BBC

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Wildlife

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SPECIAL REPORT

KILL or CURE?

Can vaccination save Britain's badgers from the looming cull?



PHOTO SPECIAL

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Beavers, shrews and flying squirrels as you've never seen them before

RESEARCH IN ACTION

ZEBRA CROSSING

Join the dash across the Kalahari on Africa's *other* great migration

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* Go behind the scenes of wildlife TV
* Get involved with vital bird research



PLANET DINOSAUR

Bigger, badder, stranger – meet the



SEALIONS AT PLAY

Why youthful high-jinks provide vital

WILD WEEKENDS UK

How to experience the bellowing clashes of

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THIS MONTH'S CONTRIBUTORS

BRIAN JACKMAN



Wild weekends UK, p14
Watching the fallow deer rut near his Dorset home is a highlight for Brian. "It marks the turning year," he says. "But most of all it's the ancient sound that gets me."

ALEXANDER BADYAEV



Secret America, p21
Alex is lucky enough to do research in some of the world's wildest places. "The synergy between science and nature photography can help us understand the biological world," he says.

ELLEN PRAGER



Sealions at play, p56
Ellen's work as a marine scientist has found her buried waist-deep in mud and living in an undersea lab. She says, "There's little more inspiring than seeing Galápagos sealions play."

DAVID LINDO



East African adventure, p68
Despite his moniker, the 'Urban Birder' *can* be found miles from the nearest coffee shop: "Three tawny eagles scrapping in the Ethiopian skies was a highlight of my recent trip."



ON THE COVER THIS MONTH...

This badger, like much of the English population, is foraging in deciduous woods close to farmland pastures.

PHOTOGRAPH BY
JAMES HARWOOD/ALAMY

INSETS Animate4.com/SPL; Malcolm Schuyl/FLPA; Rex Features



Cheryl-Samantha Owen

Welcome

Badgers have always been close to my heart. They were there right at the start of my career with wildlife, when days saw me sitting in a windowless university basement studying their every move – and grunt – on a grainy black and white TV, and nights found me perched under a tree in the woods watching the action unfold in real time.

During my study I witnessed some extraordinary behaviour, such as the male who – peeved at finding his chosen mate *in flagrante* – took her by the tail and shook her vigorously until her sneaky suitor fell off, at which point a swift, well-aimed bite to the interloper's rump sent him on his way. And I discovered that they boast an impressive repertoire of vocalisations, ranging from warning rumbles, aggressive keckers and sexy churrs to frustrated squeaks and comforting, bird-like coos.

It was around this time that my black-and-white friends were first indicted as a reservoir of bovine tuberculosis, and my colleagues were kept busy trying to figure out what makes badger populations tick and how the proposed cull would affect them.

Ten years later, *BBC Wildlife* revealed that a vaccine was being developed that could offer an alternative to fatal control. So it's immensely rewarding that, in this issue, we can report on the first UK trial of this inoculation programme. James Fair finds out how to vaccinate badgers, and investigates the factors that could influence farmers' decisions to cull (**p50**).

> "One badger – peeved at finding his mate *in flagrante* – shook her fiercely by the tail."

This month, we're proud to bring you a new-look *BBC Wildlife*. Your favourite magazine is now packed with even more beautiful photography, fascinating features and expert advice – as well as insights into British wildlife, conservation and animal behaviour. We're delighted to welcome Bill Oddie to our writing dream team, and look forward to meeting the world's finest wildlife experts and conservationists in our new interview slot. We hope we've taken the magazine you love and made it even better – let me know what you think!

Sophie

Sophie Stafford, Editor

HOW TO GET IN TOUCH

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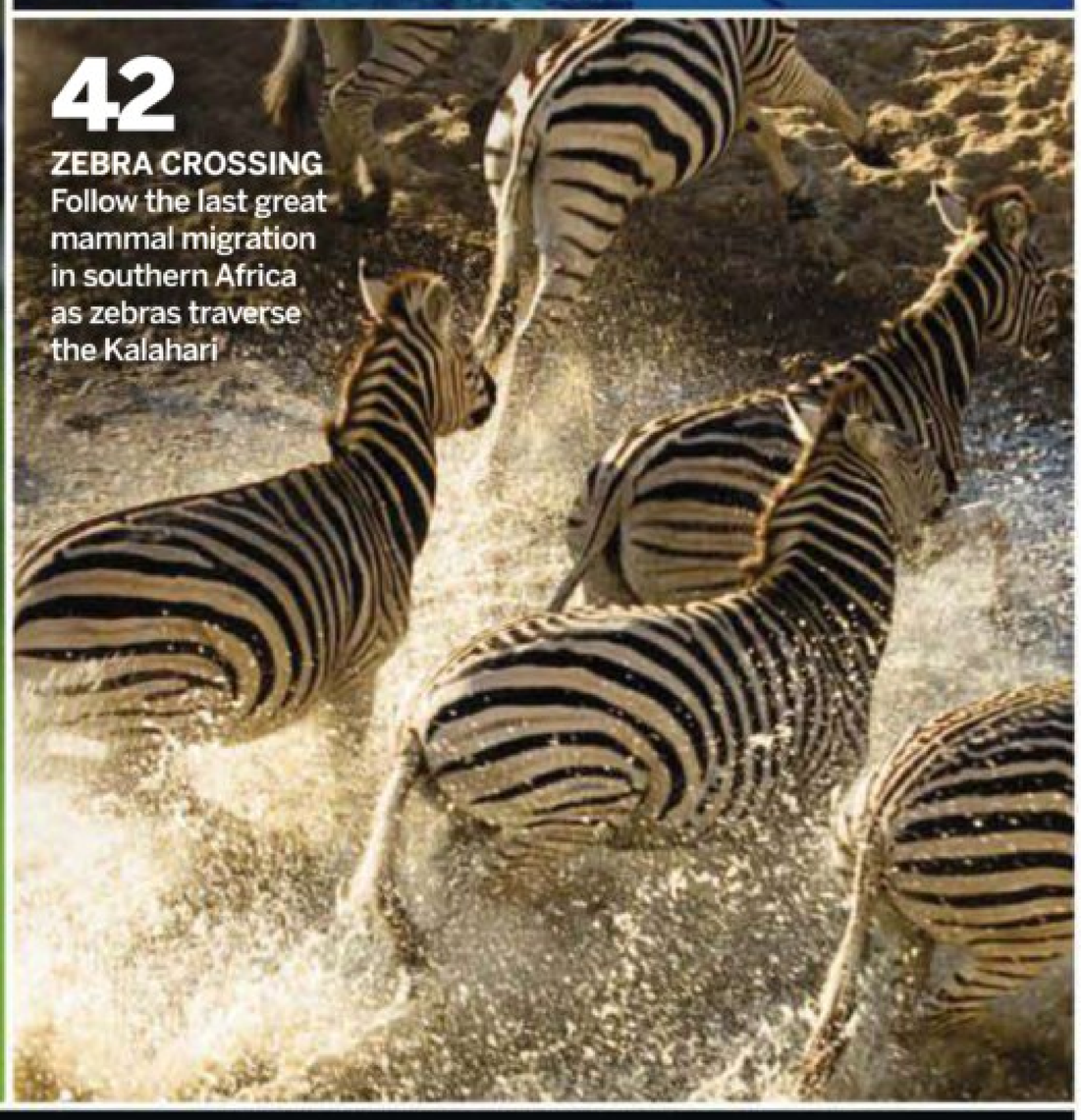
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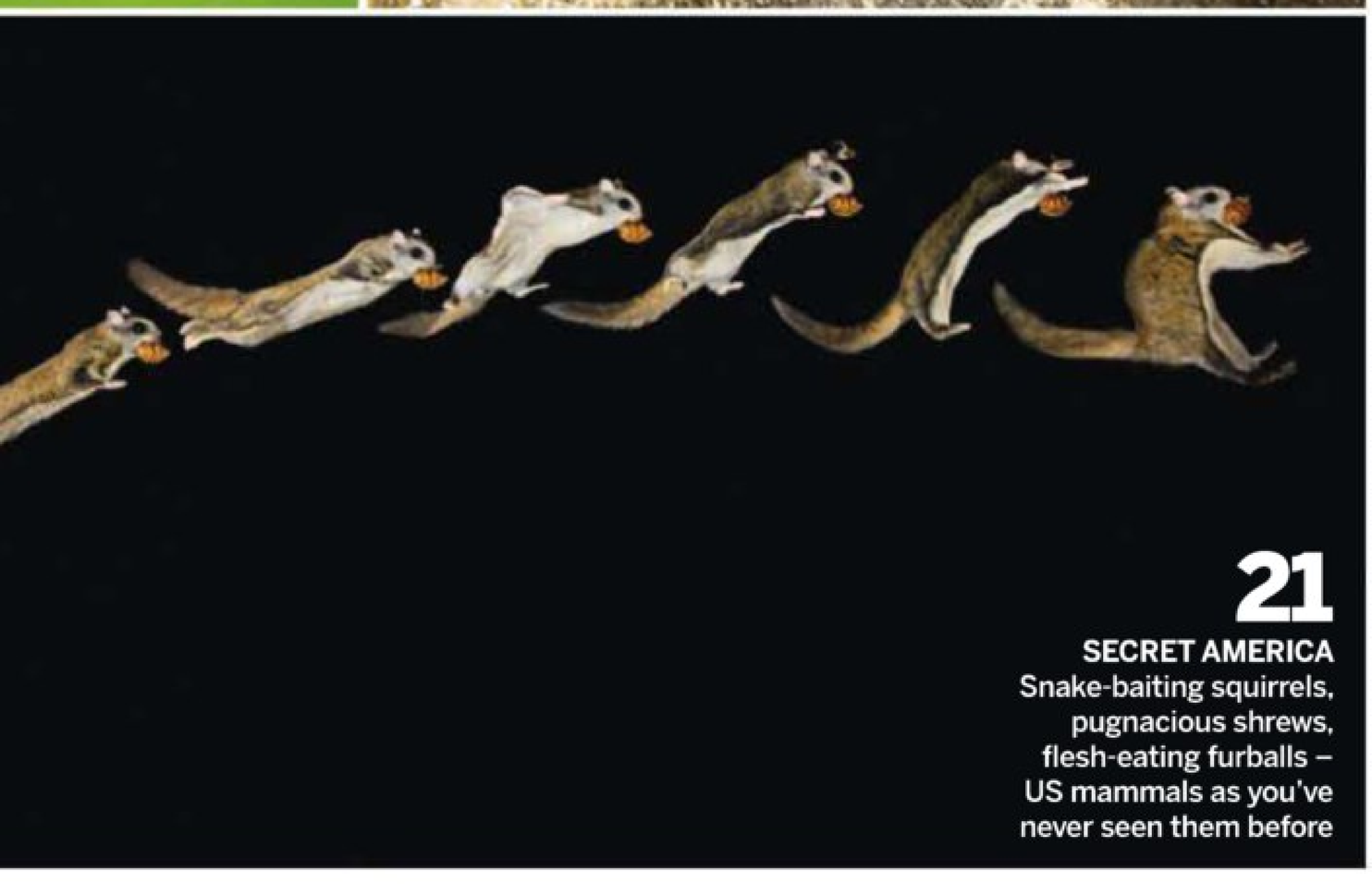




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Clockwise from top left: Brian W Matthews; Chris Newbert/Minden/FLPA; James Gifford; Alexander Badyaev; BBC; Rex Features

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***BBC WILDLIFE MAGAZINE* PODCAST**
This month the team debates whether a badger vaccine can beat the scourge of bTB.
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HAZEL DORMOUSE

Hedge funds

Dormice need to feed up well in advance to prepare for a nap that can occupy well over half of their lives, from October until as late as May each year. Fortunately, in autumn traditionally managed hedgerows are well-stocked larders, studded with hazelnuts to be nibbled (if the grey squirrels have left any, that is). The name 'hazel' dormouse is a bit misleading – these delightful rodents also devour blackberries, chestnuts, and hawthorn and yew berries during their urgent quest to lay down body fat. But they probably pass over the bright-red fruits of black bryony (*pictured*), which are poisonous to mammals. Acorns and sycamore keys also have chemical defences that make them unpalatable to dormice.

▶ *Discover more about hazel dormice at www.ptes.org/?page=165*

Gerard Lacz/FLPA (controlled conditions)

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by **Brett Westwood**
Naturalist and BBC radio presenter

THREE TO SPOT

SOUTHBOUND MIGRANTS



Laurie Campbell

▲ BARN SWALLOW
In September telephone wires are a-twittering with swallows, many of them youngsters, distinguished from adults by their short tails and duller head and shoulder feathers. Their first migration south will take them over the Sahara to their wintering area in South Africa.



Colin Varndell

▲ WHITETHROAT
At this time of year some warblers swap their usual insect diet for fruit, and now berry-bearing shrubs such as elder are buzzing with them. For whitethroats, fruit is vital fuel for the flight to their winter homes in the Sahel, an arid region south of the Sahara.

▼ CHIFFCHAFF
Not all of our chiffchaffs head south in autumn, but many do. In sunny weather you can see the migrants catching flies near coastal reedbeds (where aphids are a popular food) or from bushes and hedges. Some break into faltering song – a bittersweet reminder of spring.

Steve Round/rspb-images.com





On fine autumn days, listen out for the soporific chirping of field grasshoppers.

Leon Baas

GRASSHOPPERS AND CRICKETS

Last of the summer whine

Aesop's fable of the ant and the grasshopper is intended to teach a lesson about enjoying ourselves when we should be working hard. The grasshopper fiddled the summer away while the ant amassed a hoard of winter food. Self-righteous the moral may be, but there's no faulting the biology. Just as September spells the end of sport's cricket season, so, too, are the last frost-free days a swan song for our crickets and grasshoppers.

If we have an Indian summer, though, some may hold out longer, even until November. The field grasshopper is one such species. A common resident of short grassland, it makes a brisk chirp by rubbing pegs on its hind legs against its wingcases. It comes in a bewildering range of colours, from beige to dark grey and lurid pink. But the two sharply indented lines on its pronotum, or head-shield, offer a good clue to its identity.

In the south of England and Wales, still autumn evenings come alive with the loud hissing song of another orthopteran insect: the great green bush cricket. This is our largest bush cricket and, like the other species, it sings by rubbing one wing over the other. It is beautifully camouflaged, so can be fiendishly hard to spot even when perched high up, but do try: it's a very special beast.

Trickier still to locate is the handsome Roesel's bush-cricket. Once confined to saltmarshes in south-east England, this former rarity is now also commonly found in rough grassland and is rapidly spreading north and west. To pick up its strange 'electric' song, which resembles the buzz of high-tension power lines, you will need to beg or borrow a bat detector and set it to 20–30kHz.

▶ *Learn more about grasshoppers and crickets at www.buglife.org.uk and www.amentsoc.org*

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HABITATS OF THE BRITISH ISLES

Caledonian Forest

If your experience of Scots pine is limited to dark, close-packed plantations, then the old woods around Speyside in the Scottish Highlands will be a revelation. Remnants of the post-glacial forest that grew up 7,500 years ago, these are ancient, airy places. The oldest pines are hulking giants with massive crowns in which capercaillies feed on seeds; up to three species of crossbills nest here, the males glowing red to match the tree trunks. Crested tits purr among the pine twigs and skittering claws betray the presence of red squirrels. There are predators here, too: goshawks slalom through the open glades and, if you're very lucky, you may glimpse a wraith among the branches – a hunting pine marten.

▶ *For more information go to www.treesforlife.org.uk*



FIVE TOP SPOTS

Most fragments of the original Caledonian Forest are found in the Cairngorms. Here are three great examples, plus a survivor to the west and a relatively new pine wood that hosts many of the habitat's specialities.

1. GLEN AFFRIC. Wild lochs, moors and some of Scotland's largest old Caledonian pines.

2. GLENMORE FOREST PARK, NR AVIEMORE. Open woods surrounding Loch Morlich.

3. ABERNETHY RSPB. A huge reserve that incorporates Loch Garten, famous for its ospreys.

4. ANAGACH WOODS, NR GRANTOWN-ON-SPEY. Planted in the late 18th century, these woods are good for red squirrels and Scottish crossbills.

5. GLEN TANAR NNR, NR ABOYNE. Watch out for birds of prey and capercaillie.

Morning mist clears to reveal the ancient Scots pines and yellowing, lichen-encrusted silver birches of Glenfeshie in Cairngorms National Park.

Peter Cairns

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by **Brett Westwood**

SPOTTER'S GUIDE

Woodland fungi

Mushrooms or toadstools – call them what you will – are the colourful manifestations of subterranean fungal webs or mycelia, which comprise the real engine room of our woods. Now is when the greatest diversity is on show.

Some fungi are saprotrophic: they obtain their nutrients by breaking down organic remains. Others form mycorrhizal associations with trees or other plants: the mycelia bond with the root cells and thus ferry nutrients to the hosts. Up to 90 per cent of all plants are thought to have such fungal 'helpers'.

Putting a name to the trees in a wood will tell you what fungi to expect. The magpie fungus occurs mainly in beechwoods, for example, while the sickener prefers pines and the larch bolete is (you've guessed it) a denizen of larch plantations.

To help you get started, some common woodland species are illustrated here – and on page 81 we choose the top three fungi ID guides for beginners.

▶ HOW TO GET INVOLVED

- **Join a fungi foray** – it's the best way to pick up ID tips. Many National Trust and Wildlife Trust reserves organise forays.
- **Take spore prints** from your fungi. Place the cap on a piece of clean paper, cover it overnight and next morning you should have a perfect spore print. Fungi fun!
- **Specialise** in a few fungal types, such as colourful waxcaps, coral fungi or boletes. Report unusual finds to your local records group; a list is at www.britmycolsoc.org.uk

KEY
- ● Common and widespread
- ● Local: easy to see in some spots
- ● Scarce: searching needed



Chanterelle ●

CANTHARELLUS CIBARIUS

Coniferous and deciduous woods. Brilliant yellow; gills run part of way down thick stem. Edible (delicious).



Horn of plenty ●

CRATERELLUS CORNUCOPIOIDES

Deciduous woods, often in groups. Blackish, funnel-shaped or tubular cap with frilly edges.



The sickener ●

RUSSULA EMETICA

Pine woods. A 'brittlegill' with a scarlet cap and pure white gills and stem; gills break easily when touched. Poisonous.



Charcoal burner ●

RUSSULA CYANOXANTHA

Deciduous woods. A 'brittlegill' with a lilac or red wine-coloured cap, often with olive tints.



Wood blewit ●

LEPISTA NUDA

Deciduous woods and hedges. Rich tan cap; lilac stem and gills. Has a sweet, perfumed smell.



Larch bolete ●

SUILLUS GREVILLEI

Under larches. Cap sticky, orange when young, yellower as it matures. Has pores instead of gills.



Common stinkhorn ●

PHALLUS IMPUDICUS

All woods. Cap covered in slime when fresh; releases foul smell to attract flies that spread its spores.



Hedgehog mushroom ●

HYDNUM REPANDUM

Most woodland types. Cap creamy on upperside; underside has soft, pale spines (hence the name).



Violet webcap ●

CORTINARIUS VIOLACEUS

Mainly birchwoods. Big, beautiful mushroom with a rich violet cap; browns with age.



Verdigris roundhead ●

STROPHARIA AERUGINOSA

All woods; also heaths. Unique turquoise colour with white, fleecy patches when young. Poisonous.



Magpie fungus ●

COPRINUS PICACEUS

Deciduous woods, mainly beech. Bell-shaped cap with irregular white patches. Liquefies when old.



Yellow stagshorn ●

CALOCERA VISCOSA

Coniferous woods, on rotten logs and stumps. Slimy when wet; when dry a deeper shade of orange.

Illustrations by Felicity Rose Cole

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by **Derek Niemann**
Nature diarist and author

COMMON DARTER

Dragons on our doorstep

It's high time that more of us treated the habitats on our doorstep as nature reserves in their own right. After all, wildlife encounters in our gardens, parks and playing fields, or on commutes or shopping trips, can give us a special sense of ownership. Over the coming months we'll be sharing seasonal pointers to help bring nature observations on *your* local patch into sharper focus.

This September, keep an eye out for an exotic, mostly red or brown insect: the common darter. This dragonfly often turns up far from water and will happily perch on a patio, fence or bench – or even your shoulder. Sneak up and study it in detail before it does just what its name says. Darters can fly when it's too cool for other dragonflies – in mild years, they may still be active in December.

▶ *Find out more at www.british-dragonflies.org.uk*



Your garden doesn't need a pond to receive a visit from a common darter. This is a male – females are yellowish-brown.

▶ THREE DARTER FACTS



1 **A DARK SPOT ON EACH WING,** called the pterostigma, is a weighty cluster of cells that aids steering and cuts vibration. It works a bit like the Blu-Tack in the nose of a paper plane.



2 **THE RED UPPER PARTS** of the darter's compound eyes are where the lenses are larger and more numerous. For this reason, it usually attacks prey from below.



3 **DURING MATING THE MALE** grasps the female by the back of her head using his tweezer-like claspers. She has an egg-laying chute close to her abdomen-tip.

Top: Stephen Dalton/NHPA; 1. Paul Hugginș; 2. Matt Cole; 3. Russell Cooper/naturepl.com; honeysuckle: Niall Benvie/Alamy

GARDEN WATCH AUTUMN

■ **ENJOY THE LAST** scent of honeysuckle – your local bees and hoverflies will, too! On some of the plants corkscrewing their way up fences and bushes, there should already be berries ripening bright red.

■ **JUST WHEN YOU** thought this year's breeding season was finally over, woodpigeons are at it again. Their swoop and glide, wing-clapping display flight often continues into the autumn. If you see a bird carrying twigs it will be repairing a nest, ready to hold perhaps its fourth brood.

■ **A SILVER SHEEN** on the lawn at dawn may not be frost but the dew-soaked webs of tiny money spiders. The filigree patchwork of webs is hung out at a scarcely believable density – more than 250 per square metre.



Autumn-flowering honeysuckle is a lifesaver for bees.

■ **BLACKBIRDS ARE** least numerous in urban gardens in autumn, according to BTO data. It may be that city birds move to rural areas, where there is currently lots of natural food, for a few weeks.

MORE ON OUR WEBSITE

Delve deeper into the behaviour and habitats of the animals described in our WILD pages at www.discoverwildlife.com

- Learn how to find and recognise hazel dormice feeding signs.
- Enjoy a fabulous Caledonian Forest portfolio by Peter Cairns.
- Discover more about dragonfly and damselfly behaviour.
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edited by **Ben Hoare**
features editor, wild@bbcmagazines.com



Do your bit for science by looking out for ringed black-tailed godwits this winter. Inset: the unique ring combination worn by YG-RX, an adult female.

Main: David Tipling/naturepl.com; inset: T Gunnarsson

HELP BLACK-TAILED GODWIT RESEARCH

Reading the code

Next time you spot a bird with rings or wing tags, don't ignore it: this is your chance to add to our knowledge of the species' biology. Note details of the bird's markers (including their colour, any numbers or letters, and their position on the legs), or take a photo, and submit your sighting using the website at the end of this article.

This autumn and winter, researchers at the University of East Anglia (UEA) need your sightings of Icelandic black-tailed godwits. In the UK, this subspecies, or race, mainly overwinters on coastal mudflats in East Anglia and north-west and southern England, and it also passes through the Wash to areas further south. The different races of 'blackwit' (to use the popular birding shorthand) are hard to tell apart, but if you see a ringed godwit and aren't sure what kind it is, send the record to UEA anyway. In return, you will receive a fascinating life history of 'your' bird, giving details of all previous sightings.

HOW TO GET INVOLVED

- For more details of the UEA black-tailed godwit project and to report ringed individuals go to www.uea.ac.uk/~b026515/index.html
- To submit records of ringed birds of any species visit www.euring.org/national_schemes
- If you're involved with a conservation project in the British Isles that *BBC Wildlife* readers could help with, email me at the address above.

SURVEY RIVER WILDLIFE

IF YOU ENJOY messing about on, in or beside rivers, then the second annual Our Rivers survey is for you. Volunteers are asked to submit records of wildlife on their local waterways in England or Wales, and take part in a vote to find the most (and least) species-rich rivers. The resulting data will be used to help inform the Government's forthcoming water industry white paper.

▶ *To participate in the survey visit www.ourrivers.org.uk*



Jules Cox

WHAT TO DO IN ONE...

hour

CLEAN YOUR NESTBOXES

Nestboxes host stubborn fleas and other parasites that can survive the winter to infest next year's brood. To kill them off, pour boiling water over the boxes, then leave to dry. Add a handful of hay so that hibernating rodents or roosting birds (such as wrens) feel at home.

afternoon

VISIT THE SECRET WORLD OF MUSEUM SCIENCE

Have you ever wondered how zoological specimens end up behind the museum glass, or how 'skins' are used in scientific research? From dodos to DNA, this show at the Natural History Museum's outpost in Tring, Hertfordshire, has the answers.

▶ *Until 16 November. Find out more at www.nhm.ac.uk/tring*



day

GO ON A NUT HUNT

Search the ground under hazel trees in a wood or hedgerow, and you may find evidence that dormice have been there. Hazel shells with a smoothly gnawed hole are what you're after. The People's Trust for Endangered Species wants your records – just fill in the form online.



▶ *Find out more at www.greatnuthunt.org.uk*

Top: NHM; hazel: David Hosking/FLPA

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The fallow deer rut can be hard to see, so listen for the clacking of antlers.

WHAT TO DO IN ONE... *weekend*

Woodland warriors

The dramatic clacks and bellows of autumn's **FALLOW DEER RUT** in Dorset are fleeting echoes of old England and not to be missed.

▶ AT A GLANCE

- **What?** Watch and listen to fallow deer caught up in the throes of their mating season passions.
- **Where?** Powerstock Common in south-west Dorset, close to the market town of Bridport.
- **When?** The rut lasts for four weeks, usually peaking in mid-October.
- **Also look for** Roe deer and boar in the woods, sparrowhawks (*left*) hunting along the rides, and buzzards above.

The entrance to the wood is as dark as a cave. Once inside, I follow a footpath across boggy ground between shadowy clumps of pendulous sedge and stunted oaks whose writhing limbs are lagged with moss. Welcome to Powerstock Common, a West Dorset wildlife haven I have known and loved for over 40 years.

No ordinary reserve, this. It's a precious relic of the ancient woodlands that once mantled much of Britain. Charcoal burners felled its finest oaks a century or more ago, and the Forestry Commission planned to smother it with conifers until a change of heart. And so it survives to this day, one of those diminishing scraps of land that remains defiantly wild.

In spring, its hazel coppices are awash with bluebells. But now, in mid-October, the hazel leaves are touched with gold, and I have come on a mission: to witness a dramatic rite of passage that marks the maturing of the year into fully fledged autumn.

The tracks in the mud are a dead giveaway. Those two-toed slots are the signs of fallow deer – animals that have probably haunted these woods since the Romans marched over the downs to Eggardon, the giant chalk hill I can spy through the canopy, some 2,000 years ago.

Bucks spend the summer as solitary wanderers, sometimes ganging together in small bachelor groups. But in October, when the first frosts bite and every last scrap of itching velvet has been rubbed from their antlers, a dramatic change in their behaviour takes place. This is the time of the rut, when the veteran bucks – aged seven or eight, and in their prime – fight each other for the right to mate.

There is no mistaking their stamping grounds. In a muddy glade, I come across a black wallow where a buck has rolled and trampled to mark out his territory, thrashing his antlers against the hazels, rolling in

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Powerstock Common proves that you don't need a TARDIS to step back in time.



While waiting for fallow deer to make their presence heard, watch out for less-mobile species, such as honey fungi.

Deer: Terry Whittaker/FLPA. Powerstock: Colin Varndell: fungi: Tony Fagan/Alamy; sparrowhawk: M Varesvuo/Wild Wonders of Europe/naturepl.com

his own urine and rending the air with groans of love. But the wallow is quiet, save for the song of a robin and the dark voice of a crow in the depths of the wood.

I move on and find a fallen tree on which to sit and wait as the sunlight fades and the day grows colder. There will be frost again tonight.

Then it begins: a rhythmic, rasping grunt, not unlike the sound of a motorbike being kick-started.

It's a fallow buck caught up in the throes of the rut, a sound as old as England itself. And that is what I have come to hear: the primeval voice of the Saxon wildwood, still echoing down the centuries. Again he throws down his challenge, and this time he is answered. His rivals close in, and there follows a furious click-clack of antlers as the future of Powerstock's fallow herd is decided.

I soon realise that there is little chance of a sighting this time. The deer are in the densest part of the wood, surrounded by bramble castles and blackthorn thickets. Besides, I don't want to disturb them. But as I get to my feet, the fighting suddenly ends and a shadowy shape flits through the trees with its antlers laid back over its shoulders. The vanquished buck and I are taking our leave together.

> *A buck in the rut is a sound as old as England itself.*

by **Brian Jackman**
Travel writer

NOW YOU DO IT

FALLOW DEER RUT

SEEING THE SPECTACLE

▶ **Powerstock Common** comprises 115ha of ancient woodlands and wet pastures north-east of Bridport, in the Dorset Area of Outstanding Natural Beauty (AONB).

▶ The best time to visit is in mid-October towards sundown.

▶ With no guided walks, just head into the wood and listen out for clashing antlers. The common is muddy – wear boots.

GETTING THERE

▶ Park in Whetley, on the south-west side of the common, and walk in from there.

▶ Alternatively, there is a parking spot on the east side (and about 1km from the village of Toller Porcorum), which provides equally good access.

▶ To plan your walk into the common, use OS Landranger Map 194, Dorchester & Weymouth.

WHERE TO STAY

BUDGET **Three Horseshoes Inn**, Powerstock. 01308 485328.

The Marquis of Lorne, Nettlecombe (*pictured right*). 01308 485236; www.the marquisoflorne.co.uk. Both of these pubs are a little over 1km from Powerstock Common, putting them within easy walking distance.

MID-PRICE **The Bull Hotel**, Bridport. 01308 422878; www.thebullhotel.co.uk. Prices start at £85 for a double and £75 for a single.



LUXURY **Higher Melcombe Manor**, Melcombe Bingham. 01258 880251; www.higher melcombemanor.co.uk. Rooms start at £105 for a double and £75 for a single.

ALSO IN THE AREA

HEDGEROWS Kingcombe Meadows – 'The Farm that Time Forgot' – is nearly 200ha of unimproved pastures and unshorn hedgerows full of wildlife.

MUTE SWANS Abbotsbury Swannery is home to a large managed colony of mute swans.

MIGRANT BIRDS Portland Bill Bird Observatory at the southernmost point of Dorset offers viewpoints for migrant birds. A superb site for sea-watching.



WHERE TO GO

1 POWERSTOCK COMMON, DORSET
Dorset Wildlife Trust 01305 264620; www.dorsetwildlifetrust.org.uk

OTHER TOP FALLOW DEER SPOTS

2 KNOLE PARK, KENT
The British Deer Society is running a guided walk on 16 October. National Trust 01732 462100; www.nationaltrust.org.uk

3 HATFIELD FOREST, ESSEX
Fallow deer rut event on 27 October. National Trust 01279 870678; www.nationaltrust.org.uk

4 PHOENIX PARK, DUBLIN
Europe's largest enclosed urban park. 00 353 1 677 0095; www.phoenixpark.ie



Swan: Dave Penman/Alamy

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*Cox & Kings cannot guarantee sightings of any of the species listed.

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RICHARD MABEY
A BRUSH WITH NATURE

The luxuriant forms and fragrances of wild roses are among the great joys of our countryside.

"What's in a name?" Shakespeare wrote in *Romeo and Juliet* while musing on the sweet smell of roses, a fragrance that seems quite independent of fussy taxonomies. Then, in *A Midsummer Night's Dream*, he promptly gives the deliciously different English names – eglantine and musk – for two wild species with entirely different scents.

Forgive me for playing the pedant. I was adrift among roses this summer, and lost in their luxuriant forms and perfumes. Like many other flowers, they relished the hard winter and warm spring. Some of our garden varieties, such as Fantin Latour, ancient and nectarous and muddle-blossomed, were out at the end of April. The wild species began in mid-May, overlapping with the last of the hawthorn and the first of the elder, so that the hedgerows seemed garlanded with a haze of whites and pinks that went on forever.

I love wild roses for their scent and their simplicity. But this year I was intoxicated by their complexity, too. I peered at petioles and pollen-masses with a botanist's glass, relishing the sweetness of pure detail.

There are 12 indigenous species in the UK, of which we have nine in East Anglia. First to flower (in early May) is the burnet rose *Rosa pimpinellifolia*, an intensely prickly, low-growing, sometimes even scrambling species that occurs on a few heaths near the coast. At Dunwich, in Suffolk, there's a local form with traces of cream, and sometimes lemon, in its white flowers.

The dog rose *R. canina* comes, of course, in every shade from washed-out white to peach-pink. But, suddenly recalling an ancient riddle I was taught by Ronald Blythe, one of our most perceptive chroniclers of rural life, I was drawn down beyond the petals to the sepals, which are a mess of asymmetrical be-whiskerings.



Illustration by Shelly Perkins/shellyperkins.co.uk

> "I peered at petioles with a botanist's glass, relishing the sweetness of pure detail."

The riddle is called *The Five Brethren of the Rose*, and is a kind of aide-mémoire to the identifying characteristics of dog rose sepals:

On a summer's day, in sultry weather,
Five brethren were born together.
Two had beards and two had none,
And the other had but half a one.

Sure enough, two sepals have no 'bearded' edges, two have whiskers down both edges and one has a single bearded edge. The dog rose has also had an honourable role in the breeding line of cultivated roses. A chance cross in the Middle Ages between it and the damask rose produced the White Rose of York, *R. alba*.

My favourite, though, is the field rose *R. arvensis*. Its smell is quite different from that of the dog rose: a heavy, seductive musk that on warm days is noticeable yards away. It's the same scent you find in its close relative, the true musk rose from Asia.

It is likely that Shakespeare had this species in mind when he detailed the enticingly perfumed vegetation on Titania's bank in his *Dream*. It's also the handsomest of wild roses, low and compact. This year I properly noticed its beautiful, dark-red shoots, and the bloom's great, golden dome of anthers.

And then there are the hybrids, and the naturalised Japanese *rugosa* roses, and the 'feral' hedgerow multifloras... The Bard, as usual, was right. Names may be a register of diversity, but the true wonder of roses – indeed, of all plants – is in their effusion of scents and colours and, yes, whiskers.

RICHARD MABEY has contributed columns to *BBC Wildlife* since 1984. Catch up with *Mabey in the Wild*, his recent radio series about British flora, at www.bbc.co.uk/programmes/b012gqrc

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BILL ODDIE
WILD AT HEART

Ee by gum! Birding has changed a bit since Bill was a lad – but is it really for the better?



What if Monty Python's four Yorkshiremen were birdwatchers?

"When I were a lad, we didn't have binoculars. We had to make do with two toilet rolls and an elastic band."

"If we wanted a telescope, we had to carve one out of a marrow."

"And there were no bird books."

"None at all."

"Well, there was one – but it didn't have any birds in it."

"It didn't have anything in it."

"No pictures."

"No words."

"No point! We never saw anything."

"But it didn't stop us birdwatching."

"Things have changed since then..."

