hair in the nest walls. Birds appear to have found a range of solutions to the heat-retention problem – with varying degrees of success. Research in my lab has shown that chaffinches, for example, line their nest cups with a bounty of feathers and hair. Despite being only 6–10cm thick (about a third of the wall thickness), this layer provides 90 per cent of the total insulation for the whole nest wall. By contrast, the same thickness of the grassy blanket lining a blackbird’s nest only offers 40 per cent.

**Right as rain**

While the blue tit is incubating her eggs within her snug little nestbox, the poor old blackbird is taking a battering from the prevailing weather. When it rains, she sits tight over her clutch, the water running off



**Nest structure: The long-tailed tit**



**1** A nest site is chosen between some thin, upright branches, often deep within bramble or gorse bushes where the thorns offer protection from predators. A simple layer of moss is built up and secured to the branches with silk.

**2** Both birds gradually build up the nest by adding moss and lichen to the rim whilst sitting inside the nest cup, and use spider silk to secure the nest to the branches.



**3** The final nest has a domed roof and is lined with up to 1,500 feathers. Finished nests have about 300 sprigs of moss, and about 3,000 lichen flakes, all held together by 600 spider silk egg cocoons.







## Simple tips to help nesting birds

● Keep **THICK HEDGES** or large bushes in the garden and avoid cutting them back early in spring.

● **MUD** is often used by many species – keeping a muddy patch in the garden will encourage martins and swallows, which rely on mud, but also thrushes and magpies that incorporate mud when building their nests.

● A pile of **WELL ROTTED WOOD** may encourage a song thrush to nest nearby, as it will use this to form its nest cup.

● Keep your eyes peeled for **TELLTALE ACTIVITY** – birds regularly entering a particular bush, often carrying material, could be a sign that nesting is in progress. Similarly, if a bird flies out of a bush alarm calling, it's a good indication that a nest is present.



House martins use mud during construction.

Tree sparrows use feathers to insulate nests.



Left: hawfinch nests are usually positioned in a handy crook, high up in the tree canopy. Above: gregarious sand martins dig out tunnels in dry, sandy banks. A single colony can contain more than 100 pairs. Right: a nesting blackbird acts as an umbrella to protect its eggs from the rain.



her back and into the nest walls, preventing the eggs from becoming wet and chilled.

The component materials of a nest matter greatly when it comes to rain. Though water drains freely through the nest wall, some of it will be absorbed. Moss in particular sucks up water like a sponge, and a moss-heavy nest will take a considerable amount of time to dry out. In contrast, nests that don't use moss dry out very quickly. The 'classic' stick nest of a hawfinch, for instance, is very free-draining and dries out in no time. Blackcaps seem to create the same effect by simply sticking to using grass in their nest construction.

A degree of moisture is important, though. Eggs need to be kept at a suitable level of humidity during incubation, to ensure they don't lose too much water through their pores. Nest walls are rather leaky, which allows all-important oxygen to enter and carbon dioxide to exit. It seems that they can also retain just enough water vapour to raise the humidity of the nest to the necessary levels – rather like a fluffy duvet.

Nests also have to be engineered to be structurally sound – after all, it is imperative that they can support the weight of an incubating bird, plus its entire brood of nestlings. The larger the bird species, the heavier its reliance on woody materials for structural integrity.

How these materials are used also varies. The stick nest of the bullfinch is built towards the end of a tree's branches, with the strongest twigs deployed at the base. The heavier hawfinch, on the other hand, nests in the crook of a branch next to a tree trunk, ensuring maximum support from below. It then places the strongest twigs around the sides of the nest, where support is most needed. The 'twiggy' nests of both species may appear flimsy, but they are surprisingly hard to dismantle.

### More to learn

Though research is allowing us to learn more about how bird nests work, we are unlikely to run out of questions. Why are

some materials only used in the nest cup and others in the nest walls? How do birds decide on what materials to use and where to place them? There are also many species whose nesting habits have yet to be studied.


Sadly, for all their industry in the spring, the blue tit and blackbird in my garden will not reuse their nests. Come autumn, these dwellings will be abandoned, and will eventually break up and decay as winter sets in. If the birds survive until next spring, they will have to begin the process again – as will their offspring, who miraculously build their nests without ever being taught how to do it. Perhaps that's the greatest mystery of them all. 🐦



**CHARLES DEEMING** lectures in zoology at The University of Lincoln and has been researching bird incubation and nests for almost 40 years.

**FIND OUT MORE** Our guide to garden birds' nests: [discoverwildlife.com/bird-nests](https://discoverwildlife.com/bird-nests)





It may be the nation's favourite mammal, but the hedgehog is rapidly vanishing from towns and countryside across the UK. Why have things gone so badly wrong for British hedgehogs? And, more importantly, what's being done to help them?

*By Hugh Warwick*

**HEDGEHOG  
AWARENESS  
WEEK**

2-8 May 2021

# Helping hedgehogs

[WWW.IELTSPOP.IR](http://WWW.IELTSPOP.IR)



The estimated number of hedgehogs in the UK has fallen from about 1.5 million in 1995 to about 500,000 today.

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When I started studying hedgehogs back in 1985, there was no thought that these peculiar, fascinating and adorable creatures might be under serious threat. The main concerns for hedgehogs revolved around the numbers being killed on roads – something that became an oft-repeated joke and, rather ironically, led them to being used by the Department for Transport, in cartoon form, as a road-safety educational tool for children.

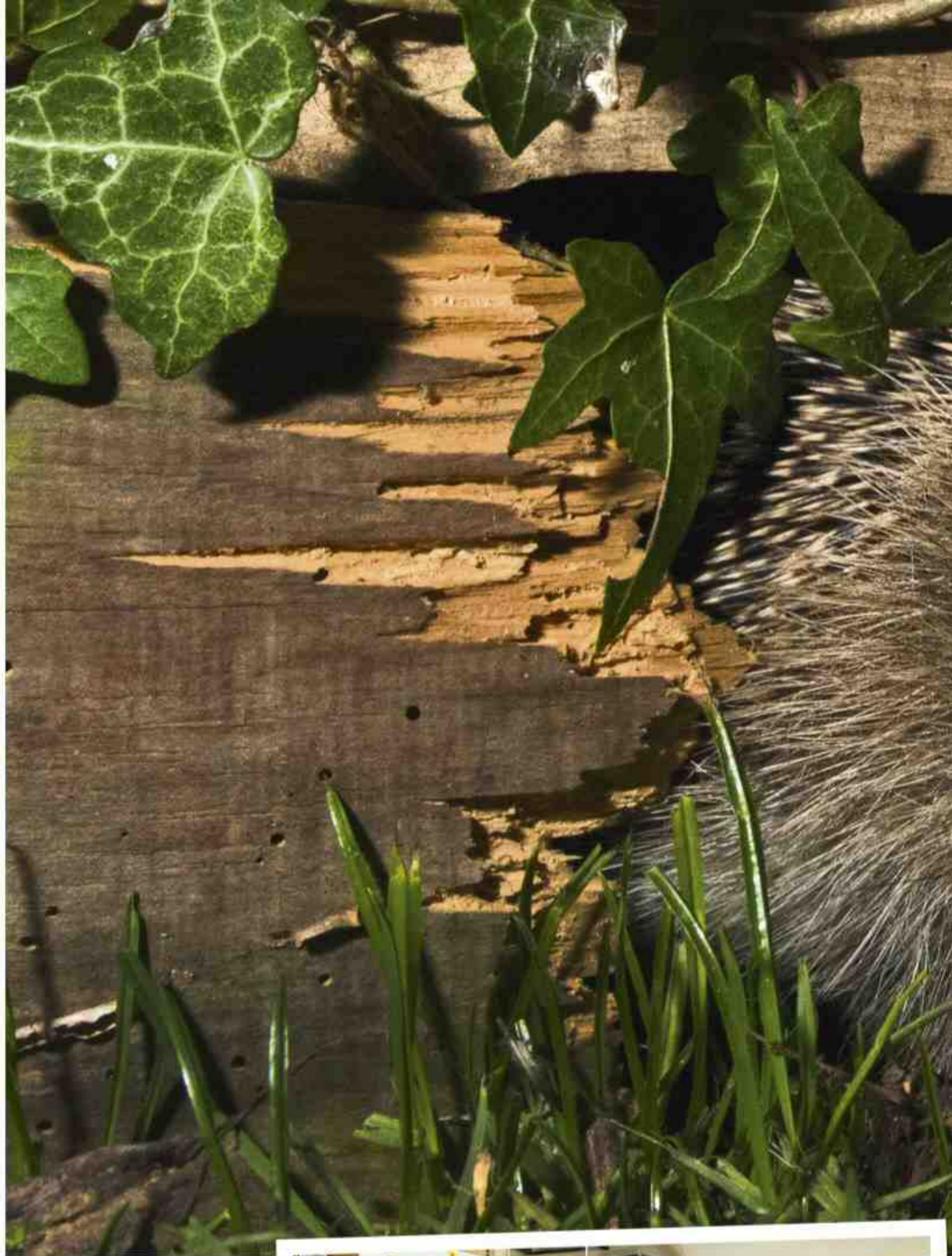
What a difference a few decades make. By 2020, the hedgehog had joined the sorry list of species considered as Vulnerable to Extinction (in the next 20 years) on the Red List for British Mammals.

### Cracks start to show

The first shot across the bow came in 2006, when the hedgehog was listed as a species of principle importance under the Natural Environment and Rural Communities Act. I remember thinking – naively – how great this was, because now the state conservation machinery would surely kick into gear and make things better.

But that machinery has long been undermined. And, after a while, it started to become clear that if anyone was going to do anything, it would have to be the conservationists and ecologists who were already involved.

The next dramatic change in the campaign to help hedgehogs came in 2011. The wonderful BBC natural history television producer Dilys Breese had left money in her will to the British Hedgehog



## Hedgehog first aid

Across the UK, some 600 centres offer care for hedgehogs, ranging in size from a single person operating from their kitchen to impressive purpose-built wildlife hospitals.

One of the busiest centres is Vale Wildlife Hospital, near Tewkesbury, set up in 1984 by Caroline Gould. In 2020, the centre admitted more than 7,000 casualties, ranging from badgers and bats to weasels and wrens. But by far the most common patients are hedgehogs. Vale costs about £40,000 a month to operate, relying on volunteers and donations.

Other well-respected centres include Shepreth Hedgehog Hospital near Cambridge and

Hessilhead Wildlife Rescue in North Ayrshire, Scotland.

In the UK, wildlife hospitals are unregulated. Unlike in the Netherlands and Denmark, for example, anyone can take in sick hedgehogs. This is something that many of us would like to see changed. In order to properly educate hedgehog carers, Vale, along with the BHPS, is offering introductory courses into hedgehog first aid and rehabilitation.

**FIND OUT MORE** Vale Wildlife Hospital: [valewildlife.org.uk](http://valewildlife.org.uk)

● If you find a sick or injured hedgehog, call the BHPS: **01584 890 801**



A prickly patient receives treatment at a hedgehog rescue centre.



## HEDGEHOG HEROES

## The young carers

*Kyra and Sophie, age 15,  
Stratford-upon-Avon, Warwickshire*

I first met these two when they were just 12 – they had recently set up Hedgehog Friendly Town, a local hedgehog hospital in Stratford-upon-Avon. They are dedicated, knowledgeable young people who give me great hope for the future. They have been recognised widely for their work, receiving commendations and awards from the RSPCA, Jane Goodall and the prime minister, among others. To date, the duo has helped 554 hedgehogs.

“Initially we just looked after and fed hedgehogs until they could be released,” explains Kyra. “However, now we have been trained to do injections with different types of medications, treat with fluids and also use a nebuliser.”

“We have learnt so much,” adds Sophie. “And it is more than just the individual hedgehogs we are trying to help. They need a safe and ecologically diverse habitat, too. So, when we can, we go around schools sharing our knowledge and experience.”

● [hedgehogfriendlytown.co.uk](http://hedgehogfriendlytown.co.uk)

While new building developments can destroy hedgehog habitat, fences also prohibit the species' movements.



**Kyra (left) and Sophie have helped hundreds of hedgehogs.**

Preservation Society (BHPS), to be spent on conservation. She also left money to the People's Trust for Endangered Species (PTES). In the cut and thrust world of many charities, this could have sparked competition. But the two charities realised that what they could achieve by working together was so much greater – and thus Hedgehog Street was born, an incredible

**Urban hedgehogs have declined by 30 per cent since the year 2000 and rural hedgehogs are down by 50 per cent.**

initiative that celebrates its 10th birthday this year.

The idea behind the Hedgehog Street campaign is straightforward – research the two charities had commissioned showed that one of the key problems faced by hedgehogs was habitat fragmentation. By way of computer modelling, using all the best and most current ecological research, Tom Moorhouse, at WildCRU, part of the University of Oxford, calculated the minimum requirements for healthy hedgehog populations.

The two major conclusions from his study were that there needed to be a starting population of about 30 individuals, and that they need, in the best possible habitat, an area of 9oha – nearly a square kilometre. Perhaps surprisingly, Tom's work revealed that suburbia is a first-class habitat for

hedgehogs, especially when compared to the superficially more 'natural' rural landscape.

To understand this more clearly, I find it useful to imagine an island. One male hedgehog on a beautiful island with ample food and shelter will not bring about a viable population. Neither will a million hedgehogs on a small island, because there won't be sufficient resources to go around. You need the right sized population on the right sized island.

Hedgehog 'islands' may not be encircled by water, but they are bordered by busy roads and canals, and carved up by fences ▶



# Hedgehogs on campus



The Hedgehog Friendly Campus campaign, funded by the BHPS, was launched at The University of Sheffield in 2018. So far, close to 100 universities have signed up. **JO WILKINSON** is the dynamo behind this innovative idea.



The University of Lincoln has campus projects to help increase biodiversity.

## WHY UNIVERSITIES?

Universities are massive – together, they own 73,000 football fields worth of land in England and Wales alone. That's a lot of potential hedgehog habitat, so we launched a campaign to ensure campuses are places where hedgehogs can thrive. We know staff and students want to do more to protect native species, and we've designed a toolkit full of practical changes they can make, from litter collection to installing hedgehog boxes.



the species. Students take that knowledge with them after they have graduated.

## WHICH ARE THE TOP ACHIEVERS?

We have three levels of accreditation – gold, silver and bronze. Among those going for gold this

year are Surrey, which has log piles dotted all over its campus; Winchester, where you can't walk three steps without spotting a hedgehog highway, and Lincoln, which is leading the way with rewilding projects.

## WILL THERE BE ANY DATA TO MEASURE IMPROVEMENTS?

We hope so. We provide survey equipment, so teams can understand if hedgehogs are present or not. This tells them where they need to focus their efforts. As they tick off more hedgehog-friendly actions, we'll be tracking changes in the numbers of campus hedgehog sightings.

## WHAT ARE THE THREE MOST EFFECTIVE MEASURES?

Increasing habitat, for instance by introducing wildflower meadows, leaving brambles alone and letting grass grow longer; considering hedgehogs in building plans – so, putting up crossing signs and creating green corridors and highways to let hedgehogs move around safely; and raising awareness about how to help



University of Lincoln staff and students litter picking on campus.

## WHAT DOES THE FUTURE HOLD?

The BHPS has granted us additional funding, so primary schools and colleges can take part alongside universities. We've even had requests from local authorities, the NHS and parish councils who want to get involved.

**FIND OUT MORE** [britishhedgehogs.org.uk/hedgehog-friendly-campus](http://britishhedgehogs.org.uk/hedgehog-friendly-campus)

and walls. All across the country, there are islands – many with hedgehogs – but often these islands are simply not large enough. And this is a key reason behind the population decline.

