Wildlife World

people's trust for endangered species

AUTUMN 2017
ISSUE 12

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Overseas

Cambodian crocodiles

Irrawaddy river dolphins

Orangutans

Ocean action

Our vital work to protect marine animals and habitats

UK

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Pine marten genetics

Water voles

Red squirrel disease

Hares and rabbits
Familar rabbits, elusive mountain hares and mad-eyed brown hares – we're helping all of Britain's lagomorphs

The noisy dark
The way we survey and study bats is changing fast. Discover how you can be part of a monitoring revolution

Riverford tales
Read our exclusive Frontline by conservationist and founder of Riverford Organic Farmers, Guy Watson

Bringing the wild back to life

Wildlife World is published by People's Trust for Endangered Species

Our wildlife is disappearing. Almost two thirds of species in the UK have declined in the past 50 years. There's nothing natural or inevitable about this. It can be stopped. And everyone can play a part. That's why People's Trust for Endangered Species exists.

Find out more
www.ptes.org

RED SQUIRRELS
Red squirrels are fighting a life and death battle against the steady encroachment of their grey cousins. Fortunately Scotland remains, at least partially, a red stronghold. To bolster the resilience of reds there, we're funding Trees for Life to re-establish populations away from the frontline threat of greys, in areas of suitable habitat in north-west Scotland.

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In this edition

© Marie Louis

© Flora and Fauna International

© Iain Green www.wildwonder.co.uk

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Welcome


© Dave Willis

Science is humanity's best attempt at understanding the world. No one can claim that all our information is correct, which is why it's important to keep gathering more and better data that will help us make connections and predictions. Many of those predictions make uncomfortable reading – climate change, species extinction, ecological breakdown. But it's important to remember that the same insights can also point to solutions. And when the solutions are known, it's important to shout about them! We *know* conservation works, and every success we see gives us a huge boost.

When it comes to the projects funded by PTES, every step of progress is due, ultimately, to our supporters, and I hope you will enjoy reading here about the many ways you're making a difference. ●

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people's trust for endangered species

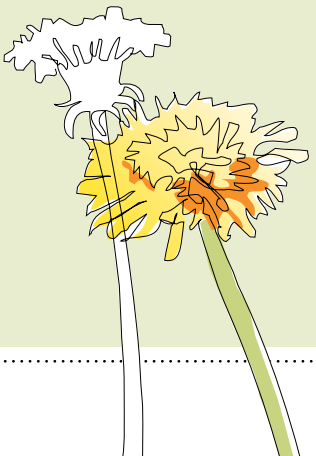
PTES PEOPLE

Every year we invite our supporters to become citizen scientists and help us gather data about British mammals. Thousands rise to the challenge, including **Ursula Gregory**, who has contributed to *Living With Mammals* every year so far – a unique acheivement!

I was very surprised to hear I'd been contributing to *Living with Mammals* for 14 years. I wouldn't call myself a scientist, though I did study science at university before going on to do other things. I wouldn't even say that I'm particularly outdoorsy. In fact my main qualification for contributing is probably just that we have a good-sized back garden, by London standards, and I can watch for mammals there from my kitchen. For us, 'mammals' really means foxes and grey squirrels. We don't encourage the latter, though they keep finding ways to help themselves from our bird feeders. The foxes are welcome though, and we do sometimes feed them scraps because we'd rather see them healthy. They dispose of food waste that can't be composted. It's been interesting over the years to see how the numbers change. Some years there are hardly any, but so far they've always bounced back.

I think I first heard about the survey though a PTES mailing. It's easy to take part – we don't set aside time to watch, just sit down once a a week and review what we can remember seeing. I sometimes tell my friends about it, and hopefully I've encouraged a few of them to join in! ●

I wouldn't say I'm a scientist, or even very out-doorsy, but PTES surveys are easy to do from home



Find out more about our surveys
www.ptes.org/surveys

PTES LOVES

LINESCAPES

Hugh Warwick
£16.99 (hardback)
Hedgehog ambassador and long-standing friend of PTES, Hugh Warwick, examines the ways man-made features such as roads, railways, hedgerows and canals connect and fragment our lives and landscape.

BRITAIN'S SPIDERS

Lawrence Bee, Geoff Oxford & Helen Smith
RRP £17.95 (flexi cover)
This authoritative new photo guide, catalogues Britain's spiders in fabulous detail. An unrivalled resource for amateur and professional naturalists.

REWILD

Nick Baker
RRP £16.99 (hardback)
A wonderfully accessible exploration of the science and psychology of our precious connection with nature.

In the mind and in the soil

Guy Watson of Riverford Organic Farmers considers the conservation lessons learned after 30 years of working with nature, rather than controlling it.

It takes two years to convert a farm to organic production and get the relevant certification. When I took the leap, thirty years ago, I was told this was the time it took for the soil and the head to adapt. In reality, the head took longer; organic farming goes well beyond turning one's back on agro-chemicals. Conventional farmers draw pride and satisfaction from rows of uniform, dark green crops stretching into the distance in a lush monoculture, preferably without a bug or weed in sight. The control they exert over nature to impose such uniformity is a mark of their skill and power. It takes time to accept, and even longer to celebrate, the fact that such tidiness is neither sustainable or desirable. By contrast, organic farms tend to be a bit of a mess – or highly diverse and ecologically rich depending on your mind-set.