They certainly have – and I am old enough to have witnessed the many advances in birding equipment and techniques. I have seen telescopes turn from burnished brass into grey rubbery stuff, and shrink from the size of a blunderbuss to that of a vacuum flask.

Binoculars have retained their shape, and presumably always will unless we evolve a third eye, but they are lighter and bank-breakingly expensive. Bird books, on the other hand, are out of control – there may now be more books than birds. In fact, a cull may be necessary.

The truth is that, having been out of the loop for a year or two, I have only recently re-entered the birding scene. I chose to dive in at the deep end by going on a trip to Guatemala, where the birds were unfamiliar and the forests dauntingly dense.

My first day out, I floundered. "What's that?" "Where?" "There." "It's flown." "It's back." "Where?" "Aaagh!"

I have rarely felt so inadequate, nor so envious of my companions, who were calmly calling out the sort of names you only get in Latin America: "Scaly-throated leaftosser! [Honestly.] Blue-crowned chlorophonia! [Is that a bird or a disease?] Northern bentbill! [A gratuitous insult?!]"

> "1: Someone spots a little brown bird. But 2: No one knows what it is. And 3: I can't even see it."

And then: "What's that?"

This time there was no response, and I realised that I was about to get my first demonstration of birding in the digital age. Here's how it works.

1: Someone spots a little brown bird. But 2: No one knows what it is. And 3: I can't even see it. So 4: Somebody points the laser pen, and a little red or green light stops halfway up a huge tree. 5: Pen-man says, "The bird is six inches above the light." But 6: We still don't know what it is. So 7: Someone steps forward with a digital camera fitted with a lens as big as a bazooka. The bird is tiny and half a mile away, yet the camera clicks and whirrs. Next, 8: We all peer at the screen. A brown speck is just visible, but as the digital zoom is activated, the image is magnified until we can see every stripe, streak and feather margin. Then 9: An identification is mooted – "Probably a yellow-bellied flycatcher."

By now, at least three smartphone screens are scrolling through *Flycatchers of Central America*, while an iPod broadcasts a whispy snatch of birdsong, at which the bird flies closer and joins in. And finally, 10: "Probably" becomes definitely. Yellow-bellied flycatcher. Tick.

So, is it progress? Or is it cheating? And do you miss the days of toilet rolls and marrows? I do.



There's a tiny bird half a mile up in the tree canopy – so is it time to activate the 'bazooka' lens? Or, better still, the toilet rolls?

Birdwatchers: David Tipling/naturepl.com; toilet rolls: Wanda Sowry

Former Goodie **BILL ODDIE OBE** has presented natural-history programmes for the BBC for well over 10 years, some of them serious and some of them silly. This column may well be a bit of both.

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PORTFOLIO

UNSEEN AMERICA *by Alexander Badyaev*



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In my dual career as a scientist and photographer, I have been fortunate to travel to some of the planet's wildest corners. However, I've learned that long-term observations made close to home often reveal the most fascinating and seldom-seen natural phenomena. These photos show the remarkable behaviour of common North American mammals, recorded within just a few kilometres of my study sites at opposite ends of the USA: in northern Montana's Rocky Mountains and the Sonoran Desert in southern Arizona.

ALEX BADYAEV



Alex is a professor of ecology and evolutionary biology at the University of Arizona, and a David and Lucile Packard Fellow in Science and Engineering. ***www.tenbestphotos.com***

ABOVE A flying squirrel grasps a spruce cone as it takes a gliding leap from its stash to avoid predators.

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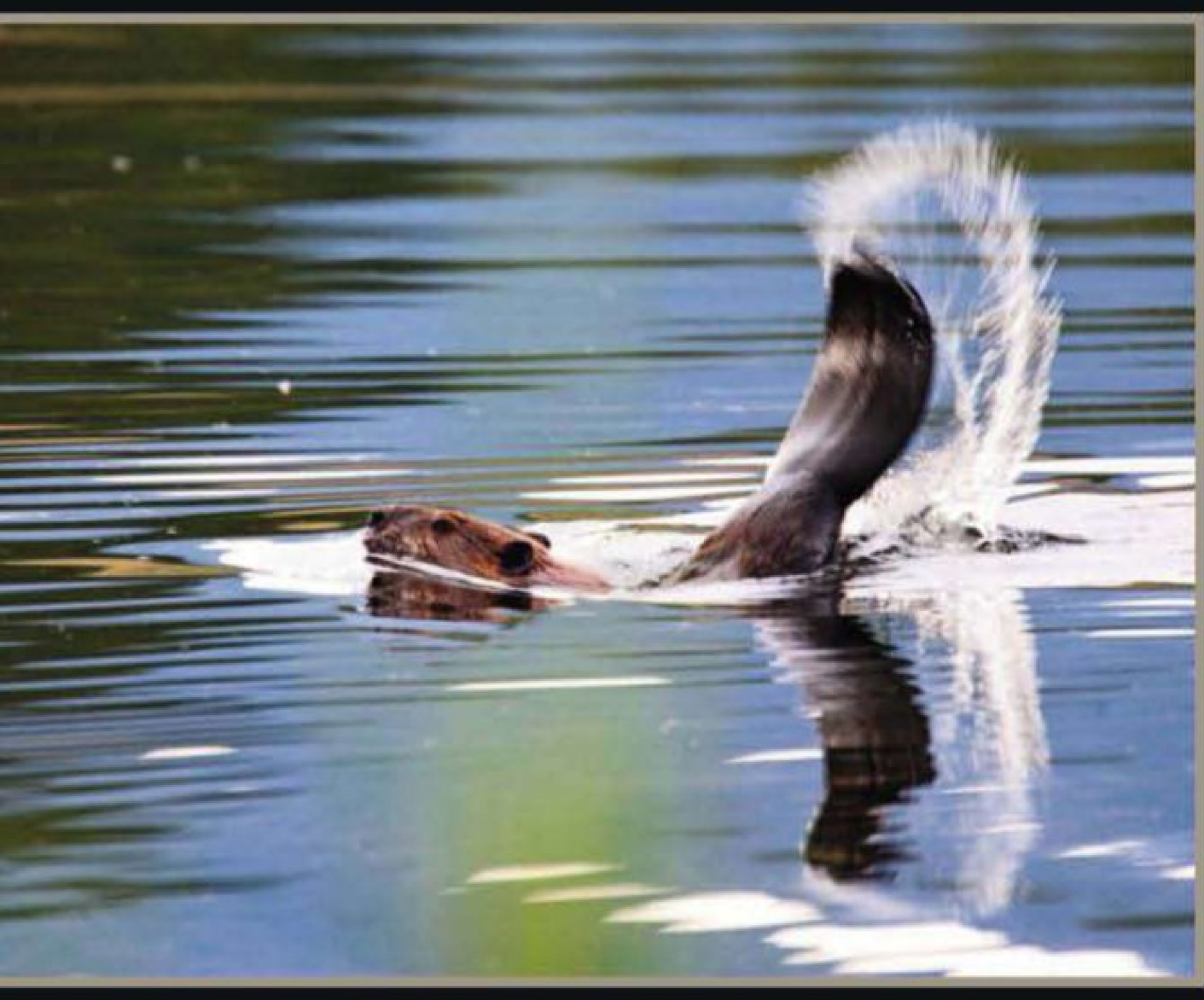


PLOTTING THE DOWNFALL

Early autumn sees the American beavers of northern Montana engage in frantic tree-felling, attempting to store up enough food to last the long winter. Nocturnal in this part of their range, beavers are rarely photographed engaging in their iconic activity of felling trees. I was fortunate to witness this matriarch and her year-old son use their considerable engineering talents to save time and effort: taking turns alternately gnawing and assessing their work, they nicked the trunk of this lakeside pine just enough to ensure that the next strong wind would topple it into the lake, not onto land. By sunrise they had similarly notched three more mature pines along the shore. A few days later, a powerful storm brought down all four trees, ensuring provisions for the five months during which ice clad the lake.

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MAKING A SPLASH ▲

The beaver's powerful tail has more than one use. As well as acting as a rudder for steering, it's also an intruder alarm: when frightened, the rodent will slap its hindquarters on the water's surface to startle (and soak) a potential predator. The sound also alerts its neighbours, which respond by paddling away into deeper waters or retreating to their lodges. The signalling animal then commonly shepherds the intruder off the lake with more slapping. I watched kits as young as two weeks old try repeatedly – and unsuccessfully – to imitate their mothers' tail-splashing; when they did achieve a splash worthy of the name, they invariably frightened only themselves.



LANDSCAPE ARCHITECTS ▶

Beavers have an unmatched ability to induce habitat succession. Here, less than three summers after settling in a remote area of dry hills and coniferous forests in northern Montana, this family created a large lake by building a series of dams on two local creeks. The newly flooded wetland was soon colonised by cranes, terns, shorebirds and waterfowl, populating an island of biological diversity in an otherwise dry habitat – and all within a single generation of beavers.

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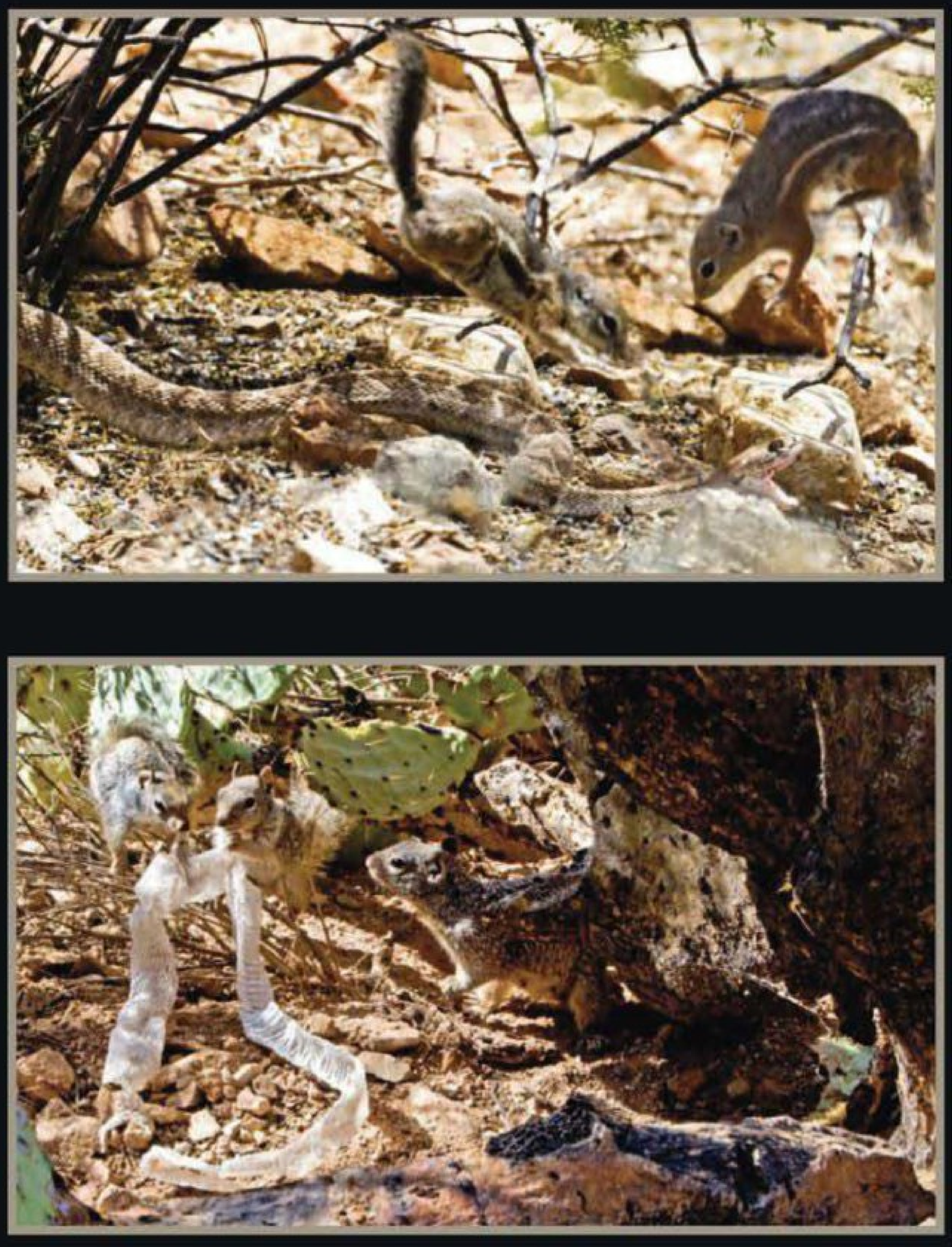
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UNWELCOMING COMMITTEE ▸

A Harris' antelope squirrel (*left*) and a rock squirrel briefly unite for the greater good: to mob a western diamondback rattlesnake. All of this reptile's potential prey species in the Sonoran Desert have developed complex behavioural rituals to make the predator aware that it's being monitored. In this case, both rodents crouch close while fanning their tails, then shovel sand and small rocks on top of the snake. This doesn't harm the reptile, and eventually the squirrels will go about their business, leaving their enemy in peace.





CAUGHT ON THE HOP ▲▲

In the Sonoran Desert, two juvenile Harris' antelope squirrels goad each other into teasing a western diamondback rattlesnake. When the inevitable strike comes, they rely on soaring leaps to avoid a fatal bite. This is a key learning ritual: in the late summer months I saw countless young squirrels playing chicken with snakes – not all lived to tell the tale.

SKIN TRADE ▲

A mother rock squirrel brings a shed western diamondback rattlesnake skin to her two recently emerged pups, which obsessively study its smell, taste and texture until the fragile remains disintegrate. This will be the youngsters' first introduction to the life-long neighbour and enemy that shares their habitat in the Sonoran desert ecosystem.

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FIGHT OR FLIGHT ▲

For several years I was puzzled to find the 'shells' of large dragonflies littering the lakeshore on midsummer mornings. Eventually, I discovered the culprits: montane shrews that patrol patches of spruce saplings before sunrise, shaking down and subduing dragonflies still half-frozen from the chill night. The tiny predator pictured is attempting to overpower a large darner dragonfly; if successful it will pry open the shell with pincer-like incisors, eating flight muscles and discarding the beautiful carapace for me to find.

TOO BIG TO BITE? ◄

In a northern Montana spruce bog, a young masked shrew investigates an unlikely prey – a fritillary, still lethargic in the early morning air. Juveniles – like this curious individual – engage in trial-and-error tasting sessions before they settle on their local diet. Shrews use remarkably constant routes, marked with their scent glands, to move through the forest. Lying in the understorey along these paths, with a few flashes behind me, revealed a world that had never before been photographed in the wild. I discovered that their break-neck dashes are punctuated by split-second pauses, often – as here – accompanied by a burst of echolocation to investigate prey at close range.

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DROPPING IN FOR DINNER

Setting up my camera near a recent wolf kill in a coniferous forest in Montana, I was expecting to photograph weasels. Much to my surprise, the visitors on that frigid December night were a pair of northern flying squirrels – a species that only rarely feeds on carrion. Even more amazing was the length of the gliding flights that brought these nimble creatures to the carcass from the nearest tree, over 100m away. This first glimpse – of aerobatic mammals floating across a snowy field, eerily silent under moonlight – prompted me to start my in-depth study of the biomechanics of this species' flight.

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LOOK BEFORE YOU LEAP ▲

Watching this flying squirrel explode from its snow-buried cache of fir cones, like a cork popping from a bottle, was a startling experience. The agile rodent relies on the thrust from its powerful hindlegs and the stabilising effects of its flattened tail to gain height, before spreading its flying membrane and gliding to the safety of a nearby tree, leaving potential predators dazed. This defence is less effective against sophisticated aerial predators: flying squirrels rustling under snow, too confident of their escape strategy, are a staple food of great horned owls.

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FLIGHTS OF FANCY

Mid-February marks the onset of the mating season for northern flying squirrels in Montana. Under the full moon and in temperatures dropping to -40°C, this female is escorted by a pair of squabbling males (only one, *above*, made it into the frame). During these flights, males display a remarkable array of acrobatic manoeuvres not seen in simple foraging glides. To record such agility, I mapped the nightly routes of resident females between their caches and placed elevated flashes in canopy gaps, firing my camera from the ground when I heard the squirrels jumping. The resulting images revealed a range of aerodynamic feats never before documented in the wild.

FIND OUT MORE

Alex Badyaev will be speaking alongside some of the world's finest wildlife and environmental photographers at WildPhotos – the UK's largest symposium for nature photography, held 21–22 October 2011 at the Royal Geographical Society, London. ***www.wildphotos.org.uk***

ON OUR WEBSITE

Admire more of Alex's photos of little-seen animals and their unusual behaviours at

www.discoverwildlife.com/gallery

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AT HOME OUTDOORS

Hidden in the mist: the French Pyrenees!

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agenda

conservation | investigation | discoveries

edited by **James Fair**
environment editor
agenda@bbcmagazines.com

▶ THE BIG PICTURE

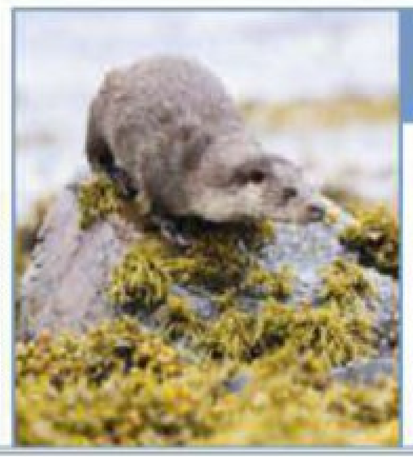
BURNING ISSUE

Under the heat of the equatorial sun of late July, a five-tonne pile of ivory burns in Tsavo National Park. Kenya is sending out a message to the rest of the world: elephant poaching is once again reaching a critical level. It is 22 years since the commercial trade in ivory was banned, but forest elephants in countries such as the Democratic Republic of Congo are bearing the brunt of a growing appetite for 'white gold' in China and other parts of the Far East. These tusks (and carved ivory *hankos* – signature seals) were seized in Singapore in 2002; they represent the deaths of about 300 elephants.

Paolo Torchio



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Elliott Neep/FLPA

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NEW RESEARCH

HOW OTTERS TALK

The make-up of anal scent is more complex – and informative – than imagined.



Marco Secchi/Getty

P40

TALKING POINT

JAPANESE WHALING

Anti-whaling protests don't help to protect whales, argues a Japanese academic.

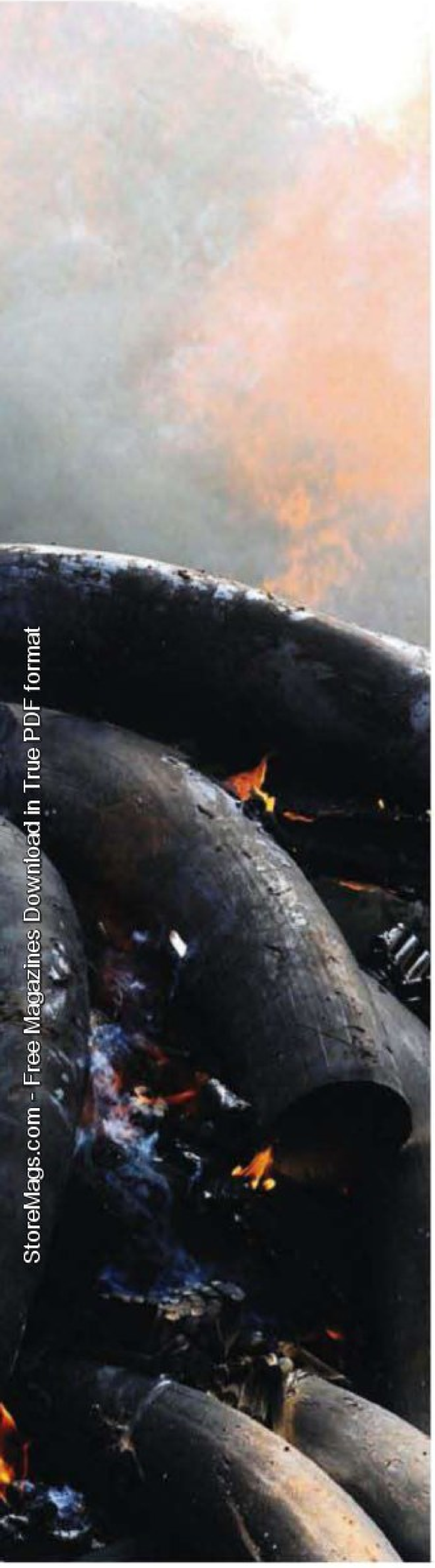
"Is the government trying to silence a scientist doing legitimate polar bear research?"

MARK CARWARDINE

P41



Rachel Ashton



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Funds are being made available by the Government to help councils and community groups carry out restoration work on nature reserves.

Lucy Hawker

▶ GOVERNMENT POLICY

Natural beauty contest

Funding provided to create linked conservation zones and help the movement of wildlife.

Environmentalists have welcomed a Government-backed scheme to fund the creation of 12 'super' wildlife reserves – to be chosen through a competition run by Natural England – but say that much more investment is needed to rescue our natural landscapes.

The 12 sites, called Nature Improvement Areas (NIAs), will consist of green spaces such as woodlands, parks and local nature reserves. These will be linked together to create large conservation zones ranging from 10,000ha to 50,000ha in size.

They could be a mix of urban and rural sites. "This is about looking beyond the boundaries of existing nature reserves," said a spokesperson from Defra.

Applications are invited from partnerships between, for example, land-owning charities, town and parish councils and community groups in England.

Each of the 12 winning bids, selected by an independent panel, will receive funds from a £7.5m pot to fund conservation work over a three-year period starting in 2012. This might include cleaning waterways, reviving hedgerows or developing green roofs in towns.

The commitment to NIAs was made in the recent Natural Environment White Paper, though the idea of creating 12 large conservation zones was proposed in a report commissioned by the previous government in 2009.

That report, *Make Space for Nature*, said that most conservation sites in England are small and poorly connected, so the movement of wildlife is restricted.

That report estimated that £27m would be needed to fund 12 NIAs for three years but just over a quarter of that figure has been pledged – enough to get the initiative off to "an excellent start", said Defra. Future investment will be dependent on the funding environment in three years' time.

Paul Wilkinson of the Wildlife Trusts, which manage 112 Living Landscapes (their equivalent of NIAs), welcomed the 'landscape-scale' approach. But, he added, "We want the Government to be much more ambitious and roll out NIAs across a much greater area of the UK." **Gemma Hall**

▶ BACKGROUND

- The Tame Valley project in Warwickshire is an example of what an NIA might look like.
- The 95km² site between Birmingham and Tamworth consists of parks, lakes, rivers, reedbeds and wet meadows.
- Warwickshire Wildlife Trust, in partnership with other organisations, is cleaning waterways and reconnecting habitats and reserves that have become fragmented.

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James Ellaby/Lancashire Wildlife Trust

Though peat has been extracted commercially from Chat Moss since the 1960s, pockets of untouched bog do remain.

▶ HABITAT PROTECTION

Digging banned at peatbog

Council cites climate change as a factor in refusing a licence for peat extraction.

Peat extraction from a lowland peatbog on the outskirts of Salford in Greater Manchester has been halted – a decision that could have major implications for similar sites across the UK.

Salford City Council refused permission for horticultural company William Sinclair to continue digging peat at Chat Moss, partly on the grounds that the extraction process leads to the release of carbon dioxide, the most significant global-warming gas. This is because carbon in the peat oxidises on contact with air.

It is the first time that climate-change issues have been cited as a reason for declining an application for a peat-digging licence.

"This is a vital decision for the protection of the Moss," said Dr Chris Miller of the Wildlife Trust for Lancashire, Manchester and North Merseyside. "It shows that national views on how we use peat are changing."

William Sinclair, one of the UK's biggest peat companies, has been extracting peat from Chat Moss since it acquired Joseph Metcalf, the previous operator, in 2008. Planning permission expired at the end of 2010, and it subsequently applied for a new licence to start digging this year.

The company has lodged an appeal against the decision, which should be heard this autumn.

"We have invested heavily in developing peat-free alternatives, but we believe that peat is still the best-available growing media in terms of cost," said William Sinclair spokesperson Mark Way.

Lowland peatbogs are among the most threatened habitats in the UK. Less than 3 per cent of the vast bog that once stretched across south Lancashire and Greater Manchester remains. Peatbogs are home to a range of rare British species, including water voles, marsh harriers and nightjars. **Simon Birch**

▶ BACKGROUND

- About 3 million m^3 of peat are used every year in the UK – 69 per cent by amateur gardeners.
- 60 per cent of our peat comes from Ireland, 32 per cent from the UK and 8 per cent from the Baltic States.
- It is government policy to totally phase out the use of peat in the UK by 2030.

AGENDA *interview*

PROF BEN SHELDON *on* AVIAN POX



What is avian pox?
It's a virus that causes tumour-like growths on a bird's body, especially around its head and eyes. We've known about the disease in house sparrows and woodpigeons for some time. What's concerning us now is the emergence of a more severe form of the disease in great tits.

How does it affect them?
In the most extreme cases it can prevent great tits from feeding and may make them more vulnerable to predators.

How is the disease spread?
By biting insects that carry the virus and through direct contact between the birds themselves.

When did it appear?
It was first reported in the 1970s in Scandinavia, but the current, severe form was first seen in the UK in 2006, when it was observed in great tits in West Sussex. By 2010 it reached Oxford, where we have been studying great tits since 1947.

Is there anything the public can do?
Yes, most definitely. We'd like people to report any sightings of pox-infected birds, so that we can track the spread of the disease. Please report your sightings to the RSPB on 01767 693690. **Simon Birch**

Professor Ben Sheldon is a scientist from Oxford University's Edward Grey Institute.

Phil Sayer

NEWS IN NUMBERS

1 osprey became tangled up in an angler's line while he was on a fishing trip. The angler was able to free the ensnared raptor.

196 rare tortoises were found inside the suitcases of two men arrested flying out of Madagascar in late July.



Jouan & Rius/naturepl.com

12 Amur leopards were snapped by camera-traps in the past year, suggesting that numbers are increasing. Previously, WWF-Russia was only able to identify some seven individuals.

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DISCOVERY OF THE MONTH

Otter scent glands provide whiff of intrigue

The latest research on otter communication is not to be sniffed at.



A new study suggests that otters have a complex communication system – involving their spraints.

Solvin Zankl/naturepl.com

A mammal biologist's working life surely has its high points – but sniffing the anal gland secretions of 158 dead otters is probably not one of them.

"The juveniles' secretions, in particular, do stink," says Eleanor Kean of the Cardiff University Otter Project (CUOP). "I soon learned to approach them with caution so as not to gag."

But it's all in a good cause. The results gleaned from Kean's unenviable task have put CUOP on the scent of the otter's mysterious social life.

For all the mustelid's charisma and popularity, its behaviour is rather poorly understood. Being largely solitary, secretive, nocturnal and wide-ranging, and having suffered a massive population crash in the 1960s and 1970s, it is a tricky species to study, Kean told *BBC Wildlife*.

CUOP has been investigating otter carcasses – sent in by members of the public – since 1992. Its latest research looks for clues as to how otters communicate via their spraints – faeces 'perfumed' with anal gland secretions.

Variations in the secretions' smell (which may be oily, sweet or faecal), colour (white, brown or black) and chemical composition were found to coincide with an animal's age, gender and reproductive status.

Even pregnant and lactating females – assumed to keep a low profile to avoid the attentions of aggressive males – were readily identifiable from their secretions.

And the presence of 432 different compounds in the secretions suggests that otters are using them to relay quite complex messages.

In future, it might also be possible to identify individual otters from a scent 'fingerprint', says Kean, which would allow this elusive, enigmatic species to be monitored in the wild. **Stuart Blackman**

SOURCE *Chemical Senses*, vol. 36, pp555–64 LINK www.otterproject.cf.ac.uk

NEWS IN BRIEF



Martin McGill/WWT

CAPTIVE SUCCESS

Conservationists hoping to reintroduce spoonbilled sandpipers into the wild have hatched chicks in captivity for the first time at a facility close to the bird's breeding grounds in Eastern Russia. Spoonbilled sandpipers number fewer than 200 pairs, according to the Wildfowl & Wetlands Trust, which is managing the project.



Charlie Phillips/WDCS

PILOT WHALE DEATHS

In late July, volunteers refloated 25 pilot whales that had stranded in northern Scotland, and prevented a further 40 whales from getting stuck. But, despite the efforts of teams from the Whale and Dolphin Conservation Society and British Divers Marine Life Rescue, 25 whales died. It is not clear at this stage why they stranded or died.

REDS IN TROUBLE

Squirrelpox has returned to red squirrels in Merseyside after an absence of 18 months, says the Wildlife Trust for Lancashire, Manchester and North Merseyside. Spread by greys, the disease is usually fatal to reds; in 2008 numbers fell by 90 per cent during a major outbreak. Since then, however, the population has recovered.

▶ RARE SPECIES

Home to the Himalaya

Twelve rare tragopan pheasants have been flown from the UK to Northern India to kick-start a captive-breeding programme in their native country. Satyr and Temminck's tragopans are both rare birds that inhabit Himalayan woodlands at about 3,000m, but they are threatened by habitat loss and hunting. It's hoped that establishing a conservation project in India will, eventually, help to reverse their decline. Like many members of the pheasant family, tragopans are renowned for their spectacular breeding displays.



The satyr tragopan: unfortunately, good to eat.

David Tipling/OSF/SpecialistStock

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Stop the protests – and save the whale?

Western campaigns against Japanese whaling merely prolong it, in the opinion of independent researcher **Atsushi Ishii**.



Sea Shepherd activists want Japan to stop whaling, but will their protest have the impact that they hoped for?

The Sea Shepherd Conservation Society is known in the West for its 'direct action' confrontations with Japanese whaling ships in the Southern Ocean Sanctuary (see boxes). Its aim? To stop them from catching whales.

In the West, these campaigns have few critics, because their goals are easy to understand and sympathise with, but in Japan, journalists and independent researchers (such as myself) joke that the pro-whaling circle must be one of Sea Shepherd's biggest donors. Indeed, I'd say that Sea Shepherd, and others, are helping to build powerful support for Japan's whaling activities.

Is there any evidence for this? Well, the *Asahi Shimbun* – a respected Japanese daily newspaper – has carried out several opinion polls on whaling, and the latest one showed that 65 per cent of the Japanese people now support scientific whaling.

And in 2008 – just after Sea Shepherd started that year's campaign – Australian researchers Julia Bowett and Peter Hay found that young Japanese people repeatedly expressed hostile attitudes towards protestors. On this basis, they argued that anti-whaling activism may result in the increased acceptance of whaling.

How is this possible? First, most Japanese people do not understand the concept of animal welfare and only see whales as resources to be used. Second, the Japanese do not tolerate civil disobedience. In 2009, Greenpeace Japan confiscated evidence to uncover a whale-meat embezzlement scandal, but most Japanese people saw this as theft.

Against this background, the pro-whalers successfully campaigned against Sea Shepherd's Antarctic operations by criticising them as unlawful activities aiming to deprive the Japanese people of whale meat. But there is no nationwide culture of eating whale meat, so Sea Shepherd has merely exacerbated antagonism towards all whaling protests.

Sea Shepherd argues that it is trying to bankrupt the Japanese whaling operation by preventing it from catching whales. But if this were working, then stockpiles should be decreasing.

In fact, there is little demand for whale meat in Japan, and stockpiles are greater than at any time since the 1980s, despite decreasing supplies and a drop in the price of whale meat. In my view, the best thing that anti-whalers could do is to let stockpiles increase, because that

> *Most Japanese do not understand the idea of animal welfare.*

PROTESTING: THE CASE FOR



Paul Watson
Founder and president of the Sea Shepherd Conservation Society

The objective of the Sea Shepherd Conservation Society is to defend the Southern Ocean Whale Sanctuary. Japanese whalers are killing protected whales there, in violation of the global moratorium on whaling inside the boundaries of a whale sanctuary.

Sea Shepherd is not 'protesting' against Japanese whaling, nor are we practising civil disobedience. We are not trying to 'educate' the Japanese people. We are intervening against what we believe is an illegal activity.

Our strategy is to make Antarctic whaling uneconomic, and we are succeeding – last season, we forced the Japanese fleet to return home a month early and to take only 17 per cent of its self-appointed kill quota.

Sea Shepherd will continue to intervene until Japanese whalers desist from slaughtering whales in waters they have no business killing them in.

Barbara Veiga/Sea Shepherd

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Cliff Hide/Demotix/Corbis

pushes up storage costs, making whaling less economic. Though this could also bring down the cost of whale meat, this is not a problem: chicken and pork both taste better and retail at about one third of the price. Not surprisingly, Antarctic whaling will never compete with a cost-efficient farming operation.

If you really want to stop Japan from whaling, the best thing you can do is keep silent and let the market run its course. Western voices opposed to whaling only make it harder for Japanese politicians to shut it down.

This 'inaction' approach would end the unfruitful quarrel with Japan and clear the way for more important discussions on the real problems that whales face, such as climate change, noise pollution and ship strikes.

▶ BACKGROUND

- The Southern Ocean (or Antarctic Whale) Sanctuary was established by the International Whaling Commission in 1994. Whaling is prohibited within its 50 million km^2 extent.
- The status of the sanctuary is reviewed every 10 years. in 2004, Japan tried to have it removed, but the proposal was rejected.
- Japan argues that there are sufficient numbers of whales for a 'sustainable harvest' to take place each year. Japanese ships hunt whales in the sanctuary, as well as in the North Pacific and its own coastal waters, on the basis that it is necessary for scientific research.
- Sea Shepherd began its action against whaling in the Southern Ocean Sanctuary in 2002. There have been six subsequent campaigns, including one last winter (2010–11).

MARK CARWARDINE



On the wild thoughts that won't let him sleep. This month:

Big oil vs the bear scientist

You couldn't make it up. A drama worthy of a James Bond movie – involving an Arctic scientist, Kafkaesque government agencies, unscrupulous oil giants, climate-change sceptics and polar bears – is currently unfolding in the United States.

Charles Monnett is the government biologist who first raised the alarm about the impact of global warming on polar bears. His groundbreaking work was quoted by Al Gore in *An Inconvenient Truth*, and used to push George Bush to act on climate change.

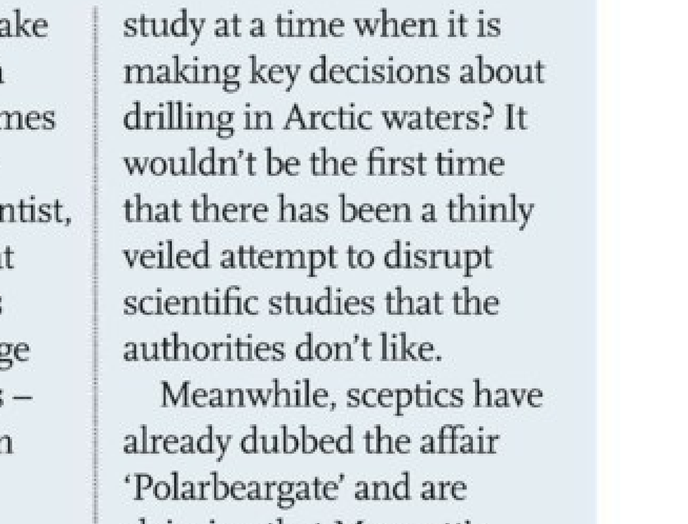
But Monnett has just been suspended – for "integrity issues" relating to a project studying how the bears are adapting to receding ice conditions – and placed under a gagging order pending an official investigation.