## Town and countryside

Every three years or so, the campaign publishes the *State of Britain's Hedgehogs* report. This compiles the latest research, from both professional and citizen scientists, to generate a robust picture of population change. The latest report, from 2018, shows that urban hedgehogs have declined by 30 per cent since the year 2000; and that rural hedgehogs are down by 50 per cent. But it did offer some good news, too: the urban population decline had levelled off since the previous edition in 2015. Rural hedgehogs, though, continue in a serious downward dive.

Hedgehog Street was initially launched to tackle the urban hedgehog problem – and the premise was simple. It is rather unlikely that any of us will have a garden of 90ha. In fact, the average garden size in the UK is 188m<sup>2</sup> – which is 0.0188ha. But just because those gardens are small, it does not mean they are not valuable to wildlife in

**We hang feeders and nestboxes for birds, but hedgehogs end up being excluded if we don't make an effort to let them in.**

general and hedgehogs in particular. And as long as a hedgehog has access to a large number of gardens, the problem can start to be resolved. Add to this the potential provided by well-managed parks and other green spaces, and an urban landscape can still support vibrant life.

Most of our wildlife gardening efforts have been, inadvertently, discriminating against terrestrial animals. We plant pollinator-attracting flowers, we hang feeders for birds and we erect boxes for them and bats. And it is easy to be seduced into thinking we have done jolly well, as we sip a glass of wine in the evening and watch bats flit after moths, and enjoy our morning coffee serenaded by birdsong. But the stuff we really love – including the wild animal that always wins any poll for the nation's nature icon, the hedgehog – ends up being excluded if we don't make an effort to let it in. ▶



## HEDGEHOG HEROES

### The campaigner

*Jonathan Houseago, Thurston, Suffolk*

Jonathan got in touch with me through my Hedgehog Highways Facebook group. He was concerned about the three different developments planned for the outskirts of his Suffolk village, and how they might impact on the local hedgehog population.



"I started by writing to the three developers," Jonathan explains. "One was already committed to building hedgehog highways into their development, another, a small family firm, immediately understood what I was hoping for and changed their plans. The third, however, a big company, was not interested."

But Jonathan was undeterred. Backed by the ecological science of the Hedgehog Street campaign, his polite and persistent letters eventually won the day. The developer committed to building in 75 holes between the new houses on the site.

Hedgehogs are nocturnal, but may also be seen at dawn and dusk in the summer, when nights are shorter.





Urban hedgehogs seem to be faring better than their rural counterparts. Left: piles of leaves are among prime hibernating spots.



## Hedgehogs and new homes

The UK Government has a target of 300,000 new homes to be built each year. There are many concerns surrounding the surge in such projects, not least of which is the wildlife that will be destroyed in the process. Ecologists are employed to make sure that those species protected by law will be monitored and removed if necessary, but the hedgehog currently has a lower status than animals such as bats and dormice, so is not required to be considered.

In July 2019, thanks to the pressure of a change.org petition, the National Planning Policy Framework was changed to include guidance on hedgehog highways – holes built into fencing. Unfortunately, there are no ‘teeth’ to enforce this yet. But pressure from the now nearly one million signatories to the petition has led to a number of developers adopting hedgehog



highways without a change in the law.

Bovis Homes, part of Vistry Group, was the first major housebuilder to start its own hedgehog highway initiative. In January 2020, it committed to putting hedgehog holes in fences at its current and new locations, where possible.

Other developers have since started to come on board. The hope is that it will become ‘normal’ for developers to help hedgehogs in this way.

Of course, putting in a hole is no guarantee. A new homeowner might not be interested. To combat that, a ‘top tips’ leaflet is included in the welcome pack.

The conversations that have been started around hedgehog holes have also led to discussions around the management of the public open spaces built into new estates. This is yet more land that, if managed sensitively, can become valuable for hedgehogs.



Housing developers are starting to help meet the needs of hedgehog residents.

And that is where Hedgehog Street comes in. The main message of the campaign is to connect gardens for hedgehogs, allowing them passage via 13cm square holes (about the size of a CD case) in walls and fences. Not only does the initiative link crucial hedgehog habitat, it’s a great way for people to get to know their neighbours – Hedgehog Street parties are not unknown.

The lockdown of 2020 reminded us of the important point that not everyone has access to a garden. In fact, one in eight of us is without this vital outdoor space. But that does not mean you cannot engage with Hedgehog Street. There are many spaces around the country that we have a say over – our councils manage sports fields and parks; the Wildlife Trusts manages reserves. And then there is the fantastic opportunity provided by the ‘soft estate’ of the rail, canal, road and power networks – for example, the verges of roads and railway lines. There is an estimated 420,000ha of land that has to be managed to maintain this infrastructure, and we can ask for it to be done with wildlife in mind. Polite persistence can influence decisions.

Main image: Terry Whittaker/naturepl.com; hibernating: Oliver Smart; housing development: Nick Varsley; road sign: University of York



HEDGEHOG HEROES

## The educator

*Dylan Allman, age 14, Monmouth, Wales*

Dylan's Damascene moment came last summer, when finding a hedgehog in the garden dragged him away from his computer. "I heard a rustling," he says. "It was the first time my mum or I had ever seen a hedgehog." Dylan set up trail cameras, made a film, built a website and launched a communication campaign.



"Whenever I saw my neighbours, I would explain how they could help hedgehogs, and now pretty much the entire street is connected up with hedgehog holes."

But Dylan has ambitions beyond his street. Next will be garden equipment manufacturers and retailers, to raise awareness about injuries caused by mowers and strimmers. Then the council and its planners. One to watch – I am expecting great things!

● [hedgehogaware.org.uk](http://hedgehogaware.org.uk)



## The hedgehog is a predator that is bigger than 99 per cent of all animals that have lived on this planet.

Hedgehog Street also has a very strong line in science. So far, it has funded five PhDs and 11 independent studies that have resulted in the publication of more than 20 scientific papers. For example, Lucy Bearman-Brown, a senior lecturer at Hartpury University, Gloucestershire, studied the potential of using sniffer dogs to track down hedgehogs with great success – so much so that Henry (the dog) has become quite famous.

Research commissioned by Hedgehog Street has also identified how the rural

hedgehog population is falling at an even more dramatic rate than the suburban one. But trying to affect change in rural regions is much harder, as individuals have much less control over what goes on. However, the campaign is working with the farming community, outlining areas in which hedgehogs can be incorporated into farmland conservation measures.

### Under pressure

In rural areas, the key pressures are loss of food, loss of habitat and competition with (and occasional predation by) badgers. Of these, it is likely that the loss of food is most significant. And it is not just hedgehogs that are impacted by the changes in our rural ecosystem. Farmland birds have declined by 55 per cent since 1970, for example, and in the 30 years prior to 2016, common toads had fallen by 68 per cent across their range.

When it comes to loss of habitat, well, the hedgehog was not named at random. They really do hog the hedges, and the UK is down 300,000km from peak hedge. Of the remaining 500,000km, more than 60 per cent is in poor condition – meaning that they will disappear if not reclaimed, replanted and properly managed.

The badger question is often, and inappropriately, used as an excuse to justify culling, yet these two species have managed to cohabit the same land for 10,000 years, since the retreat of the last ice sheet. The only way to return hedgehogs to their former glory is to fix our degraded ecosystem.

And hedgehogs are a form of glory. I am often asked why I dedicate so much of my life to these prickly mammals, and the answer is simple: they discernibly share our space when we let them, giving us the opportunity to observe an amazing wild animal. It's a predator ▶

The University of York campus has hedgehog road signs.





## I am regularly blown away by the dedication of the nation's hedgehog champions.

that is bigger than 99 per cent of all animals that have lived on this planet, an animal in the top 1 per cent, with the blue whale, *Tyrannosaurus rex* and us.

From humble beginnings 10 years ago, Hedgehog Street now boasts more than 90,000 supporters. This demonstrates just how much the species means to British people. We've profiled some of these 'hedgehog heroes', and the work they are doing, across these pages. From university campuses to hedgehog hospitals and new housing developments, the power of our collective love for this creature is breathtaking. I am regularly blown away by the dedication and achievement of the nation's hedgehog champions.

### Making a difference

So, how do we celebrate a decade of collaborative work? I think we should see Hedgehog Street parties all over the country – once lockdown restrictions have been lifted. For now, let's commit to doing 10 things to help the hedgehogs that live near us.

Start with the obvious – let hedgehogs into your garden by creating a hole. Then, make sure there is food and shelter – log piles, bramble patches and compost heaps



Give hedgehogs a helping hand by leaving out meaty dog or cat food for them.



Creating 13x13cm holes in fences lets hedgehogs forage across wider areas. Left: hedgehog houses provide extra shelter.

## Give a hog a home

One of the citizen science projects that the Hedgehog Street campaign undertook was the Hedgehog Housing Census. I was sceptical as to the value of these structures – not helped by being shown hedgehogs ignoring them and creating nests against the lovingly built or bought houses! But I was wrong. The survey showed that hedgehogs really do use them, both bought and built – with a preference for built.

It can take a while for hedgehogs to start using nestboxes, so don't be downhearted if you install one and it's not immediately occupied. They are used more often in back gardens and in sheltered spots. Providing food (in the garden, not in the house) and bedding increases the chances of a hog moving in. Here are just three nestboxes worth considering.



### 1 HEDGEHOG HOME

Wildlife World, £59.95

A top-of-the-range product, made from recycled plastic and FSC wood. Its design allows easy cleaning (if unoccupied in March–April) and the entry porch helps protect against disturbance.

[shop.britishhedgehogs.org.uk](http://shop.britishhedgehogs.org.uk)



### 2 HEDGEHOG HOUSE

Coopers of Stortford, £29.99

This simple design includes an entry tunnel as well as a lid for easy access. It's made from untreated Chinese fir wood and should be effective in keeping hedgehogs safe.

[coopersofstortford.co.uk](http://coopersofstortford.co.uk)



HEDGEHOG  
HIGHWAY  
PLEASE KEEP THIS HOLE OPEN!

WWW.HEDGEHOGSTREET.ORG

## HEDGEHOG HEROES

### The 'highway man'

Chris Powles, Kirtlington, Oxfordshire

The Kirtlington Wildlife and Conservation Society (KWACS) is a small community group that punches well above its weight when it comes to helping hedgehogs.

"The village is full of stone walls," says Chris, its Chairman. "So, when it came to making a hedgehog highway, linking gardens together, it was no small task. However, we got a map, calculated the minimum number of holes we would need to maximise connectivity, and set to work. The support has been superb."

The result is an array of amazingly creative holes, through stone, brick and wood, linking 60 premises, including the village church, pub and school.

Even dramatic height differences (between the ground on opposite sides of a wall) haven't got in the way. Chris has constructed an ingenious stone staircase (possibly the world's first for hedgehogs) and a ramp – both of which are in regular use.

● [kirtlingtonvillage.co.uk/kirtlington-hedgehog-street](http://kirtlingtonvillage.co.uk/kirtlington-hedgehog-street)



Chris created a ramp to give hedgehogs a route through gardens.



### 3 ECO-PLATE HEDGEHOG HOUSE

CJ Wildlife, £49.99

Made from a material produced from recycled car seats, this is a hardy house that will keep hedgehogs nice and dry. The entrance tunnel is hidden within the design and helps deter predators. [birdfood.co.uk](http://birdfood.co.uk)

all help. Build or buy a hedgehog house, especially if you aren't able to let a corner go wild. Supplementary food is useful, and there is lots of advice available to help you avoid inadvertently feeding other animals.

Then, move on to the potential hazards. Make sure ponds are accessible – with a beach or ramp, so hedgehogs can get a drink and, more importantly, get out. Remove litter and netting – a hedgehog's spines make them susceptible to getting trapped. Elastic bands and discarded facemasks are both a liability. Really reconsider chemical use – lawn treatments and slug pellets kill off hedgehog food. Please mow or strim with care – hedgehogs have no fight or flight response, so the potentially alarming noise of a mower will just prompt them to roll into a ball. They face the same problem with bonfires, and this is made worse by the fact that a bonfire very much resembles the

perfect hedgehog home. Make sure you check autumn pyres before they are lit, and only build them on the day they will be burned.

Do your bit and spread the word. Sign up to Hedgehog Street and become a hedgehog champion. Talk to your neighbours, talk to your local councillors, talk to your schools – anyone who has potential hedgehog habitat is a potential ally. And remember, most people love hedgehogs, and most people want to help – they just need a gentle nudge in the right direction. 🦔



**HUGH WARWICK** is an author and ecologist. He is also a spokesperson for the BHPS. [@hedgehoghugh](https://twitter.com/hedgehoghugh)

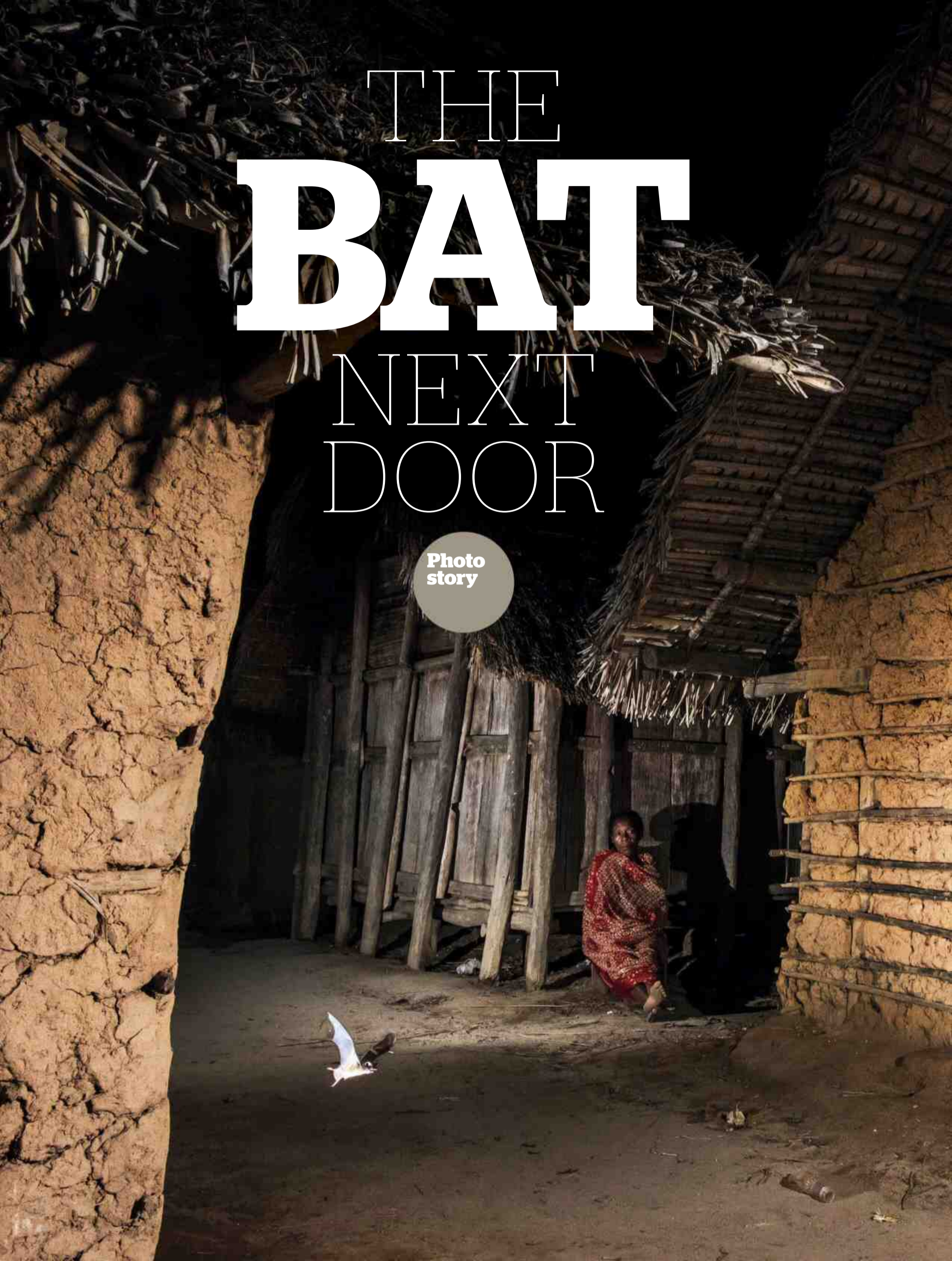
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# THE BAT

NEXT  
DOOR

Photo  
story







**Madagascar's bats are helping to fight insect infestations in the country's rice fields – so, can the locals learn to love their new neighbours?**

*Photographer Joan de la Malla*

Lying off the east coast of Africa, Madagascar is home to more than 40 species of bat, most of which are endemic (including Peters's wrinkle-lipped bat, pictured). As their natural rainforest home is cleared for rice paddies, these winged mammals are finding themselves living in increased proximity to humans – who often view them as a bad omen, an expendable nuisance or an easy meal. Yet bats are incredibly valuable to local livelihoods. As voracious insect-feeders, some offer a free pest-control service to farmers, while their nutrient-rich guano is an effective agricultural fertiliser.