Organic farming is often defined as farming without synthetic fertilisers and pesticides. Though broadly true, I much prefer to describe it as farming in partnership and sympathy with nature. So much of intensive farming is about replacing ecological complexity with something much more simple. Any ecologist will know that it takes a lot of inputs; normally fuel, machinery and chemicals to maintain the instability of a monoculture; nature tends so strongly towards diversity that a farmer must constantly intervene to maintain a simplified system. To my frustration, organic farmers are often characterised as Luddite or anti-science, when nothing could be further from the truth. I embrace any technology that allows food to be produced with less cost to customers and the planet, provided the consequences have been thought through. Not all progress can be found in a chemical container and I would maintain that those rejecting the benefits of diversity are far less scientific than those looking to embrace complexity in their farming systems by, for example, including new crop rotations, mixed cropping, more crop diversity, allowing marginal field corners and boggy areas to re-wild, mixing livestock with arable systems or perhaps pursuing the ultimate goals of agro-forestry and permaculture.

© Riverford

The best organic farmers actively encourage diversity, welcome some weeds and pests and devote much of their time to mantaining the balance

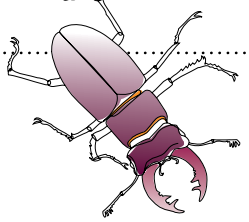
The best organic farmers encourage diversity, welcome some weeds and pests and devote much of their time to managing the balance. In our greenhouses we even encourage aphids with non-crop plants in order to maintain a population of parasitic wasps and predatory ladybirds, lacewings and hoverflies. Our picking staff are welly-wearing entomologists, constantly monitoring population balance and occasionally introducing cultured predators and parasites when needed. The interventions are subtle and require observation and constant learning; far more scientific than obliterating every insect, good and bad, with nerve toxins.

Outside, once a crop is established, we are happy to see some weeds, especially later in the season when they provide winter ground cover. Our fields are relatively small and surrounded by glorious Devon banks that shelter and support vital predatory insects. Occasionally the restrictions and added cost of small field size can be frustrating, but they bring many benefits and contribute hugely to wildlife value.

It's not perfect; we do sometimes lose crops but every year we get better at managing our field ecology and soil life. Our soils are so diverse and rich in bacteria, fungi and invertebrates that we almost never see significant slug damage; slug populations are controlled by beetles, nematodes and probably a host of other, as yet poorly understood, stabilising ecological relationships.

Learning from nature has made me a better farmer and a better human being. Power corrupts, and the power granted by fossil fuels and agro-chemicals has been applied with an arrogance and ignorance in our industry, wreaking havoc on our planet. It is time for a more humble, wise and scientific approach. ●

Guy Watson is an organic farmer and ethical business specialist and founder of Riverford Organic Farmers.



Amy-Jane Beer reviews some of the big recent news stories for PTES and the wider field of conservation. A lot happens in six months, but you can also find the latest at **www.ptes.org**

Missing lynx

New plan to return lynx to the wild in Britain after an absence of more than 1000 years.

© Shutterstock.com/ annaliphotography

Plans for a five-year, trial reintroduction of Eurasian lynx to a Northumberland forest are awaiting a response from Natural England. The Lynx UK Trust proposal involves releasing six to ten Swedish animals to Kielder Forest, where they'd be monitored by satellite collars. Project adviser Dr Paul O'Donoghue said the scheme 'marks a significant milestone in the history of UK conservation; potentially the first return of an extinct predator, which could prove to be a keystone species for our ecosystem'. The plan faces opposition from some residents and sheep farmers, and claims from other conservationists that consultation to address local concerns has not been adequate. ●

Beetle mania

Results of the 2017 *Great Stag Hunt* are in, and PTES has a new celebrity benefactor, Spike the artistic beetle.

We've received an amazing 8000 stag beetle records this year. Thank you to everyone who told us about their stag beetle encounter (there is still time to tell us if you've seen a beetle or unearthed a larva here www.ptes.org/gsh). Stag beetles only live for a few weeks as adults and don't survive over winter. But you can help stag beetles (and other insects) by building a log pile or leaving a wild corner in your garden. Please visit our website for more details www.ptes.org/stagbeetles.

© Mandy Bryant

Meanwhile, 'Young Insect Artist' Spike has been taking the internet by storm, with over 68,000 followers on Twitter. Spike came to live with owner Mandy Bryant in January and soon showed a willingness to carry all kinds of objects in his huge mandibles. One day he 'picked up' a pen, and the rest is history. Mandy thinks of Spike as an ambassador for insects as well as a very effective fundraiser. Spike's unique and original miniature canvases are selling at auction, and 20% of the proceeds come to PTES. Thank you Spike. Fans with a smaller budget can purchase pin badges of T-shirts on Spike's own website, www.spikethebeetle.com. ●

More tough times for saiga antelope

New threat as livestock disease hits important herds in Mongolia.