The timing is intriguing. Oil giants demanding an expansion of oil exploration in Alaska have been complaining of delays caused by environmental sensitivities. In August, the president issued an order to speed up the processing of drilling permits.

Is the US government really trying to silence a well-respected scientist conducting a legitimate study at a time when it is making key decisions about drilling in Arctic waters? It wouldn't be the first time that there has been a thinly veiled attempt to disrupt scientific studies that the authorities don't like.

Meanwhile, sceptics have already dubbed the affair 'Polarbeargate' and are claiming that Monnett's original work has been discredited. It's all hot air, of course. But, unlike the vast majority of peer-reviewed research adding to the weight of evidence for climate change, they seem to be making the headlines.

Can conservation get any more frustrating than this?



Polar bears: at the centre of a drama worthy of a Bond movie.

> *"Sceptics have dubbed the affair 'Polarbeargate' and say that the original work has been discredited."*

Mark Carwardine is a zoologist, photographer and TV presenter.

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Panicked zebras dissolve in a dazzling array of black and white stripes designed to confuse predators. This herd, pictured at a water hole, is part of the last great mammalian migration in southern Africa.

James Gifford

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March of the ZEBRAS

When a game fence came down in Botswana, a long-lost migration was reborn. **JAMES GIFFORD** reveals why some zebras are stay-at-home types but others feel wanderlust.

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Slowly but surely, our two vehicles crawled along the bank of the winding Okavango River to reach our striped target. In the lead vehicle were Hattie Bartlam, whose plains zebra research project I was visiting, and Rob Jackson, the local vet. They cautiously approached the 320kg animal, while I took up the rear in case she bolted after being darted: my role was to keep an eye on her until the sedative began to work its magic.

"Dart in!" The radio crackled. The mare jumped in shock and began to gallop away, but the tranquiliser quickly took effect. Soon she was slumbering and we were busy changing her radio-collar. The depth of empathy between Hattie and her subject was obvious. Dousing our sleeping beauty with water to help regulate her temperature, Hattie's air of nervous tension only relaxed when the mare finally trotted away to show her new collar to the ever-vigilant stallion. By the time the late afternoon sun had begun to slide into the papyrus-lined swamplands, we had replaced the neckwear on three more mares.

"DART IN!" THE RADIO CRACKLED. THE MARE JUMPED IN SHOCK AND GALLOPED AWAY, BUT THE TRANQUILISER QUICKLY TOOK EFFECT.

Battling through thick, thorny bush in the middle of the Okavango Delta, far from civilisation, might be a daunting prospect to most of us. But for Hattie, it's all in a day's work. Her slim frame belies a steely determination and inner toughness – a prerequisite for working in the field in this part of the world – that led her to make an astounding discovery. In 2008, Hattie realised that she had just found the second-longest zebra migration on the continent.

EARNING THEIR RACING STRIPES

For herbivores – indeed, *any* animals – to travel over 270km through mopane woodland and across the dusty scrub of the Kalahari Desert is a remarkable feat in itself. But to do so in as little as 11 days without any apparent need, as this zebra population does, raises some intriguing questions. On average, their journey involves an energy-sapping round-trip of 588km – between the Makgadikgadi salt pans and the Okavango Delta – making it second only to the great trek

THE EXPERT

JAMES GIFFORD



lives in Botswana where he runs wildlife photography safaris. He spends several months a year in the Okavango Delta.

Half-hidden by clouds of dust and a shimmering heat haze, zebras trek through a bleached Botswana landscape, lured by the promise of fresh grazing.



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made by the Serengeti's zebra herds. (The latter's famous, never-ending odyssey follows the same circular route as that of wildebeest and Thomson's gazelles, and covers 600–800km a year). Even more incredibly, until recently nobody even knew that the Botswana zebra migration existed.

Hattie's discovery was made while tracking zebra harems in the south-east of the Okavango for her PhD. Each harem consists of a stallion and up to seven or eight mares and foals. There is no loyalty beyond this social unit, though harems often congregate to form large herds. For her study, Hattie was planning to compare the small-scale movement patterns of 11 different groups in the delta.

In December, when the annual rains had transformed the wetland's roads into swollen rivers, she was therefore more than a little surprised to find that six of her harems had appeared 270km away on the edge of the Makgadikgadi, the largest network of salt pans on Earth. Then, when the last of the moisture from the rains had evaporated in May the following year, five of those herds thirstily trudged back to the Okavango. This raised the question: why, despite an abundance of food and water in the delta, were the zebras being drawn inexorably eastwards to the salt pans? ▶



Hattie checks a female zebra that has been darted to fit a collar. The unit weighs 950g, delivers hourly location fixes via its GPS system and may be left on for up to 30 months before being removed.

Both photos by James Gifford



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Zebras gallop across one of the myriad shallow lagoons in the Okavango Delta. This immense seasonal wetland is fed by a river that flows inland, instead of to the sea.

More perplexing still was what prompted six of the zebra harems to travel while the other five remained in the lush surroundings of the Okavango.

BLOCKED – AND BORN AGAIN

The discovery created quite a buzz among the research community in Maun, the gateway to the delta and my adopted home. Intrigued, I persuaded Hattie to let me join her on her latest collaring mission.

Now, with the day's radio-collaring work complete and an ice-cold beer in hand, I finally had an opportunity to pick Hattie's brain. First I needed a history lesson...

A century ago, Hattie explained, the size of Botswana's zebra and wildebeest herds and the ensuing competition for grazing made migratory behaviour essential. One of the migration routes was from the Okavango to the Makgadikgadi. But in the late 1960s a series of giant fences were erected to stop foot and mouth and other diseases spreading between wildlife and cattle.

One of these stopped the migration in its tracks. Though the animals could trudge around the obstacle, each leg of their journey would now be 200km longer – an insurmountable distance given the lack of permanent water on the elongated route. Even today, with the fence gone (it was officially decommissioned in 2004), there is perilously little drinking water to support the harems during their return march to the delta.

A plains zebra can live for up to 20 years, so it seems that the migration must have skipped at least one generation during the 40 or so years that the fences were *in situ*. This prompts another question. It has always been assumed that the young of social herbivores learn migratory behaviour from their parents. Patchy maintenance may have enabled a few zebras to begin sneaking through gaps in the fences a few years before 2004, but not an entire population. So how did the latest generation learn the route? Not from their parents, who were prevented from making the long trek. Did they follow in the footsteps of another species, such as elephants? We may never know.

And why do the zebras choose to leave the delta's plentiful food and water? "You need to think of the journey in reverse," Hattie tells me. "The zebras would happily feed on the nutritious



Lions soon adapt their hunting strategies to take advantage of the position of fences – as this zebra discovered to its cost in the Boteti River region.

Top: Chris Harvey/ardea.com; skull: James Gifford

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Two stallions battle it out – the winner may take control of a harem. No stallions were collared in Hattie's research project to avoid the valuable equipment being damaged during such contests.

Richard Du Toit/Minden/FLPA

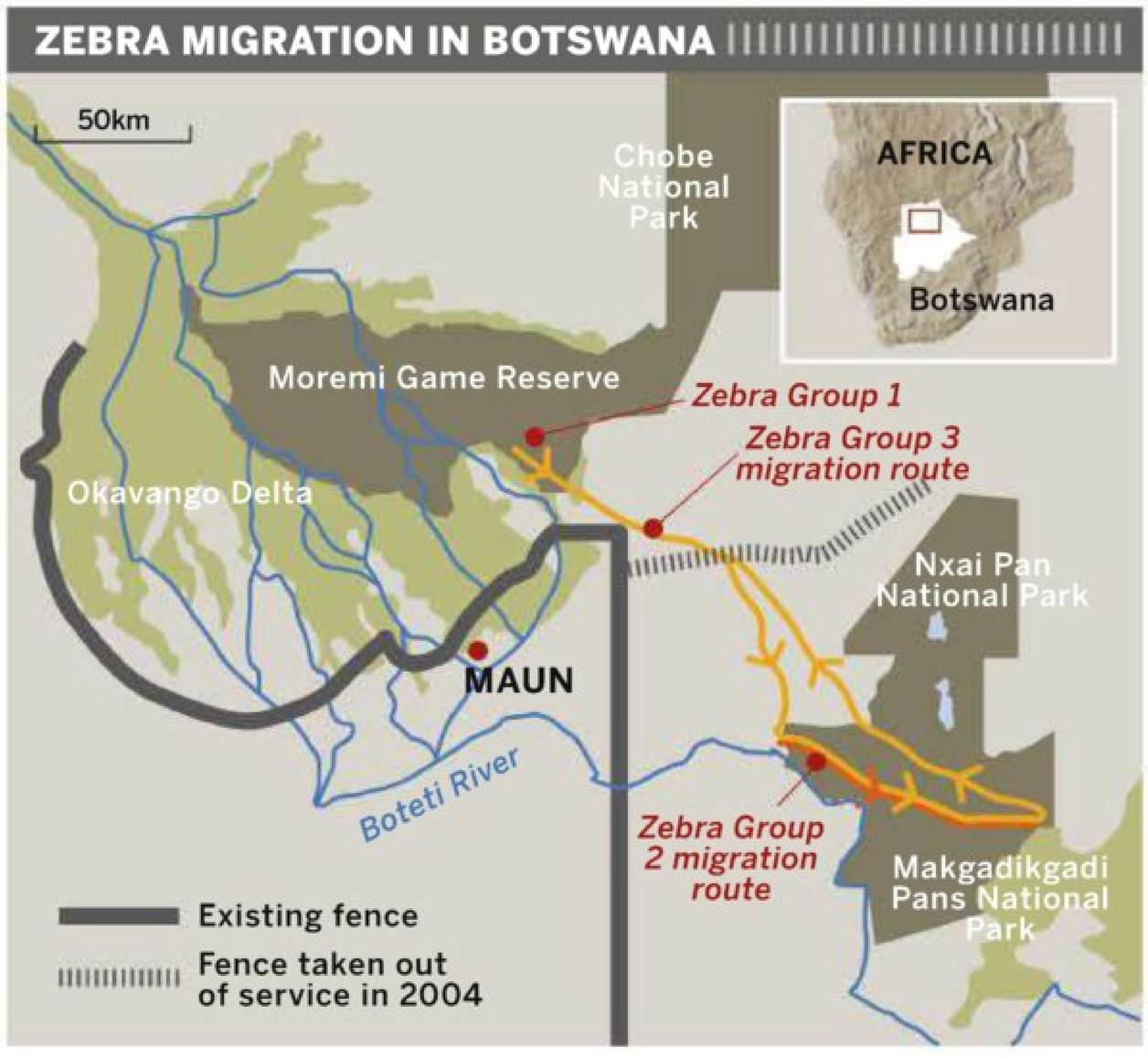
grasses that spring from the mineral-rich Makgadikgadi soil all year, but when the water runs out, they're forced to migrate from the pans to the delta."

Imagine walking for three weeks to feast on Michelin-starred cuisine, knowing that a few months later you will run out of water and be forced to trek back almost 300km (twice as fast this time) with the equivalent of a thimbleful of water to quench your thirst.

THREE OF A KIND

"The curious thing," Hattie adds, "is why the zebras go all the way back to the delta rather than lingering beside the much nearer Boteti River." It used to be thought that all of the Makgadikgadi zebras remained in the Boteti area during the dry season, nourished by the flowing river or, if that runs dry, by pools left in the riverbed. And, in fact, most of the Makgadikgadi's black and white equines do precisely that. But some of them march to a different tune, as if driven onwards by a powerful wanderlust.

Could there be several zebra populations adopting different behaviour? Hattie's data certainly points to this conclusion. The first group, like the vast majority of the Okavango's zebras, live the easy life, spending the entire year in the south-east of the delta. The second group, 15,000–20,000 strong, work a bit harder, eking out an existence in



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Richard Du Toit/naturepl.com

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the Boteti area during the dry season, often moving 30km or more in search of fresh grazing. Their reward: the succulent grass that greens the margins of the Makgadikgadi.

The final group of zebras, whose numbers are more modest (though as yet unknown), are the true athletes. By moving between delta and salt pans, they can enjoy the best of both worlds. But the price they pay is an epic journey across northern Botswana.

The livin' is definitely easy for this zebra family party, pictured in lush wet-season grass.

MAKING THE NEWS FOR A CHANGE

Endangered species naturally tend to hog the headlines, so it's refreshing for a relatively abundant animal like the plains zebra to be the centre of attention for once. It's not just idle curiosity. Zebras are a vital part of the food chain: understanding their migration in turn helps us to interpret the movements of their predators. And Hattie's research has shed light on the impact of fences on migratory game.

What triggered Hattie's interest in zebras, I wonder? "It's easier to get funding to study 'sexy' species," she says, "but herbivores like zebras are key to understanding any ecosystem. They're not just stripy donkeys, you know."

DID THE MIGRATING ZEBRAS FOLLOW IN THE FOOTSTEPS OF ANOTHER SPECIES, SUCH AS ELEPHANTS? WE MAY NEVER KNOW.

NOW YOU DO IT

GETTING THERE

▶ Fly to Maun via Gabarone (Botswana's capital city) or Johannesburg.

WHEN TO GO

▶ During the dry season (June–October), the best zebra viewing is in the west of the Makgadikadi Pans National Park, along the banks of the Boteti River.

▶ You can get better views of huge zebra herds during the wet season (December–April) in the open eastern area of the park, but finding the animals – and not getting stuck – can be tricky.

WILDLIFE HIGHLIGHTS

▶ In the Okavango and Moremi, expect to see antelopes such as impala, red lechwe, waterbuck, oryx and the rare sitatunga, as well as buffalo, elephants, giraffes, hippos, lions, wild dogs and many colourful waterbird species.

▶ Take a trip into the delta in a traditional *makoro* (below) – it's a great way to get close views of wildlife.



Ariadne Van Zandbergen/Alamy

FIND OUT MORE

▶ **Southern African Wildlife** by Mike Unwin (Bradt Travel Guides, 2nd edition, 9781841623474, RRP £19.99, readers £17.99, subscribers £16.99). Buy on p81, quoting WAUT11/12.

▶ **www.herbivoreresearch.com** for the zebra research.

▶ Hattie's paper appeared in *Oryx* vol 45, published by Fauna & Flora International.

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SIX MORE UNFAMILIAR MIGRATIONS IN AFRICA

1 BLIZZARDS OF BATS

In November–December, eight million straw-coloured fruit bats descend on Kasanka National Park, Zambia, to gorge on fruit. It could be the biggest concentration of mammalian biomass on the continent – or even the world. Find out more at www.discoverwildlife.com/animals/fruit-bats-africas-greatest-mammal-migration

2 WILDEBEEST HERDS (WITH NO TOURISTS)

Zambia's Liuwa Plains hosts what is said to be the second-largest wildebeest migration, but its inaccessibility has led to disagreement over the numbers involved (estimates vary from 50,000 to 250,000 animals). Strictly speaking, it may be more of a wet-season gathering than a migration.

3 PINK TIDE

Between November and May, up to 300,000 greater and lesser flamingos gather on the Makgadikgadi pans to breed, having flown from wetlands across southern Africa.

4 SUDAN'S SECRET

Africa's newest country, the Republic of South Sudan, is the location of one of the most recently discovered herbivore migrations. Each year 800,000 white-eared kob, 250,000 Thomson's gazelles and 160,000 tiang trek nearly 1,600km through this state and the neighbouring Gambela region of Ethiopia.

5 THE SARDINE RUN

Though it is not a guaranteed event, in June–July billions of sardines may surge up the South African coast. Following in their wake are superpods of dolphins, fur seals, gannets, sharks and Bryde's whales.

6 SWARMS OF DRAGONFLIES

Every year vast numbers of dragonflies (mostly globe skimmers) fly from India to East and southern Africa. They arrive in the Maldives in October–December, then continue to Uganda, Tanzania and Mozambique. The next generation of adults makes the return trip in March–June.

1. Karen Deoler/Alamy; 3. Frans Lanting/FLPA; 5. Alexander Safonov





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This badger is being released after being vaccinated against bovine tuberculosis. Unless it has already contracted the disease, it should be free of bTB for the rest of its life.

With the practised efficiency of someone who has done it countless times before, Fiona Rogers takes a syringe and presses the needle firmly into a tablet-shaped, 5cm-thick silicon pad. The texture of the pad replicates badger muscle, and is covered in soft, light-grey 'fur' to make it look and feel more realistic.

A veterinary adviser to the Food and Environment Research Agency (FERA), Rogers is teaching a group of seven people, including the chairman of a badger group and two members of the National Farmers' Union (NFU) policy team, how to vaccinate a badger. She depresses the plunger firmly but gently – there should be some resistance, but not too much, she says.

"It's not exactly *Pulp Fiction*, then," says one of the trainees to a ripple of laughter. Rogers smiles. "No, and it's not *The Rock* either," she responds. In other words, don't go wielding the needle as if it's a fencing sword – you are, after all, trying to do the animal some good.

It is one thing to plunge a needle into a cushion, however, and another to stick it in a dangerous animal that has been caged for up to six hours. But these trainees will do just that as part of a government programme to create a cohort of 'lay vaccinators' to inoculate badgers against bovine tuberculosis (bTB).

THE BAITING GAME

The Badger Vaccine Deployment Project (BVDP) was originally to be trialled in six bTB hotspots, but in 2010 this was reduced

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Kill or cure?

In an innovative project in deepest Gloucestershire, volunteers are training to vaccinate badgers against bovine tuberculosis. But will this trial work? And will a cull take place anyway? **JAMES FAIR** investigates.

Photos by **NEIL ALDRIDGE**

Fieldworkers wear protective masks and gloves to reduce the risk of catching any diseases, such as bTB, from badgers.

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Vaccine – check; syringes – check; stylish, purple latex gloves – check.



When setting the trap, Jeff and Lucy make sure that the door swings freely and closes properly.



An early start sees the sun creeping over the Cotswold escarpment, an area of beech woodlands and rough pastures where the trial is taking place.



This badger is leaving the trap backwards – most of them come out headfirst.

to one location due to budget cuts. The survivor of that cull was here in South Gloucestershire – an area of mixed beef and dairy farming that ranges from intensively cultivated pastures to beech woods growing on the precipitous Cotswold escarpment. Prime badger habitat.

But before the trainees get anywhere near a needle they have to learn how to catch a badger. As the trial's manager Dr Iain Trewby says, this is the hardest bit. "It's all about field skills," he explains. "How to site a trap and maximise trapping efficiency."

That afternoon I'm taken out by two of the field team, Lucy Borde and Jeff (he declined to give his full name, for reasons that will become clear), to find out what this involves. The most obvious ploy is to set up a battery of traps by an active sett but, as the BVDP does not have access to all of the setts within its 91km² area, the operatives also have to place 'remote' traps on well-used badger runs. Think of it like locating speed cameras on the busiest A-roads.

IT IS ONE THING TO PLUNGE A NEEDLE INTO A CUSHION, HOWEVER, AND ANOTHER TO STICK IT IN A DANGEROUS ANIMAL.

Badgers leave several indicators of their presence: footprints; latrines or dung pits, where they deposit faeces to mark their territories; coarse hairs caught in barbed wire; and their runs, which vary from distinct tunnels through a hedgerow to less defined routes through vegetation.

Jeff points to a hole in a hedge that he says badgers use. "It's clearly the work of a short animal, not a deer," he explains. "Badgers scrape their bellies on the ground so the grass is worn away. And the hole is almost semi-circular – if it had been made by a fox, it would be much narrower." Jeff and Lucy bait and set the trap, and we move on – there are 21 more cages to prepare today.

The next morning we meet at 4am, and by 5:30am it is clearly going to be a glorious summer's day. The sky fades from a rich indigo and, though the sun has yet to rise above the rolling hills, this resonantly English landscape is bathed in a warm glow. To conform with animal welfare regulations drawn up by the Veterinary Laboratories Agency (VLA), Jeff and Lucy must check all 22 of the traps we set the previous day by 8am, and they go about their job with a brisk but unhurried calm.

Soon we reach a trap that contains a big male badger. He appears docile, but is not going to just sit there and allow his large rump to be prodded without protest. As Jeff approaches, he gives a few low, menacing growls and bares his teeth.

Lucy calls for the 'wicket' – a six-pronged



Peanuts work well as bait: they have a strong smell but don't attract many other species.

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plastic gate used to immobilise the badger at one end of the cage. After a scuffle, he is cornered. Jeff sticks the needle into his plump behind then, to mark him as vaccinated, clips a patch of fur from his rump (which will take months to grow back) and sprays it with temporary red dye. At last Brock is free to go. The door swings open and he's off, with a speed I've never seen before in a badger.

It proves to be a busy morning, with 17 badgers trapped and vaccinated, of which at least six are cubs. This is especially significant: inoculate one of this year's models, and that's one badger that is unlikely to be responsible for spreading bTB to cattle.

CULL VS CURE

Beef and dairy cows are precious – every one lost is a waste. There is a dire need to find an effective method of reducing bTB in Britain's cattle, which currently costs the taxpayer £90 million a year (excluding research).

But badger vaccination is not the only option. In July, environment secretary Caroline Spelman said that she "was strongly minded" to permit farmers and landowners to shoot free-running badgers if their livestock is threatened by bTB. The earliest this can start is 2012, in two pilot areas – probably Devon and Gloucestershire – for the first year.

HOW TO TRAP A BADGER

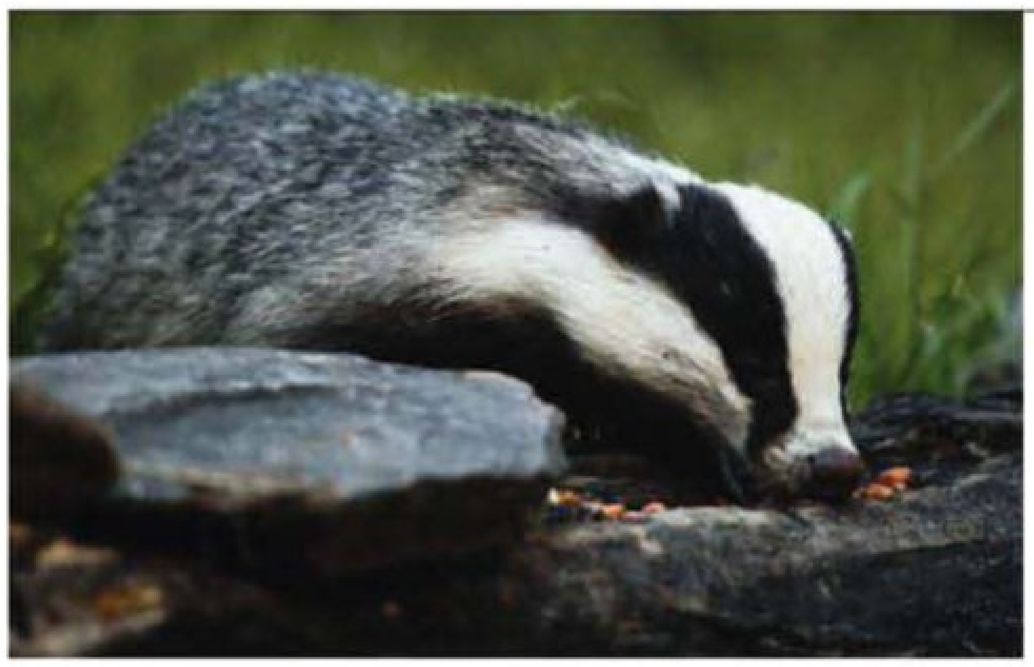
To catch Brock you need keen eyes, handfuls of irresistible treats, a trapdoor cage and a licence from Natural England.



1

FIRST FIND YOUR BADGERS...

Look for the large exit holes of setts in banks or hillsides; 'litter' from inside may be piled up outside. Runs can be harder to spot: look for well-worn paths through hedges or vegetation.



2

GET THEM USED TO THE BAIT

Badgers need to learn that your bait indicates a regular source of food (peanuts smell strongly, so are ideal). Place it in a small pit and cover with a stone to deter mice and squirrels.



3

POSITION AND SET THE TRAP

Now introduce your cage, with the door wired open so that it can't fall. On the first night place the nuts at the entrance, on the second just inside, and so on – until the bait is right at the back.

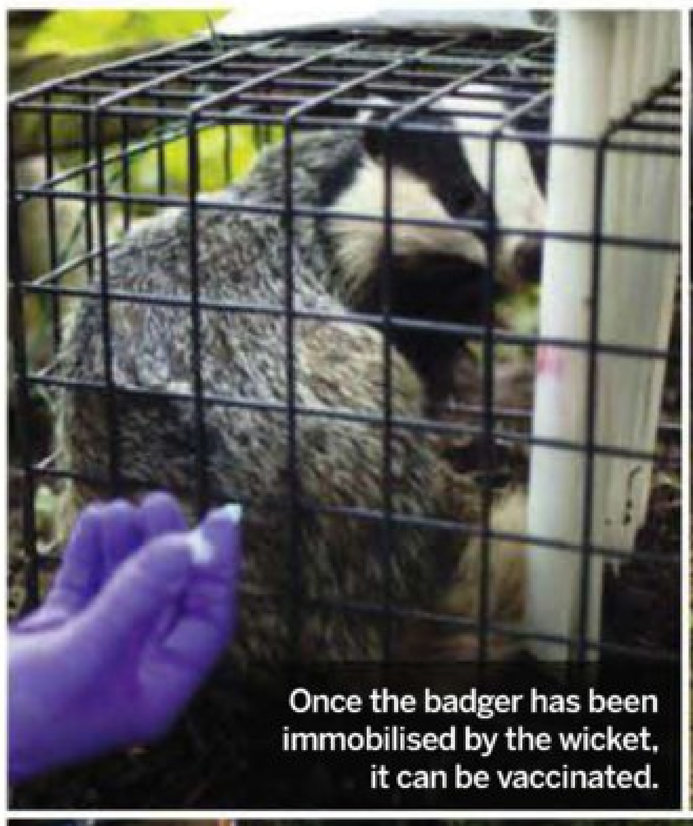


4

NOW CATCH YOUR QUARRY

Bury the nuts at the back of the trap. Cover them with a stone, and run some thread from it to the trigger. As the badger roots for the nuts, it will move the stone and the cage door will fall shut.

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Once the badger has been immobilised by the wicket, it can be vaccinated.



Red dye is sprayed on the badger's rump so that the fieldworkers know that it has been vaccinated.



After the badger is released, the cage door will be securely wired shut until the next trapping round. Jeff's face has been pixellated to hide his identity.



Rigorous documenting of how many animals have been vaccinated is crucial so that the success of the trial can be evaluated.

The £90 million question is: which will work best, culling or vaccination? And which strategy will farmers adopt?

Since the NFU has long advocated badger culling as a means to defeat bTB, you might think that there is no contest – culling will win, every time. However, the NFU's chief farm policy adviser John Royle attended the same BVDP course as me – a sign that his organisation is taking vaccination seriously.

"Our members are asking about it more and more," Royle says, but he has reservations about whether it can be truly effective. Trapping badgers is a skilled business, he points out, and to catch enough of them to make a difference in a given area will require great effort. "This morning we caught just one badger at a sett where there is supposed to be a social group of eight or nine animals," he tells me. "That's not enough."

OF COURSE, FARMERS MAY BE WARY OF AN ARMY OF 'BADGER-HUGGERS' TRAIPSING OVER THEIR LAND.

Figures released by Defra suggest an even more telling discrepancy: the cost of vaccination is £2,250 a year per km² shooting, the culling method Spelman proposes, costs just £200.

But also attending the course is Simon Boulter, an ecological consultant and a trustee of the Badger Trust. Perhaps not surprisingly, he is much more optimistic about vaccination as a way forward and fizzes with ideas about how to make it work in practice.

"I see no reason why conservation groups such as the Badger Trust can't call on the services of their members in order to cut the cost to landowners," Boulter says. "We could mobilise thousands of volunteers to do the labour-intensive, pre-baiting work." Of course, he concedes, farmers may be wary of what they might see as an army of 'badger-huggers' traipsing over their land. "The NFU would need to help break down barriers," he says.

There may also be other attitude barriers to overcome. Some people oppose trapping wildlife for any purpose. Despite notices on the cages stating that no animals will be harmed, there is occasional interference. "A few people tamper with our traps or even steal them," Trewby says. This is why Jeff declines to give his surname or show his face: he doesn't want to be recognised by someone who has jumped to the wrong conclusions about his work.

DID YOU KNOW...

- **Badgers are the** only British species to have their own Act of Parliament: the Protection of Badgers Act 1992.
- **Badger setts are** passed on between generations. Some last for centuries.
- **Earthworms are their** favourite food. One boar is known to have eaten no fewer than 200 in a single night.
- **The badger study** project at Woodchester Park in Gloucestershire has collected more than 9,600 records of 2,000 individuals since it launched in 1975 – a world record for badgers.



Trainees learn how to vaccinate on a silicon pad and fake fur.

DIFFICULT CHOICES

By the BVDP's own admission, an oral vaccine would be preferable to an injectable one; the former is being tested in a separate trial and, it's hoped, could be ready

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Boots, car wheels and mudguards are sprayed to minimise the risk of spreading infections.

for use by 2015. By then, though, if farmers opt to cull, badger numbers in much of the South-West could have fallen by 70 per cent. So what factors, besides cost and effort, will influence the farmers' choice?

There are some 'known knowns': it has been demonstrated that the BCG vaccine *does* reduce levels of bTB in individual badgers. It's also known that last year 541 badgers were vaccinated in the BVDP trial area.

Then there are 'known unknowns'. Badgers already infected with bTB will not benefit from the vaccine, so the risk to cattle will only be reduced when these animals have died off and when disease-free animals have been vaccinated. Most badgers have a lifespan of three to five years, so Trewby says, "Five years seems like a sensible period over which to expect to see a reduction in the incidence of TB in badgers." But he adds: "We do not know how long it will take for this to translate into a reduction in cattle herd breakdowns."

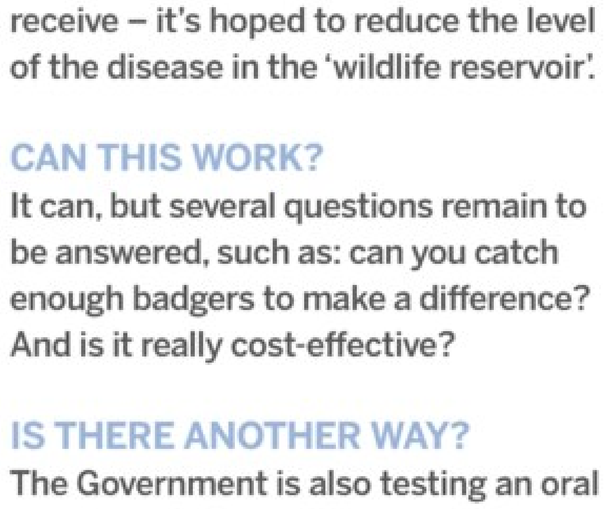
There may even be some 'unknown unknowns', but that hasn't stopped two conservation groups beginning their own badger vaccination trials this year: Gloucestershire Wildlife Trust (GWT) on sites in the Slad Valley and at Bourton-on-the-Water, and the National Trust on its Killerton Estate, in Devon. GWT chief executive Dr Gordon McGlone says that the trust wants to end the "polarised debate" surrounding bTB: "There is no one solution. Vaccination is not cheap, but bTB is an industrial disease and it won't be cheap to solve. We must use all of the techniques that we have at our disposal."

For the time being, then, the 'cure' part of the 'cull or cure' conundrum has a head start; only time will tell if it will stay that way.

FIND OUT MORE

- For further details of the badger vaccination programme and the cage-trapping and vaccination course, visit www.defra.gov.uk/fera/bvdp
- Read the NFU policies on bTB at www.nfuonline.com/Our-work/Bovine-TB/Bovine-TB

BADGERS AND bTB
THE BACKGROUND



TB or not TB: that is the question.

WHY ARE BADGERS BEING VACCINATED AGAINST TB?

Badgers do carry bTB and transmit it to cattle, so by immunising them with the BCG – the same vaccine humans receive – it's hoped to reduce the level of the disease in the 'wildlife reservoir'.

CAN THIS WORK?

It can, but several questions remain to be answered, such as: can you catch enough badgers to make a difference? And is it really cost-effective?

IS THERE ANOTHER WAY?

The Government is also testing an oral vaccine, which would be much cheaper to deliver. But there are problems to overcome here, too. The earliest it will be available is 2015.

SO, IT'S BACK TO CULLING THEN?

The Government has said that it is "strongly minded" to allow culling, and two pilot trials are scheduled to start in 2012. On the evidence of the culling trial carried out between 1998 and 2006, Defra says that it should reduce bTB by 16 per cent over nine years. But that trial was based on the trapping and shooting of badgers, whereas it has now opted for the cheaper method of allowing landowners to shoot 'free-running' badgers.

DOES THAT MATTER?

It might do. It's already known that culling has the potential to increase levels of bTB, because infected badgers that are not killed disperse and spread the disease to outlying areas. Scientists say that shooting badgers, at night, is likely to exacerbate this so-called 'perturbation effect'.

ON THE PODCAST

Our environment editor James Fair gives his take on the latest developments in the badger debate in the new *BBC Wildlife* podcast. Download it now from our website:

www.discoverwildlife.com/podcasts

Cows: Robert McBride

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Mitsuaki Iwago/Minden/FLPA

Boisterous young sealions never tire of larking around in the crystal-clear waters of the Galápagos Islands. They love playing tag, tug-of-war and follow-my-leader, surfing waves and teasing the other wildlife.

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PLAY time

For mischievous young sealions, the ocean is a giant playground. **ELLEN PRAGER** dives in to meet the girls (and boys) that just wanna have fun.

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These sealions aren't hunting – they are simply tormenting the striped snappers for fun. Making the panicked shoal split up and regroup is great sport.

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Forever blowing bubbles: a youngster flips upside down with jaws agape, delighting in the effervescent water. Its sense of fun will help it to hone the survival skills needed in later life.

Lying on the sandy seabed in the cold, azure waters of the Galápagos Islands, I'm suddenly aware of a large, shadowy form to my left. Before I have time to turn around it races away. Moments later, a big-eyed, whiskered face appears less than an arm's length away. It's a young sealion, hovering effortlessly upside down in front of me, deliberately blowing bubbles into my mask. But as quickly as it appeared, the super-sleek, brown-coloured sprite is gone.

Now something starts tugging my fin – and it's not my dive buddy. Craning my neck awkwardly (how very un-sealion-like), I glance backwards to find my lithe new friend nibbling on my flipper. It then surges off to the side, picks up a small rock in its mouth, and tosses it upwards in a solo game of catch. After a few more rounds of rock-toss, it shoots off, presumably to look for a more exciting playmate.

Young sealions are among the most playful animals on the planet – and the species (now considered separate from the California sealion) that lives year-round in the equatorial Galápagos Islands is no exception. But though the romping looks like pure fun, it is actually critical to their development and survival.