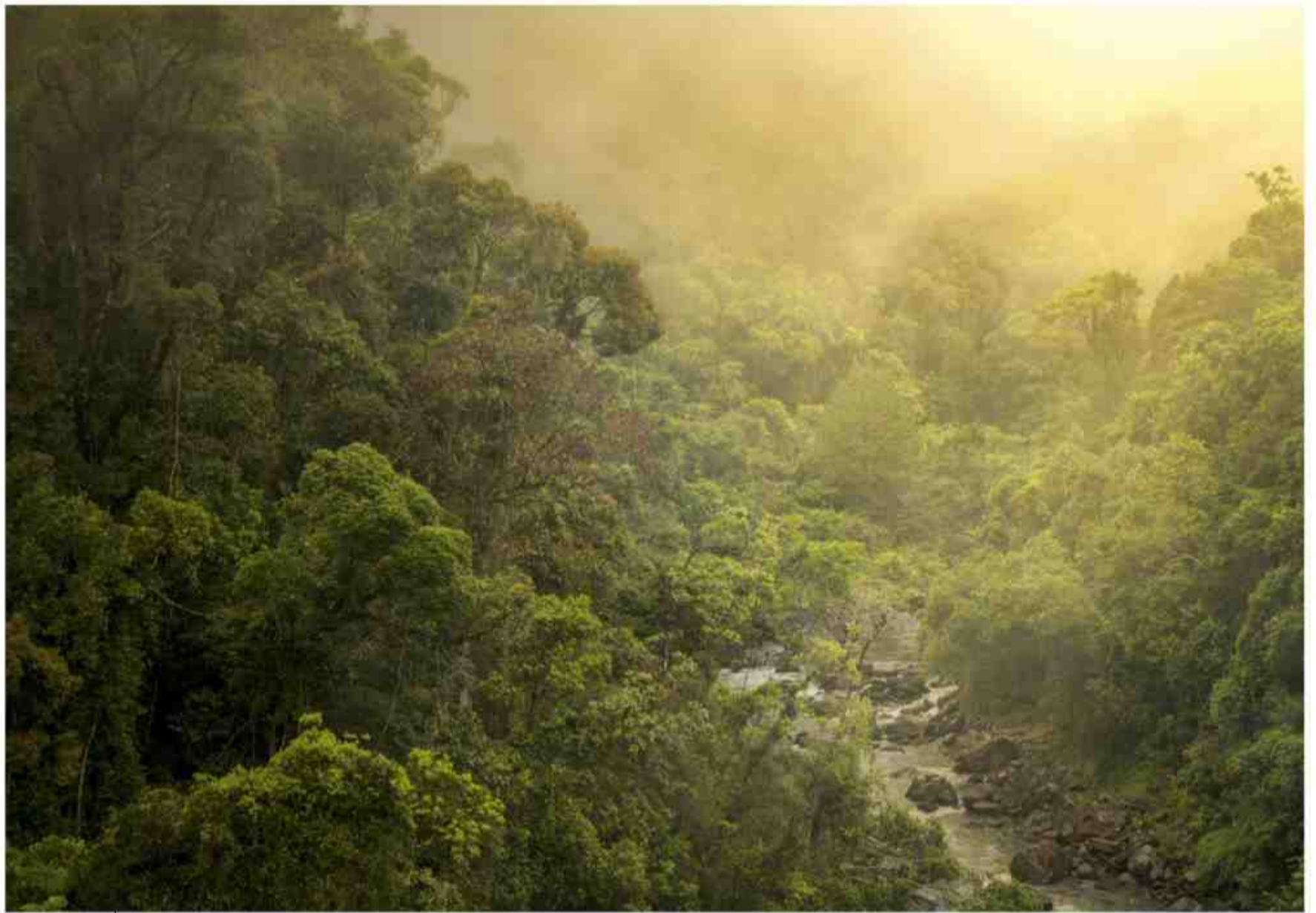


**ABOVE** *Chaerephon atsinanana* (a free-tailed bat) is one of six bat species that researcher Adrià López-Baucells – from the Natural Sciences Museum of Granollers, Spain – and his team spotted flying in from forest or village roosting spots, to feast on insects in Madagascar’s rice fields.

**RIGHT** Rice farming has grown exponentially in the past five years, driven by a rapidly expanding human population. “Madagascans are quite poor, so they are really dependant on rice for their survival,” says photographer Joan. “The country consumes more rice per capita than anywhere in the world and it’s the most important exporter, too.”







**ABOVE** Madagascar's rainforests are being felled at an alarming rate. "There's been about a 65 per cent reduction in forests in the past 80 years," says Joan. Alongside bats, the trees harbour animals such as lemurs, chameleons and aye-ayes.



**RIGHT** Insect pests, such as the paddy swarming armyworm and grass webworm, have a devastating impact on rice crops, causing more swathes of forest to be cleared to create new paddies. However, the researchers believe that promoting bats as pest controllers will allow a mutually beneficial relationship to take wing.







**ABOVE** Some bat colonies still roost in caves found within the forests. Local people are employed to locate the sites and hundreds of tonnes of guano are excavated by large-scale commercial outfits and exported overseas for use as a fertiliser. This activity is currently unregulated and potentially damaging to the resident bats.

**LEFT** Villagers are beginning to discover their own sources of guano. Newer buildings with metal roofs (often schools or libraries built by NGOs) are becoming popular with bats. Gathering droppings from a few roof spaces every few months is a sustainable model, allowing farmers to boost crop yields and the bats to remain unharmed.





**ABOVE** At dusk, Madagascar's skies come alive as vast swarms of bats embark on their nightly feeding missions. While some species appear to be thriving by feasting on insects above the rice fields, bats' long life-cycles and relatively slow reproduction rates means colonies can be eradicated all too easily.



**LEFT** Despite their valuable guano, bats (here, Peters's wrinkle-lipped) roosting in the eaves are not always welcome. Regarded as smelly pests, they can be forced out or killed. "Many people simply don't want bats in their buildings," says Adrià. However, trials are underway to relocate the colonies to bat boxes. "The solution is simple – it just needs to be put into practice."





Madagascan flying foxes, which feed on fruits and flowers, also provide a valuable service, helping to regenerate forests through seed dispersal. This Vulnerable species is viewed slightly more favourably by local people than their smaller insectivorous relatives – perhaps because of their ‘cute’ appearance, or perhaps because they make a popular meal.

**RIGHT** Easily caught in nets, flying foxes are hunted seasonally as they migrate to feed on fruit trees. They may then spend days in cramped, unsanitary conditions, waiting to be sold at market. Adria doesn't believe an outright ban is in order, though: "I wouldn't feel comfortable telling villagers not to hunt bats anymore – they've been hunting bats for decades." Instead, he suggests further regulation of the hunting season or quotas might provide protection to the rapidly decreasing population.







**BELOW** Conveying the benefits of having bats as neighbours can be challenging in a culture where storytelling is rife and facts sometimes scarce. “Bats are often hated, or people are afraid of them, or they are related to bad luck,” says Joan. “These myths started a long time ago, and the idea of a relationship where people can profit from bats is quite new. It takes time to change minds.”



**LEFT** Conservationists still have much to learn about Madagascar’s bat populations. “It’s much easier to ask for funds for lemurs and other endemic species – there’s lots of money and research for them and very little for bats,” says Joan. But these nocturnal neighbours might just be the country’s greatest agricultural and ecological asset.



**JOAN DE LA MALLA** specialises in wildlife conservation photography and his work has been awarded in many international competitions. For this particular project focusing on Madagascar bats, Joan worked in close collaboration with researcher Adrià López-Baucells. Find out more at: [joandelamalla.com](http://joandelamalla.com)





WELFARE  
IS NOT  
FAIR

ANIMALS  
HAVE TO HAVE RIGHTS  
TOO

TO  
ANIMALS

ANIMALS

GIVE  
OUR  
RIGHT



# ANIMALS' CHARTER

Animals are alone within our society - they are living beings legally classified as 'things'. Is it time we gave them their own rights?

By Noël Sweeney | Illustrations Eric Smith

Animals, both domestic and wild, touch all aspects of our daily lives, and we use our power to control them by law. Law is our language of natural justice, a language that speaks for the vulnerable and the weak. Yet our past is tainted by injustice towards those targets we have made victims of prejudice, including black people, children, Jews and women. Today, while we grant rights to all *Homo sapiens*, we still deny rights to all animals.

Animals are denied rights because speciesism – the assumption of human superiority – prevents them from climbing our ladder of law. Our common law is the basis of the legal systems in many countries, including Canada and India. Our self-serving sense of superiority can be seen in *R v Menard* (1978), a case in the Quebec Court of Appeal involving a defendant who ran a business euthanising animals by motor exhaust, a practice that caused pain and burns. Judge Lamer confirmed: “The animal is inferior to man, and takes its place within a hierarchy which is the hierarchy of animals... It will often be in the interests of man to kill and mutilate wild or domestic animals, to subjugate them and, to this end, to tame them with all the painful consequence this may entail for them...”

Lamer’s judgment is speciesism in action. Though *Menard* is the defendant, it is almost as though the animal is on trial, at the mercy of a human judge, prosecutor and

jury. However, the creature’s only ‘crime’ is the birthmark curse of being an animal.

The fight for animal rights is the last moral crusade of the 21st century. We can only counteract our animal abuse by granting a legal voice to those without one, by creating an ‘Animals’ Charter’.

Richard ‘Humanity Dick’ Martin, an Irish barrister and MP, introduced the first major animal welfare legislation in the world, namely the Act to Prevent the Cruel and Improper Treatment of Cattle 1822. Known as Martin’s Act, it deemed it an offence to abuse domestic animals.

It may sound morally correct, but Martin cleverly concentrated on the benefit to the animals’ owners, who now had a legal right against anyone who damaged their property. The welfare of the animals was secondary to this.

Consequently, the concept of animals as property was embedded as a cornerstone of our law. A modern typical example is the Theft Act 1968, which states that ‘...wild creatures, tamed or untamed, shall be regarded as property.’ An animal’s status is determined by the creature’s use to us.

The reasoning is the same as that used to practise and promote racism and sexism. Our conspiratorial belief that we have absolute rights over all animals is similar to our ancestors’ belief that black people were





born to be slaves and that women were natural chattels for men.

Therefore, humans and animals need an 'Animals' Charter', based on the principles that animals are created as individuals endowed with inalienable rights, including life and liberty and the ability to live naturally and free from abuse by humans – and that they are living beings with innate dignity that must be respected by humans.

Within the proposed charter are 100 articles that cover the changes essential to grant animals a legal personality, which confers the associated rights. These include appointing an 'animals' advocate' to promote and protect their rights.

Anyone within our society who faces discrimination on the grounds of age, disability, ethnicity, gender, sex or otherwise, has legal protection. Animals, in contrast, have no representation. Animals need an advocate for the same reasons as other victims of prejudice, but their need is greater because they are denied any legal means of dissent. To have a future in our society, animals need rights with a human face.

'Rights' as compared to 'welfare' is more than mere semantics. Welfare may allow a bigger cage or longer leash, yet our tether sets the limits of animal freedom. We decide who benefits and who bears the burden within our law, hence animals remain imprisoned by our ball and their chain. A direct comparison reveals the truth: would any free person want their status defined by a 'human welfare act' or by our Human Rights Act?

In 1215, King John was challenged by the barons who saw him as a dictator that believed he was above the law. Out of this came the rights established by the Magna Carta, which states: 'to no one will we sell, to no one will we deny, or delay right or justice'. An animals' advocate under the charter would ensure the 'one' is not limited to humans.

**T**wo significant cases have recently brought the debate of animal rights to the forefront, while highlighting a foresight lacking in English law.

In the Animal Welfare Board Case (2014), action was taken against Jallikattu, a 300-year-old custom involving bull/bullock cart-races, in which the animals "are physically and mentally tortured for human enjoyment." In the Supreme Court of India, Judge Radhakrishnan was not impressed: "We are, in these cases, concerned with an issue of seminal importance with

regard to the rights of animals under our constitution, laws, culture, tradition, religion and ethology, which we have to examine, in connection with the conduct of Jallikattu."

He delivered a bellwether judgment by interpreting their constitution as 'the Magna Carta of animal rights.' Radhakrishnan ruled the custom as sadistic and declared it illegal.

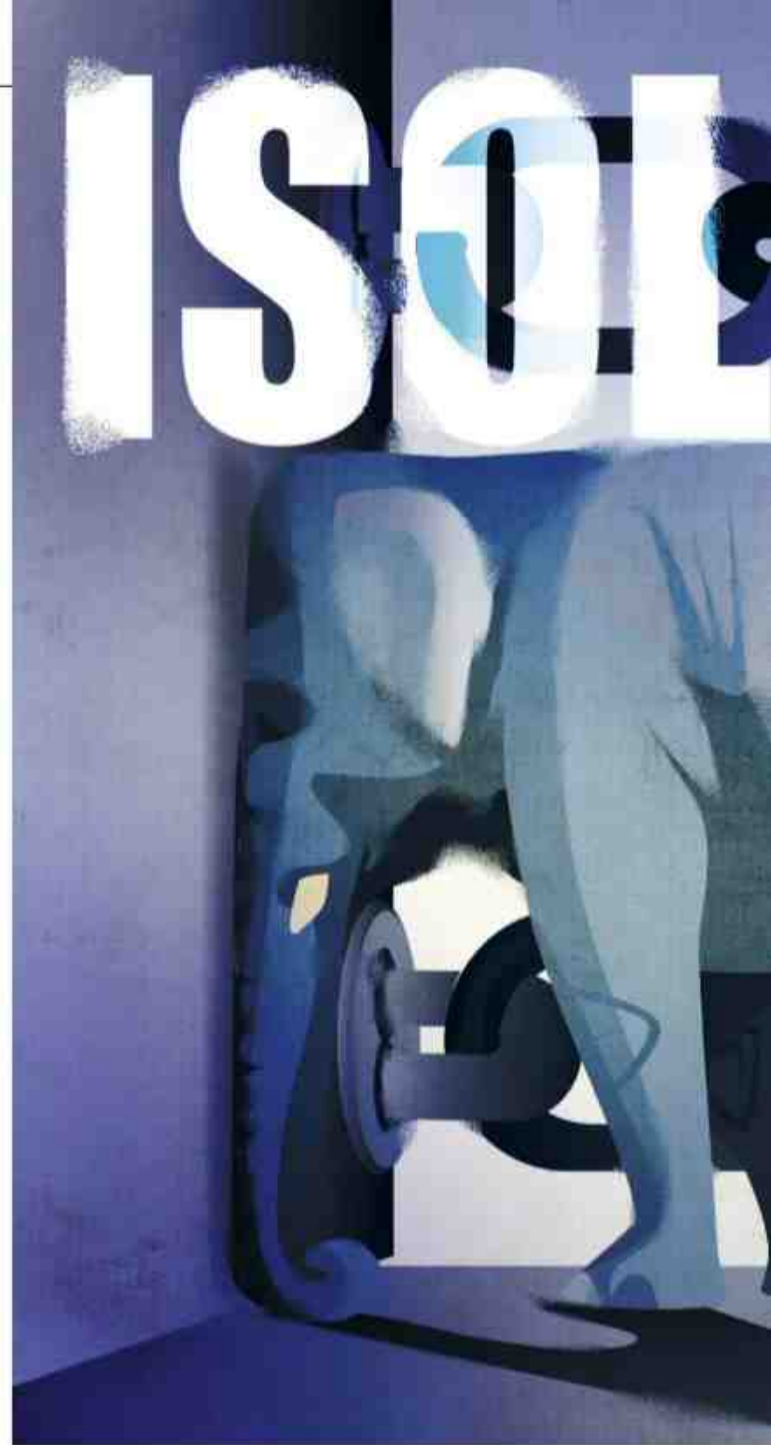
In the Noah Case (2003), the petitioner applied to the Supreme Court of Israel for a declaration that force-feeding geese for the production of foie gras was illegal. The court granted the declaration, as the practice was "cruel" and "constituted abuse of animals." Judge Rivlin delivered a perceptive judgment: "There is no doubt in my heart that wild creatures, like pets, have emotions. They were endowed with a soul that experiences the emotions of joy and sorrow, happiness and grief, affection and fear."

Rivlin ruled that force-feeding is abuse, leading to its abolition in 2005.

The force-feeding of geese echoes the practice used on suffragettes in prison. All women suffered, some died. Mary Clarke (Emmeline Pankhurst's sister) was pinioned and force-fed in Holloway Prison. She suffered a brain haemorrhage and died on Christmas Day 1910.

At that time, women had no power to resist such legal abuse. The same position remains for animals held and confined for our purposes.

**E**nglish law can be further called into question when comparing the progressive approach of the Islamabad High Court in the Kaavan Case (2020), which has set the bar higher for the future. Kaavan was an Asian elephant in his 30s, living alone in a Pakistani Zoo, and his case was brought to court by American activist and singer Cher. Chief Justice Minallah concluded with a scathing judgment: "Do the animals have legal rights? The answer



to this question, without any hesitation, is in the affirmative.

"To separate an elephant from the herd and keep it in isolation is not what has been contemplated by nature... It is a right of each animal, a living being, to live in an environment that meets the latter's behavioural, social and physiological needs..."

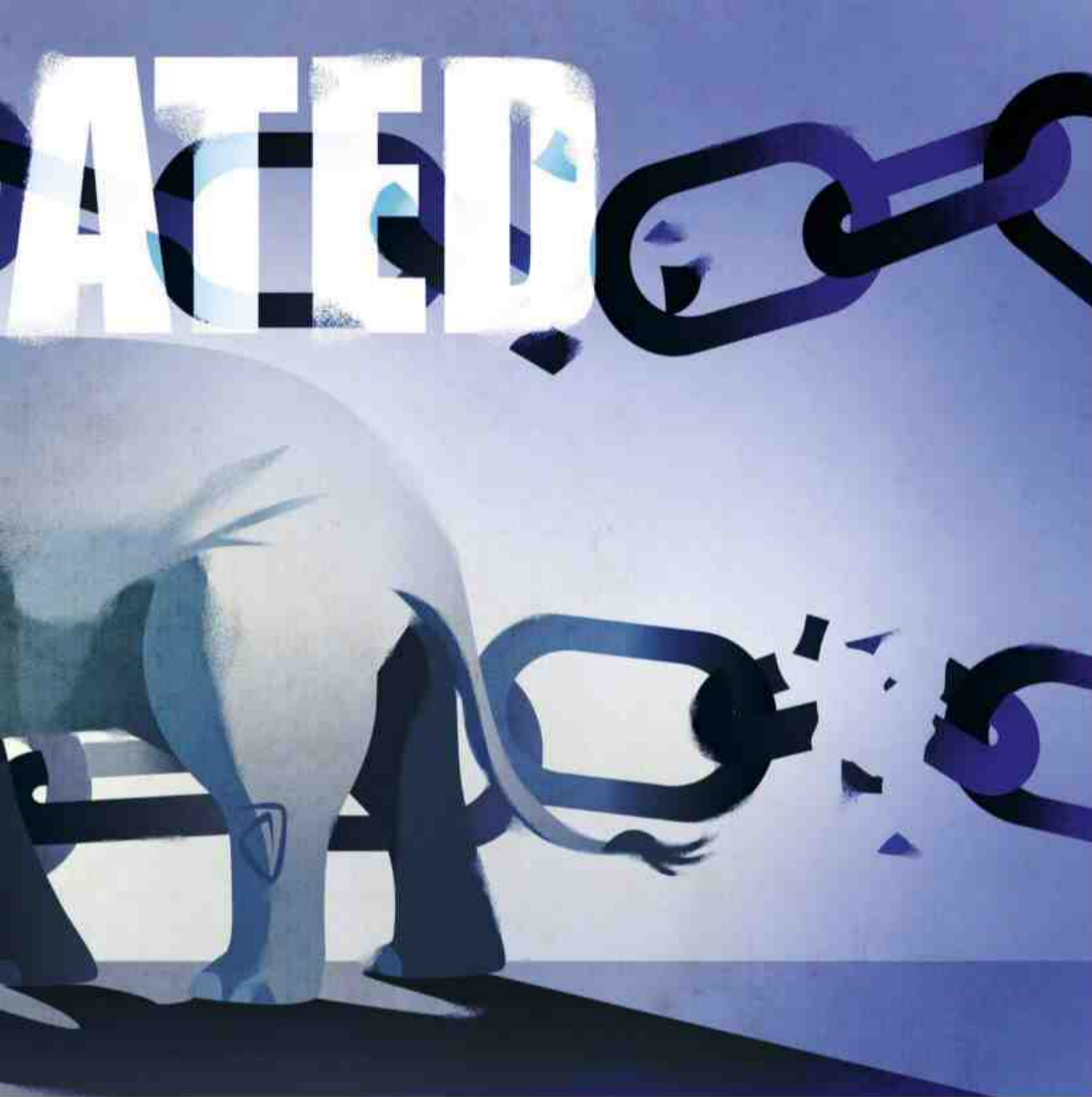
"Humans cannot arrogate to themselves a right or prerogative of enslaving or subjugating an animal because the latter has been born free for some specific purposes."

Minallah then ordered that Kaavan be relocated to an elephant sanctuary.

An appeal in the Alberta Court of Appeal, Edmonton (City), 2013, may yet prove to be vital for animals. It involved another Asian elephant, known as Lucy, who was similarly suffering from isolation. The appeal was dismissed, yet its importance lies in the

**"While the law protects wildlife and endangered species from extinction, animals are denied rights."**





twin limbs of freedom and justice. The legal wall we have conspiratorially constructed between animals and us is built with bricks of natural injustice.

**A**braham Lincoln led the fight to abolish slavery, and his vision is a life lesson for English law: “I am in favour of animal rights as well as human rights. That is the way of a whole human being.” Lincoln, an attorney, saw the law as it was and as it should be.

English law introduced the first major animal welfare legislation in the world. Yet wild animals are now in peril as our power and retrogressive ethos is exercised by killing badgers and squirrels. In 2021 the Government intends to renege on an undertaking by making banned pesticides lawful (as covered in News, *BBC Wildlife Magazine*, April 2021), which could potentially decimate bees throughout our countryside.

Law, as our mirror of morality, should reflect and respect the fact that we are all ‘animals-in-law’. Animals exist as sentient entities in their own right and for their own interests and reasons. A legal system that sanctions tyranny over another species is immoral and unjust. Our failure to treat them within the true purpose of the level of law proves our prejudice. For animals to have a future that displaces their present and past, as the charter advocates, they need to be freed from our legal yoke. Animals will continue being victimised by our speciesism unless and until they are protected by the legal mantle of an ‘Animals’ Charter’. 🐾



**NOËL SWEENEY** is a barrister who specialises in human rights, criminal law and animal law. His latest book, *An Animals’ Charter (Alibi, £12.99)*, is available now.



**WANT TO COMMENT?**

Should animals be given more legal rights? Should they no longer be viewed as human property? Tell us your thoughts by emailing us at [wildlifeletters@immediate.co.uk](mailto:wildlifeletters@immediate.co.uk)

potent dissent by the presiding judge, Chief Justice Fraser, who was adamant Lucy was entitled to a day in court: “Some may consider this appeal and claims on behalf of Lucy inconsequential, perhaps even frivolous. They would be wrong. Lucy’s case raises serious issues not only about how society treats sentient animals, but also about the right of the people in a democracy to ensure that the government itself is not above the law.”

**T**he importance of rights for animals is related to our prejudice towards them. Richard Ryder, who coined the word speciesism, explained his reasoning in *Victims of Science* (1975): “Speciesism and racism (and indeed sexism) overlook or underestimate the similarities between the discriminator and those discriminated against and both forms of prejudice show a selfish disregard for the interests of others, and for their sufferings.”

That is why we used to have slave and wife-selling auctions, and still have animal auctions. Racism, sexism and speciesism root and grow from the same stem of prejudice. Black and women’s lives matter, and so do those of animals. Any victim of discrimination that shares sentience is equally entitled to justice.

We are content to continue treating animals in the same way we once treated black people and women. An Animals’ Charter might seem utopian, but only because our law is an anachronism. English law, once progressive, is now retrogressive, out of harmony with the foresight demonstrated by other jurisdictions that recognise rights for animals. Our law is unfit for the purpose of protecting animals from those who could, and do, harm them: us.

The Nair Case (2000) involved the Government of India banning the training and exhibition of animals – bears, monkeys, tigers and panthers. Judge Kurup in the Kerala High Court upheld the ban, and his conclusion is a legal lodestone for legislators now and in the future: “If humans are entitled to fundamental rights, why not animals? In our considered opinion, legal rights shall not be the exclusive preserve of the humans, [legal rights have] to be extended beyond people, thereby dismantling the thick legal wall with humans all on one side and all non-human animals on the other side. While the law currently protects wildlife and endangered species from extinction, animals are denied rights, an anachronism which must necessarily change.”

That wall is the equivalent of the Berlin Wall, which denied those behind it the



# ISLANN

## AT THE EDGE OF THE WORLD

The isolated Scottish islands of St Kilda provide a vital breeding station for seabirds. But how are the species faring in this remote Atlantic outpost?

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*By Sara Frost*





# DS

The remote archipelago of St Kilda (the westernmost islands of the Outer Hebrides) may not be the easiest place for humans to eke out an existence, but it's a haven for gannets and many other avian species.

Scotland: The Big Picture/NPL

After four hours at the bow of a small boat, straining my eyes at a nondescript dot on the Atlantic horizon, I have finally made it. I'm about to set foot on the archipelago of St Kilda, that famously remote scattering of rugged little islands that erupt from storm-tossed waters off Scotland's west coast.

Raucous cries echo from the cliffs that tower over the boat as we cruise into Village Bay. A thick cloud of puffins, razorbills and guillemots circles above and the sour smell of faeces from a million seabirds slices through the salty air.

It's summer 2018, my fourth year of leading wildlife cruises to St Kilda (and 18 months before trips here would grind to a halt with the advent of COVID-19). To be greeted by uncharacteristically calm seas, sunny skies and the din of several hundred thousand screaming seabirds is a spectacular welcome back.

Running ashore by Zodiac, I lead my guests onto Hirta, the largest of the islands. A tough journey across Atlantic waves is what the islands demand of any visitor, but the challenges involved in reaching St Kilda just make it all the more alluring.

## Rise of an avian empire

St Kilda emerged from the Atlantic 55 million years ago. Surrounded by bountiful ocean waters, far from notable pollution and with a complete absence of land predators, it's perfect avian habitat.

Today, managed by the National Trust for Scotland (NTS), St Kilda is the most significant station for breeding seabirds in north-west Europe, supporting internationally important colonies that number 330,000 pairs. It is also a stopover for Arctic-breeding migrants, and known for its records of American vagrants. Such is the length of time that birds have reigned over these islands that a subspecies of Eurasian wren has even evolved here – a slightly larger and less 'streaked' version of our mainland species. The powerful call of this tiny bird rings out across the bay, cutting above the cries of its maritime cousins. ▶







St Kilda ranger Sue Loughran lives on Hirta, alongside a seabird and marine ranger, an archaeologist and a residential volunteer. Sue's responsibilities include monitoring wildlife, tracking biosecurity (rats arriving on the island would be a disaster), liaising with the Ministry of Defence (which has a radar on the island) and educating visitors.

"The islands are set in a near-pristine marine environment that supports them as a seabird sanctuary," Sue says. "St Kilda has four designations on the strength of its breeding seabird populations alone."

The archipelago is the only place in the UK to carry dual UNESCO World Heritage status (for both its natural and cultural significance), an honour shared with just 39 other sites in the world, including Machu Picchu in Peru and Mount Athos in Greece.

Indeed, St Kilda boasts a seemingly never-ending list of accreditations to prove its worth: it's home to 66,000 pairs of fulmars, representing the largest colony of the species in Britain, 60,000 pairs of northern gannets, which breed on the sea stacks (making it the second largest gannetry in the world, after Bass Rock), and 150,000 pairs of puffins – about 25 per cent of Britain's breeding population. It is also home to the largest European colony of Leach's storm petrels, as well as significant numbers of common guillemots, razorbills, Manx shearwaters and great skuas. In total, more than 200 species of bird have been recorded on these islands.

### Peaks and troughs

A critical component to the success of the seabirds here lies beneath the ocean's surface. The waters around St Kilda are part of Scotland's Marine Protected Areas (MPA) network, designated a Special Area of Conservation for their reefs and sea caves. The sea cliffs – which, at 430m on Hirta, are the tallest in Britain – plummet to the ocean depths, forming canyons, trenches and caves in the seabed. This varied topography generates nutrient-rich

upwellings and delivers more food to the surface waters than in other areas, resulting in abundant shoals of fish.

St Kilda may be famed for its birdlife, but such a bounty doesn't go unnoticed by marine mammals. Feeding beneath the waves are porpoises, dolphins (Risso's, white-beaked, bottlenose, Atlantic white-sided and common), minke whales and grey seals.

Soft corals, too, are plentiful. In November 2018, Scottish Natural Heritage carried out a survey of the coral reefs, during which a new species (*Clavularia*) was discovered. St Kilda's exceptional waters support marine life rarely seen around the British Isles.

Despite its riches, St Kilda's avian residents are at risk. In 2019, a team of NTS surveyors carried out a huge seabird census – the first in nearly two decades – as part of a nationwide count aiming to provide an overview of population trends across the country. Given its status as the most important seabird colony in the UK, the results from St Kilda would be critical.

Acquiring the data was no easy task. "Weather conditions had to be right, and the expedition required rope-access trained ornithologists," says Sue. The census took



The St Kilda wren: a bijou bird with a big voice.



Clockwise from bottom left: Chris Gomersall/Alamy; Richard Burdon/Alamy; Pete Morris/AGAM/Alamy; Alan Wright/Alamy; Niall Benne/NPL; Hugh Harrop/Alamy; Sara Frost





The archipelago is the only place in the UK to carry dual UNESCO World Heritage status.



Clockwise from top left: the jagged shores of St Kilda; Leach's storm petrel is a starling-sized seabird; a fulmar in flight – the species could be affected by changes in fisheries legislation; land ho! St Kilda is 160km from the mainland; Risso's dolphin.



The St Kilda field mouse is hardy enough to cope with island life.



### Island mice

In August 1930, the last remaining villagers on St Kilda departed the islands for good. The resident house mouse became extinct almost immediately, having lived solely among the islanders and subsisting on their leftovers. The St Kilda field mouse, however, being hardier and almost twice the size of its counterpart in mainland Britain, still survives today. Research has found that the mouse is largely dependant upon seabird-derived food, though it is unclear if this is from scavenging or predation of seabirds, or from consuming their discarded food catches.