Play is no joke. It's a behaviour that has evolved to help animals acquire skills needed in later life (the great biologist EO Wilson believes that even ants play, to train for future conflicts). In the case of sealions, play is a way of practising how to hunt and avoid predators. Mock fighting prepares young males for battles over territories and mature females. And, for both sexes, innocent tussles as pups are precursors to later sexual encounters.

For sealions, play begins at a very tender age. Born on land, the pups (one per female) quickly become mobile. When barely a week old, they are able to waddle on their front and back flippers. Soon they are nipping their own limbs or nearby stones, and clambering over their patient mothers, as they discover the world around them.

It's just as well: despite their youth, these newborn pups will be left alone for days at a time while their mothers are away foraging, finding the food they need to supply fat-rich milk for some 12–13 months. In between resting and crying for their absentee mums with heart-rending little barks (similar to bleating lambs) this is the perfect opportunity to play.

PUSHING, SHOVING AND POSTURING

Walking along the beautiful white-sand, black-rock shore of Española in the east of the archipelago, I can see that the year has been a bountiful one for the sealions. An abundance of small pups doze in the sand or among the rocks, killing time while they wait for their mothers to return from fishing trips. Others rollick in tidal pools, relishing their first swimming lessons like toddlers splashing at the shallow end.

If there is more than one pup in a pool, they push, shove and (gently) bite one another's necks and heads – antics that will become more aggressive as they get older. For males, these will be the tactics deployed during the breeding season to win their own sections of beach. They also learn the

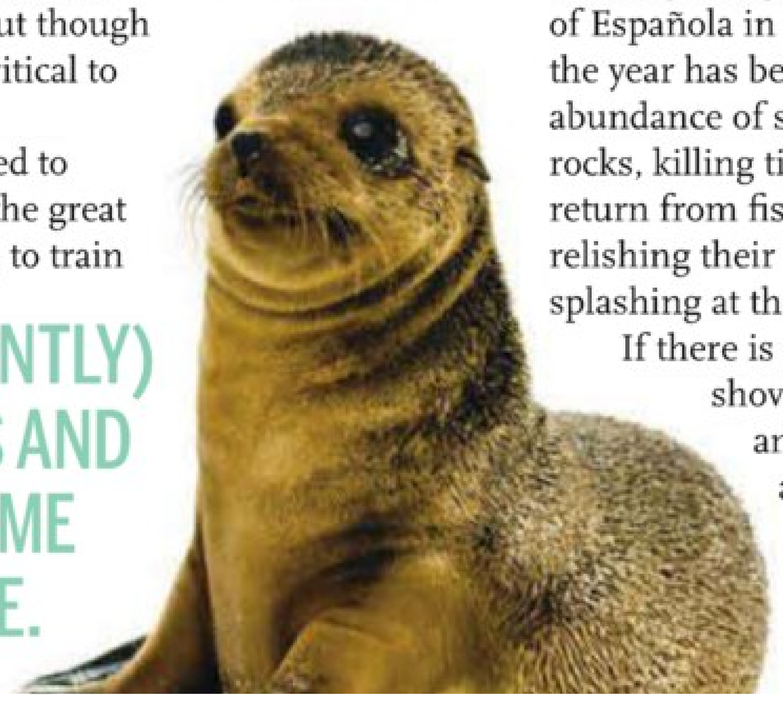
THE EXPERT

ELLEN PRAGER



is an author and marine scientist with a diver's love of the ocean. She frolics with sealions in the Galápagos as often as she can.

Pups show their mischievous side when only days old, but restrict their play time to sheltered nursery pools where they e safe from sharks and orcas.



PUPS PUSH, SHOVE AND (GENTLY) BITE ONE ANOTHER'S NECKS AND HEADS – ANTICS THAT BECOME MORE AGGRESSIVE WITH AGE.

Clockwise from left: Tui De Roy/Minden/FLPA; Andy Rouse/NHPA; Kevin Schafer/Alamy

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Pups bodysurf under a breaking wave at Punta Suarez on Española, delighting in the powerful current and their own balletic prowess.

posturing necessary to signal surrender, such as backing off and lying prone.

On the beach nearby, a marine iguana ambles past a resting sealion pup. The youngster eyes the lizard's long, leathery tail as it slithers by, like a kitten transfixed by a plastic mouse teasingly waved back and forth. The pup stretches its neck and nips at the iguana's tail. Some go a bit further – there is nothing more surprising than seeing a marine iguana hurtle through the air, having been flung by a rambunctious sealion.

UNWILLING PLAYMATES

Young sealions have an insatiable urge to play with things. In the Galápagos, potential toys abound: stones, driftwood, sluggish marine iguanas and the webbed feet of resting seabirds (not to mention scientists and tourists). And California and Steller's sealions in the North Pacific relish tugs-of-war with stretchy strands of kelp, while on the coast of Uruguay southern sealions love sliding over and diving off flat rocks. This behaviour develops the skills needed for capturing and eating prey; sealions often shake fish to break them apart.

Off the coast of Española, in slightly deeper water, I come across three juvenile sealions engaged in a high-speed game of chase. They jump, pirouette, somersault,

A BODY BUILT FOR FUN

EYES
Good at detecting movement; rounded lenses able to focus on refracted light underwater

NECK
Long and flexible; can twist through almost 180° to peer behind, above or below

REAR FLIPPERS
Provide pinpoint steering at speed and improve stability in the water

FRONT FLIPPERS
Produce enough power for rapid acceleration

WHISKERS
Highly sensitive 'vibrissae' pick up vibrations in the water and investigate objects

Top: Tui De Roy/Minden/FLPA; right: Hiroya Minakuchi/Minden/FLPA

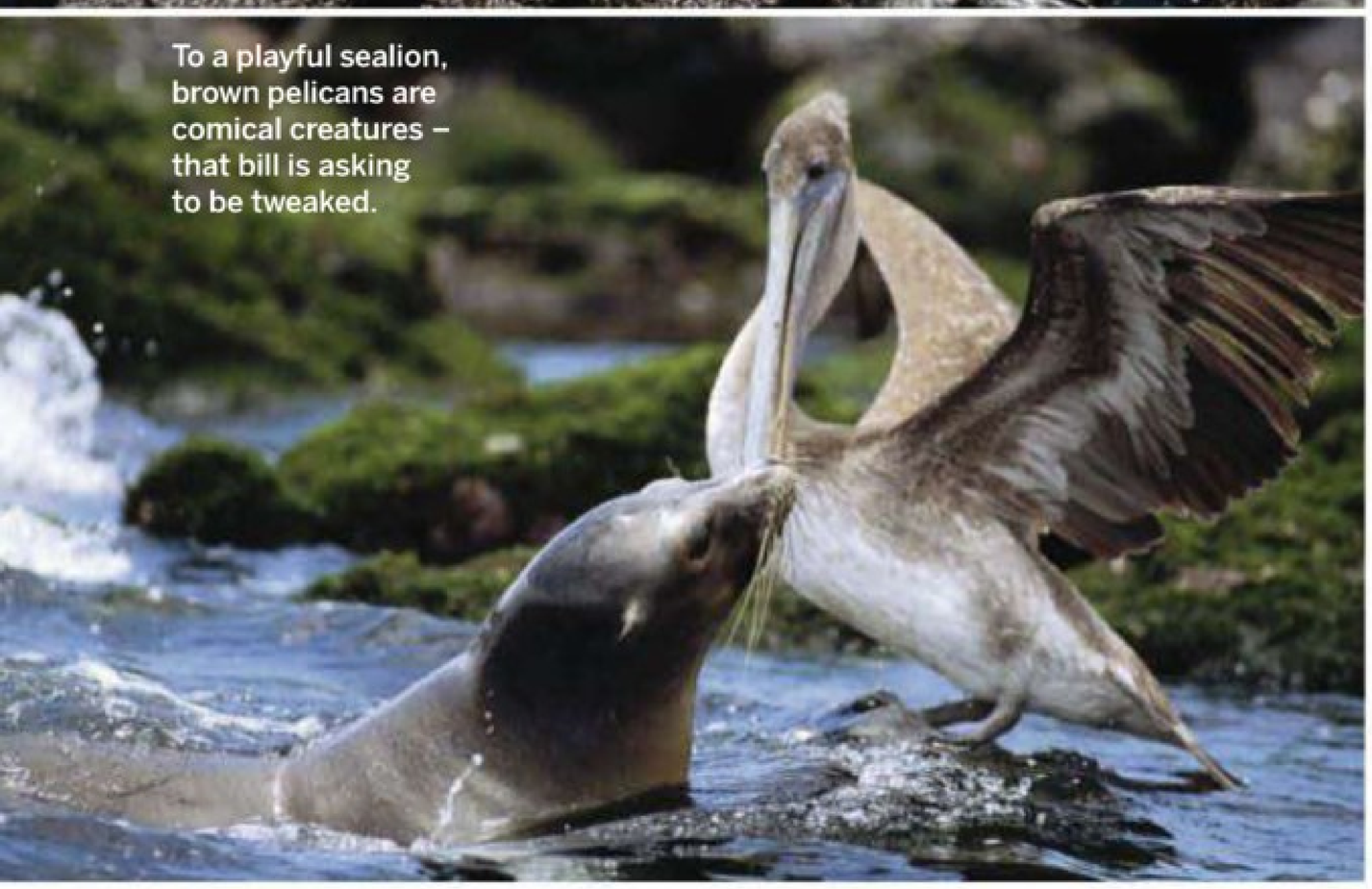
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A young sealion nips the tail of a hapless marine iguana as it hauls itself ashore after grazing on algae in the shallows.



To a playful sealion, brown pelicans are comical creatures – that bill is asking to be tweaked.

FACT FILE

GALÁPAGOS SEALION

Zalophus wollebaeki



▶ LENGTH
Male: up to 2.5m; female: up to 2m.

▶ WEIGHT
Male: up to 400kg; female: up to 110kg.

▶ ID TIPS
Adult male is stockier with a 'humped' forehead; female is paler brown.

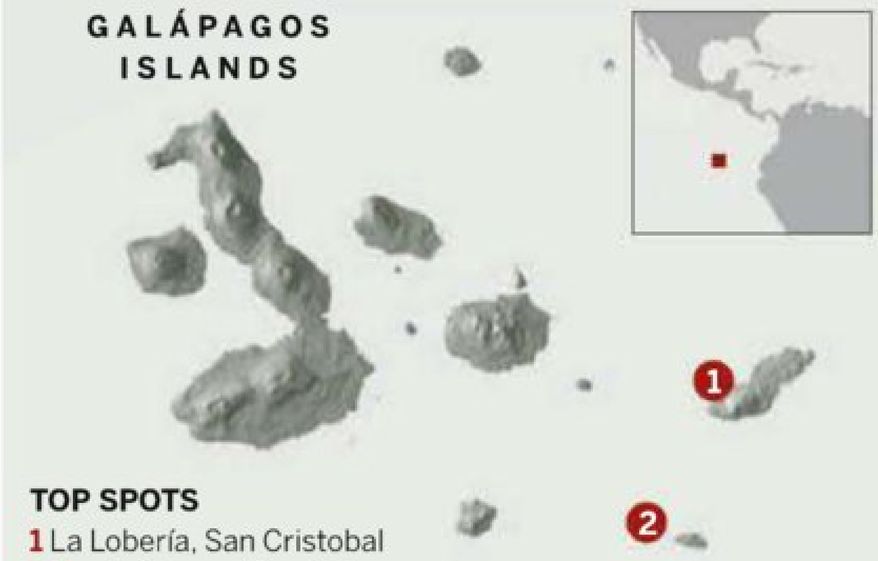
▶ DIET
May include fish, octopus, squid and crustaceans.

▶ LIFE-CYCLE
Mating can occur all year. Female gives birth to a single pup after an 11-month gestation, which is usually weaned at 12–18 months.

▶ HABITAT
Coastal waters around the archipelago. Breeds on flat, sandy beaches and near sheltered tidal pools; non-breeding males gather on wilder, rockier coasts.

▶ STATUS
Endangered. Threats include drowning in fishing gear and El Niño events.

WHERE IN THE WORLD



TOP SPOTS
1 La Lobería, San Cristobal
2 Punta Suarez, Española

IT'S AN UNFORGETTABLE FEELING WHEN A FEISTY PUP MIRRORS YOUR MOVEMENTS FOR A SYNCHRONISED SWIM BENEATH THE WAVES.

and twist and turn in manoeuvres that a fighter pilot would envy. Their seemingly playful jumps are also teaching them how to 'porpoise' or leap out of the water for more efficient travel.

Nearby, a shallow pile of rocks has created a good wave break and the incoming swells steepen to form curling blue crests. Sometimes, seconds before a wave breaks, a dark form zooms across, just beneath the surface. For these wave riders, it may simply be fun – it certainly looks that way – but this behaviour also helps them to learn how to use waves to propel themselves out of the water onto high rock ledges or steep beaches.

COUNTING THE COST

Scientists have long questioned whether play, such as that seen in young sealions (as well as in dolphins, chimps, lions – and, in fact, pretty much *all* mammals) can be just for fun, without any specific purpose. Because while there are benefits to play, there are also costs.

Play uses up energy. When food is scarce, sealions may play less. Another cost is the risk of predation when play distracts young animals or takes place away from the protection of their mothers. Research suggests that in the young of closely related South American fur seals (fur seals are in the same family as sealions, the eared seals or Otariidae) play increases their risk of predation by the much heavier southern sealions.

On the other hand, without play, fur seals and sealions alike may not develop the agility needed to escape predators. As sealions get older, they play less frequently, which suggests that either the costs of play increase as they age or the benefits decline – or both.

In the Galápagos, sealions are used to the presence of strange two-legged landlubbers (and *all* wildlife has the right of way here, both on land and at sea). So, while you can also snorkel with California sealions in Mexico's Sea of Cortez, and with endangered Australian sealions off the south of that continent, this remote outpost is probably the best place on Earth to experience sealions at play.

It's an unforgettable feeling when a feisty sealion pup decides to mirror your movements for a synchronised swim beneath the waves, twisting and turning as you do (but with much more grace, of course). It's the best entertainment that nature has to offer.

Clockwise from top left: Brandon Cole/Alamy; S Huwiler/Photolibrary; Tui De Roy/Minden/FLPA

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DECADE OF THE DINOSAUR

More new dinosaurs have been unearthed in the past decade than over the previous two centuries. PAUL CHAMBERS celebrates this golden age of discovery.

The sensational discovery of a giant Jurassic pliosaur dubbed 'Predator X' sent shock waves around the world in 2008. Its 30cm-long fangs were useful for tackling plesiosaurs, such as this *Kimmerosaurus*.

BBC

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Our world, according to some commentators, has entered a new epoch: the 'Anthropocene'. For the first time in recent geological history, the activities of one species – *Homo sapiens* – have left an indelible mark on the planet. And a by-product of the spread of our civilisations has been the discovery of geological treasure troves, some of which have fundamentally changed our understanding of the fossil record – and, in particular, our knowledge of dinosaurs. Indeed, a growing number of palaeontologists have come to refer to the past decade as a golden age of dinosaur discovery.

SUPERSIZE ME

Big is beautiful – at least, it was during the early years of dinosaur research, when museums pushed scientists to find ever-larger exhibits for their galleries. A century ago, the biggest species on display were the plant-eating *Apatosaurus* (popularly known as *Brontosaurus*), which weighed in at 30 tonnes, and the fearsome 6-tonne predator *Tyrannosaurus rex*. However, despite an expectation that even mightier specimens would be found, many decades of scouring the bone beds of Europe and North America revealed no new giants.

By the 1980s, *T. rex* had retained its crown as king of the prehistoric carnivores, but the heaviest known herbivore was *Supersaurus* which, at 35 tonnes, was only marginally heavier than *Apatosaurus*. With the established fossil sites apparently exhausted, palaeontologists turned their attention towards the unexplored badlands of Asia, Africa and South America.

One notable success came in southern Argentina, where a rancher stumbled upon the largest fossilised bones the world had ever seen. In 1993 palaeontologists unveiled the results of their research: *Argentinosaurus*, an absolute monster of a dinosaur with an estimated 90-tonne mass – three times that of *Apatosaurus*. Its eggs were the size of rugby balls.

Hot on its heels, and at a nearby site in Patagonia, came the discovery of *Giganotosaurus*, a massive carnivore with ▶

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razor-sharp teeth that, at 7 tonnes, would have flattened *T. rex* (had the two species actually met – in fact, they were separated by some 30 million years).

As the behemoths of South America reared their scaly heads, many established beliefs had to be questioned. For example, the maximum size of dinosaurs was long thought to be constrained by physiological factors; some two decades ago, scientists were sure that no larger species would be discovered. Since then, though, it has been speculated – albeit amid some controversy – that *Bruhathkayosaurus*, unearthed in India a few years before *Argentinosaurus*, might have weighed as much as 170 tonnes, and that the African carnivore *Spinosaurus* could have reached 20 tonnes.

Terrestrial habitats were not alone in nurturing giants. The marine reptile dubbed 'Predator X', excavated in Arctic Norway and revealed to an astonished world in 2008, was a muscular, 15m-long pliosaur that roamed Jurassic seas. But even this creature was dwarfed by *Shastasaurus*, a 22m-long, dolphin-like ichthyosaur from China and Canada.

Gigantic reptiles populated the skies, too: in 2002, the 70-million-year-old pterosaur *Hatzegopteryx* was declared to be the largest flying animal of all time, with a possible wingspan of 12m – as large as a light aircraft.

MICRO MARVELS

Confusingly, as well as yielding this giant pterosaur, the bone beds of Romania's Hatzeg province have, over the past few years, seen a parade of miniature dinosaurs emerge from the Cretaceous rocks. Here, fossils revealed a diverse dinosaur community in which the largest herbivore, *Magyarosaurus*, was the height of a cart horse and the largest carnivore, *Balaur*, the size of a dog.

But why so small? This miniaturisation echoes traits exhibited by modern species living on remote oceanic islands such as the Galápagos. Here, isolation from the mainland caused some animals (for example, tortoises) to evolve bigger or smaller forms than their mainland cousins.

Similarly, geological evidence suggests that Hatzeg was once a remote island, cut off from the rest of Europe. The absence of large predators and limited food resources lent an advantage to smaller species – so the Hatzeg dinosaurs shrank in order to increase their survival chances, creating a Lilliputian world that existed in isolation for millions of years.

And Hatzeg's dinosaurs are not the tiniest: earlier this year, a chicken-sized dinosaur – currently the world's smallest known species – was found in Sussex.

Advances in knowledge have not all been about size, of course. Technological developments have enabled scientists to detect and examine features that were previously hidden or inaccessible, revealing new aspects of biology and behaviour. For example, computerised tomography (CT) ▶

THE EXPERT

PAUL CHAMBERS



writes about fossils. He worked on the smash-hit BBC series *Walking with Dinosaurs* and its sequels.



The cranial horns of the 8.5m-long *Allosaurus* may have shaded its eyes while hunting – here, the beaked herbivore *Camptosaurus* falls victim.

Main: BBC; below from left: Rex Features; Corbin17/Alamy; Jaime Chirinos/Science Photo Library; Roger Harris/Science Photo Library

DEFINING MOMENTS: 10 YEARS OF DISCOVERIES

2000 *Microraptor* (*right*), the first unequivocally feathered dinosaur, is discovered in China.

▶ *Jeholosaurus*, also from China, is found to have teeth adapted for eating meat *and* plants – it is the first known omnivorous dinosaur.



2001 *Paralititan*, unearthed in Egypt, is the first known dinosaur to have inhabited coastal mangrove swamps.

▶ CT scans show that some species had crocodile-like brains; others were bird-like.



▶ Studies of a fossil of the large predator *Daspletosaurus* (*below left*) reveal that its last meal was a small hadrosaur (a 'duck-billed dinosaur').

▶ Several fossils of the carnivore *Mapusaurus* are found together – did it hunt in packs?

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THE DINOSAURS' SHEER SIZE HOLDS US IN THEIR THRALL, BUT THEY ALSO SERVE AS A REMINDER OF THE FRAGILITY OF THE NATURAL WORLD.



2002 The pterosaur *Hatzegopteryx* is discovered. With a wingspan of 12m, it is the largest flying animal known to science.

2005 In Mongolia the 8m-tall, bird-like *Gigantoraptor* (*left*) is found to have walked on two long legs. It would have been able to outrun any of its predators.

2006 Predator X is found; two years later the pliosaur is revealed as the largest predatory marine reptile. It is estimated that *Bruhathkayosaurus* may have weighed 170 tonnes (later revised to 100 tonnes).

2007 A new study produces a revised estimate of the weight of the African predatory giant *Spinosaurus* (*left*). At 20 tonnes it was some three times the weight of *Tyrannosaurus rex*.

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Main: BBC; below from left: Zhao Chuang & Xing Lida; National Geographic Image Collection/Alamy; Emily Willoughby/Wikimedia Commons; Martin Shields/Alamy

Microraptor may have used its plumed limbs to pursue this *Xianglong* lizard – which also had gliding apparatus – between trees.

DEFINING MOMENTS: 10 YEARS OF DISCOVERIES

2008 *Epidexipteryx* (*rig*) is found in China. Dating from the middle to late Jurassic, it is the oldest known feathered dinosaur.

2009 The grooved teeth of *Sinornithosaurus* (*right*) suggest that it may have had a venomous bite.

▶ Injuries on the horned dinosaurs *Triceratops* and *Centrosaurus* show that they were more liable to hurt their partners during mating than to be attacked by predators.

2010 A horned dinosaur found in Canada is named *Mojoceratops* – its cool name inspired by its large, intricate and all-round funky head-crest. The name was reportedly proposed by a palaeontologist 'over a few beers'.

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scans of skulls have proved useful in understanding the size and function of predatory dinosaurs' brains.

Allosaurus was a big predator – 8.5m long or more, and with a huge head lined with dozens of large teeth – that hunted during the late Jurassic period around 150 million years ago. In common with many older carnivores, its brain resembled that of a crocodile, which has led some scientists to speculate that it was a primitive hunter.

By contrast, study of the crania of more recent Cretaceous species such as *Velociraptor* suggests that they had better sight, smell and hearing. By those measures, *Velociraptor* would have been an efficient hunter, perhaps using complex social behaviour such as mating displays or pack hunting. The brainiest, though, was *Troodon*, which may have possessed intelligence approaching that of modern birds.

READ IN TOOTH AND CLAW

The use of technology has revealed much about dinosaur physiology, but to understand their behaviour we must look to the skeletons themselves. Fossil bones and teeth can tell us much about the way in which a dinosaur moved and what it ate, and can provide subtle insights that lead to the most remarkable revelations and theories.

The fossil bones of *Majungasaurus*, a medium-sized predator found in Madagascar, were scored by numerous tooth marks made by others of the same species – suggesting that it cannibalised, and possibly even hunted, its own.

Another surprise came from examination of the Chinese dinosaur *Sinornithosaurus*. The surfaces of its teeth are grooved, and evidence suggests that a small gland may have been embedded in its jaw. The same arrangement can be seen in living poisonous reptiles: a gland in the jaw produces venom that is injected via grooved teeth. Could *Sinornithosaurus* also have inflicted a poisonous bite – and so be the first venomous dinosaur to be discovered?

The unearthing of six skeletons of the large predatory species *Tarbosaurus*, lying together at a site in the Mongolian desert, prompted a more controversial theory. Claims that this species lived and hunted in social groups – like lions – are not universally accepted: some scientists believe that the animals only died together because they were caught out by a catastrophic event such as a flash flood.

But possibly the most fiercely contested scientific feud, which rumbled on for decades, concerned the theory that small predatory dinosaurs such as *Velociraptor* might have been the ancestors of living birds.

In 1996 a small species named *Sinosauropteryx* was found in Liaoning province, China. Its remains, dating back some 145 million years, are so beautifully preserved that many of its soft parts can still be seen – including a layer of hair-like material covering parts of its body. Study suggested that it may have sported primitive feathers, possibly for insulation. Still, the hair-like nature of the 'feathers' left room for doubt.

Then, in 2000, *Microraptor* arrived. The arms and legs of this chicken-sized dinosaur, discovered in the same quarry as *Sinosauropteryx*, were covered in long, distinctly bird-like feathers: in effect, four 'wings' that enabled it to glide like a flying fox. The discovery of this and other 'feathered dinosaurs' from this site led to a general acceptance that not only are birds descended from these ancient reptiles, but that they are themselves types of 'avian dinosaurs'.

For over 150 years the human race has been fascinated by these 'terrible lizards'. The dinosaurs' sheer size undoubtedly holds us in their thrall, but they should also serve as a reminder of the fragility of the natural world. For millions of years our planet was home to hundreds of dinosaur species – then, in the geological blink of an eye, they were gone.

HOW TO BUILD A DINOSAUR

Once the bones are excavated and cleaned, how do museums reconstruct the skeletons of extinct species?

First, they check that all of the pieces are present. Generally, the larger the animal, the less complete it will be, so it is common practice to build a single skeleton using bits from several individuals. Where bones are entirely missing, models are made by looking at the anatomy of closely related species.

The shape of most dinosaurs is well known nowadays, so there should be a basic blueprint to follow. The bones themselves may also hold clues – wear patterns, for example, or evidence of ligament and muscle connections.

Museum dinosaurs used to be exhibited in passive poses. Modern revelations about dinosaur behaviour have led skeletons to be constructed in more active, life-like positions.

BBC FOUR *How to Build a Dinosaur* is a three-part series on BBC Four.



Piecing together a 17m-long *Spinosaurus* skeleton is akin to completing a (very) big jigsaw.

Frank Robichon/Corbis

FIND OUT MORE



BOOK
Planet Dinosaur is published by BBC Books (ISBN 9781849900935, RRP £19.99, readers £16.99, subscribers £15.99). Buy this book on page 81, quoting code WAUT11/10.

ON TV
Planet Dinosaur is a six-part series on BBC One showcasing the most astonishing of the new discoveries.



2010 *Balaur* (*left*), a carnivore the size of a domestic dog, is found in the rocks of Hatzeg province, Romania – it is one of several 'dwarf dinosaurs'. The fossil site was probably a remote oceanic island during the Cretaceous period, leading to the evolution of these miniature species.

2011 The first Australian fish-eating dinosaur is discovered. It lived in the early Cretaceous period, and may have been similar to the huge European predator *Baryonyx*.

▶ A *Triceratops* fossil (*below left*) is excavated from rock strata formed at exactly the time that the dinosaurs became extinct. This *Triceratops* might have been one of the last individual dinosaurs ever to have lived.

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EAST AFRICAN ADVENTURE

'Urban Birder' David Lindo travelled to Ethiopia to survey rare endemic birds, but it was an encounter with the country's endangered canids that made him cry wolf.



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Lake Garba Guracha in the Bale Mountains: less arid East Africa, more *The Land that Time Forgot*.

Martin Zwick/Photolibrary.com



David – here on the Liben Plain – carried out survey work with the help of guides from the Ethiopian Wildlife and Natural History Society.

David Russell F Spencer; wolf: The Africa Image Library/Alamy

"Wolf!"

The sight of a canine trotting down a hillside towards us had me yelling with excitement. But it wasn't a wolf; as it came closer, I realised – to my chagrin – that it was just a rusty-coloured mongrel.

I was scanning the landscape from a Land Cruiser bumping and skidding over a muddy, potholed road in the foothills of the Bale Mountains National Park, some 400km south of Addis Ababa. I'd already cried wolf once before, some five minutes earlier, precipitating a mad scramble for binoculars and cameras from my fellow passengers, so this time they were prepared for the anticlimax. But you couldn't blame me for being excited about travelling through the Bale Mountains, a rugged upland covering 2,200km² and home to about 300 Ethiopian wolves – the largest single surviving population of this endangered canid.

THE BALE MOUNTAINS: WORTS AND ALL

As we began our ascent onto the Sanetti Plateau, lowland farms gave way to lush forest and then, as we approached a breathless 4,000m above sea level, to alpine habitat. Just a few hours ago we'd been overheating in open-necked shirts; now we pulled on fleeces and watched our breath condense in a misty vapour. Giant St John's worts, the size of small trees, dotted the boulder-strewn landscape: this was not the Ethiopia I had imagined – it was more like *The Land that Time Forgot*.

Many of the flora and fauna on the plateau were stranded here as glaciers retreated at the end of the last ice age. While some developed into new species, others are relict populations of European species such as golden eagles and choughs. As if to demonstrate the point, a hoary-looking creature appeared, pummelling through the low vegetation: an Ethiopian highland hare, endemic to the Bale Mountains but related to our brown hare. ▶

THE EXPERT

DAVID LINDO

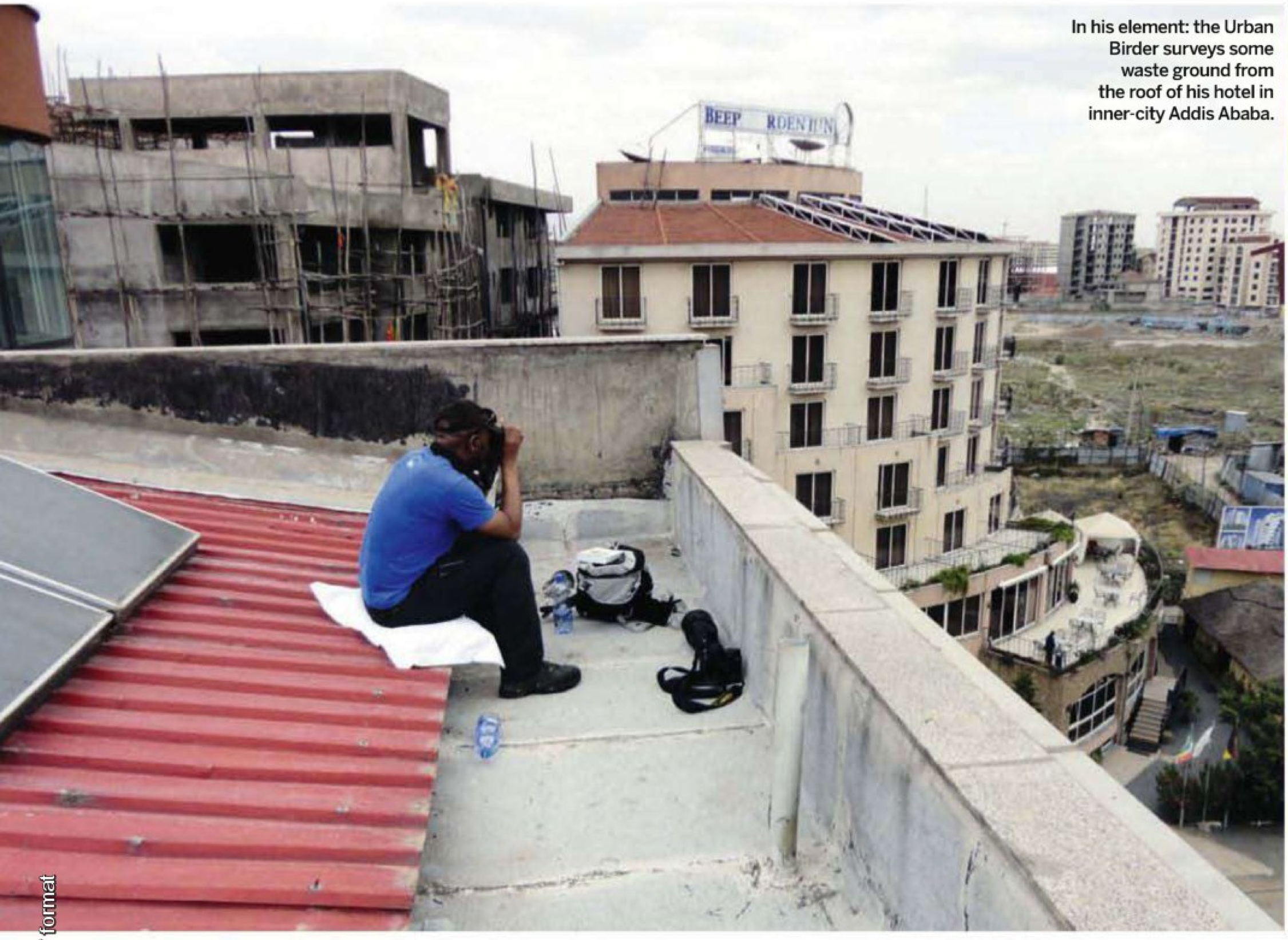


has been birding, mostly in Britain's urban areas, for the past 30 years. This was his first trip to Ethiopia.

David cried "Wolf!" so many times, no one believed him when a real one materialised.



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In his element: the Urban Birder surveys some waste ground from the roof of his hotel in inner-city Addis Ababa.



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The Tacazze sunbird – found across East Africa, from Sudan to Tanzania – is a colourful find in Addis Ababa, particularly the male with his shimmering plumage.



And then it appeared, as if from nowhere: a tan-coloured dog with its head up and its ears pricked. "Wolf! Wolf!" I blurted – and this time I was right, even though no one else was listening. The beast was quite unlike anything I had expected, resembling a long-legged, labrador-sized, lean fox, with a mid-length, bushy tail; the only feature that was remotely lupine was its face.

By the time my companions realised that I wasn't joking, one of the world's rarest canids was standing within 20 paces of us. That day – our only day in the Bale Mountains – we saw eight individuals, including a family party of two adults and a pair of well-grown pups. Not bad for an urban birder.

Rewind 10 days and you'd have found me boarding the flight to Addis Ababa – alongside far more experienced ornithologists from BirdLife International and the RSPB – wondering what on Earth I was doing. I'd been invited to join an expedition to conduct surveys of four of Ethiopia's rarest endemic birds: the Ethiopian bush crow, the white-tailed swallow, Prince Ruspoli's turaco and the enigmatic Liben lark. Conservationists have been estimating the populations of these species since 2008, with the aim of establishing whether numbers are going up or down, and if anything can be done to help them survive.

Ethiopia, embedded in the Horn of Africa, is entirely landlocked; even so, it is ecologically diverse, with deserts in the east, mountains looming over much of the interior and tropical forests in the south. As large as Spain and France combined, its population is the second-highest in the continent, at more than 82 million people. Everyone I encountered was invariably warm, friendly and universally predisposed to sharing.

URBAN BIRDING IN ADDIS

I began my visit in the capital, Addis Ababa, where I spent four days exploring its urban birding spots. The city is home to nearly 300 species of birds; scouring hotel gardens and botanical parks, I was rewarded with great views of exotic species such as moorland chats, black-winged lovebirds and Tacazze sunbirds, the males resplendent in their iridescent plumage.

Overhead, vultures and yellow-billed kites were stacking up like planes at Heathrow, waiting for their next free meal. But my ultimate birding site was a piece of waste ground behind my city-centre hotel: it was rough and it was smelly, but I spotted an incredible number of birds here, including whitethroats and willow warblers bound for Europe.

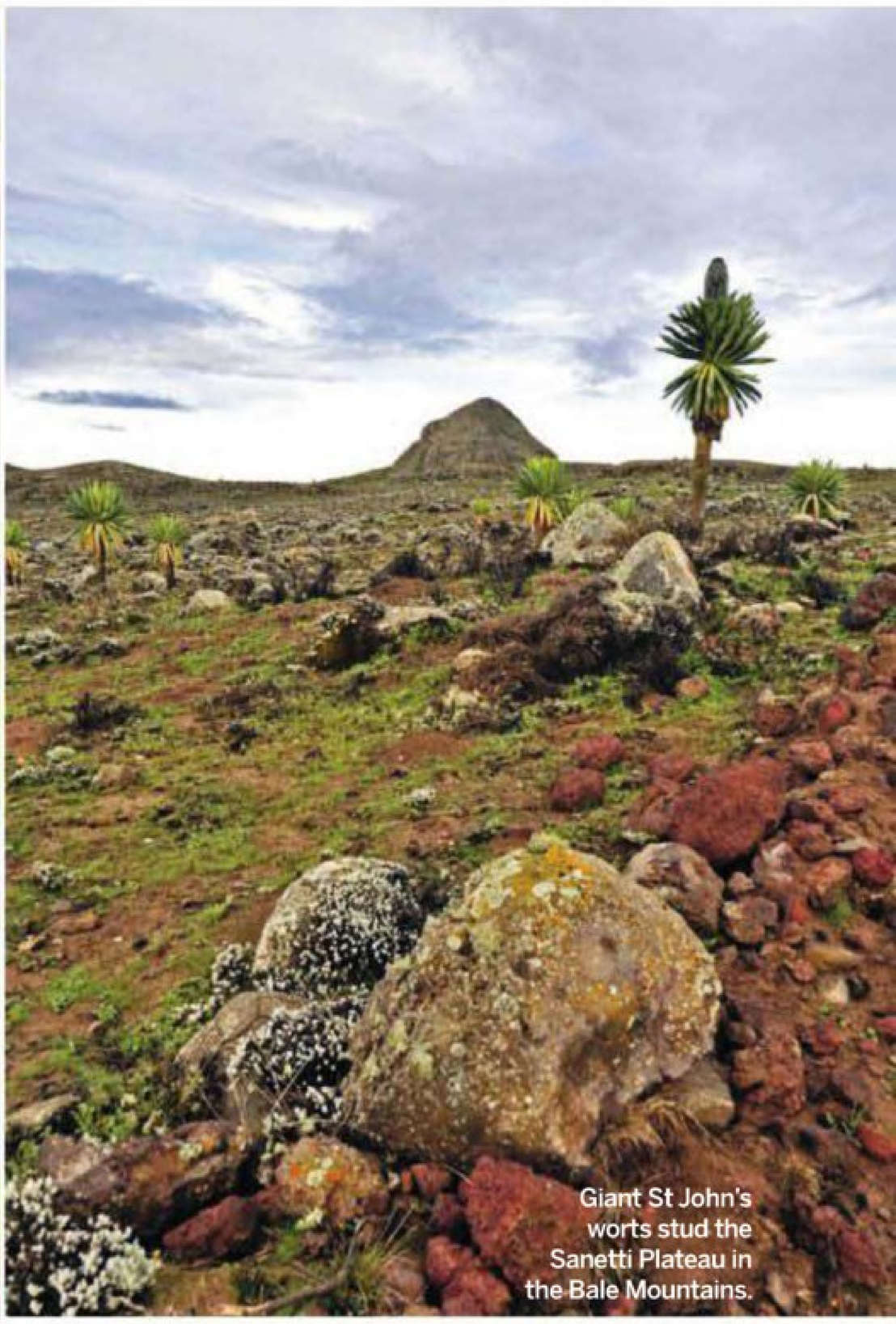
Our first study species were the bush crow and the swallow. Both live in very restricted ranges 12 hours' drive south of Addis in Yabelo Wildlife Sanctuary, a sparsely wooded, savannah-type habitat where cattle herding is the

THAT DAY WE SAW EIGHT WOLVES, INCLUDING A FAMILY PARTY WITH A PAIR OF WELL-GROWN PUPS. NOT BAD FOR AN URBAN BIRDER.

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On the lookout: a huddle of blue-breasted bee-eaters wait to snatch insects out of the air.



Giant St John's worts stud the Sanetti Plateau in the Bale Mountains.

number-one occupation. The road trip there offered plenty of birding opportunities, though mammals of any size were decidedly scarce. Indeed, my first furry sighting was of an unlucky small rat being swallowed alive by a gutsy black-headed heron.

The reason for this absence, according to our guides from the Ethiopian Wildlife and Natural History Society, is that most of the large game has been hunted for food to the point of being completely wiped out, a consequence of numerous droughts and the burgeoning population.

In Yabelo (a small town near the wildlife sanctuary of the same name) we saw much evidence of prolonged drought conditions: cattle carcasses littered the landscape atop the largely bare soil, which was an odd shade of Martian red. It's a landscape that has been shaped by its people, and it is believed that both the Ethiopian bush crow and the white-tailed swallow have evolved in tandem with the human population and rely heavily on the semi-natural woodland – not unlike some of our corvids and swallows.

THE THORN BIRDS

The bush crow lives in clumps of acacia trees in the villages surrounding the town of Yabelo; here they build their domed, magpie-like nests in large colonies. They are adorable small, grey birds, with black wings, a black tail and a curious bare eye patch – they are believed to be one of very few species that flash the bare skin behind their eyes to indicate their mood. We spent several days counting nests and the birds themselves; overall, they seemed in fine fettle.

WILDLIFE SPOTTER ETHIOPIAN WOLF

▶ NAME *Canis simensis*. Also known as the Abyssinian wolf, Simien fox or Simien jackal.
▶ IDENTIFICATION A medium-sized wolf with long legs and muzzle. Fur is usually tawny-red, with white underparts and a blacky, bushy tail.
▶ BEHAVIOUR Lives in close-knit, territorial packs up to 13 strong.
▶ DIET Specialises in taking giant molerats and three species of grass rat; hence farmers do not fear for their livestock.
▶ HABITAT Confined to isolated pockets of afroalpine grasslands and heathlands above 3,000m.
▶ DISTRIBUTION Mainly Bale Mountains National Park and Simien Mountains National Park.
▶ POPULATION About 500.
▶ STATUS Classified as 'Endangered' by the IUCN Red List.



The Ethiopian wolf's range is restricted to seven isolated mountain regions.

Clockwise from top left: Russell F Spencer x3; Anup Shah/naturepl.com; Tui De Roy/Minden/FLPA

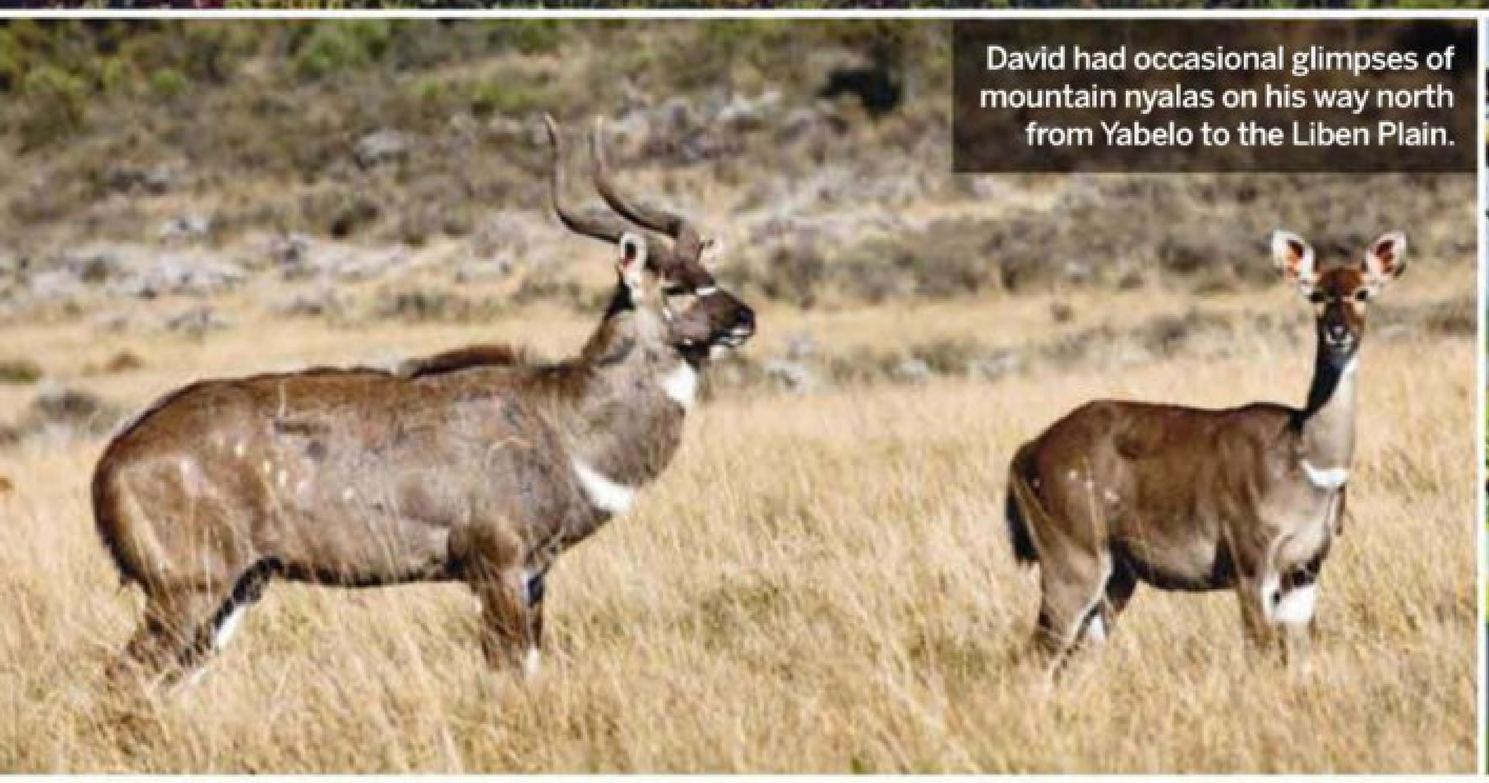
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Degradation of the Liben Plain, caused by cattle grazing, is the key reason why the population of the Liben lark has declined so precipitously in recent years.

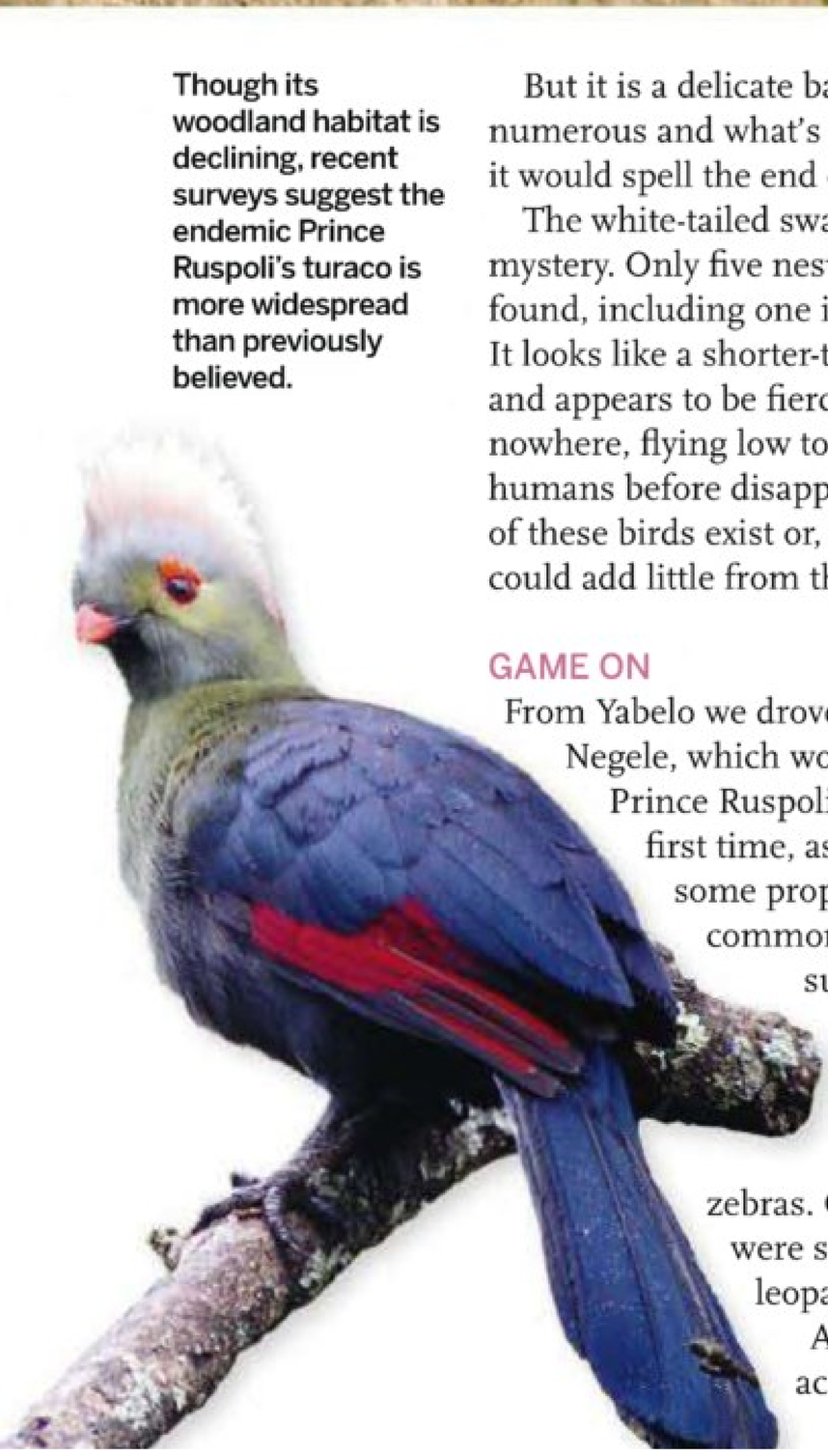


David had occasional glimpses of mountain nyalas on his way north from Yabelo to the Liben Plain.



The Ethiopian bush crow fares best in areas of low human habitation.

Though its woodland habitat is declining, recent surveys suggest the endemic Prince Ruspoli's turaco is more widespread than previously believed.



But it is a delicate balance: if humans become too numerous and what's left of the acacia woodland is lost, it would spell the end of this remarkable bird.

The white-tailed swallow, by comparison, is a complete mystery. Only five nests are ever known to have been found, including one in a clay oven in one of the villages. It looks like a shorter-tailed version of our barn swallow and appears to be fiercely solitary, often turning up out of nowhere, flying low to the ground and showing no fear of humans before disappearing. Nobody knows how many of these birds exist or, indeed, how they live. Sadly, we could add little from this year's study.

GAME ON

From Yabelo we drove 200km north-east to the town of Negele, which would be the base for our search for Prince Ruspoli's turaco and the Liben lark. For the first time, as we journeyed north, we spotted some proper African 'game'. Warthogs were common; less frequently we saw antelopes such as the diminutive dik-dik and the graceful and endangered mountain nyala, with occasional glimpses of mountain reedbucks, Thomson's gazelles and Burchell's zebras. Our guides assured us that there were still low numbers of lions and leopards in the area, too.

An inhabitant of dry juniper and acacia-conifer woodlands, Prince

PRINCE RUSPOLI'S TURACO IS EXTRAORDINARY: A DAZZLING PLUMAGE OF BLUES, REDS AND GREENS, PLUS TEDDY-BOY QUIFF.

Ruspoli's turaco is an extraordinary bird to look at: a dazzling plumage of blues, reds and greens is complemented by a teddy-boy quiff. But it is an even more extraordinary bird to hear, emitting a gutteral call, not unlike that of a red grouse, that does not suit its regal name or nature. For three days it eluded us until we found one perched high in the canopy, barking out its cacophonous song.

But the main purpose of our visit was to survey the Liben Plain, a high-altitude plateau that is a shadow of its former self. As recently as 20 years ago it was a sweeping savannah that harboured big game. Since then, cattle herding and agriculture have pushed out most of the wildlife; today, the night-time howls of the spotted hyenas are all that remain to remind visitors of its former glory.

So, how is the critically endangered Liben lark faring? The species possesses a long hind claw, indicative of a preference for long grass, yet I couldn't find a single blade more than 5cm in height. It wasn't looking promising. For the past few years, BirdLife International and the RSPB have conducted surveys here to establish its numbers. Last year, they recorded nearly 60 birds but could not decipher how many were female – crucial

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NOW YOU DO IT

GETTING THERE

▶ **Ethiopian Airlines** flies Heathrow to Addis Ababa direct. 0800 635 0644; www.flyethiopian.com

▶ **Lufthansa** flies to Addis via Frankfurt. 0871 945 9747; www.lufthansa.com

TOURS & GUIDES

▶ Operators offering Ethiopian wildlife tours include Naturetrek (www.naturetrek.co.uk) and Exodus (www.exodus.co.uk).

▶ David's guide was **Abiy Dagne** (abiymill@yahoo.com), who is affiliated with the Ethiopian Wildlife and Natural History Society. http://ewnhs.org.et

SAFETY

▶ The UK **Foreign and Commonwealth Office** currently advises against travel to some border zones including the Somali region and other specified areas, though not those described in this article. For the latest advice visit www.fco.gov.uk

WHEN TO GO

▶ The driest period is October to March, though many areas are dry till July. October and November are ideal times to visit the Bale Mountains, when the wildflowers are in bloom.



Look out for hartebeest in Yabelo Wildlife Sanctuary.

FURTHER READING

▶ **Birds of the Horn of Africa** (Helm Field Guides, 9780713665413, RRP £29.99, readers £27.99, subscribers £26.99, WAUT11/13).

▶ **Ethiopia** (Bradt Travel Guides, 9781841622842, RRP £16.99, readers £15.50, subscribers £14.50, WAUT11/14).

▶ Buy these books on p81.



THE INFORMATION

ETHIOPIA A landlocked country in North Africa, Ethiopia has a huge range of habitats and some fantastic wildlife.

THE NAVIGATOR



Bale Mountains NP
The Bale Mountains are home to many endemic species, including Ethiopian wolves. Trekking through the park's juniper woodlands and over its high moorlands is a popular tourist activity.

Simien Mountains NP
The Simien Mountains are home to species such as ibex, geladas and a small number of Ethiopian wolves. The highest peak in Ethiopia, Ras Dashan, is here. It's one of the few places in Africa where snow regularly falls.

Yabelo Wildlife Sanctuary
Yabelo Wildlife Sanctuary comprises acacia savannah and juniper woodlands, and is one of the best game-viewing areas in Ethiopia, with zebras, hartebeest and even some big cats such as lions and leopards.

WILDLIFE SPOTTER LIBEN LARK

▶ NAME *Heteromirafra sidamoensis*. Formerly known as the Sidamo lark.

▶ IDENTIFICATION Typical lark, with brown, cryptic plumage. Big head with short, stout bill on a relatively long, slender neck.

▶ SONG Like an underdeveloped skylark's song, delivered from a brief low flight.

▶ BEHAVIOUR Unobtrusive. Creeps through the grass like a mouse.

▶ DIET Invertebrates.

▶ HABITAT Poorly known. Currently found on heavily used pastureland.

▶ DISTRIBUTION Only discovered in 1968, it is believed to be restricted to the Liben Plain east of Negele, at or above 1,450m.

▶ POPULATION Probably fewer than 100 individuals.

▶ STATUS 'Critically Endangered' on the IUCN Red List.



Restricted to an area of less than 36km², the Liben lark is one of Africa's rarest birds.

Plain, crow and lark: Russell F Spencer; turaco: Nik Borrow; nyalas and hartebeest: Martin Zwick/NHPA

information if they are to assess the species' breeding potential. What would we find this year, I wondered?

On my first morning I spotted plenty of larks, but most turned out to be the common Somali short-toed variety. The main diagnostic feature of its Liben cousin is behavioural: the song flight is very similar to our own skylark's, but it climbs less than 10m above the ground before plummeting earthwards, legs akimbo.

Sadly, it was all too easy to see why the existence of this rare species is threatened. The cattle weren't just cropping the grass, they were reducing many areas to bare earth. Tallying up the results of our survey, we'd counted only 30 birds – half of last year's total – with no idea how many of them were female.

LIVING WITH THE LARK

Can the Liben lark survive? Perhaps, but it will take engagement with local people, helping them to find ways of keeping livestock and growing crops that do not completely edge out this perilously endangered bird. From my encounters with some of the villagers who live on the Liben Plain, I got the impression that they didn't want to lose the lark either. On one day we brought some schoolchildren on the survey, and they all took to the task enthusiastically, so perhaps there is hope for the future. But whatever is done, it needs to be done quickly – time is running out.

And so, with our work completed, we prepared to head north to Addis Ababa via the Bale Mountains. Apparently, somebody said, there are wolves in them there hills...

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STARS IN STRIPES

by Brandon Cole

Lembeh Strait, off the north-eastern corner of the Indonesian island of Sulawesi, is a must-dive for underwater photographers. I regularly scour its shallow, silty slopes for the most magical marine creatures: pygmy seahorse, cockatoo waspfish, mimic octopus and hairy frogfish.

Top of the wishlist on my last visit was the Banggai cardinalfish, a species whose numbers have plummeted due to intense collecting for the aquarium trade. Floating 3m below the surface, I waited for a dozen of these striped beauties to pose for the photo I'd envisaged, set against the gorgeous backdrop of a purple sea anemone. But the 5cm-long fish just milled around in a chaotic jumble of fins and eyeballs. After half an hour I was cross-eyed with frustration and ready to give up when my guide, Joe, tugged me back.

Another hour later, still static, I started to shiver. Then, Joe gave the 'okay' signal, and a gentle current began to course along the seabed. Within minutes the Banggais snapped into a perfect formation, facing into the sea breeze, and I had my shot.

brandoncole.com

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exposure

The image that most amazed us this month

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W2

Essential information and expert advice

TV Plus
Previews and behind-the-scenes insights p77

Books
The month's best wildlife reads reviewed p79

Q&A
Expert answers, new discoveries, quirky facts p83

Photo Masterclass
How to take better wildlife shots p89



Narrator David Attenborough admires the handiwork of a Vogelkop bower bird in New Guinea in 1995.

Richard Kirby/BBC

TV PREVIEW

GRAND DESIGNS

TV CHOICE

NATURAL WORLD: ANIMAL HOUSE

BBC2, 7 SEPTEMBER, 8PM

We pride ourselves on being the most creative species ever to have lived, but in truth we were slow to get our act together. Animal architects were perfecting complex structures long before early humans even dreamed of building roofs over their heads. So the producers of this delightful film put our human-centred world view firmly in context, raiding the Natural History Unit's archives to dig out breathtaking footage of these creatures at work.

With David Attenborough at the helm, the viewer is whisked on a global tour of hidden worlds. We learn that grasscutter ants invented air-conditioning and were the first to care for house 'plants' (okay, fungi), explore prairie-dog towns, discover why hummingbird nests hang by a thread, and investigate beavers' feats of hydraulic engineering.

In the New Guinea rainforest, we visit a pleasure garden tended by a male Vogelkop bower bird. The 'seduction pad' created by this single-minded landscape architect reveals an astonishing degree of planning – and a keen awareness of aesthetics.

Appropriately, the producers don't just show us the proud owner-occupiers of the animal kingdom, but its freeloaders, squatters and burglars, too.

This is an hour of light-hearted TV, but it makes a serious point. As David says: "If you want to understand people, look in their houses. I think the same may be true for wildlife." **Ben Hoare**

FIND OUT MORE

BBC TWO *Visit the* Natural World *series website at www.bbc.co.uk/programmes/b006qnnh*

W2 STAR RATINGS ★★★★★ Excellent - a classic ★★★★ Very good ★★★ Good - worth a look ★★ Fair - may be of interest ★ Poor - not worth the time

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Honeypot 'repletes' in the set. These workers store honey in distended abdomens to feed the rest of the colony.

BEHIND THE SCENES

TAKING ON THE ANT WORLD

Director John Brown on the challenge of filming thousands of tiny, demanding virgins.

Empire of the Desert Ants, one of the latest films in BBC2's *Natural World* series, aired on 10 August and follows the rise and fall of a colony of honeypot ants in a remote canyon in Arizona. It opens with the founding queen digging a nest in the desert, then shows the first brood being raised, the colony's rise to dominance and its eventual grisly demise.

What was your biggest challenge when making this film?
Understanding the behaviour of the ants. Many of the intricacies of their day-to-day lives remain a mystery, so I spent days in the field observing them before even picking up a camera. The other challenge was their size. The workers are only 3mm long, yet I needed viewers to engage with and care about them. I wanted the ants to feel like stars in a feature film, so I avoided conventional macro techniques, which can give a distorted, bug's-eye perspective on the world.

How did you film underground?
As the brood chambers can be 3m down in rock-hard earth, filming a wild colony *in situ* was out of the question. So I teamed up with Ray Mendez, an entomologist and craftsman who had several established colonies in his workshop. Using dust from the canyon floor, we created an elaborate set of tunnels and chambers in which we could film our 'stars'. We monitored the humidity and developed an air-conditioning system. The ants were happy and performed beautifully.

Which scenes give you the greatest sense of achievement?
We filmed two key pieces of behaviour above ground. First, a raid on another colony – a very rare event. I spent hours in the field before I finally saw one – an epic battle that lasted two days.

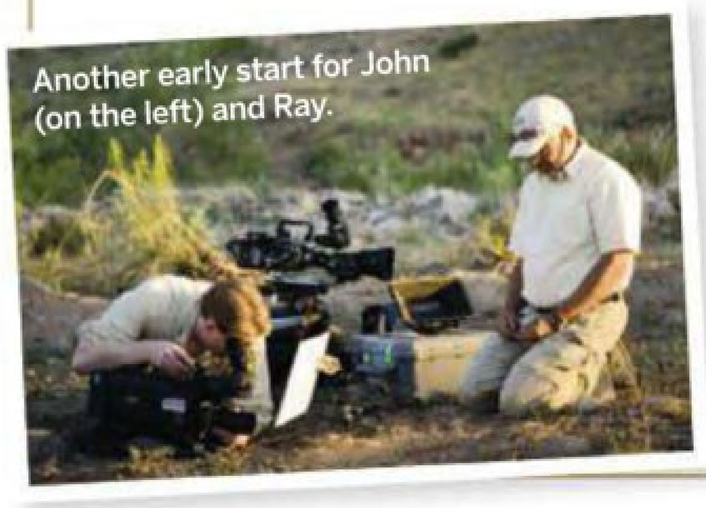
Second, the nuptial flight of the males and virgin queens. This became an obsessive, two-year quest. They emerge early in the morning after consecutive days of heavy rain. Week after week I monitored weather radar feeds through the night, and was out in the canyon by 3:30am.

But you got the footage?
When it finally happened, the spectacle was truly magical. The air was full of insects, giving a real sense of the sheer number of ants living beneath the desert. Sadly, it lasted only 30 minutes.

DON'T MISS IT...

You can catch up with Empire of the Desert Ants *online at www.bbc.co.uk/programmes/b006qnnh*

Ants: John Brown; filming: Matt Drake



Another early start for John (on the left) and Ray.

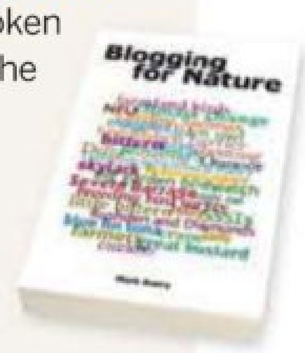
3 THINGS WE LOVE THIS MONTH

BOOK

BLOGGING FOR NATURE

In 2009, the outspoken Mark Avery joined the ever-growing tribe of nature bloggers. The former RSPB conservation director is now a prolific social media networker: this is a self-published collection of the best bits from his online environmental musings.

▶ *Available from www.lulu.com*



FILM

ASTONISH ME



Emma Lewis/WWF-UK

Screened in cinemas in August, this short film made to celebrate WWF's 50th birthday is now available to watch online. Scripted by Stephen Poliakoff, it tells the story of a boy who visits a museum full of recently discovered wonders.

▶ *www.wwf.org.uk/what_we_do/50th_anniversary*

APP

OCEAN ENCOUNTERS

Smartphones and tablet computers offer exciting opportunities for wildlife photographers to share their work, and Brandon Cole is among the first to launch his own dedicated app, which runs on iPhones and iPads. It allows you to enjoy his stunning undersea images by scrolling across a map peppered with ocean snaps.

▶ *Visit iTunes for more information.*

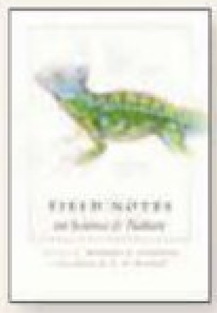


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Naturalist Roger Kitching's watercolour of Borneo's five-bar swordtail.

Roger Kitching/Harvard University Press



LETTERS TO THE FUTURE

BOOK OF THE MONTH

A peek into the notebooks of some of the most prominent naturalists of our time.

FIELD NOTES ON SCIENCE AND NATURE

Edited by Michael R Canfield
Harvard University Press, 297pp.
ISBN 9780674057579 (hb)
£20.95/18.99/17.99 Code WAUT11/09

How do you distinguish a naturalist from someone who has a casual interest in nature? Maintaining a field notebook – a personal repository of observations and drawings made at the moment of discovery – might be a key criterion.

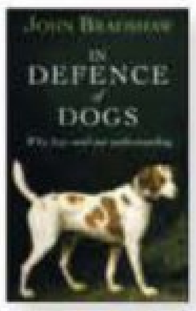
Notes and sketches by Charles Darwin, Gilbert White, Linnaeus and Sir Joseph Banks have proved to be of enduring scientific value; likewise, the field notebooks of today's naturalists will assume increasing importance in a rapidly changing natural world.

Thirteen eminent observers have contributed essays to *Field Notes*, each describing how and why they record their data in their "letters to the future", as John Perrine and James Patton refer to their own jottings.

Anyone who is contemplating compiling a collection of their own observations will find something helpful and inspiring in this book. They will also gain an insight into the thought processes of a naturalist, showing how simple, factual observations catalyse ideas that lead to investigation and then to moments of revelation. These, ultimately, are what make the study of nature so addictive.

Verdict ★★★★☆

Phil Gates Botanist



IN DEFENCE OF DOGS

By John Bradshaw
Allen Lane, 352pp, ISBN 9781846142956 (hb)
£19.99/15.99/14.99 Code WAUT11/07

I have been bitten by 'friendly' dogs more than once, so I approached this book with some suspicion. But it is a fascinating, balanced review of canine history and biology. Too often we regard domestic dogs as mini-humans, forgetting that their natural history is as interesting as, and distinct from, that of their wild ancestors.

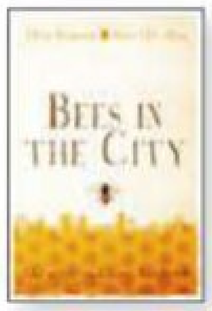
In Defence of Dogs aims to dispel long-standing myths, and is likely to prove controversial. Many of our behavioural assumptions, particularly regarding interactions within groups and dominance hierarchies, turn out to be wide of the mark. There is no doubt (based on DNA evidence) that the domestic dog is descended from the wolf. But, says Bradshaw, this does not mean that we should look for wolf-like behaviour in our pets. Their origins should not inform how we train them.

Doggy domestication is explored in depth, and we learn how the companionship and skills of modern breeds have developed in partnership with humans. Their brain power, their behaviour towards us (and vice versa) and the world of smells are also covered in detail.

In examining how we breed dogs, Bradshaw concludes that they are increasingly kept as living ornaments, constrained to conform to arbitrary norms defined by breeders. Arguably, this constitutes a form of genetic abuse – cruelty, even. 'Man's best friend' deserves better.

Verdict ★★★★☆

Pat Morris Mammal expert



BEES IN THE CITY

By Alison Benjamin and Brian McCallum
Guardian Books, 256pp, ISBN 9780852652312 (hb) **£12.99/11.99/10.99** Code WAUT11/08

Yesterday, there was a knock at my door. It was a neighbour alerting me to the new colony of bees settling into his hive just over our garden fence in East London. As Benjamin and McCallum illustrate in their wide-ranging investigation of urban beekeeping, this is an increasingly common occurrence, due to a movement to make cities more bee-friendly.

Bees in the City charts the progress of this emerging trend, fuelled by a new generation of urban beekeepers ranging from 'armchair apiarists' to office workers tending rooftop hives during their lunch breaks.

These insects are no longer kept solely for their honey. Instead, they have re-entered the popular imagination, becoming bound up with environmentalism and a desire to reconnect with nature. Beekeeping's benefits are endless – it has even been found to help children with ADHD.

The authors, whose bestselling *A World Without Bees* explored the terrifying decline in bee numbers, emphasise that helping to increase populations need not involve becoming a beekeeper – we can all do our bit. Though their new book does include a basic step-by-step guide to setting up a hive, it also features gardening tips and advice on campaigning. The wide scope makes *Bees in the City* an excellent and inspiring companion to existing 'how to' manuals.

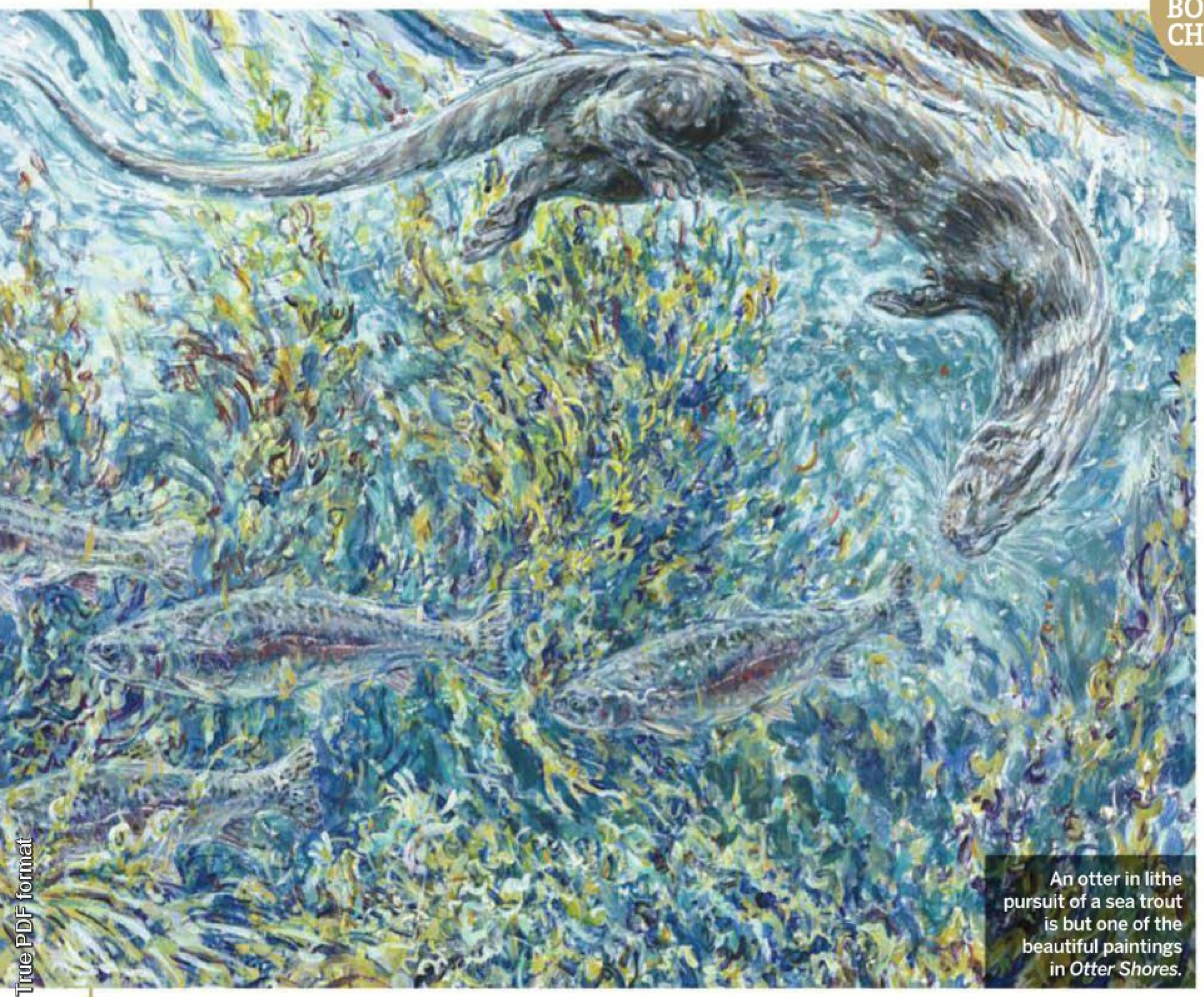
Verdict ★★★★☆

Helen Jukes Urban beekeeper

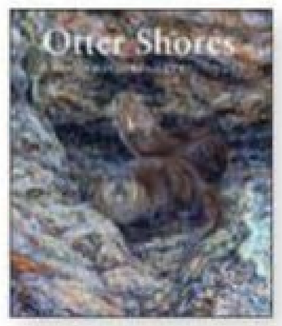
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PICTURE BOOK CHOICE



An otter in lithe pursuit of a sea trout is but one of the beautiful paintings in *Otter Shores*.