## Sea stacks dripping with centuries of white guano resemble iced cakes.

three seasons to complete, and only now have the scientists been able to process the vast reams of data gathered.

The results are mixed. Kittiwakes have decreased by a shocking 99 per cent, signalling a colony facing collapse (on Hirta alone, the 500 nests that were once regularly monitored have all vanished). The cause is not clear, but studies on the Isle of May, off Edinburgh, have linked poor kittiwake survival with rising sea temperatures, because the bird's prime prey of sandeels thrives in cooler waters. Though this study has not been repeated on the west coast, inferences may be drawn that something similar is happening on St Kilda.

Likewise, fulmar numbers have halved over the past 25 years, a possible consequence of changes in fisheries legislation. Fulmars once benefited by feeding on discards, but these must now be landed. Burrow-nesting Leach's petrels are also in a downturn, with researchers believing that predation from great skuas is playing a significant role.

### The burrowers

Surveying petrels is particularly tricky. You have to play audio recordings of their calls and then listen for nesting birds to respond. Petrels nest on the island of Dùn (though nestboxes on Hirta are starting to show encouraging occupancy), and spend all day on the wing, going to ground at night.

Another abundant burrow-nester is the puffin, and these endearing birds are no easier to count. While nests can be tallied from photographic surveys, researchers must check if each puffin burrow is occupied, either by observing the birds' comings and

goings, or tentatively feeling inside for feathers or beak. It's a time-consuming task, but the efforts have yielded some positive results: Sue and the team believe there are currently 135,752 'AOBs' (apparently occupied burrows) on St Kilda.

Puffins can dive to depths of up to 60m, allowing them to hunt an array of fish species. They are therefore far more resilient to changing food availability than surface feeders such as kittiwakes. Nonetheless, the discovery of a stable puffin population is still surprising and gratifying news, particularly given that populations in Iceland and Norway are declining.

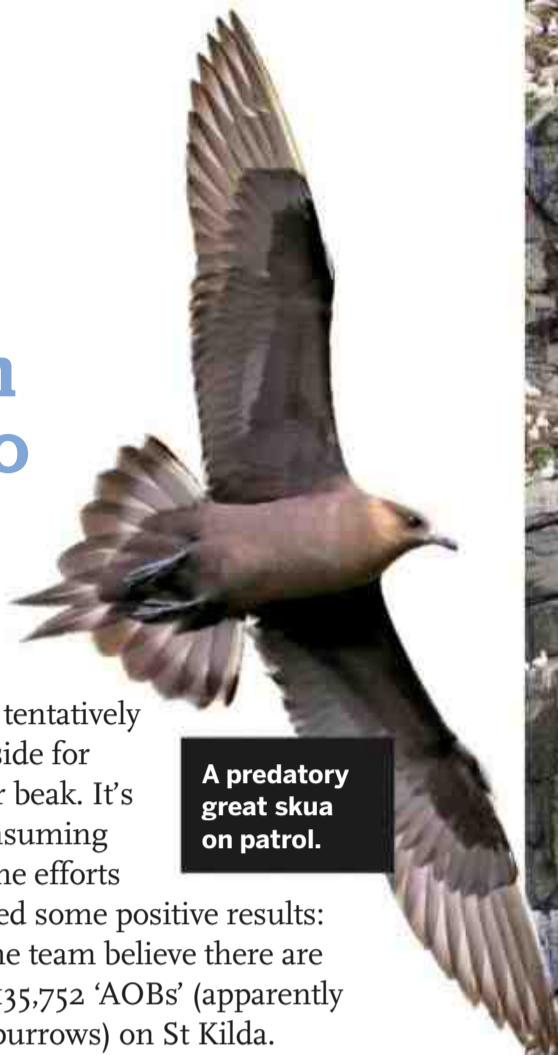
Mike Harris from the UK Centre for Ecology & Hydrology has studied the puffins on St Kilda and says: "We don't know where St Kilda's puffins winter, or how well they currently survive. Overwinter tracking has shown that puffins from declining populations in Iceland and Norway, where survival is perhaps lower than anticipated, winter far north in the Atlantic and across to Canada. In contrast, individuals from Skomer [in Wales] where numbers are increasing and survival is high, winter further south in the east Atlantic and Mediterranean. St Kilda puffins have not been tracked, but ringing shows that they also visit the Mediterranean, so it is plausible that, like those from Wales, they survive well by wintering in similar areas."

And there's more good news. St Kilda's gannet population has held steady since the last census in 2000 (which declared 60,428 occupied sites). It's likely that, because these birds can travel great distances – up to an impressive 500km – from their nest sites to forage, and can also dive deeper than some species, thus reaching a wider variety of fish, they rarely encounter food shortages. This, combined with high adult survival rates, may be the main factor behind the successfully sustaining population.

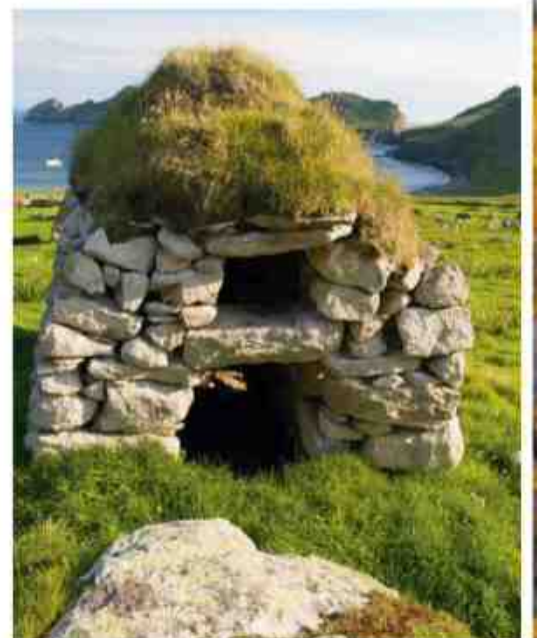
### Homeward bound

After spending two days on these incredible islands, we depart for the

A predatory great skua on patrol.

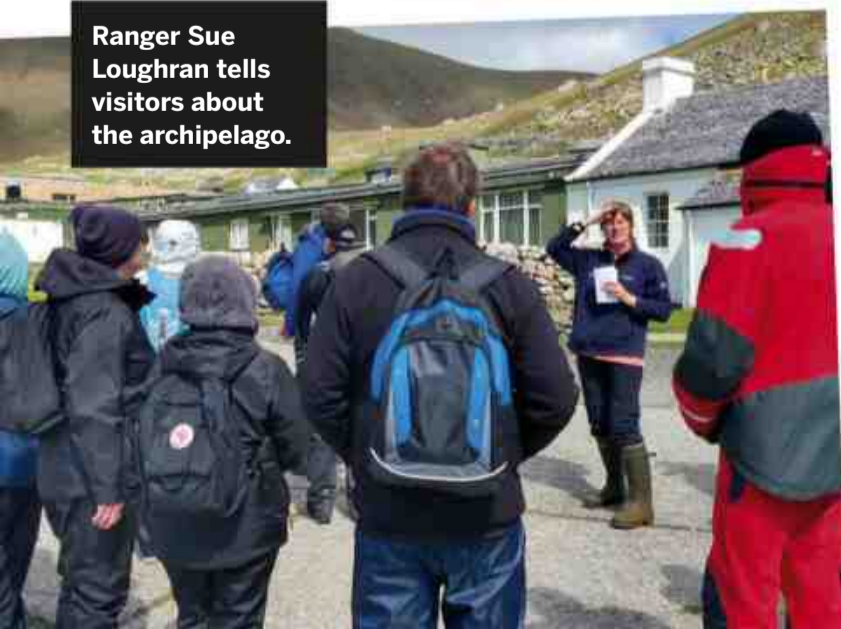


Above: the islands' cliff faces are covered with thousands of gannets. There's been a stable population of these birds here for more than two decades. Right: St Kilda's puffins seem to be faring better than those in Iceland and Norway. Below: previous human residents stored food in stone cleits dotted across the islands.



Clockwise from bottom left: Sara Frost; Philip Mugridge/Alamy; Andrew Mason/FLPA; Pump Park Vintage Photography/Alamy; Annelies Leeuw/Alamy; Jack Ronson/Alamy

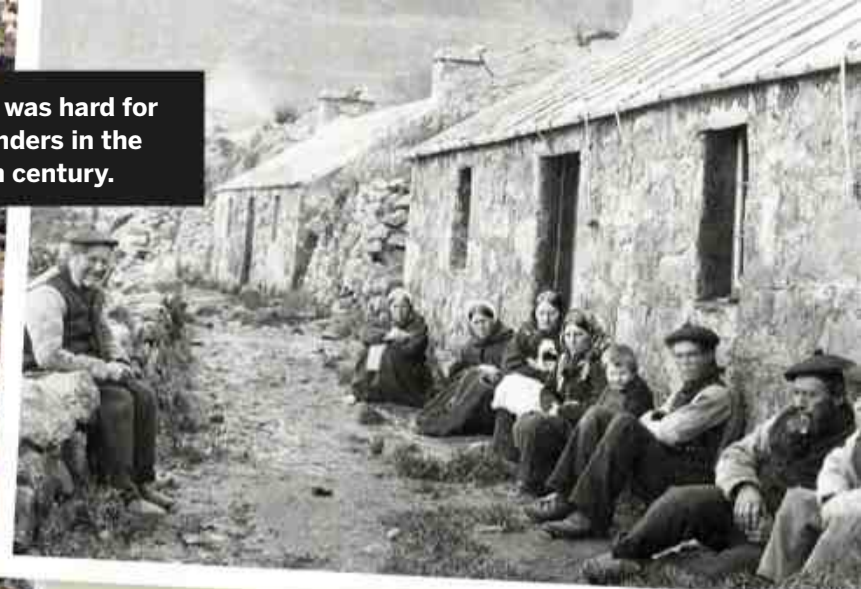
Ranger Sue Loughran tells visitors about the archipelago.







Life was hard for islanders in the 19th century.



## St Kilda: a potted history

Hirta is thought to have been first inhabited 5,000 years ago, by Bronze Age travellers. The population reportedly never exceeded 180 people (averaging 100), strictly limited by resources. Indeed, St Kildans had to be remarkably self-sufficient, and the community relied heavily upon seabirds as a source of food. Men would row out to the stacks in wooden boats, leap onto the slippery, wave-battered rocks and climb to treacherous heights with incredible skill to harvest gannets, fulmars, puffins and their eggs. According to documents from 1764, a staggering island-wide total of 3,240 eggs and 1,620 birds were consumed every day. To sustain them through winter, the islanders stored supplies of dead birds in igloo-like stone structures known as 'cleits', the remains of which still pepper the steep hillsides today.



mainland. Leaving Village Bay, I gaze at the sea stacks – dripping with centuries of white guano, they resemble freshly iced cakes – encircled by clouds of birds caught up in a frenzy to feed and fledge their chicks.

The dark shadows of great skuas hover overhead, as the predators search for unsuspecting victims to chase down for dinner, and, over the screaming of the seabirds, the crashing waves of the Atlantic and the chug of the boat engine, blasts the powerful song of the St Kilda wren.

The last great auk to be seen alive in the British Isles was on St Kilda – the species' final stronghold in Britain. We must hope that this wild gem will not become a final stronghold for other cherished creatures, as they face the challenges of climate change. For now, the islands remain a place of true wild wonder. 🐦



**SARA FROST** is a zoologist and wildlife guide. She spent three years living in the Hebrides, and has been guiding cruises to St Kilda since 2016. [sarafrost.webs.com](http://sarafrost.webs.com)

**FIND OUT MORE** St Kilda's highlights and history: [nts.org.uk/visit/places/st-kilda](http://nts.org.uk/visit/places/st-kilda)



## This month's panel



**BEN HOARE**  
Editorial consultant



**ELLEN HUSAIN**  
Wildlife film-maker



**LAURIE JACKSON**  
Wildlife tour leader



**ALEX MORSS**  
Ecologist



**HELEN PILCHER**  
Science writer



**KATE RISELEY**  
Ornithologist



**HELEN SCALES**  
Marine biologist



**LEOMA WILLIAMS**  
Science writer

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wildlife mysteries.*

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More amazing facts at  
[discoverwildlife.com](http://discoverwildlife.com)

# Q&A

## BEHAVIOUR

### How much wood does a woodchuck chuck?

**T**he word 'woodchuck' (another name for a groundhog) is thought to be a corruption of the Native American word *wuchak* – the name in no way references the rodents' biology or behaviour. In fact, they have very little to do with wood. Their diets are not tree-based, but consist largely of plants, grasses, fruits and occasional invertebrates. Neither do they make nests of wood, preferring to dig large and elaborate burrows underground.

These burrows were put to service in 1988 to answer the famous riddle: how much wood would a woodchuck chuck, if a woodchuck could chuck wood? US Fish and Wildlife worker Richard Thomas theorised that a woodchuck able to excavate a typical 9m-long burrow from the earth could (should it be inclined) move the equivalent volume of wood. It equates to about 317kg "on a good day, with the wind at his back." **Ellen Husain**





MARINE LIFE

# Why do humpbacks hang out at mountains?

**S**atellite-tracking studies have shown that humpback whales sometimes break their long migrations at giant underwater mountains, called seamounts. For example, they pause for a few days at La Pérouse seamount between the Indian Ocean islands of Réunion and Madagascar, and in the Pacific, off New Caledonia, they hang around seamounts for a week or more before continuing their southward migration.

It's not known for sure what humpbacks get up to during these stopovers, but they

may feed in the waters above seamounts, which are often thick with plankton and fish. They may also congregate here to mate, using the huge geographical features as meeting points.

Another theory is that male humpbacks use the acoustic properties of seamounts to amplify their songs through the ocean. Perhaps the whales locate the seamounts (which influence the Earth's geomagnetic field) by means of magnetic mental maps. Helen Scales

Left: woodchuck by name but not by nature. Above: if the mountain won't come to the humpback...

Woodchuck: Lynn M Stone/naturepl.com; humpback: Craig Lambert/Getty





Surfgrass can pollinate at the surface of the ocean and when fully submerged.

## BOTANY

## Can water pollinate plants?

**Y**es. There's a reason seagrasses produce some of the longest known pollen grains on the planet – they use water to help with pollination. This is called hydrophily. The 5mm-long pollen flows into the water from the male stamens, and forms tangled strings moved by sea currents, which eventually land by chance on a female flower.

Scientists have found rod-shaped pollen is best at striking its target and that some seagrasses increase their luck by only

flowering at low spring tides, when male flower buds (complete with pollen) float on the surface and are captured inside creased female petals. Some seagrass pollen forms rafts shaped like snowflakes, while other threads drift underwater.

As water pollination relies on volatile marine currents and chance, water-pollinated seagrass also hedges its bets, using some self-pollination and pollination by crustaceans and sea worms as a backup plan. Alex Morss

## ARACHNIDS

## Which spider puts its mate in a trance?

**M**ating may be one of the riskiest things a male spider ever does. Females are often larger, potentially aggressive and pack a venomous bite. For the desert grass spider of the southwestern USA, an interesting arms race has developed. The females produce a pheromone that acts as a siren song for males, who have left the safety of their web in pursuit of a mate. Upon meeting, the male begins to dance. His repertoire is known to include 21 different moves, combining abdomen wiggles and leg waves that he uses to advertise himself. Working his way towards the female's web, he begins to pluck its strands before unleashing his own chemical weapon – a pheromone that induces a motionless trance in the female, allowing him to mate with her safely.

Laurie Jackson



Mating can be risky business for the desert grass spider.



Migrating white-crowned sparrows get little shut-eye.