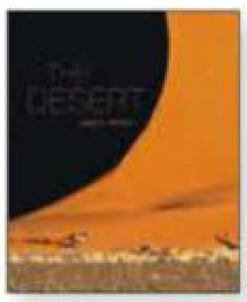


OTTER SHORES

By David Bennett

An otter glides through tendrils of seaweed, the only trace of its passage the bubbles in its wake... Moments such as this are perfectly captured in watercolour and pencil by wildlife artist David Bennett, creating a vivid, intimate portrait. *Otter Shores* depicts these elusive mammals among the wild scenery – and weathers – of the west coast of Scotland, from mother and cubs on a wind-blown shoreline to a lone male relaxing at sunset.

Langford Press, 208pp, ISBN 9781904078425 (hb)
£37.99 Code WAUT11/01



THE DESERT

By James Parry

Carlton Books, 256pp, ISBN 9781847322982 (hb)
£30/27.99/25.99 Code WAUT11/02

Throughout history, travellers have fallen under the spell of the desert, and James Parry is no exception. Here he has chosen 20 notable for their wildlife and landscapes, showcasing them with stunning photography.

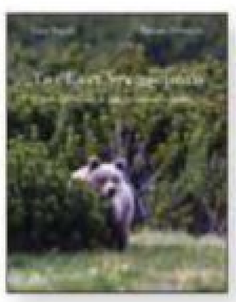
Some, like the Kalahari, will be familiar. Others, such as the Kavir in Iran – where the Asiatic cheetah still lingers – may surprise you, as will the Tabernas badlands of Almería, a relic of the Sahara marooned in Spain along with its sandgrouse and trumpeter finches.

All deserts are hostile to life: South America's Atacama, for example, has received no rain for decades – maybe even centuries. Yet extraordinary plants and creatures have evolved to fill these most unforgiving of niches, among them the saguaro cactus, the drought-proof gemsbok and the Gobi bear – one of the rarest animals on the planet.

Today, warns Parry, deserts are under threat as never before: the next two decades will be critical if they are to persist. This timely book, full of facts but thoroughly readable, reinforces the message that they are well worth saving.

Verdict ★★★★☆

Brian Jackman Travel writer



THE LAST STRONGHOLD

By Erik Baláž and Bruno D'Amicis

Historia Naturae, 240pp, ISBN 9788089244553 (hb) **£47.50** Code WAUT11/03

The halfway point of *The Last Stronghold* sees Slovakian naturalist Erik Baláž complete his rites of passage in the High Tatra Mountains, graduating from naive adventurer to respected brown-bear researcher. And both the style and narrative benefit from the transformation.

Baláž's lengthy and slightly scattergun first half describes his introduction to the Tatra with grandiloquent prose almost comparable to the wilderness he explores – bursting with sumptuous anecdotes of capercaillie courtship and snowboarding bear cubs.

But by mid-book, his narrative matures, reaping the benefits of 15 years' devotion to the brown bears of the Tichá and Kôprová valleys. He challenges conventional perceptions of behaviour with his own observations on territoriality and competition for food. The struggles of life and death are gripping, particularly with the arrival of a heavyweight male that precipitates a spate of infanticides.

D'Amicis' accompanying photography is generally splendid, though evinces a clear preference for ethereal landscapes over close-ups of bears.

Verdict ★★★☆☆

Mark Stratton Nature and travel writer

David Bennett/Langford Press

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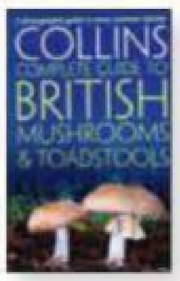
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Steffen & Alexandra Sailer/Ardea

The cep, also known as king bolete or penny bun, grows in both deciduous and coniferous woods.

BEST BOOKS ON FUNGI by naturalist Peter Marren



COMPLETE GUIDE TO BRITISH MUSHROOMS AND TOADSTOOLS

By Paul Sterry and Barry Hughes

This up-to-the-minute guide illustrates most of the species that can be recognised in the field. The descriptions are clear and the images excellent. It also includes species poorly served by other guides, notably brackets, puffballs and cups.

Collins, 384pp, ISBN 9780007232246 (pb)
£16.99/12.99/11.99 Code WAUT11/04

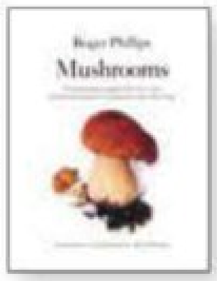


POCKET NATURE FUNGI

By Shelley Evans and Geoffrey Kibby

Written by veteran fungus-finders, this is the best of the pocket guides, and has been designed for easy use in the field. More than 450 species are included, chosen because they are common or easy to identify. The volume is attractively laid out, with the beautiful design you expect from DK, the publisher.

DK, 296pp, ISBN 9781405349963 (pb)
£9.99/7.99/6.99 Code WAUT11/05



MUSHROOMS

By Roger Phillips

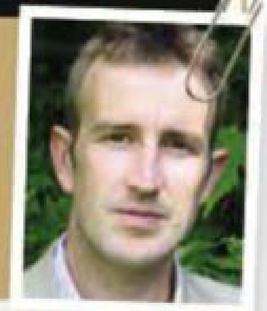
The most successful mushroom book ever is illustrated with fabulous colour photos. First published in 1981, it rapidly became everyone's favourite. The third edition arrived in 2006, and features even more images and the latest scientific and English names. However, its size makes it one for the car, not the pocket.

Macmillan, 384pp, ISBN 9780330442374 (pb)
£19.99/18.99/17.99 Code WAUT11/06

MY FAVOURITE BOOK

THE LIVING MOUNTAIN

chosen by **Robert Macfarlane**

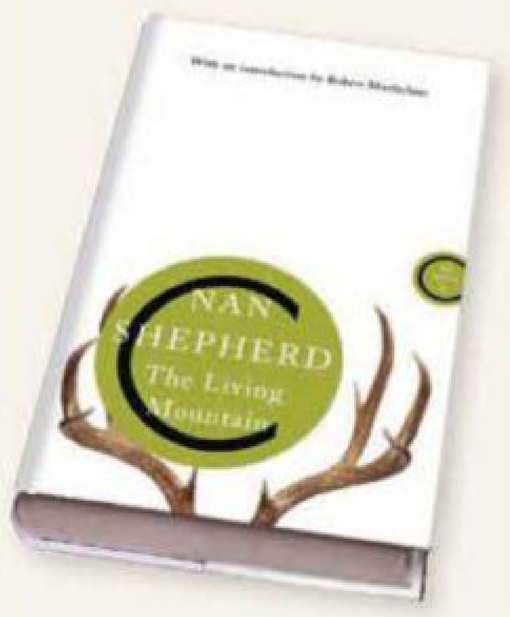


Most works of mountaineering literature have been written by men, and most male mountaineers tend to be focused on the summit. Anna 'Nan' Shepherd's slim and humble masterpiece, *The Living Mountain* – a hymn to the Cairngorm massif of north-east Scotland – is bracingly uninterested in mountains as enemies to be conquered. The author prefers the plateau and the pass to the peak; she would rather walk 'into' than 'up' her mountains.

The book, which was written in the 1940s, draws on her lifelong experience of the massif. At once a celebratory prose-poem, a natural-historical chronicle, a geo-poetic quest and a philosophical enquiry into the nature of knowledge, *The Living Mountain* changed forever not only the ways I imagine mountains, but also the ways I behave when among them.

It is, I feel, one of the most important and unusual British 20th-century works of place- or nature-writing, right up there with JA Baker's *The Peregrine*.

Robert Macfarlane is a travel and nature writer. His The Wild Places *is available from Granta.*



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Q&A

Your questions answered, plus the latest discoveries, fantastic facts and people who made natural history.

OUR EXPERTS



MATT DOGGETT
Matt has a PhD in marine biology and has worked in tropical and temperate seas. He undertakes marine surveys and photography and is a Sea Search diver.



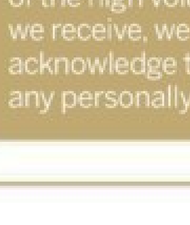
MIKE TOMS
Mike is head of garden ecology at the British Trust for Ornithology. He has written and co-written several bird books, including *BTO Garden Birds and Wildlife*.



RICHARD JONES
Richard has been fascinated by insects since he was a child. A former president of the British Entomological Society, he now works as a surveyor and writer.



STEVE HARRIS
Professor of biological sciences at Bristol University, Steve is one of the UK's leading mammal experts as well as a regular contributor to *BBC Wildlife Magazine*.



STUART BLACKMAN
A zoologist with a PhD in evolutionary biology, Stuart now works as a science writer and editor, specialising in biology and the environment.

SEND YOUR QUESTIONS TO

Q&A, *BBC Wildlife Magazine*,
4th Floor, Tower House,
Fairfax St, Bristol BS1 3BN

OR EMAIL
questions@discoverwildlife.com

We are very sorry, but because of the high volume of questions we receive, we are not able to acknowledge them, or answer any personally.

Q I took this photo of a bearded seal in Beadnell Bay, Northumberland, in June. Why is the animal such a long way from home? Is it unusual to see one this far south?

Eric Barnes, via email



This bearded seal made an unexpected visit to Northumberland. The species' whiskers are curly when dry.

Eric Barnes

A Bearded seals, easily distinguished from our native grey and common species by their distinctive square jaws and long, bushy whiskers, are rare visitors to British waters and an appearance is always a talking point. Individuals are recorded here about once every two to three years, usually having been carried off-course from their usual range in the Arctic Ocean.

It's also unusual to encounter a bearded seal this far south, as sightings tend to occur off the Shetland and Orkney Isles. But it's not unheard of – the species has been spotted in Hartlepool (1999) and the Medway Estuary in Kent (1991). Our oldest record is also a southerly one – from Norfolk in 1892.

Bearded seals will often return to their natural biogeographic range under their own steam. However, some are granted a first-class relocation service. One individual that was found in Lincolnshire in 1998 was flown north to the Shetlands and released, while another that washed up in County Mayo, Ireland, was returned to its home waters by no less a power than the Irish Navy.
Matt Doggett *Marine biologist*

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A nuthatch saves a nice fat nut for a very rainy day.

Jörn Friederich/Imagebroker/FLPA

Q I spotted a nuthatch jamming nuts into oak bark. Was it storing food? Is this normal?

Rupert Stocks, via email

A Hoarding food is typical nuthatch behaviour, and usually occurs during late summer and early autumn. As you observed, the birds often wedge their snacks into cracks and furrows in the trunks and large branches of oaks and other trees. Each item – typically a nut or seed but occasionally an insect – is stored individually.

Even when a nuthatch takes several seeds from a feeder, each will be squeezed into its own spot and then covered with bark or lichen. This process is known as scatter-hoarding.

By storing food when it is plentiful, the birds can maintain a supply for use later in the year, when times are harder. This strategy is particularly important for those living in the more northerly parts of their range, where temperatures drop even further in winter.

Research suggests that nuthatches are rather prudent when using their caches, only turning to them when other foods become very difficult to find or the weather takes a turn for the worse.

The birds also appear to have an excellent spatial memory, and are able to quickly relocate their stores in the event of an unexpected cold snap.

Mike Toms *BTO*

Q Why are the mosquitoes in my garden trying to insert their proboscises into cactus plants?

Buddhika Wijerathne, Sri Lanka

A This is unusual, but not unprecedented, behaviour. Though female mosquitoes have a fearsome reputation for sucking blood, this is only to nourish and mature their eggs. Most of their feeding and growing occurs during the aquatic larval stage, when they graze on algae and plant material.

Blood, therefore, is only part of a mosquito's diet. Males subsist on plant juices, and females also visit flowers, gaining metabolic energy from the sugary liquid.

One group of large, showy but non-biting mosquitoes in the subfamily Toxorhynchitinae have curved mouthparts that are unable to even pierce vertebrate skin. Their larvae eat other water invertebrates, so they are better nourished and can lay eggs without needing to drink blood.

Your mosquito looks like a member of the subfamily Culicinae (many of which carry yellow fever) and the feathery antennae indicate that it is a male. It is probably probing the cactus for moisture.

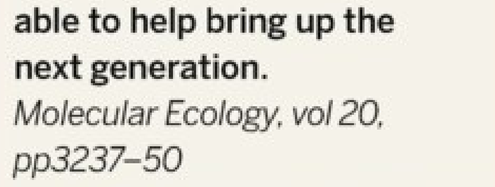
Richard Jones *Entomologist*



A mosquito attempts to drink from a cactus, using its proboscis to pierce the tough stem.

Buddhika Wijerathne

LATEST DISCOVERIES



Flip De Nooyer/FN/Minden/FLPA

KEEP IT IN THE FAMILY

Like many birds, female eider ducks lay eggs in the nests of their neighbours. But such 'brood parasitism' might actually prove mutually advantageous. The 'parasites' tend not to be strangers but younger relatives of their hosts, meaning that older, less fertile birds are still able to help bring up the next generation.

Molecular Ecology, vol 20, pp3237–50



Ralph Mangelsdorff (composite)

SOUND OF SUGAR

Many plants use colour and scent to attract pollinators, but the vine *Marcgravia evenia* employs sound – or, more accurately, echoes. To tempt bats to its flowers, it has dish-shaped leaves that reflect the bats' sonar and make the plant easier to locate.

Science, vol 333, pp631–3

SELF-CLEANING FEET

Sticky feet make White's tree frogs *Litoria caerulea* adept climbers but are also a magnet for dirt, which ruins their adhesion. The problem is solved by the mucous coating itself – it slides across the foot with each step, removing muck as the frog walks. SB

Society for Experimental Biology Annual Conference, July 2011

StorkEggs.com

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STRANGE BUT TRUE...

Teasel with a taste for flesh

Florists and goldfinches beware. The teasel *Dipsacus fullonum* – a favourite food of winter flocks and the centrepiece of many a table arrangement – has a dark side. It eats meat.

It's not the plant's fearsome spines and bristling flowerheads you have to be wary of, fitting as they are for a carnivorous species, but the pools of water that collect in the steep-sided, slippery leaf-cups surrounding its stem.

These lethal baths have long intrigued inquisitive naturalists. Charles Darwin's grandfather Erasmus believed that they acted like a castle moat, protecting the plant against marauding hordes of crawling herbivorous insects. Others noticed that bugs trapped in the watery snares died faster than they would by simply drowning, suggesting they were being poisoned.

It is only in the past year, however, that scientists have proved the species' carnivory, discovering that plants supplied with fresh meat produce 30 per cent more seed than those on a vegetarian diet.

Exactly how the teasel kills and digests its victims or absorbs the resulting insect soup is still unknown. Time for a closer look at those flower arrangements – just not *too* close.

Stuart Blackman *Science writer*





Forget the barbs and bristles, it's the leaf cups (*inset*) that bag a teasel's meal.

Main: Niall Benvie/naturepl.com; inset: Nigel Cattlin/FLPA

TEASEL TEASERS

- The teasel is native to Europe, Asia and Africa, but has been introduced to the Americas, where it is an invasive weed.
- The flowerheads are traditionally used to raise – or 'tease' – the nap on woollen cloth.
- Carnivorous plants are typical of acidic, boggy, nutrient-poor soils. Teasels, however, prefer rich, dry, alkaline ground.

Q Why were red admirals landing on my patio, then chasing each other around?

Anna John, via email



Arco/Alamy

A Red admirals arrive in the UK having already mated on migration from southern Europe, but courtship behaviour is deeply innate and continues as they fly north. Males guard a sunny territory, waiting for females and seeing off rivals. You may have seen a female pursued by a gang of suitors, or a confused bunch of males all trying to defend the same patch of patio.

Male and female reds are identical, but a small pebble lobbed over a basking individual will rouse a male to attack – a female will ignore the missile.

Richard Jones *Entomologist*

Q Why do some birds, especially waterbirds, stand on one leg?



Flamingos swap the leg they stand on, so that only one gets cold at a time.

Wayne Lynch/Photolibrary.com

A Though various theories have been proposed to explain this behaviour, known as 'unipedal resting', research has only recently produced an explanation. A study on captive Caribbean flamingos has revealed that standing on one leg helps to conserve warmth. This probably also applies to other waterbirds, such as various species of wader.

Cold water draws away body heat, so, for birds that spend a lot of time wading, it makes sense to minimise losses by placing only one limb in the water, keeping the other tucked up in the plumage.

The scientists ruled out other mooted benefits, notably to reduce fatigue in the legs, shorten the time needed to take flight and improve balance, through studies of individually marked birds.

Mike Toms *BTO*

What's in a name?

Happy face spider

Theridion grallator



Scientists named this Hawaiian speciality after its spindly legs (*grallator* means 'stilt-walker'), but its local name, *nananana makaki'i* ('face-patterned spider'), and common English name capture what really makes it unique. **SB**

Darlyne Murawski/National Geographic Stock

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Q I saw a photo of a female elephant with mammary glands – breasts – on her pectoral area. Don't only primates have these?



Baby elephants depend on their mother's milk for the first 3–4 years, drinking up to 12 litres per day.

Photolibrary.com

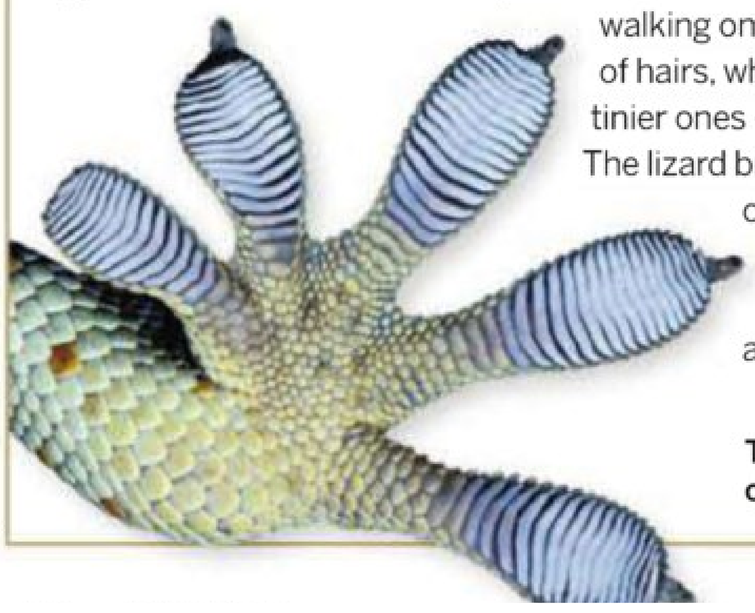
A Primates, bats and elephants generally produce a single youngster and have one pair of pectoral mammary glands. Other mammals that produce a single offspring have one pair of glands in the groin (as in whales and seals) or an udder with one or two pairs of glands (as in many ungulates).

Where the mammary glands are located seems to depend on ease of access. In most ungulates, the belly curves upwards to the hind legs, so it is easier for the calves to get under the groin. In elephants, the reverse is true, so it is more convenient for the youngsters to get beneath the front legs. Each baby elephant then has to lift its trunk out of the way so that it can use its mouth to feed.

Steve Harris *Mammalogist*

HOW DO... geckos walk on ceilings?

To understand this, you must think small – very small. Instead of using glue, suction or friction, geckos harness van der Waals forces – the tiny forces of attraction that arise between atoms when they get very close together. To achieve the closest possible contact with the surface it's walking on, gecko feet bear millions of hairs, which subdivide into many tinier ones – about a billion in all. The lizard breaks the bonds just by changing the angle of contact, which it does by peeling its toes away like tape. **SB**



The secret of the gecko's cling power? Hairy feet.

Ingo Arndt/naturepl.com

THE MAN WHO...

was the forefather of modern twitching



EDWARD BOOTH (1840-90)

Nowadays, mobiles, motorways and the internet make life relatively easy for anyone with an obsessive fascination with rare birds and a penchant for lists. But things were rather less convenient for twitchers in the Victorian era.

Not that Edward Booth would have called himself a 'twitcher', because the term wasn't even coined until the 1950s. Indeed, Booth was arguably the first of his kind.

Like all good twitchers, Booth had a ticklist. But, being a gung-ho Victorian, it wasn't a camera he shot his subjects with. "I have restricted the collection entirely to birds that have fallen to my own gun during my various excursions in the British Isles," he wrote.

He also shared with modern twitchers a willingness to drop everything to race the length of the country should he get a whiff of a potential 'tick'. A man of independent means, he had a private railway carriage at his disposal, and rumour has it that he once kept a locomotive under steam in Brighton for a week while waiting for word of sea eagles in Scotland.

But Booth's legacy comprises more than a list and the pioneering of a now-popular pastime. His specimens form the heart of the collection at Brighton's Booth Museum of Natural History – one of the most important in the country.

He also revolutionised the way in which subjects are exhibited, and his displays of stuffed birds in the context of their natural habitat have been copied by major museums all around the world. **SB**



Sanderlings, in winter plumage on a sandy shore, collected by Booth in 1866.

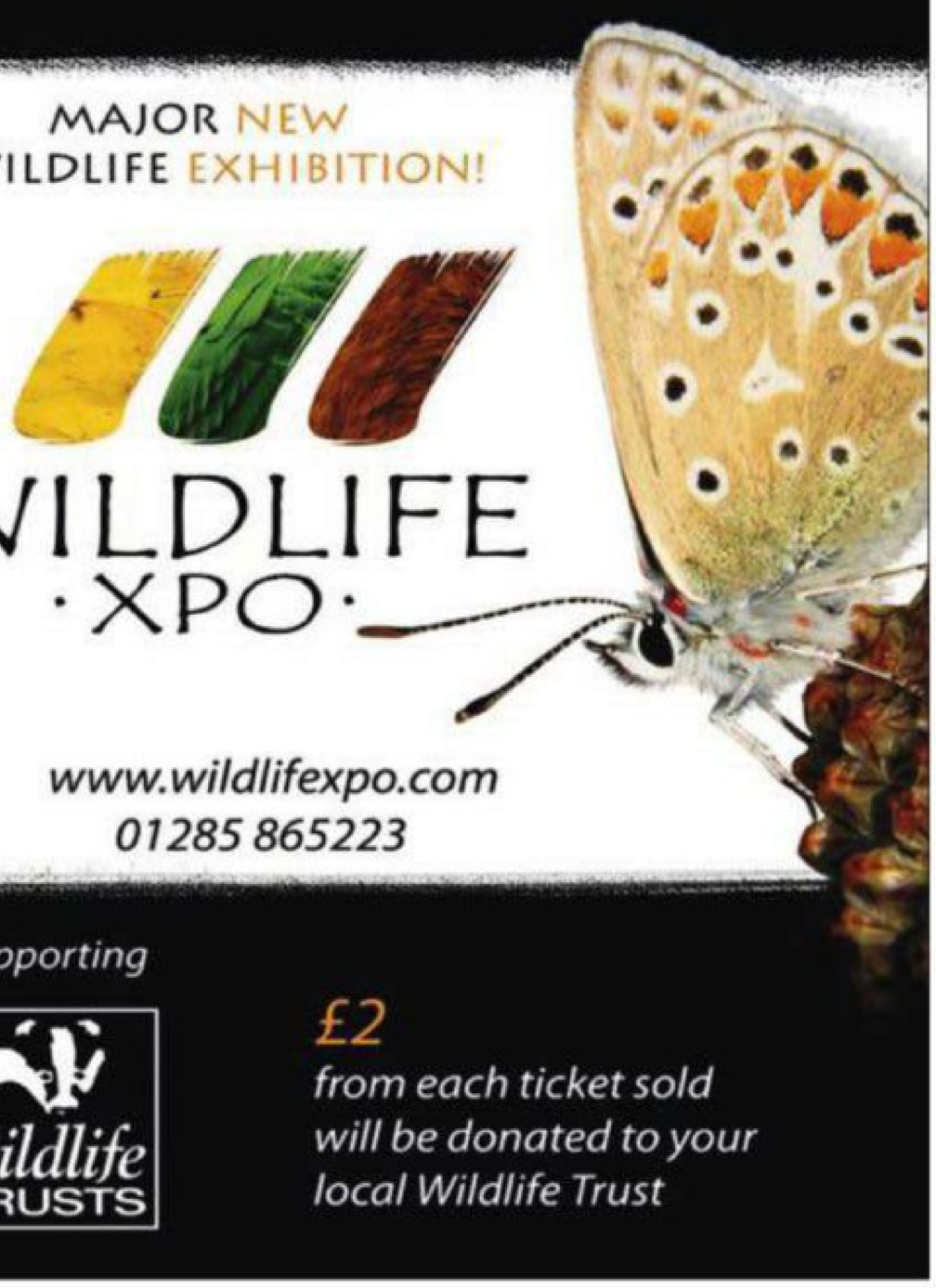
Both photos: The Royal Pavilion and Museums, Brighton & Hove

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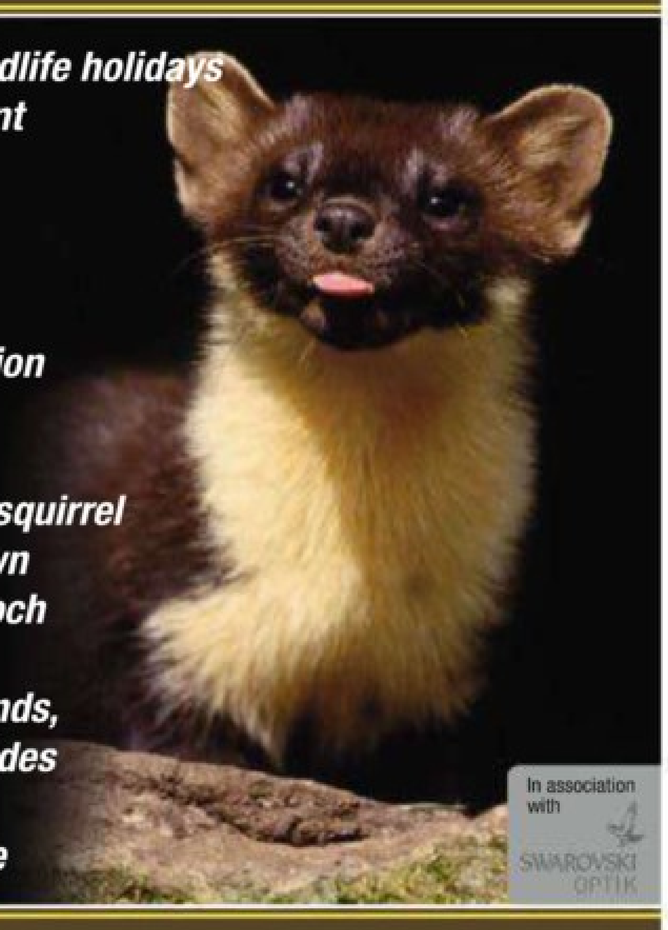
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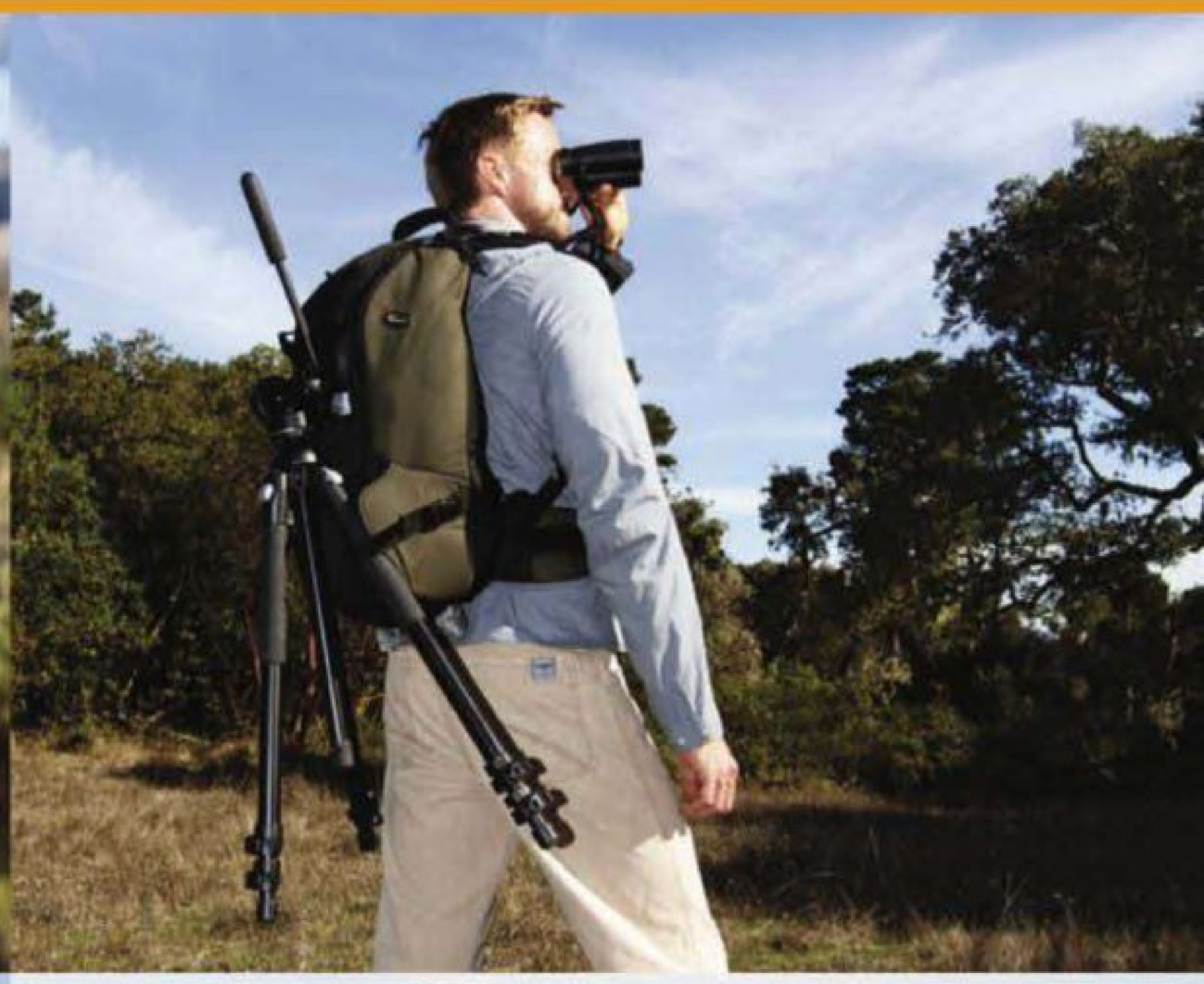
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PHOTO MASTERCLASS

PART 7: HOLD STEADY



A pin-sharp finish is fundamental to great nature photography. Crisp images have a mesmerising immediacy, enticing the viewer to linger over every feather, scale and hair, says wildlife photographer Mark Carwardine.

I would rather go on a shoot without my trousers than without a tripod. Okay – maybe that's a bit of an exaggeration, but it's a good principle nonetheless. One of the greatest challenges in nature photography is getting your images pin-sharp – more pictures are ruined by a lack of clarity than almost anything else.

One major problem is a general hatred of tripods. Important as they are, they can be excessively heavy, awkward to carry and as difficult to put up as deck chairs, while cheaper models have a habit of crushing your fingers and collapsing, bringing your precious camera gear down with them. An unruly tripod can turn wildlife photography from a pleasure into a test of endurance.

But despite all the recent advances in digital photography, none has yet solved the need for actually holding a camera steady. The good news is that nowadays there are some excellent, sturdy, lightweight tripods available, and if you bother to use one, you will dramatically increase the number of pictures that make the cut. This in turn will make you a more confident photographer.

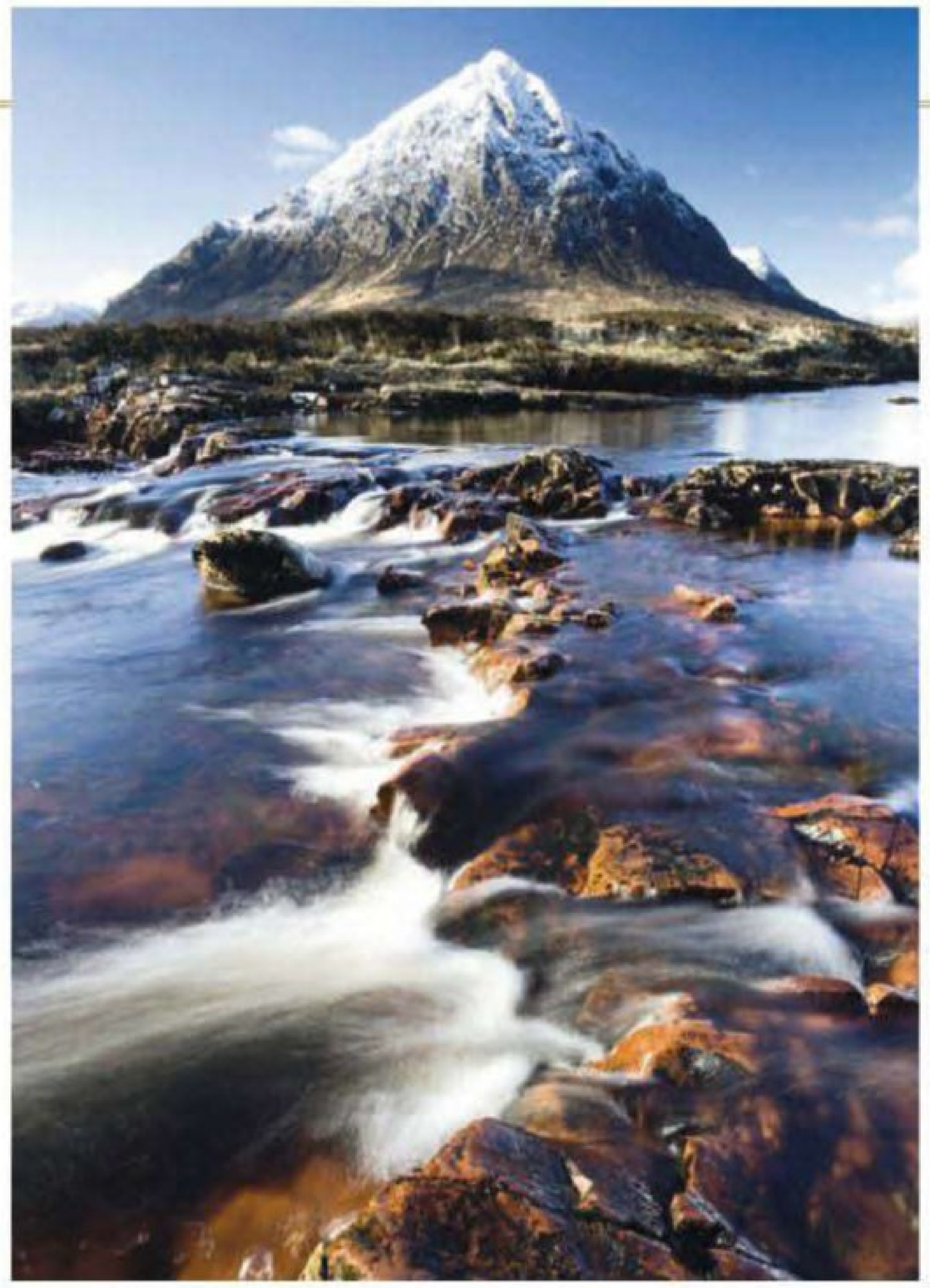
There are also other ways of keeping your camera still, ranging from beanbags and fenceposts to good old-fashioned technique. So, this month we'll be introducing a few tricks of the trade to sharpen up your shots.