## ORNITHOLOGY

## Do birds need to catch up on lost sleep?

**W**e all know the feeling of needing to catch up on missed sleep, and it's easy to imagine that other animals must also feel tired after a disturbed night. Indeed, some studies have shown that, like us, birds sleep longer and more deeply after being kept up. But, unlike us, there seem to be certain times of year when they can do without sleep.

One phenomenon has been called 'migratory sleeplessness', where birds

seem naturally to reduce their need for sleep during the migration period. Throughout most of the year, North American white-crowned sparrows need to catch up on even small amounts of lost sleep, but during migration they reduce their sleep by up to two-thirds, with no apparent impact on their problem-solving skills. Another study looked at barnacle geese – they need to catch up on lost sleep in summer, but not in winter. Kate Risely



## PRIMATES

# Do other animals gamble?

**M**ight orangutans 'fancy a flutter'? Perhaps not quite, but they can place a smart bet. In a new European study, researchers gave several species of great ape and monkey the chance to gamble a small cracker in their possession, for the potential jackpot of a larger one. There was a risk of losing – getting an even smaller cracker. Vegas, eat your heart out!

The scientists varied the odds of winning over different trials, by changing the ratio of large to small crackers, and by varying the amount of information the primates had about the odds (by covering some of the options). Because of this, the furry gamblers could not always estimate their chances of winning.

Results showed that orangutans, along with chimpanzees, were the savviest gamblers, deciding to take the risk more often when the odds of success were higher, even when some guessing was required.

Leoma Williams

Beating the odds: orangutans turn out to be savvy gamblers. Below: turkeys and Komodo dragons (bottom left) have been known to have virgin births.

## 3 questions on

### Virgin births

#### 1 WHAT ARE THEY AND WHICH SPECIES HAVE THEM?

Virgin births occur when an unfertilised egg divides and develops, eventually producing a full-blown adult. It is a type of asexual reproduction, also known as parthenogenesis, and it's more common than you might think. Many invertebrates, including aphids, water fleas and some bees and scorpions, reproduce this way, but the phenomenon also occurs in some vertebrates. Komodo dragons, hammerhead sharks and turkeys are known to produce virgin births, too.

#### 2 WHY WOULD YOU WANT TO REPRODUCE THIS WAY?

As some women might be inclined to tell you, there are many reasons to do away with males. In female-only species, every adult member can produce offspring, which means the population can grow faster than species with both sexes. Energy isn't wasted looking for love or reproducing, freeing up resources to concentrate on other things, such as finding food or dodging predators. It can also be a way to bulk up the population when numbers are scarce.

#### 3 DOES IT PRODUCE ONLY FEMALES?

Remarkably, no! It all comes down to sex chromosomes, which are the chunks of DNA that determine whether an embryo develops into a male or female. In some birds, reptiles and fish, females have both male and female sex chromosomes, which means they can theoretically produce both sons and daughters by parthenogenesis. In practice, boa constrictors seem to have only female virgin births, while pit vipers and turkeys seem to have only male ones. No one knows why. **Helen Pilcher**





## ORNITHOLOGY

## Why do starlings' beaks change colour?

**A** crucial part of avian anatomy, birds' beaks are used as tools, weapons and much more – including communication. Beaks are formed from the jaw bones, covered with a skin-like layer toughened with keratin, and it is this layer that stores the pigments that provide colour to the beak.

Melanin gives starlings their dark winter beaks, but from November (later in migrant starlings) these start transitioning to yellow, ready for males to establish their breeding territories. This yellow coloration comes from

carotenoid pigments, which the starlings cannot produce themselves but instead gain through their diet.

Since carotenoids also play an important role in avian immune systems, the intensity of yellow can be used by starlings as an insight into each other's condition and potential parenting skills. A nice bright beak suggests a healthy bird. This is known as an honest signal, as the starlings are unable to manipulate its message – they're forced to show their true colours. Laurie Jackson

## The Explainer

## Bioacoustics



Bioacoustic monitoring can be used to study bats.

Bioacoustics is the study of sound in relation to animals. Bioacoustic monitoring has been transformed by the latest generation of super-sensitive digital audio recorders. Researchers at the BTO, which is pioneering the tech in the UK, say that it's like having "digital ears". The devices are simply left out in the field to record and store ambient sounds, such as the vocalisations of birds, bats or crickets. The great advantage is that you can record 24/7 (and in awkward or remote locations), then later analyse the data by computer. Ben Hoare

## AMPHIBIANS

## Do all frogs produce spawn?

**I**n short, yes! Female frogs produce eggs that are then fertilised by males. The resulting gelatinous blob, which typically contains lots of individual eggs, is called frogspawn. For most frog species, the spawn then develops wherever it is deposited – in ponds or puddles, for example – but some species buck the trend.

Females of the (sadly extinct) gastric brooding frog, which used to live in eastern Australia, would swallow their fertilised spawn and convert their stomachs

into makeshift wombs. Unbothered by predators, the emerging tadpoles would then develop entirely inside their mothers, who would then burp up the fully formed froglets.

Meanwhile, male Darwin's frogs, which are alive and kicking in Chile and Argentina, gulp in mouthfuls of fertilised spawn and then let the emerging tadpoles develop inside their enlarged vocal sacs.

Several weeks later, these frog dads also 'give birth' via their mouths.

Helen Pilcher

A bit of a mouthful: male Darwin's frogs carry tadpoles in their vocal sacs.

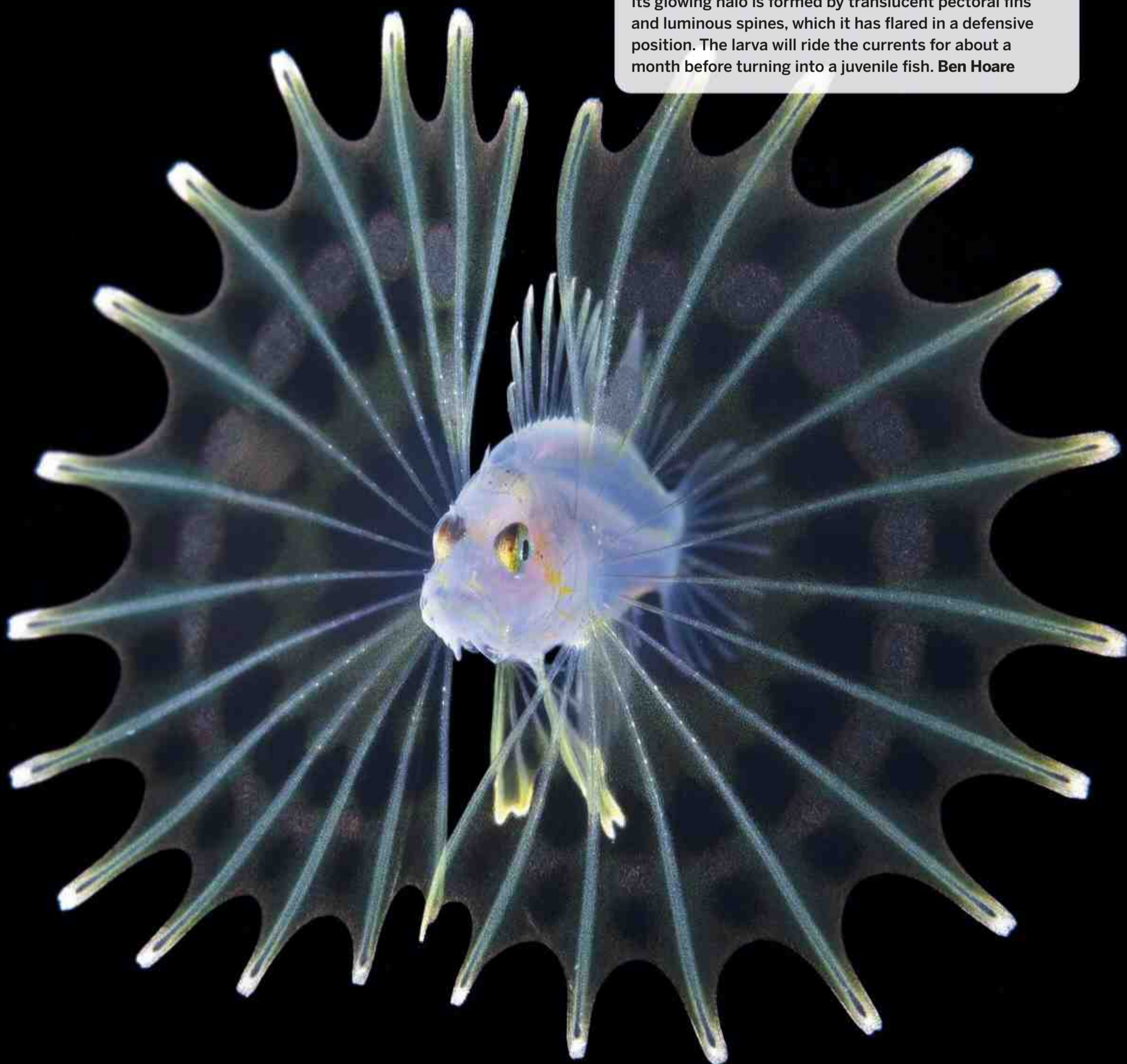




## What is it?

### RED LIONFISH LARVA

Like many marine fish, red lionfish are impressively fecund. A full-size female can produce up to two million eggs a year, which hatch into tiny larvae after a day or two spent drifting through the ocean. The larval lionfish in this image is barely 2.5cm long, yet already looks like a ghostly version of its spectacular, venom-spined parents. Its glowing halo is formed by translucent pectoral fins and luminous spines, which it has flared in a defensive position. The larva will ride the currents for about a month before turning into a juvenile fish. **Ben Hoare**





# At home

Bring a little extra wildlife into your life with the best of this month's TV, books, podcasts, streaming and much more.

Labour of love: Will worked with scientists and community members to take this image of a black leopard against a starry night sky.

**Book choice**

## Chasing shadows: on the trail of an elusive leopard

A journey of a lifetime saw one photographer capture his dream image of a melanistic big cat in Africa.

### THE BLACK LEOPARD

BY WILL BURRARD-LUCAS, ABRAMS & CHRONICLE, £26



"I learned that checking a camera-trap leads to disappointment much more frequently than satisfaction." Will's words should strike a chord with anyone that's ever

attempted to use one of these devices. The technique – placing multiple remote cameras, rather than being present behind a viewfinder – might be regarded by many as





the cheetah's way, but as this book so effectively explains, camera-trapping is much, much harder than you might think. Especially if you're trying to photograph a creature of legend.

A lesson in patience, passion and persistence, this is the story of a quest to capture one of the rarest cats on the planet, told through the life of an award-winning wildlife photographer. Taking us on an impressive journey from photographic infancy to mastery, Will explores the pitfalls of fieldwork and the honing of one's vision, delving into technical difficulties, failures

and successes along the way. Ingenious is certainly the word, from devising a BeetleCam (think a *Robot Wars*-style contraption crossed with a pro-spec camera) to months of painstakingly deploying camera-traps with the help of people from the local community.

Not only does Will succeed in his quest, he also turns the difficulty dial to a whole new level by managing to position his black leopard against a star-encrusted sky. The resulting image really shouldn't be viewed for anything less than five minutes – just sit back and take it all in.

Alongside the spectacular photographs, the behind-the-scenes stories, highlighting some of Will's conservation work in Africa, are a worthwhile read. The pages on the Ethiopian wolf are of particular intrigue.

If you have the slightest inclination of becoming a wildlife photographer, this book is a must. Even if you don't, it's a fascinating tome with images throughout that will leave you nothing less than inspired.

Tom Mason Wildlife photographer

● **VIEW MORE IMAGES FROM THE BOOK**  
[discoverwildlife.com/black-leopard-gallery](https://discoverwildlife.com/black-leopard-gallery)



BOOK

# Extraordinary Orchids

SANDRA KNAPP, THE NATURAL HISTORY MUSEUM, £25



Meticulously researched – as one would expect from Sandra Knapp, a senior research botanist at the Natural History Museum – this book is also lavishly brought to life with an abundance of artwork by a roll call of great botanical illustrators.

While it would be easy to be distracted by the glorious colour plates, the accompanying text is full of captivating surprises and interesting information about this immense, diverse family of flowering plants. For example, the ends to which orchids go to ensure pollination are remarkable – deploying flowers with scents that mimic insect sexual pheromones, flowers with enticing ultraviolet-spectrum ‘landing lights’, and even flowers that look like insects, replete with furry bodies and glossy ‘wings’.

*Extraordinary Orchids* ranges from the past to the present day, with thoughtful consideration for the future prospects of these fascinating flowers. I learned a great deal from this enjoyable book.

Jon Dunn Nature writer



Beautiful artwork of amazing orchids adorns the pages of this new book.

## WILD STREAM

YOUTUBE

**Birdsong ID**

Naturalist and photographer Ben Porter shares his top tips for identifying birdsong in these short videos.

[bit.ly/BirdsongID](https://bit.ly/BirdsongID)

RADIO SERIES

**Under the Canopy**

In these four episodes of *The Compass*, Jessica J Lee explores the wonder of forests.

[bit.ly/thecompasscanopy](https://bit.ly/thecompasscanopy)

TV SERIES

**Secret Safari: Into the wild**

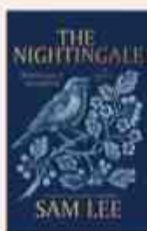
From lions and rhinos to cranes and a baboon named Alan, discover the animals living inside a Kenyan wildlife conservancy.

All 4, streaming now

BOOK

## The Nightingale: Notes on a songbird

BY SAM LEE, CORNERSTONE, £14.99



Anyone familiar with Sam Lee as a leading folklorist and singer will be aware of his love affair with another timeless tunesmith – the nightingale. This is a celebration of the nightingale, illustrated throughout with an eclectic mix of art.

It starts at a personal and practical level before weaving off into the past, as Sam explores our relationship with this bird in literature, song, story and art. The sources are as far reaching as the bird itself, and range through our cultural history to the present day, where the nightingale is seen as a modern symbol of wild recovery, hope and ecological rebellion.

Nick Baker TV presenter and naturalist

BOOK

## Skylarks with Rosie: A Somerset spring

BY STEPHEN MOSS, SARABAND, £12.99



Accompanied by his red fox Labrador, Rosie, Stephen Moss takes us on a touching and reminiscent journey through the unprecedented spring of 2020 in Somerset. Filled with the wonder of British wildlife at the height of its most memorable season, this is a delightful read.

Seeing 10 warbler species by 8am, welcoming his first spring views of chiffchaffs, swallows, orange tip butterflies and pipistrelles, Stephen draws attention to the beauty of the natural world. He also highlights that the entire nation is now realising nature’s beauty, too, and cherishing it like never before. A must read for all.

Hannah Stitfall Wildlife film-maker



## PRODUCT

## Smith The Roll Pack

MILLICAN, £140

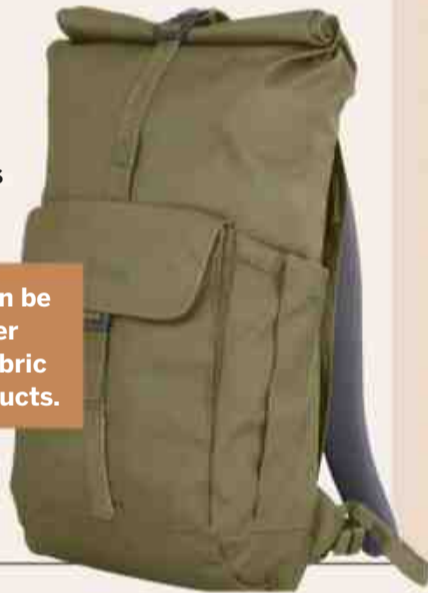
If you want travel wares that take wear and tear, you could do worse than trust people who've been there. Jorrit and Nicky, the founders of Millican, first met in the Andes in the '90s. Many moons later, they hooked up once again to launch their own travel goods company.

Within their Mavericks range, Smith The Roll Pack is beginning to take on legendary status. This stylish and durable 25L backpack has it all. It's light, comfortable, hard-wearing, packs down to a comfortable size but expands to fit all you'll need for a day on the mountains, in the jungle, on the coast or on the daily commute. Oh, and the pack is now made from 100 per cent recycled materials.

Roll on!

Paul McGuinness

Millican will soon be using the 100 per cent recycled fabric on all their products.



## YOUNGER READERS

## When We Went Wild

BY ISABELLA TREE, IVY KIDS, £7.99



The real skill of successful conservation lies in the ability to communicate complicated, scientific concepts to as many people as possible, including

children. Isabella Tree is one such communicator. *When We Went Wild* tells the story of two farmers who make the shift from industrial farming to rewilding, and the wonderful benefits that this brings for wildlife, the community and for them.

The story is understandably simplified, perhaps a little too much so, and I can

imagine eagle-eyed young children (5–8) pestering parents and teachers with questions: “but why did the land soak up the water, Mummy?” or “Miss, why do people use chemicals, if they kill all the animals?” The subject matter may be a little intense at times, but the exquisitely detailed illustrations from Allira Tee bring the whole thing to life.

Based partly on Isabella's personal experiences at Knepp Wildland in Sussex, this book would sit brilliantly on any nature-loving child's bookshelf.

Lucy McRobert Wildlife writer

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## ON OUR WEBSITE

## A TASTY FORAGED TREAT

Author and forager Chris Naylor shares his recipe for making pesto from wild garlic, also known as ramsons: [discoverwildlife.com/wild-garlic-pesto](https://discoverwildlife.com/wild-garlic-pesto)

## GOING PLACES

Use our illustrated guide to learn about 12 birds on the move in spring in the UK: [discoverwildlife.com/migrating-spring-birds](https://discoverwildlife.com/migrating-spring-birds)

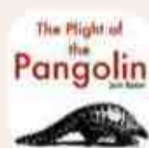
## FINDING A REAL RARITY

Pasqueflowers are stunning spring blooms, but are rare in the UK. Discover where to see them after lockdown: [discoverwildlife.com/pasqueflowers](https://discoverwildlife.com/pasqueflowers)

## PODCAST

## The Plight of the Pangolin

ANCHOR.FM/JACKBAKER



In each episode of this series, conservation student Jack Baker looks at a different element of the pangolin, from behaviour to conservation.

Jack features a global collection of specialists who bring insights from the field, alongside academic and personal perspectives. Some of the interviews are a little dry in places, but are balanced out with livelier exchanges with Jack's closer contacts. The series lacks the high-end production values and slick editing of more professional fare, but for fans of these unique creatures and those looking to learn more, it is packed with facts.

Ella Davies Nature writer

## ● NEW TO PODCASTS?

Read our guide: [bit.ly/wildlifepodcasts](https://bit.ly/wildlifepodcasts)

## BOOK

## Butterflies

BY MARTIN WARREN, BLOOMSBURY, £35



The book we butterfly lovers have all been waiting for – filling a gap between our atlases and field guides. Martin Warren delves into the extraordinary lives of Lepidoptera like no other.

The tone is accessible and informed as he explores each subject – from the aerodynamics of butterfly flight to the macabre world of parasitoids. Later chapters shine with passion and offer sound advice on finding different life stages, managing habitats and why conserving butterflies is of such importance. Martin set out to write the book he wished he had when first embarking on his own butterfly journey – I've no doubt that generations of lepidopterists to come will be grateful. Apithanny Bourne Entomologist



# Your photos

Amazing images  
taken by our readers

Enter our Your Photos  
competition at [discoverwildlife.com/submit-your-photos](https://discoverwildlife.com/submit-your-photos)



## ENTER TO WIN A JACK WOLFSKIN 32L BACKPACK

This month, our star photo will win an Orbit 32 Pack Recco backpack from Jack Wolfskin, worth £120. Ideal for hiking for miles along steep paths, rocky trails and other challenging terrain. With 32L capacity, there is room for everything you need. [jack-wolfskin.co.uk](https://jack-wolfskin.co.uk)





Star photo

**Icy stare**

The 'mousing pounce' is one of the strategies used by foxes when hunting small mammals (typically rodents). They rear up on their hind legs, bend their knees and jump up, landing with their front paws on their prey, which is grabbed quickly.

Lying on the snow, I patiently observed this Japanese red fox looking for its next mousing-pounce victim. It came closer and closer to me, until our eyes met.

*Alexandre BÈS, France*



1

**1 Cool cats**

This moment was captured during a hot summer evening drive to Tadoba National Park, India. I was lucky enough to witness this mother and cub cooling down at the water's edge.  
*Sudhanshu Tiwari, Indore, India*



2

**2 Made to measure**

Acorn woodpeckers create small holes for storage (I photographed this one in Orange County, California). The amazing thing is that these holes are different sizes, so that each acorn fits just right!

*Jack Zhi, California, USA*

**3 Diving in**

It was my first time in Bimini in The Bahamas. After memorable encounters with tiger sharks, I came across a shallow dive site, with a depth of 10–15m, full of great hammerheads, bull sharks and nurse sharks (pictured). I was only there for a day, but I took over 1,000 photos!

*Carlos Grillo, Brasília, Brazil*

**4 Gone fishing**

After spending several mornings in a cold, low-level hide, attempting to photograph an osprey catching a meal, it all finally came together – light, wind direction and the bird flying directly towards us with its catch.

*Stephen Laycock, Blackrod, Lancashire*



5

**5 Blowing bubbles**

In my garden, I found this housefly – it was busy making bubbles. The flies blow out bubbles of spit every few seconds to help keep them cool. It was very tough to capture but I managed to get the shot.

*Arindam Saha, West Bengal, India*





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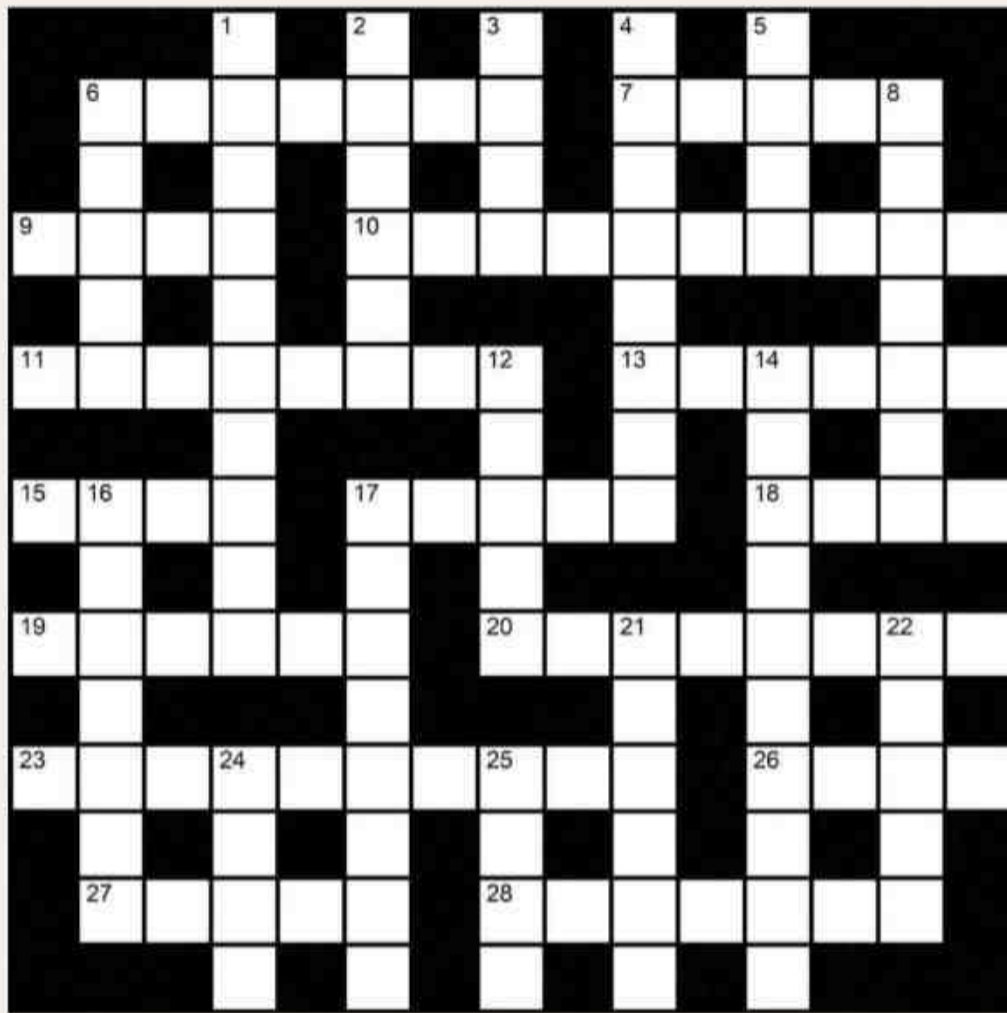
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**PUZZLES** Win a prize with our crossword, and test your wildlife knowledge.



Answers in our June 2021 issue

**MARCH ANSWERS**

**ACROSS:** 1 ash canker, 6 Sámos, 9 tussock, 10 dead man, 11 chitons, 12 inky cap, 13 angelfish, 15 dry up, 16 banks, 19 hop clover, 22 titmice, 23 hominid, 25 opossum, 26 pelagic, 27 saker, 28 Norway rat.

**DOWN:** 1 Aztec, 2 Hosking, 3 axolotl, 4 kakas, 5 red bishop, 6 stalked, 7 mimicry, 8 sandpiper, 13 albatross, 14 ichneumon, 17 network, 18 scissor, 20 lamella, 21 vinegar, 23 Hopar, 24 dicot.

**MARCH WINNER**

**N BOLTON**, Devon

**ACROSS**

- 6** RSPB reserve in Somerset (3, 4)
- 7** Plant genus that includes celery and marshwort (5)
- 9** Shrub or small tree (4)
- 10** Large bird of prey, *Aquila rapax*, native to Africa and India (5, 5)
- 11** Auks and terns, for example (8)
- 13** Developmental stage of an insect or other arthropod (6)
- 15** Yellow-billed rail or crane of North America (4)
- 17** Microbial fungus (5)
- 18** Parts of a paw (4)
- 19** Small, carnivorous mammal (6)
- 20** *Potos flavus*, rainforest mammal of Central and South America (8)
- 23** Small songbird of highland pine forests (7, 3)
- 26** Gorse or furze (4)
- 27** Remain stationary in flight, as a

- kestrel often does (5)
- 28** Flowering plant in the buttercup family (7)

**DOWN**

- 1** Frogs and newts, for example (10)
- 2** \_\_\_ snake, New World reptile that may be shorthead or blackneck (6)
- 3** \_\_\_-worm, limbless lizard (4)
- 4** Distinctive spotted beetle that feeds on aphids (8)
- 5** \_\_\_ bean, legume grown for its edible seeds (4)
- 6** \_\_\_ martin, migratory hirundine that nests beneath eaves (5)
- 8** Common freshwater duck (7)
- 12** New World mammal, noted for its foul-smelling spray (5)
- 14** Tropical Asian tree, also called Indian redwood (10)
- 16** *Life* \_\_\_, classic BBC wildlife

- documentary (2, 5)
- 17** Fruit tree in the genus *Morus* (8)
- 21** Evergreen tree noted for its seeds, which are used as a spice (6)
- 22** Small Mediterranean tree (5)
- 24** \_\_\_ The Whales, conservation slogan (4)
- 25** Small wild duck, *Anas crecca* (4)

Crossword compiled by **RICHARD SMYTH**, quiz set by **BEN HOARE**

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**Wild quiz**



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**1) What is this spring wildflower?**

- A** Herb Robert
- B** Ragged robin
- C** Red campion

**2) Which bird's dusk display flight is called roding?**

- A** Woodcock
- B** Nightjar
- C** Tawny owl

**3) Which animal's farts are a form of communication?**

- A** Common toad
- B** Musk-ox
- C** Atlantic herring

**4) How many caterpillars can a blue tit chick eat in a day?**

- A** 10
- B** 100
- C** 1,000

**5) According to Encyclopedia Britannica in 1809, which of these creatures might exist?**

- A** Cyclops
- B** Griffin
- C** Unicorn

**6) Which nuts are naturally radioactive?**

- A** Brazil nuts
- B** Conkers
- C** Coconuts

Find out the answers on p91

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**Star letter**

## Ethical tourism

Taking a trip to Sri Lanka in 2019, I wanted to see wildlife but was adamant with the holiday company that I was not interested in any excursions that involved animal exploitation or captivity. The company immediately recommended a safari with a chance of seeing wild Asian elephants in a national park, and I gladly accepted.

The safari started with a glimpse of elephants feeding about 200m away, easily watched with binoculars from a

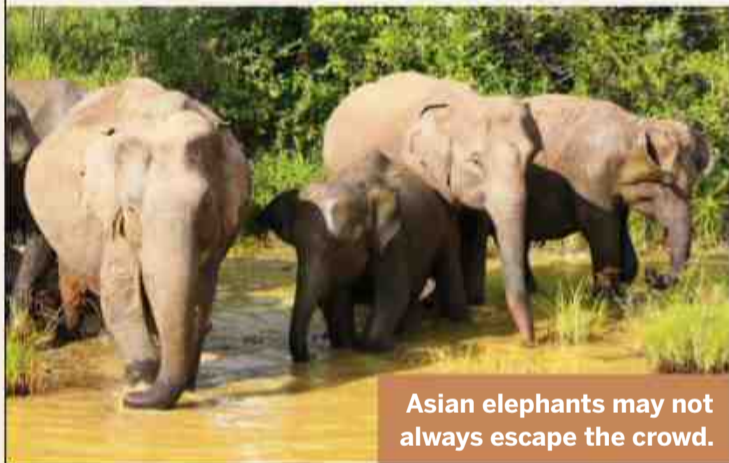
lone vehicle hidden on a quiet track. This moment was incredible and one I'll remember forever.

However, what came later would be remembered for the wrong reasons. The next group of elephants found was surrounded by more than 60 vehicles, all jostling for position in the exhaust fumes. The elephants wanted to cross the track but were blocked and hassled at every opportunity.

Our guide was shocked when I demanded that we be taken back to the hotel half a day early with no further elephant viewing. I felt complicit in a terrible cruelty and vowed never again to pay money for wildlife tourism, unless I knew that the wildlife would be a chance encounter, admired at a distance.

I took this photo (left) of the elephants but what you cannot see is the London-esque traffic in the national park!

*Richard Dowling, Kent*



I disagree with Mark's comment about climate change being just another fad and it being put on the back burner. The whole issue of climate change is not as simple as just reducing carbon emissions.

We need to persuade governments, industry and farmers to return to the old styles of land management and start wilding areas, as well as reducing carbon emissions. However, the problem comes when that means less profit and less revenue into the government's purse from taxes, along with higher prices in the shops. So, we need to re-educate both governments and consumers into adopting and accepting a different way of life, and highlighting the consequences if we don't change our ways.

We all have a part to play – by making some simple lifestyle changes in our own lives – but we also need to get involved and lobby our local MPs instead of sitting at home thinking other people will do it.

*Michael White, via email*

### Staying positive

What a pleasure it was to read the 50 reasons to be cheerful feature (January 2021). It is so good to know that all is not doom and gloom and some of the efforts of the hard-working folks who actually work to conserve our wildlife, rather than just talk about it, are paying off. It is also really special, in these times

– when wildlife is giving us something else to think about, watch and treasure – to know that lockdowns keeping tourists away is not all bad news, as it is giving our wonderful planet a chance to recover.

Thank you to all those who work to conserve, rewild and protect the natural world.

*Carol Clayton, Portishead*

somewhere. I have been alert to the issue since the early 1970s, which is why I only had two children and have tried to live and eat accordingly. The fact that most of my extended family have failed to come on board – I still get the 'here we go again' look – exemplifies the difficulty that those in power face.