▲ STAY FOCUSED
Sharpness is achieved by good technique – don't let the high ISO capabilities of modern cameras, or lenses' vibration reduction or image stabilisation, make you sloppy.

Mark Carwardine

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Use a tripod and long exposure to create the effect of flowing water in a sharp landscape, as in Lee's portrait of Buachaille Etive Mor, Scotland.

1 THREE IS THE MAGIC NUMBER

LEE FROST UK



Landscape photography demands the use of a tripod even more than most other genres. "Tripods are crucial for several reasons," says Lee. "As well as keeping camera shake to an absolute minimum (even when using small apertures and slow shutter speeds), they force you to slow down and compose carefully. Once I've set up my tripod, I often make small adjustments until I'm completely satisfied."

Sometimes, though, merely using a tripod isn't enough, especially if it's windy. You can maximise sharpness by keeping the tripod as low as possible and leaving the central column unextended. If conditions are particularly bad, place a beanbag on top of the camera and lens or hang your bag underneath to add stability. A cable release or the self-timer will also keep shaky fingers away from the camera.

A one-legged monopod may be lighter and useful in certain situations (such as stalking animals in thick undergrowth), but is very much second-best. It lacks the stability of a sturdy tripod, and you can't set it up and leave it while you wait for the decisive moment.

▶ *www.leefrost.co.uk*

TECHNICAL SPECS

Canon EOS-1Ds Mark III + 21mm lens; 1.3 sec at f22; ISO 100; polarising filter



To achieve crystal-clear images underwater, such as Jordi's green turtle in French Polynesia, use a wide-angle lens and approach within 1m. Telephoto lenses are a big no-no.

TECHNICAL SPECS

Canon EOS 5D + 15mm lens; 1/80 sec at f16; ISO 100; strobes; underwater housing

2 GET CLOSE, GET CLOSER

JORDI CHIAS SPAIN



Taking sharp images underwater is particularly challenging, partly because you can't use tripods or cable releases, but mainly because you're shooting through a medium that makes everything look soft.

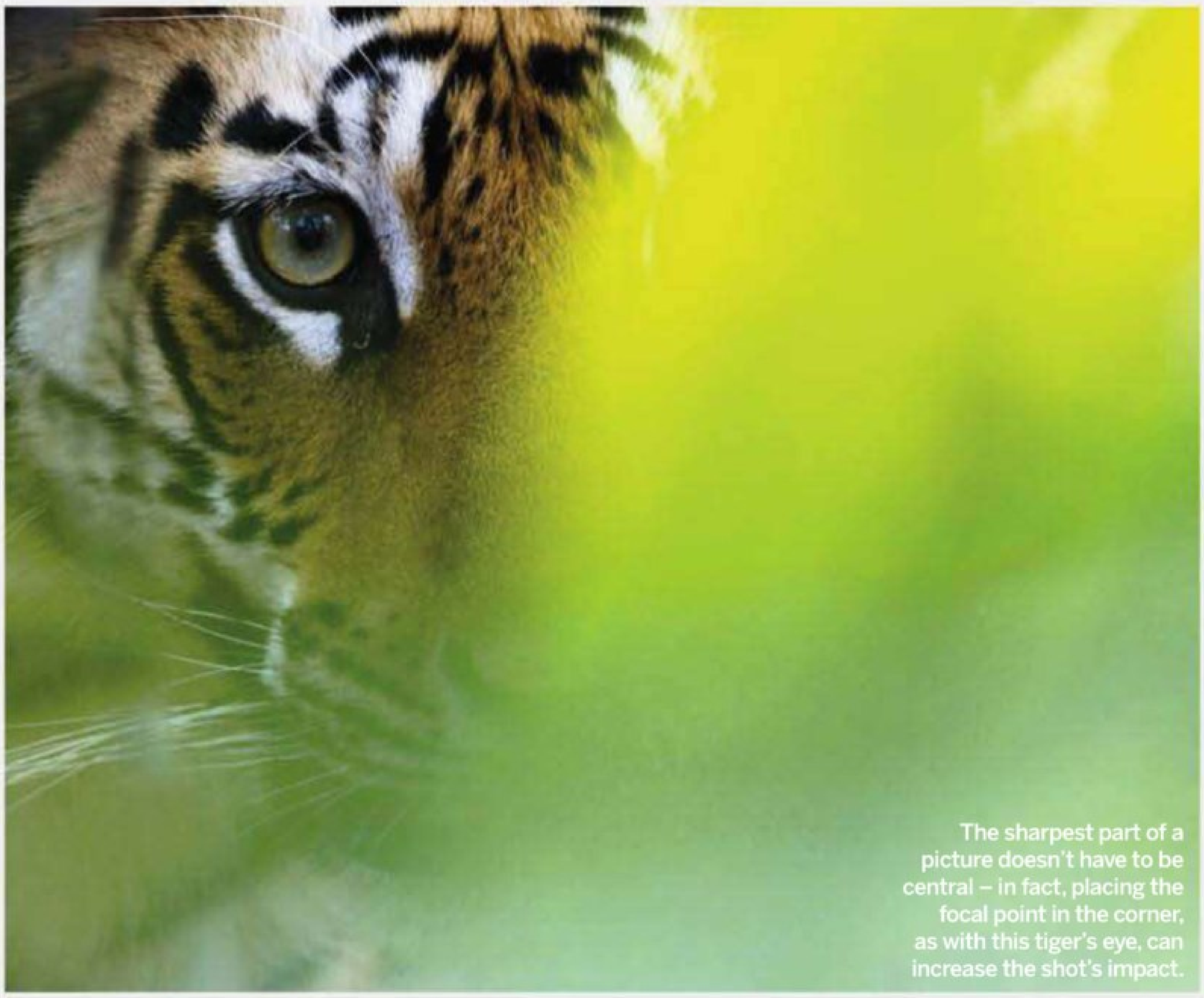
"The trick," says Jordi, "is to get close... and then get even closer. The less water you shoot through, the sharper your images will be."

Wherever you are shooting, your choice of lens makes a big difference, too. As a general rule, spend less on your camera and as much as you can afford on your lens. Lenses with vibration reduction or image stabilisation can also help to keep hand-held pictures sharp. And think about your aperture: lenses have a 'sweet spot' (usually f8 or f11, or two stops smaller than wide open) at which sharpness is at its best.

▶ *www.uwaterphoto.com*

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The sharpest part of a picture doesn't have to be central – in fact, placing the focal point in the corner, as with this tiger's eye, can increase the shot's impact.

3 THINK OF ALTERNATIVES

THORSTEN MILSE GERMANY



Thorsten took this captivating picture of a tiger while riding an elephant in India's Bandhavgarh National Park. When you're trying to keep your pictures sharp, this is as tricky as it gets.

He often works from vehicles, too, where space constraints make it impossible to use a tripod. But there are alternatives. The first is a window-mount, which clamps over the open window. The second is a brick-sized beanbag. You travel with it empty, then fill it with dried beans or rice when you reach your destination.

"Used properly," says Thorsten, "a beanbag can be at least as stable as a tripod. It supports a lens along most of its length, rather than at one point."

▶ *www.wildlifephotography.de*

TECHNICAL SPECS

Canon EOS-1Ds Mark II + 300mm lens; 1/125 sec at f5.6; ISO 400

4 WHEN TIMES ARE ROUGH

CHRIS GOMERSALL UK



Chris snapped this short-beaked common dolphin in Scotland's Loch Torridon.

"Shooting from small boats can be tricky," he says, "as you can't use a tripod or beanbag. I was lucky here, because the sea was calm, but you are often thrown all over the place."

It can be great fun taking pictures without the restrictions of a tripod – you can react more quickly and work more fluidly. But you still need sharp images.

There are several tricks. First, if the engine isn't causing the vessel to vibrate, lean against something to support yourself. Second, use a shutter speed that is higher than the number of the focal length of your lens (so if you're using a 300mm lens, strive for a shutter speed of at least 1/500 sec). Then keep your elbows in, hold your breath and hope for the best.

▶ *www.chrisgomersall.com*



TECHNICAL SPECS

Nikon D3 + 70-200mm lens; 1/3200 sec at f5.6; ISO 800

To capture a dolphin in mid-air, you need to anticipate where the animal is going to emerge by following it underwater while looking through your lens.

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BREAKING THE RULES

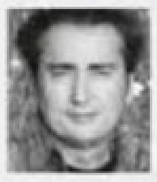
Once you know the rules, bending them can result in a better picture.



If you're going for an exciting action shot, a blurred finish can add edge and impact.

5 BLURRING THE LINES

EDWIN GIESBERS NETHERLANDS



A lack of sharpness through incompetence or laziness can ruin a good picture. But if you know what you are doing, a bit of blur can turn an average image into an outstanding one.

Take Edwin's photo of a red fox. It's obvious that the softness was intentional – in fact, it's almost as important to the success of the picture as the fox itself.

"Sometimes," says Edwin, "when you freeze a moment in time by shooting a moving subject with a fast shutter speed, you lose that sense of movement. In this image, by selecting a slower shutter speed and panning with the running fox, I've added an element of drama to the scene. Panning is important because it blurs the background more than the animal itself."

There is no magic shutter speed when taking slow-motion shots, but start with 1/15 sec and work from there. This is one of the great advantages of digital photography – you can play around and learn from your mistakes while you're out in the field.

Obviously, there is little time to experiment when a wild fox is running past, so persuade your friends and family (small children are usually willing) to scamper backwards and forwards in front of the camera and practise on them.

▶ *www.edwingiesbers.com*

TECHNICAL SPECS

Nikon D300 + 50–500mm lens; 1/15 sec at f22; ISO 400

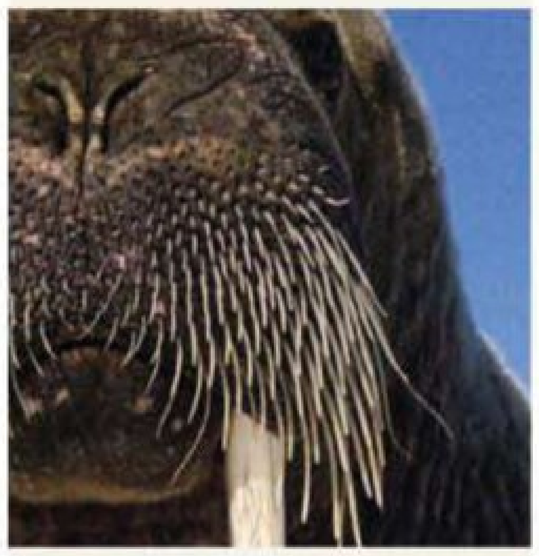
TRICKS OF THE TRADE

▶ LET BAD IMAGES LIE

Sharpening digital images on the computer can make them crisper, but you can't make a soft image miraculously sharp.

▶ SCRUTINISE ON SCREEN

Check the sharpness of your images on a computer at 100 per cent magnification. With something like a walrus (*below*), inspect every whisker.



Mark Carwardine

▶ CHECK YOUR TECHS

Turn the image stabilisation off when using a tripod. If a camera is still, there is a small chance it could add blur.

▶ GET CONNECTED

Attach long lenses to the tripod via their tripod collar. If you attach the camera, the weight of the lens may damage the lens mount.

BUYING A TRIPOD: WHAT TO LOOK FOR

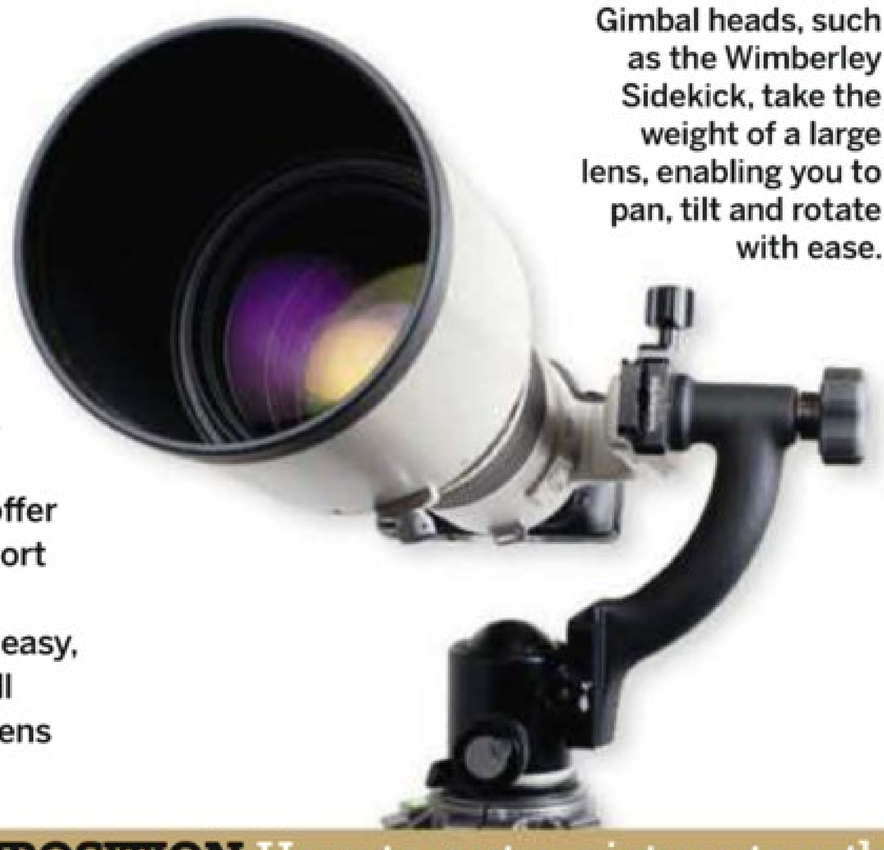
tech zone

A good tripod is one of the most important accessories you will ever own. When purchasing one, consider:

Weight – heavier usually means sturdier, though the modern carbon-fibre models used by most professionals are sturdy and relatively light.

Legs – these must be easy to extend and adjust, offer a comfortable maximum working height and support your camera down to ground level.

Head – You need a high-quality head that provides easy, smooth movements in all directions. Consider a ball head, a gimbal head (which puts the weight of the lens and camera below the pivot point) or a video head.



tripodhead.com

Gimbal heads, such as the Wimberley Sidekick, take the weight of a large lens, enabling you to pan, tilt and rotate with ease.

NOW YOU DO IT



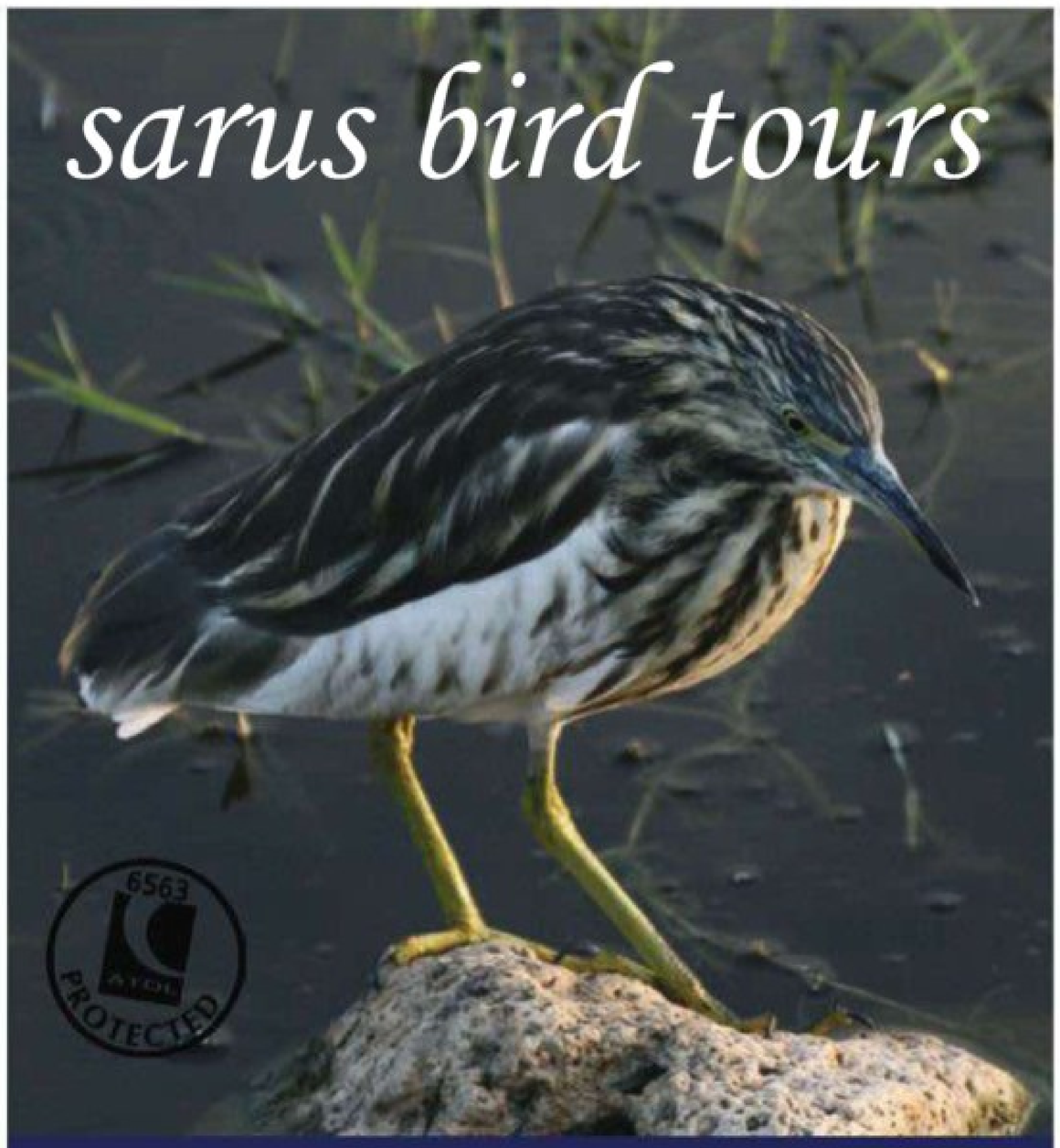
Neil Aldridge

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NEXT MONTH THE ART OF COMPOSITION How to put a picture together

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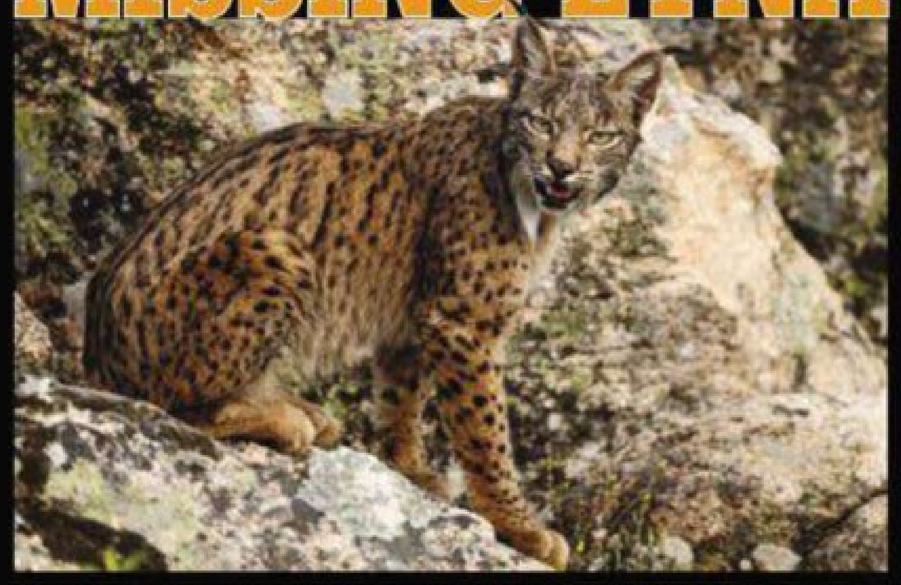


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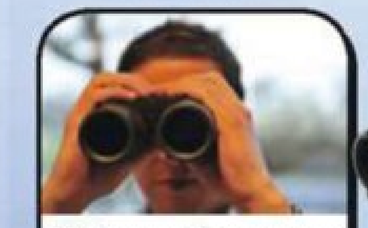


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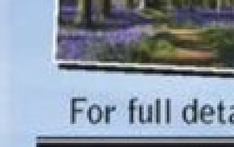
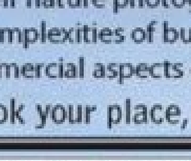
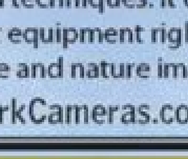
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your letters

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LETTER OF THE MONTH

Touchy about spiders? I am now...



Like Gemma Hall ('Terror of the spiders', July), I am a lifelong lover of wildlife, yet also seriously arachnophobic. I've always known spiders to be beautiful creatures with an important place in the world, but I just couldn't live with them.

In 1997, while home alone, I fled the house after finding a common house spider in the bedroom wardrobe. I stopped a complete stranger on their way to work and begged him to remove the spider, so that I could get dressed and go to work as well.

So for my own safety I decided to try the 'Friendly Spider Programme' at London Zoo that year. By the end of the day I had done the unthinkable: caught a spider in a glass and let it go outside. I had even held a tarantula.

I am not completely 'cured'. When September comes around and spiders start moving back into my house, my senses go into overdrive, my eyes are peeled to catch any hint of movement on the skirting board and my legs are safely tucked up on the sofa.

Nevertheless, I am much better than I was, and I can still catch a house spider with a glass. And I can hold, look at and touch the pictures in the July issue.

Nicola Chester Inkpen, Hungerford

▶ WIN, WIN, WIN

The Letter of the Month wins a pair of HI-TEC V-Lite Fasthike waterproof boots, worth £50 and perfect for hiking. They're available in sizes 7–13 for men and 4–8 for women. For more information, visit www.hi-tec.com/uk



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Cut out the mower

After reading about the gorillas threatened by diseases carried by tourists, and the missing Rutland osprey that is presumed shot (News, August), I'd like to encourage everyone to consider the impact of their actions and the small things they could be doing at home to help wildlife.

My lawn is unmown and full of weeds, but it gives me joy every day. How many of us strive to make our gardens neat and weedless when, by simply letting a few wildflowers grow, we could help butterflies and bees? Even the dandelion has an important role to play. I was thrilled recently to find a glow-worm living on my unkempt grass.

Being a lover of wildlife isn't just about protecting endangered species, but also about helping spiders, beetles, slow-worms, grass snakes and frogs. I got as much joy from seeing my glowing beetle as I have done from watching exotic wildlife abroad. So, next time you have a Sunday afternoon spare, why not have a cup of tea and admire the bugs on your lawn, rather than mowing it?

Claire Sawers
Sussex

Counting kestrels

I put this plastic rubbish bin up in our apple orchard more than 15 years ago, specifically as a 'resting box' for barn owls. To my knowledge, no barn owl has ever been anywhere near it, but this year – for the first time – a family of kestrels hatched and reared four chicks in it.

This photograph shows what we believe to be three of the chicks – there is one barely visible underneath the bin, behind the lower kestrel – just after they had fledged.

Neil Fair
Kent


The third young kestrel, barely visible, is beneath the right-hand side of the bin.

In for the krill

I'd suggest that the shrimp-like creatures known as euphausiids or krill, the main food source for blue whales, would consider the latter to be predators. Since blue whales are larger than sperm whales, perhaps they should have the distinction of being called "the world's largest predator" (Editor's Letter, July)?

Alan McBride
Australia

Editor Sophie Stafford responds:
We have endless discussions in the office about whether we should call sperm whales "the world's largest predator". Technically, we're wrong, but somehow the predatory lifestyle of the blue whale is not in the same league as that of the sperm whale. What do other readers think?

Badgers: for...

With such a lot of focus on badgers at the moment [see ▶

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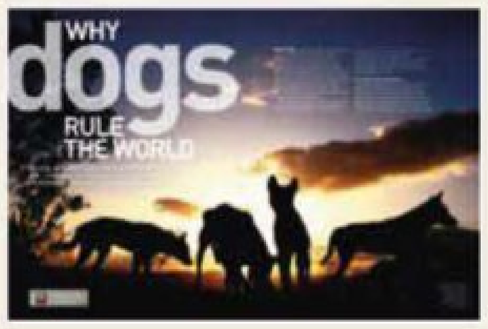
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WHAT ON EARTH? Amazing wildlife antics from our postbag

Clearly unwell, this Scottish wildcat kitten was rescued by a farmer, who brought it to me to assess whether it was a feral hybrid or the genuine article. With its perfect markings, I was in no doubt: the real McCat. It has now recovered and will be released back into the wild by October.

Keith Ringland Perthshire



A glass apart: indisputably, a real Scottish wildcat.

Keith Ringland

p50 to read our special investigation into badgers, bTB and the race to find a vaccine], I thought your readers might be interested in the first Scottish Badger Week, which runs 3–9 October. It will be a celebration of all things 'badgery' but with an emphasis on raising awareness.

Scotland has been declared TB-free, and our approach to cattle movement and TB testing has a lot to do with this. Sadly, however, our TB-free status is barely mentioned in the wider debate. Even here, in Scotland, we often respond to farmers and landowners on this very issue.

Scottish Badger Week will be an opportunity to shout it from the rooftops.

Steve Jackson-Matthews
www.scottishbadgers.org.uk

... and against

In the August issue, you stated that 63 per cent of adults are opposed to a badger cull (News), but I think at least 99 per cent of farmers would be in favour of one. People may think badgers are cute, but no one considers the damage they do.

They dig their setts in fields, even when there is ample woodland habitat available. The new setts cannot be filled in to protect cattle without jumping through endless hoops. Instead, farmers have to build fences around the setts.

Farmers work hard to produce food for the rest of us, but few people take this into account when it comes to badgers.

Cilla Platt
Via email

Picture perfect

Whenever my *BBC Wildlife* arrives and I haven't time to read it straightaway, I always have a quick flick through it. On reaching the *BBC Wildlife* Artist of the Year 2011 results (August), I showed the beautiful 'photo' of Amur tigers to my husband.

It wasn't until later that I realised that the 'photo' was a painting. I am absolutely enthralled by its beauty and reality, and wanted to say a heartfelt congratulations to the artist, Stella May, on winning the competition.

Jo Lou Burn
Bradford

Defending the dingo

'Defining the dingo' (September) provided an accurate account of the mercurial dingo and its chequered past. I grew up in New South Wales, where sightings were common, and while we gave the animals a wide berth – they are, after all, wild and territorial – we often watched their behaviour from afar.

Contrary to the Australian insult "You dingo!", implying stupidity, dingos can be very bright. I once saw four or five dingos encircle a tree, on the lower branch of which sat a lame bird. Rather than scratching at the trunk and getting frustrated (as many other predators would have done), the dingos mobilised themselves, with one using two others as a bridge. That one climbed across their backs and snaffled the bird.

People are right to be cautious, but I hope dingos aren't victimised out of ignorance. Australia has enough space to allow humans and wildlife to co-exist, and the sooner people realise this, the better.

Simon Terry
Essex

Alien concept

I really enjoyed the dingo article, but when I read how Australians take such a hard line towards non-native species, I could not help but be amused. Aren't



What should be done to stop badgers infecting cattle with bTB? Opinions vary.

Neil Aldridge/conservationphotojournalism.com

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From the forum

Bring back *Big Cat*!

I've been wondering why we haven't seen *Big Cat Diary* for ages, and after listening to Jonathan Scott on your podcast (March), it seems that BBC producers don't think it will draw in a big enough audience and that the format needs updating.
I don't agree at all! I thought it was pure entertainment. I'm a big fan of Jonathan, and I loved *Big Bear Diary*, too. **wildlife-warrior**

▶ www.discoverwildlife.com/forum

humans the most destructive non-native species in Australia?
Clinton Cox
Via email

Giant encounter

Your feature on 'Swimming with giants' (September) reminded me of my holiday on the east coast of Mexico last year and an experience that I will never forget – snorkelling with whale sharks.

A 90-minute boat trip took us to a site where more than 30 whale sharks were feeding. We were only allowed in the water two at a time, and the sharks swam right up to us with their mouths wide open, engulfing the plankton.

We stayed in the area for about an hour, and it was one of the most memorable periods of my life. And I was not in the least afraid, despite their size.
Sue Istead
Via email

Flocking 'ant-ics'

A flock of gulls circling around in the sky is probably snapping up aerial insects such as winged ants, and it is unlikely that those seen by Chris Turner (Letters, September) were trying to catch starlings in the tree. Those gulls that flew into the trees may have been pursuing the insects.

Having said that, Chris doesn't say what time of day this took place, but the reference to fireworks suggests that it was at night, which would make the gulls' behaviour unusual. They are diurnal and would normally be roosting – though not in trees!
Jonathan Elphick
Author, editor & consultant, via email

Reserve not rehab

Your feature on orangutans ('Hope for the red ape?', August) referred to Semengoh as a rehabilitation centre, but it ceased to be this many years ago. It's now called Semenggoh Nature Reserve, and when I was there a few months ago, the only cages contained three estuarine crocodiles awaiting relocation.

The place was a rehab centre for more than 20 years, at which point it was decided that the forest could not accommodate any more releases. Though there's still a feeding platform, few orangutans take advantage of it because they are self-sufficient.