So, the one point I disagree with is the fact that it was a 2019 fad. I hope that the lovely Greta will make sure it stays – finally – on the agenda.

*Irene Voaden, via email*

Full praise to Mark Carwardine for, once again, speaking out about such a critical issue as climate change. I do hope the appropriate people will read it and take note.

*Aynsley Halligan, via email*

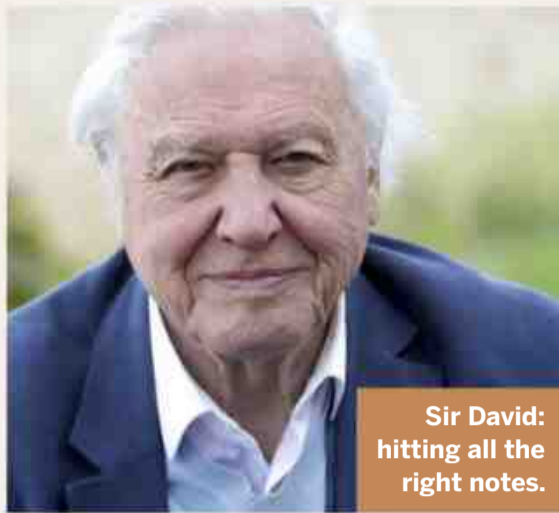
### Keep it down

My wife and I greatly enjoy reading the articles in *BBC Wildlife* and admiring the excellent photographs. We therefore always look forward to indulging in the next issue. The article by Michael Bright on the BBC's *A Perfect Planet* (The Goldilocks planet, February 2021) was intriguing, also revealing Sir David Attenborough in his 'studio'.

We enjoy Sir David's narrating style but why, oh why were his words frequently drowned out by the intrusive and, in our opinion, completely unnecessary 'background'







Sir David:  
hitting all the  
right notes.

music on the programme? There's little need for any scene-setting music for wildlife series: the interesting narrative and excellent photography are well able to stand on their own.

Mike Smith, Fareham

### Taking stock

I read James Fair's well-balanced report (Nature by numbers, February 2021) with great interest, but feel it necessary to add four points.

First, we should not automatically accept the target of 300,000 new houses per year. The costs of the pandemic have not been fully assessed – we may end up with closed hotels and empty office-blocks, suitable for conversion to affordable homes.

Second, we risk thinking that we are rather clever – we “can establish tracts of land (habitat banks) that will be pre-prepared as development offsets”. Being ‘clever’ has landed us in our current dire situation.

Third, we must retain humility in the face of nature – places such as Gavray Meadows in Oxfordshire (mentioned in the article) are not replaceable. We might achieve a location with some of their features, but nothing more.

Fourth, if Gavray Meadows is threatened, then Natural England is not doing its job properly. The prime minister claims green credentials – he should put our money where his mouth is.

Robin Noble, via email

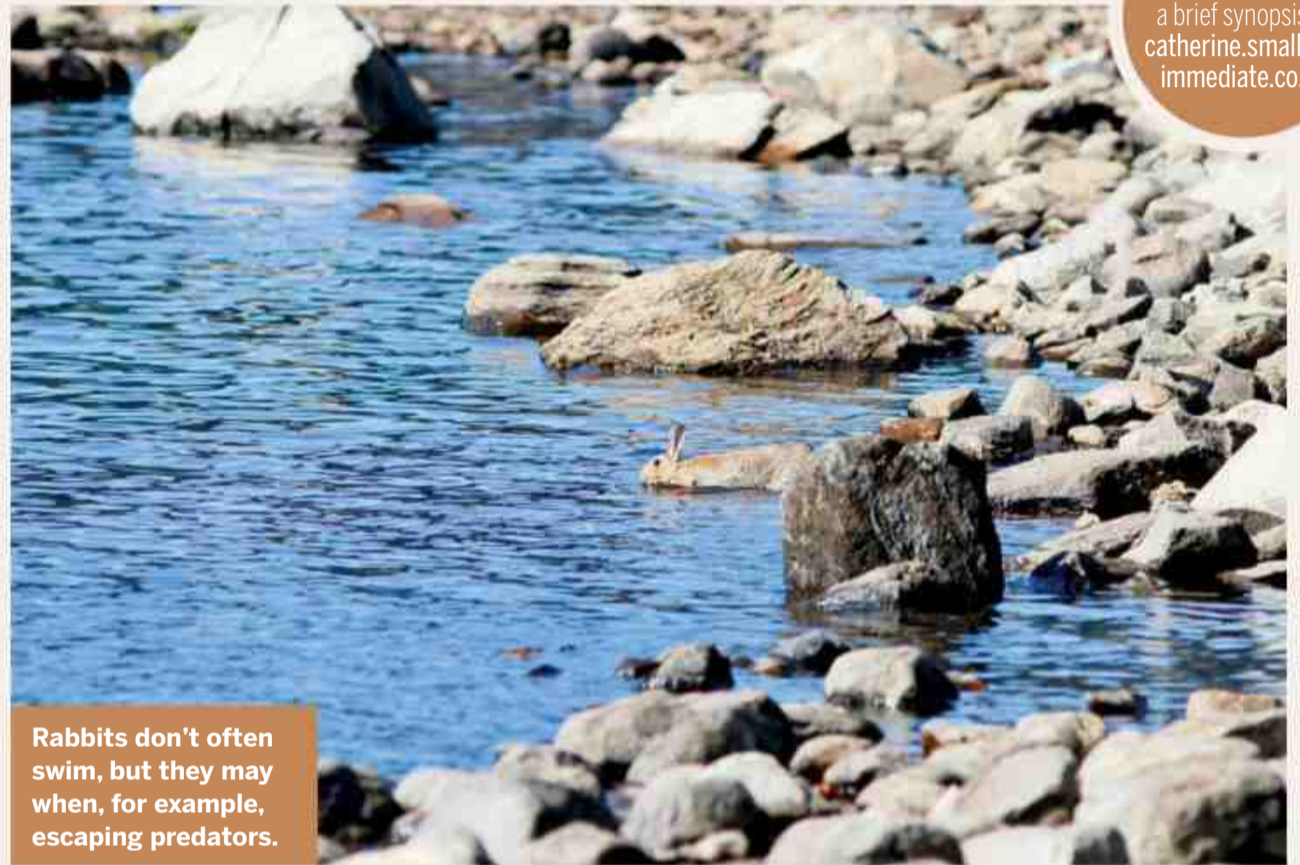
**QUIZ ANSWERS** (see p89)  
1B, 2A, 3C, 4B, 5C, 6A

## TALES FROM THE BUSH

# When bunny went bathing

Have you ever heard of a rabbit going for a dip? Well, neither had Genevieve Leaper, until she visited a Scottish loch.

Have a wild tale to tell? Email a brief synopsis to [catherine.smalley@immediate.co.uk](mailto:catherine.smalley@immediate.co.uk)



Rabbits don't often swim, but they may when, for example, escaping predators.

Glenn Esk has always been my favourite of the Angus Glens. In the winter, I have seen whooper swans on Loch Lee and otter tracks in the snow along the shore. Come the spring, I like to search for adders and slow-worms. A little later, there is a chance of a ring ouzel, and, one year, I found a dipper's nest under a waterfall. On the high plateau, there are mountain hares, occasionally golden plover and – if I'm really lucky – an eagle.

But my strangest sighting involved a much more ordinary creature, an animal I see every day in my own garden.

One sunny day in July, I left the rough track to go down to the shore of Loch Lee in the hope of photographing the sand martins that nest in a lochside bank. I watched them for a while but they flew straight into their nest tunnels and were too quick for me when they emerged a few minutes later, never lingering at the entrance.

Having failed to get a single worthwhile shot, I was about to give up and continue up the glen. Though it was not yet roam, it was already hot – so, I thought it would be good to get up high before midday. Just then, a solitary rabbit came hopping down

“I was half expecting the swimmer to stretch out for a spot of sunbathing.”

the stony beach in a very leisurely way. I thought it was coming to drink and, sure enough, it reached forward to touch its nose to the water. To my astonishment, the rabbit paused only briefly at the water's edge, before launching itself into the loch and striking out with a strong bunny paddle. It didn't look

entirely comfortable – back arched and ears laid back, just head and little cotton tail above the surface – but it made good progress.

I watched, fascinated, as the rabbit swam straight offshore, as if heading for the far side of the loch. After about 50m, it turned around and swam back – just like a human taking a quick dip at the beach.

By the time it was back on dry land, I was half expecting the swimmer to don a pair of sunglasses and stretch out for a spot of sunbathing. But bunny made do with a quick shake before hopping away up the bank.

I know that most mammals can swim if they have to and many will wallow to cool down. But recreational swimming? I thought that was a peculiarity of humans! 🐰



**GENEVIEVE LEAPER** is a freelance photographer, writer and environmental consultant based in Aberdeenshire.



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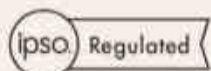
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Emmanuel Rondeau

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# Spring

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## WILDLIFE CHAMPION

## SARAH RAVEN

In our series about people with a passion for a species, we ask writer and TV presenter Sarah why she adores **grass-of-Parnassus**.

Interview by Ben Hoare

### Why is grass-of-Parnassus so special to you?

This pale, green-veined, white flower grows in the damp marshes and rough grazing where I grew up – on the very rainy west coast of Scotland. It always comes as something of a surprise and looks weirdly out of place amongst all the acid-loving sedges, deer grass and rushes that surround it – more Greek than Scottish, more southern than northern, more delicate than the rough country where it makes its home. That disconnection, between what it is and where it is, is like a burst of light and beauty just where you wouldn't quite expect it. It has been my favourite wildflower since I was eight years old.

### How did you fall in love with wildflowers?

My father was a great wildflower man. He often used to take me botanising with him, wherever we happened to be... in Scotland, Greece, Italy, Ireland or East Anglia. And so, from early on, I got a wild and deep experience of the thing that he was most attentive to – the connection between particular flowers and the habitats and environments in which they grow. We would head off every **weekend, and for longer in the school**



“My father often used to take me botanising with him, wherever we were... Italy or East Anglia.”

holidays, to bluebell woods in spring, the Burren in Ireland in May half-term, and the machair of the Outer Hebrides during summer.

### Where's your favourite place to lose yourself in nature?

The high pastures in the Cretan mountains. They run as a spine down the centre of that beautiful island, and have a diversity of wildflowers that amazes anyone who comes to see them, however young or potentially bored they might be. From anemones to tulips and orchids, daphnes to narcissus, euphorbias to poppies, iris to ranunculus... it's all there. It's like walking into a dream.

### Which 'dream' wildflower is top of your wish list?

I would love to find a grove of wild dahlias in Mexico. I'm mad keen on garden dahlias, and the longer I grow them, the more I'm

drawn to the single varieties. They are simply beautiful and are abuzz with butterflies and bees.

### Do you grow any native plants in your garden?

We grow lots of native species here. There's viola 'heartsease' and *Narcissus pseudonarcissus* in spring, swathes of poppies, cornflowers, marigolds and other cornfield weeds in summer, wild hawthorn and spindle for their berries for the birds in autumn, and then native hellebores, *H. foetidus* and *H. niger*, for winter into spring.

### What have been your wildlife gardening successes?

Wildflower gardening is tricky in this part of East Sussex, on our heavy, rich clay soil. But we do now have yellow rattle established down the drive, and some other interesting wildflowers, including a few precious pyramidal orchids creeping in. The deer love to graze on these orchids, so we protect the clumps in a cage once they come into flower, or the whole lot would be stripped overnight. 🐿

**SARAH RAVEN'S** new book *A Year Full of Flowers: Gardening for all seasons* (Bloomsbury, £25) is out now. Her new podcast, *Grow, Cook, Eat, Arrange*, is also available now.

### The expert view



*Grass-of-Parnassus, with its ivory-white flowers, is a welcome sight in late summer and autumn on our moors, rough grasslands and Hebridean machair, standing out in stark contrast to the browning vegetation. It's relatively common across northern parts of Britain, but has been lost from many sites in the south, due to changes in land use. It's a reminder that we need to protect our agriculturally unimproved grasslands.*

Alastair White, Head of Plantlife Scotland







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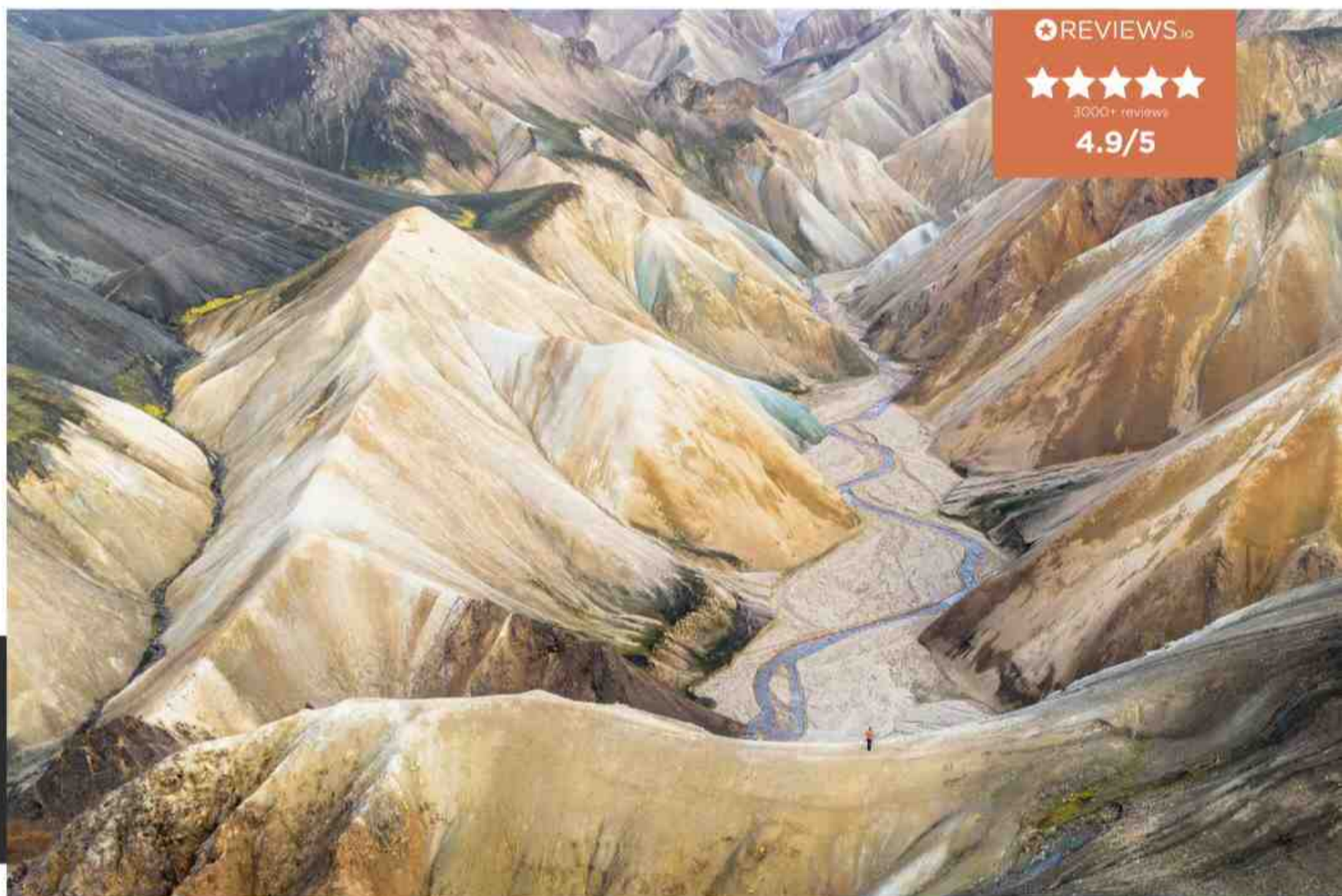
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