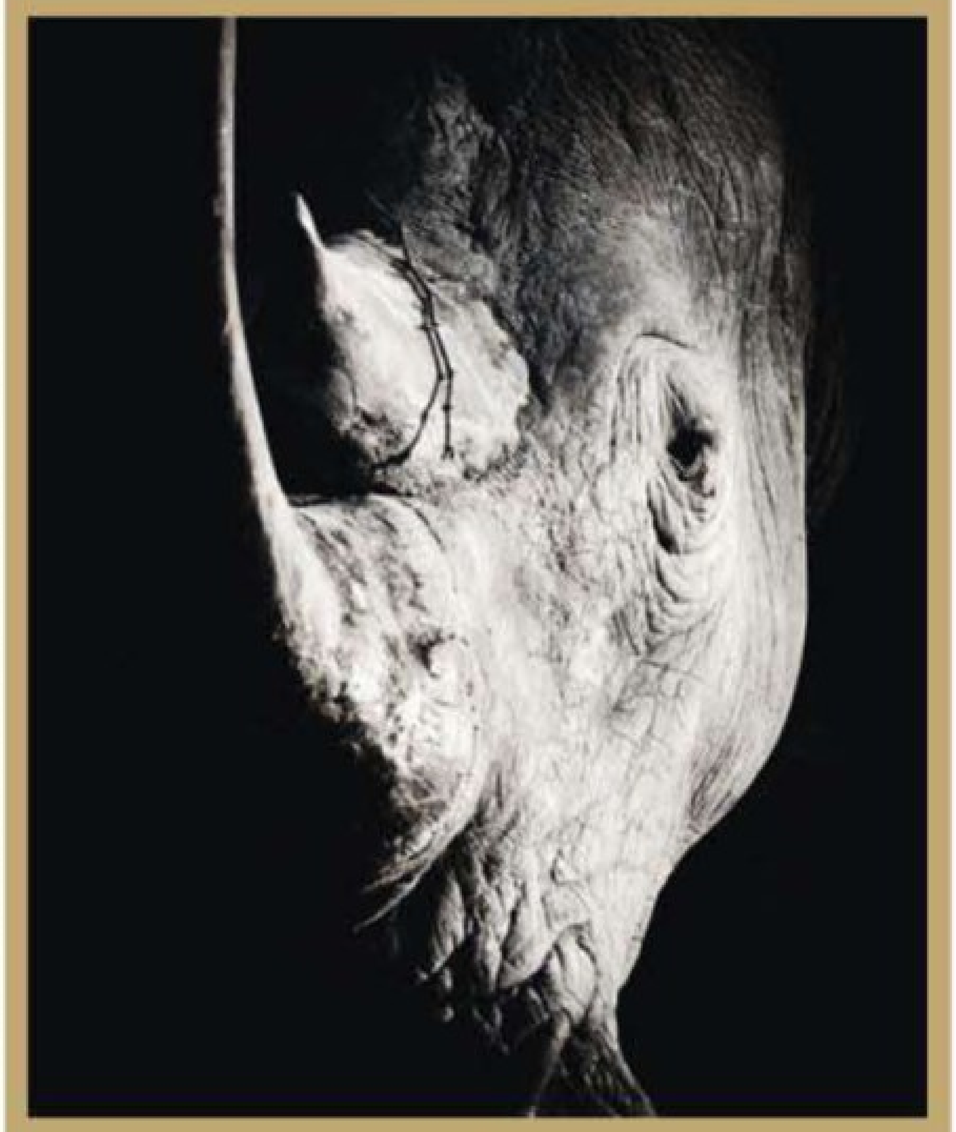
You may have to visit several times to see any orangutans at all, showing that rehabilitation has been a success and that the orangutans now breed naturally.
Ian Cruickshank
Thailand

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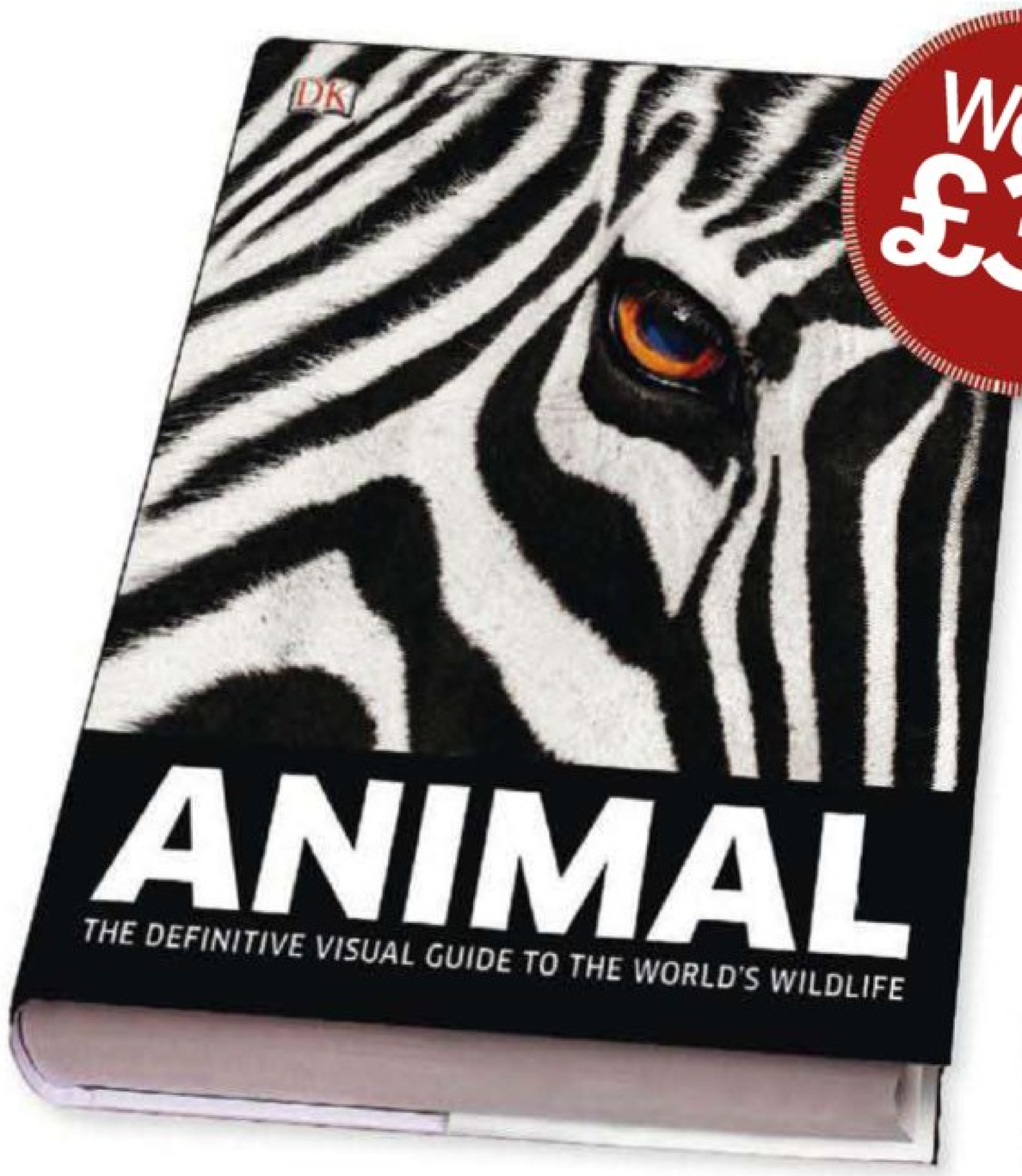
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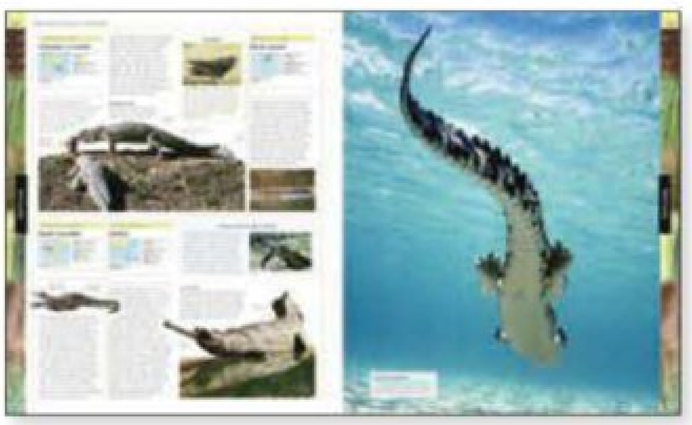
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PHOTO OF THE MONTH



1

1 LOOP THE LOOP

I noticed this acrobatic ladybird clambering upside down and back and forth among the tendrils of a sweet pea in my garden one sunny afternoon. Perhaps it was practising for the asymmetric bars at the London 2012 Olympics?

Alan Lewis
Via email

2 STRIKE A POSE

I love photographing African animals – and not just the big five – so I was delighted to find this colourful male rock agama posing on a massive kopje on the Serengeti Plain, Tanzania. He was posturing, doing push-ups to show off his dominance – I just sat there and let him come to me.

Chuck Graham
Via email



2

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4

3 FIGHTING BACK
In Yellowstone National Park, river otters like to tease coyotes by leaping in and out of the water – a dangerous game. But this little guy dramatically turned the tables on his would-be predator!
Max Waugh
Via email

4 TOAD TIME
My friend lives down a long lane, through woodland and past some lovely swamps – perfect for common toads. I found these two mating in the middle of the road, and moved them to a safer place.
Ruth Papworth
Via email

5 LAVENDER LOVE
In June, our French holiday home was surrounded by lavender. The luscious flowers attracted this spectacular hummingbird hawkmoth. It didn't stay in one place for long, so I was pleased to get this picture.
Dave Sermon
West Midlands



5

Find out what happened next at www.discoverwildlife.com/galleries

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6



7



9

6 SCOTTISH STAR
On a family holiday to Mull, Scotland, I joined a boat trip on Loch na Keal in the hope of seeing a sea eagle fishing. After three hours, we were about to turn back when this stunning bird swooped by us, a fish in its talons. Talk about lucky!
Will Dawes
Whitley Bay



8

7 JUMPING JACK
In Botswana's Moremi Game Reserve we met a herd of blue wildebeest on the move. Most of the animals simply waded across a flooded track, but this one clearly did not want to get its hooves wet and launched itself over the water.
Jean Kreiseler
Via email

8 MY BEST SIDE?
The water vole is one of our most endangered mammals, and also one of the cutest – very useful when it comes to grabbing attention. This cheeky chap in the New Forest Wildlife Park, Southampton, was no exception, flashing me a toothy grin.
Peter Cooper
Romsey

9 CLOSE ENOUGH
I took this photo in Shark Alley, just off the coast of Gansbaai, South Africa. I leaned as far as I dared over the side of the boat to get the shot. It was the first time I had seen a great white shark in the wild, but I promised myself it would not be the last.
Andrew G Davis
Edinburgh

PHOTO CONTEST COASTAL WILDLIFE The editor's pick from August's online challenge



CONCENTRATION by Tejas Soni



BABY GREEN TURTLE by Alastair Marsh



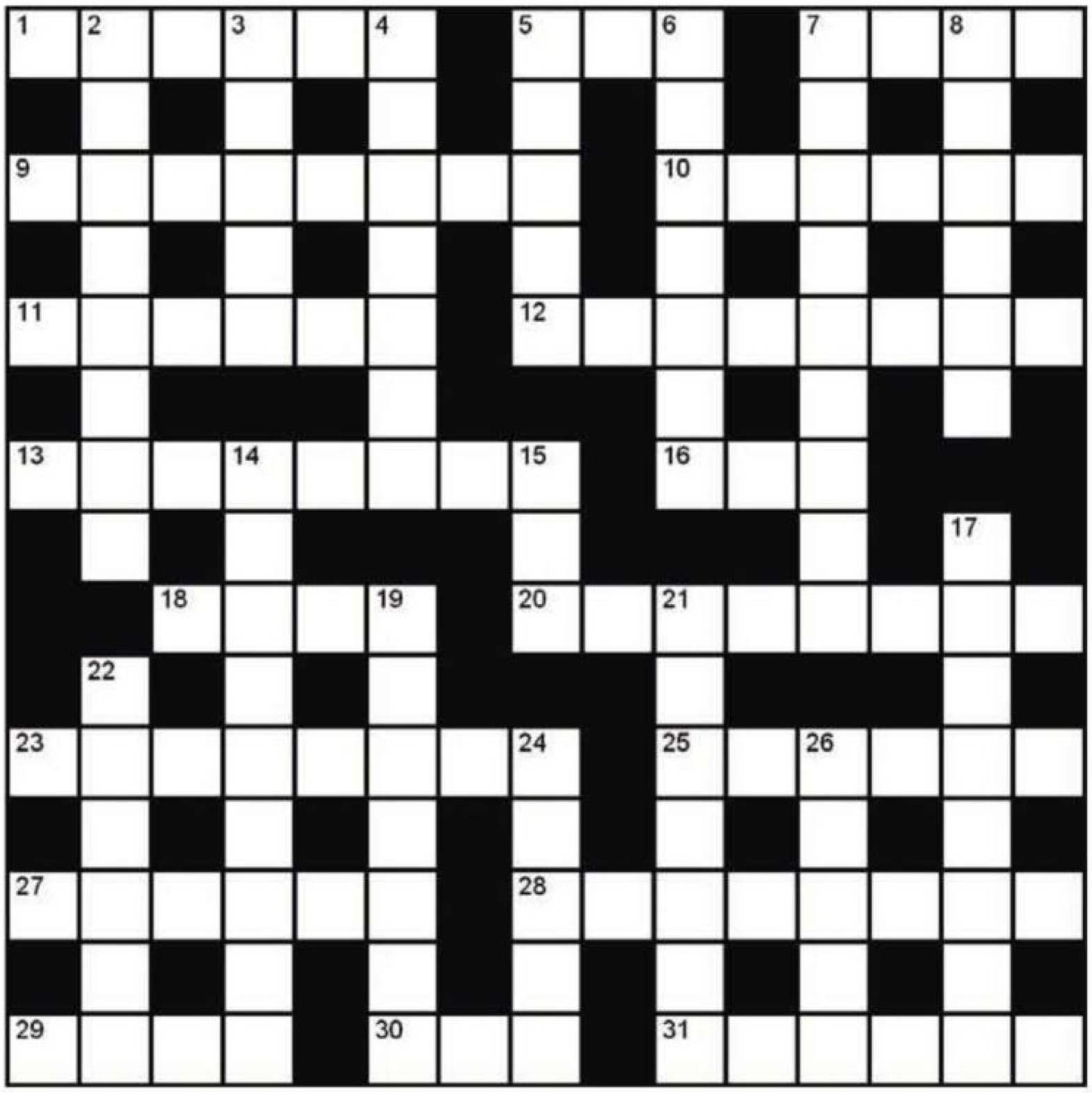
MINKE WHALE by Tom Kelly

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crossword

compiled by **EDDIE JAMES**



ACROSS

1 Long-necked wading birds, sacred in ancient Egypt (6)

5 Liquid circulating in plants (3)

7 Accustom a young mammal to solid food (4)

9 Horned mammal, called caribou in North America (8)

10/29 Large mammal seen rutting on Powerstock Common, Dorset, in autumn (6, 4)

11 Bird of the order Psittaciformes (6)

12 Alternative (but misleading) name for a termite (5, 3)

13 S-shaped species evolved from a pipefish (8)

16 Fast-moving whale, swims on its side to feed (3)

18 The goliath _____ weighs up to 3.3kg (4)

20 New Zealand's smallest bird: wren-sized, coloured like a former British armed soldier's uniform (8)

23 Common but erroneous name for a semi-aquatic vole of northern and eastern Europe (5, 3)

25 A flower's sweet offering to pollinators (6)

27 'Female' reproductive part of a flower (6)

28 Colourful bird seen on the soda lakes of Kenya (8)

29 See 10 across

30 The onager is the Asian wild species of ____ (3)

31 Cured herring (6)

DOWN

2 Insectivorous bird related to the kingfisher, found mostly in Africa (3-5)

3 Dolphin's system of audible 'clicks' (5)

4 An animal sanctuary offers _____ to wildlife (7)

5 The world's lightest mammal is the Etruscan _____ (5)

6 Colourful-beaked birds associated with Lundy (7)

7 'Glutton' – subarctic member of the weasel family (9)

8 Fruits of oak trees (6)

14 Common name for a type of ant, butterfly or 'spider' (9)

15/24 Distinguishing features of a red squirrel (3, 5)

17 Marshland area of France, famous for its wild horses and [28 across] (8)

19 The two endangered species of _____ are the largest of the apes (7)

21 Alternative name for the second-longest whale (7)

22 Organisms that live in the sea are _____ (anagram of 'airmen') (6)

24 See 15 down

26 Colloquial name for the smaller of the African great apes (5)

▶ *Answers will appear in our October issue.*

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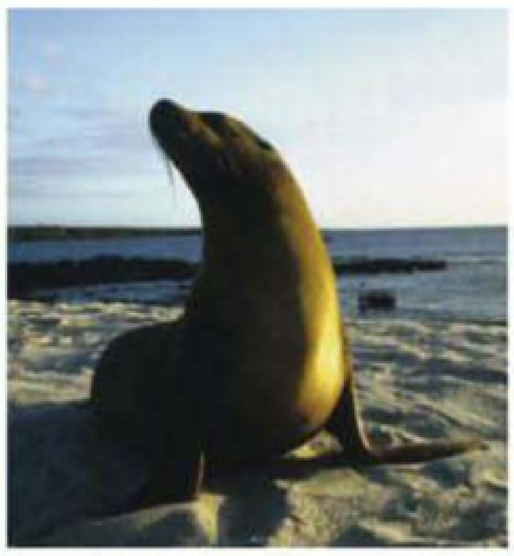


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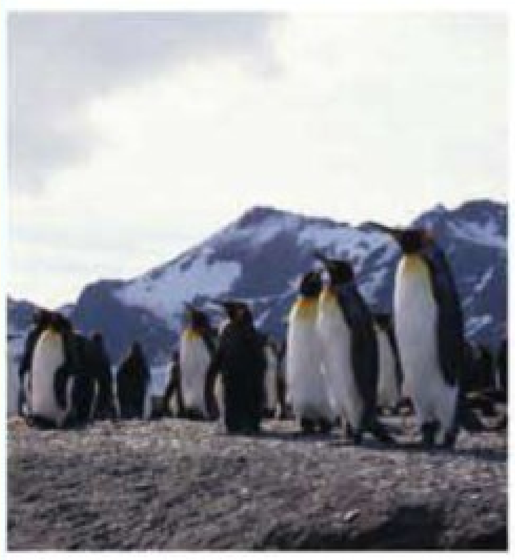
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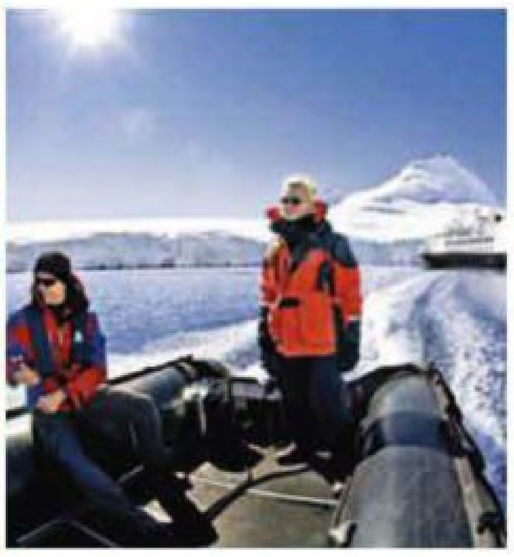
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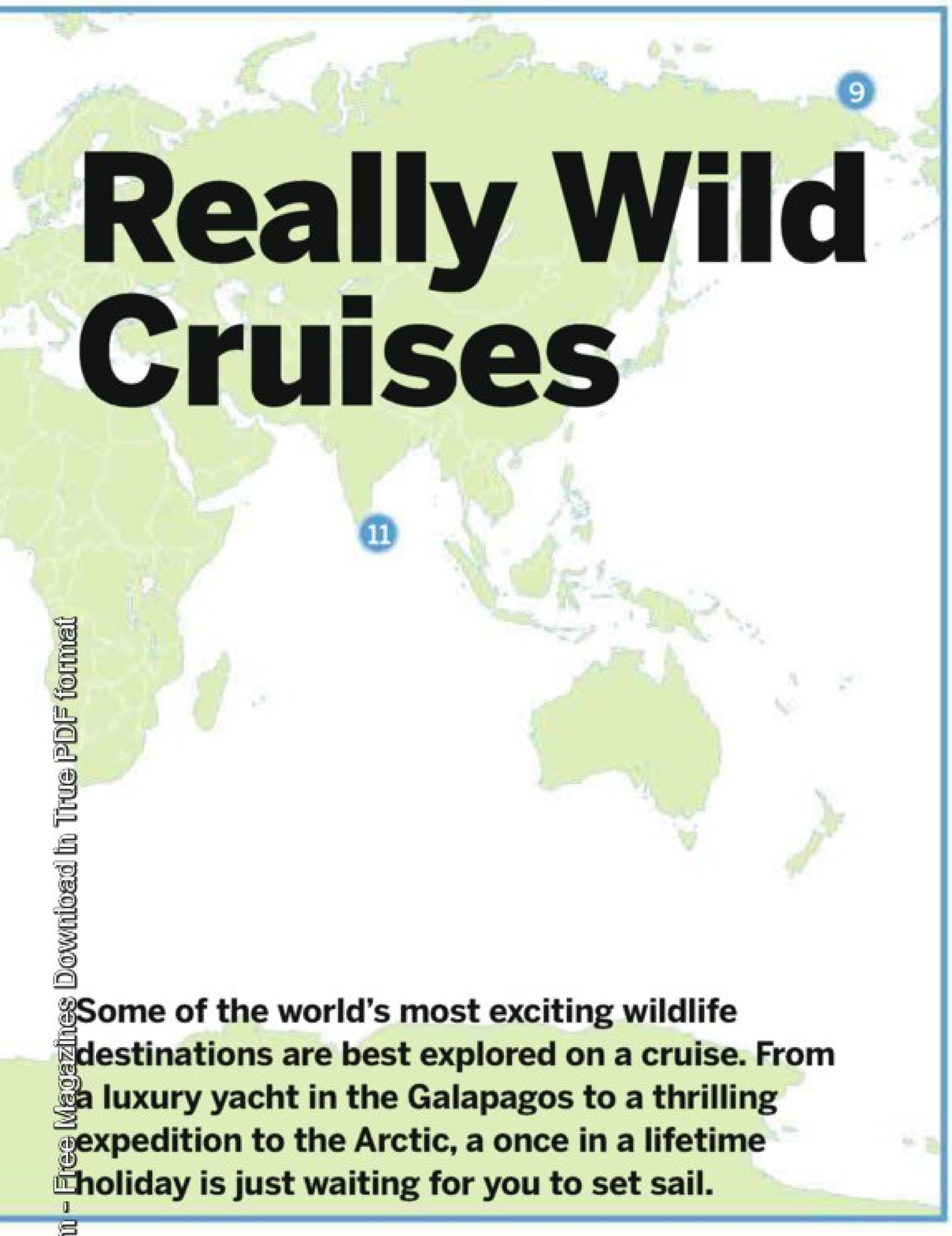


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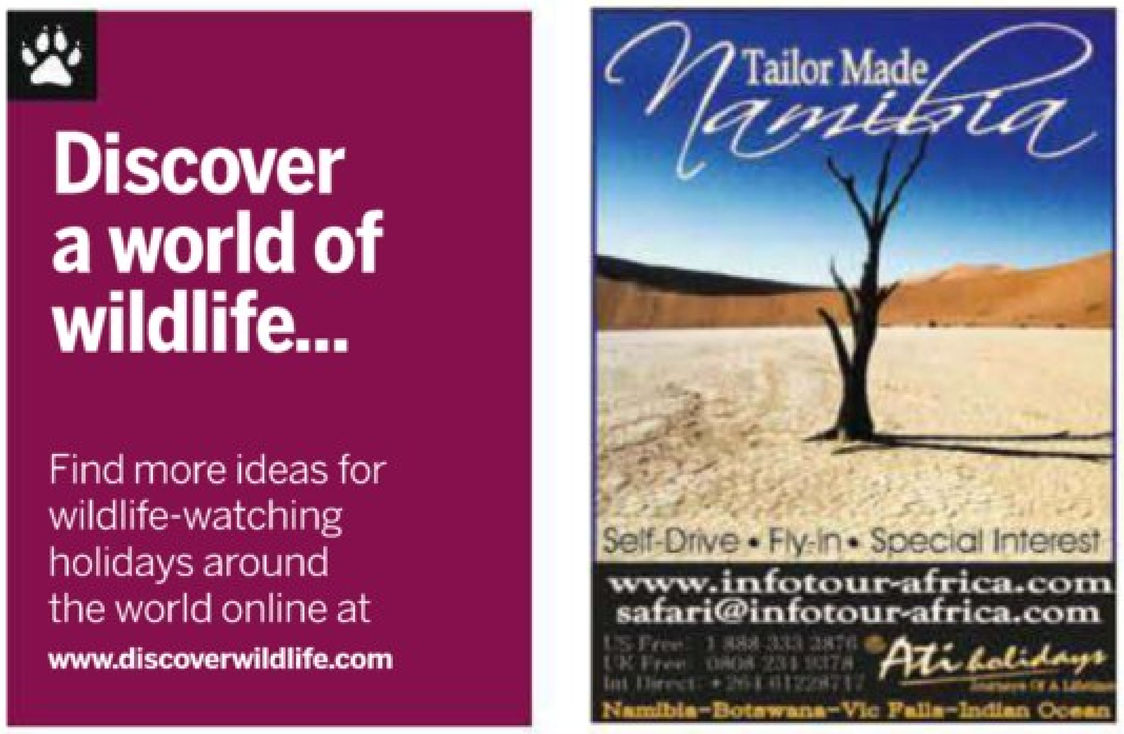
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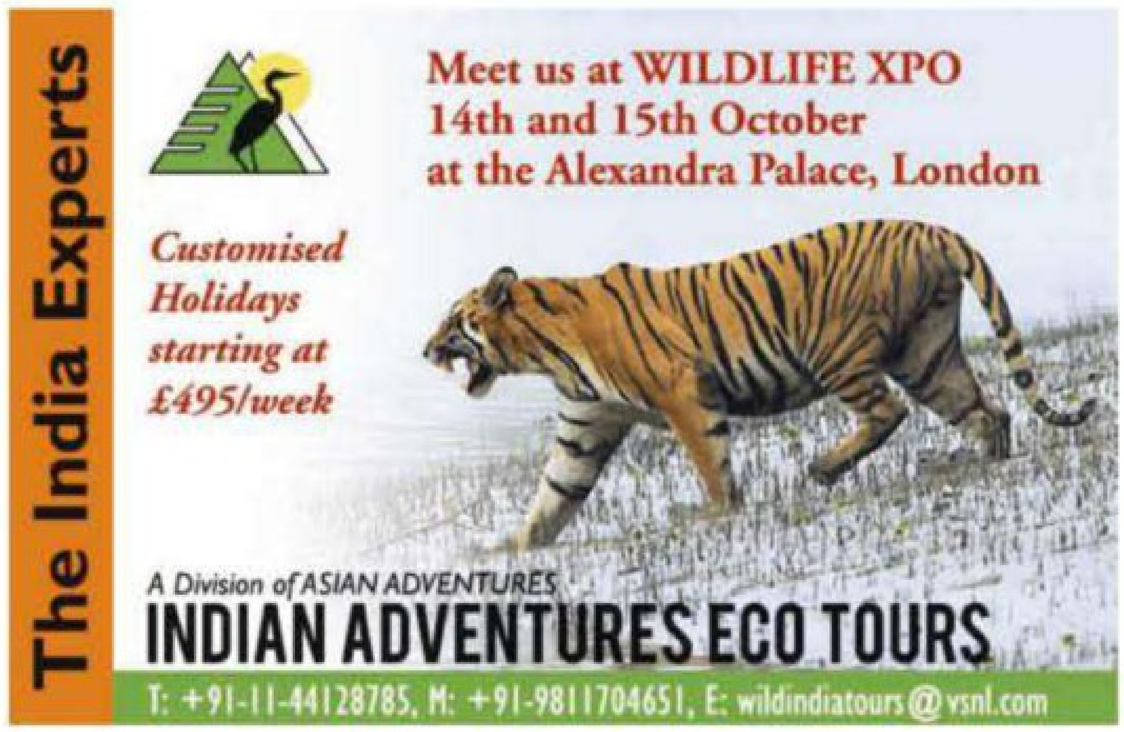
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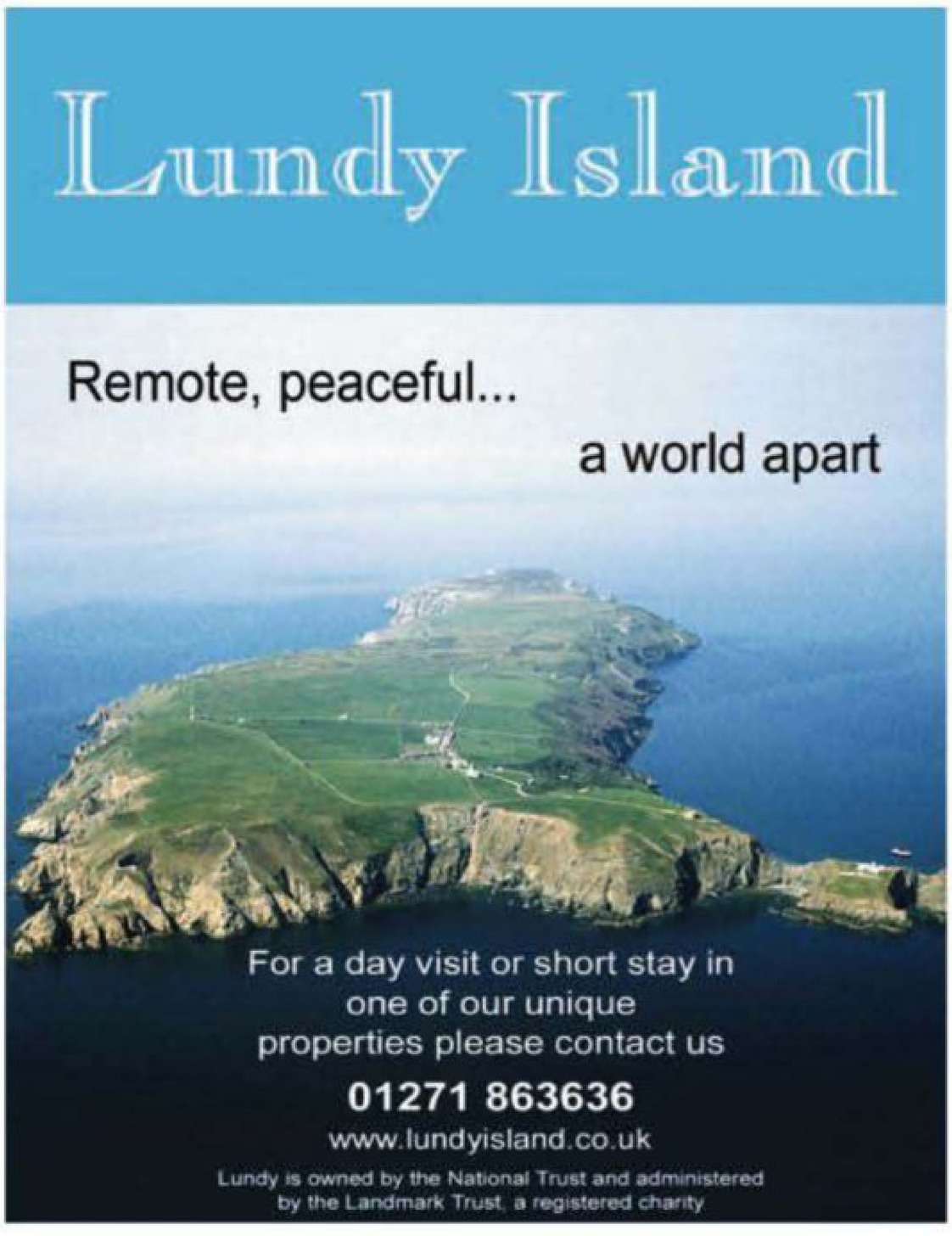
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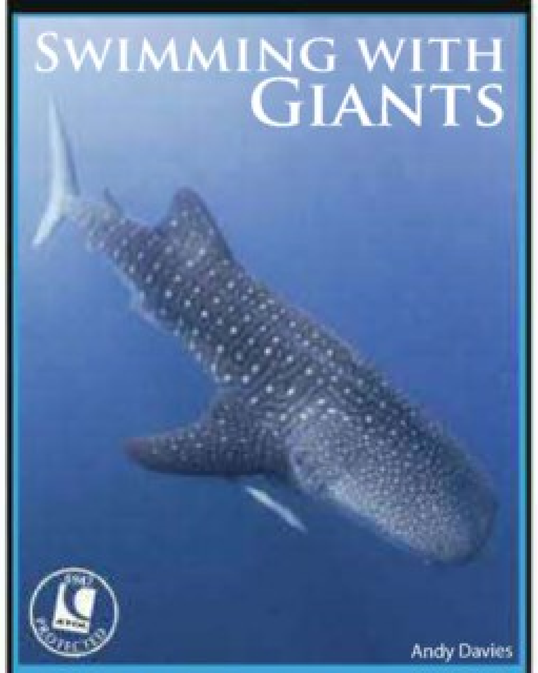
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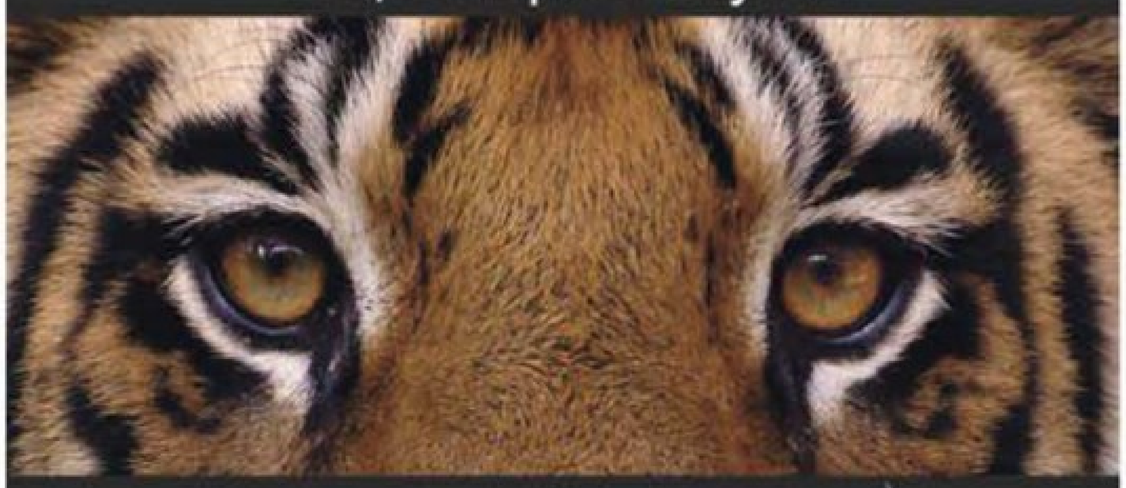
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David is famous for paintings such as *The Tigers of Bandhavgarh*.

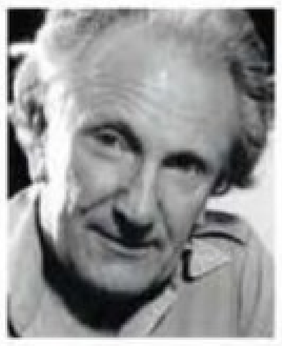
MY WILD LIFE

Wildlife artist DAVID SHEPHERD talks about his love of Africa, meeting Neil Armstrong and what he *really* loves to paint.

People ask me: "What would you like to be remembered by?" "Well," I say, "I don't want to be remembered for an elephant painting. I *have* done other things."

I was obsessed with being a game warden in Africa, simply because of books I had read. I'd never been anywhere – I'd never even been to France. So I chuntered out to Kenya, at enormous expense to my father, and when I arrived in Nairobi I knocked on the door of the head warden and asked, "Can I be a game warden?" He said, "No" – and that was the end of my life.

On the strength of my first oil painting, I was thrown out of art college. I'd done one painting at school, and that was merely to avoid playing rugger, because I was a weedy little boy who didn't want to get his neck broken.



DAVID SHEPHERD is one of the world's most successful wildlife artists. Born in 1931, he founded the David Shepherd Wildlife Foundation in 1984. Its work is partly funded through the sale of his paintings.

I've had people on the footplate, and it's changed their lives.

In 1960, my wife and I visited the Serengeti. One day the sky was black with vultures, and we found a water hole into which a poacher had poured battery acid. There were more than 200 zebras lying dead on the ground – a huge herd – and every one had drunk battery acid. When you see something like that, you never forget it.

The foundation has a very loyal following, but we're not well known because we don't place adverts in the *Daily Telegraph*. The money for an advert can pay for an anti-poaching team.

There's one man who can cure all the problems in the world and he lives in the Vatican. To go to Africa and to not promote birth control is monstrous.

man-made, but you can't build another tiger – so pull your bloody thumb out and stop the poaching."

Last time I flew into the Masai Mara, I saw 37 Land Rovers in a row. Now, that is not eco-tourism.

In South Africa, poachers shoot black rhinos from helicopters. I never believed I would hear that. It costs £30,000 an hour to hire a helicopter, but it's still economically worthwhile for them if they shoot even one rhino.

Alzheimer's. Oh God, I hope not.

I met Neil Armstrong just after he'd returned from the moon. My host tapped him on the shoulder and said, "I'd like you to meet David Shepherd. He's a conservationist." Neil had no idea who I was but he said, "Great to meet you, David. I'm a conservationist, too – you have to be, when you've been to the moon and back."

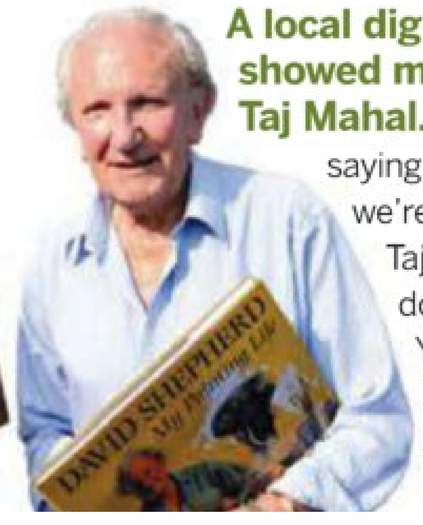
I was on *This is Your Life* with Michael Aspel. When we'd finished recording, I heard one lady say to another, "You know, Doris, I love this programme, but that one was bloody boring. I still don't know who the hell he was."

Interview by James Fair

My favourite subject to paint? Steam engines. It's the emotion. They talk to you. If I gave you a ride on one, you'd see the point straight away.



After being rejected by art college, David succeeded as a painter of aircraft, steam engines – and wildlife.



A local dignitary showed me round the Taj Mahal. He kept saying, "It's terrible – we're losing the Taj." I replied: "It doesn't matter. You can build another one, because it's

From top: davidshepherd.com; Rex Features; Jack Boskett/Alamy

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John Greenslade, Byways Farm, Devon





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