© Shutterstock.com / Vladimir Sevrinovsky

Less than two years after a bacterial infection killed almost half the world saiga population in Kazakhstan, another disease has claimed a severe toll on the smaller herds of Mongolia. The majority of deaths, amounting to more than a quarter of the Mongolian population, happened in January, and have been attributed to a condition known as goat plague, or PPR. It seems likely that the saigas picked it up from livestock that grazed on the steppe where they live. After a particularly tough winter, the herd were in no condition to fight off another assault. Dr Richard Kock, of the Royal Veterinary College of London, highlighted the risk, saying, 'Once you're down to very low numbers, a species is vulnerable to extinction. You have to wake up to the fact that these populations really are on the brink.' ●

Bad news for badgers

Unscientific culling of badgers expands in England, with plans to more than triple the number killed.

© Ben Andrew

The government's widely criticised attempt to control the spread of bovine tuberculosis (bTB) by culling badgers has resumed, with 11 new areas in Devon, Wiltshire, Somerset, Dorset and Cheshire added to the cull zone and plans to shoot up to 33,500 animals. Badgers are a protected species, whose numbers have increased in recent decades from dangerously low levels in the 1970s and 80s. Wildlife and animal welfare organisations, and former members of the government's own (now disbanded) independent expert group have united in condemning the cull as inhumane and ineffective, and extensive disruption is expected. The government and National Union of Farmers claim the cull is an essential part of a suite of measures aimed at tackling the disease in cattle, but opponents point to evidence that the killing will have little effect and may make things worse as stressed animals attempt to disperse. Meanwhile, there's increasing evidence that programmes of badger vaccination, improved farm biosecurity, tighter controls on cattle movement and more intensive TB testing may offer a way forward without the need to reduce badger numbers at all. ●

A busy summer of hedgehog work

The plight of hedgehogs is one of our highest priotities at PTES and we're acting on several fronts.

© Royal Parks

Great news for hedgehogs as Transport Minister Chris Grayling takes over from ex-MP Oliver Colvile as the official Hedgehog Species Champion at Westminster. The Species Champions Project encourages MPs to raise awareness of their chosen species and address the causes of their decline, both in Parliament and in their constituencies. With our partners the British Hedgehog Preservation Society, we're finding out why hedgehogs are declining.

Meanwhile, our friends at the Royal Parks have completed a fourth year of surveying in Regent's Park, London, home to a small and extremely vulnerable isolated population of hedgehogs. The survey relies on hundreds of dedicated nocturnal volunteers, support from London Zoo, and expert guidance from Dr Nigel Reeve and Prof John Gurnell. This year the project was visited by TV naturalist Steve Backshall, pictured above with Clare Bowen, Director of Development and Learning. 'We use our hedgehog data to adjust our management' says Clare. 'We've defragmented certain grassy areas by creating holes in fencing and railings and we've put out 50 nestboxes which we are monitoring regularly. Essentially, we are trying to 'Think Hedgehog''. ●

Wildlife 'Oscar' for sungazer champion

Prestigious award for South African sungazer champion Ian Little.

We've supported Ian and his colleagues for several years in their efforts to turn around the fortunes of sungazer lizards, working closely with local farmers and tribal leaders. The new award, from the Whitley

© Shivan Parasnath

Fund for Nature, will allow Ian and his team to further champion the conservation of grasslands and the species that depend on them. They're busy building capacity and helping farmers transition to less intensive grazing practices and burning regimes, in order to reduce pressure on grassland habitats while maintaining and even boosting productivity. ●

Night delight

Incredibly rare parrot, previously thought extinct, rediscovered in South Australia.

© John Young

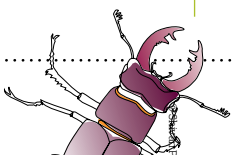
One of the world's rarest and most elusive birds has been confirmed in South Australia for the first time in 100 years. The sighting adds to the clutch of recent records in Queensland and Western Australia and expands the area in which the night parrot is now known to survive. The extreme elusiveness of the species makes attempts at estimating its precise status very difficult, but the population is unlikely to number more than a very few hundred and it undoutedly remains highly endangered. ●

DATES FOR YOUR DIARY:

23rd November and 8th December 2017
Starling Murmuration and Somerset Wildlife Spectacular

A day on the Somerset levels culminating in a chance to photograph the incredible million-strong starling roost. Suitable for those with an interest in wildlife and photography at any level.

Find out more
www.ptes.org/get-involved



Nelson's column

Counting on you

As another wildlife surveying season draws to a close, we have reasons for hope and concern.

Once again it's time to say thank you to the thousands of you who took part this year either recording individual species, such as dormice or water voles, or those in particular landscapes, such as gardens or roadsides. Together the findings paint a picture of the state of Britain's wildlife and, over time, we can spot when a natural blip becomes a long-term decline. For example, our *Living with Mammals* survey found that hedgehogs were in trouble in urban areas. Then *Mammals on Roads* revealed their decline in the wider countryside. We acted quickly, commissioning work with the British Hedgehog Preservation Society to investigate the causes and we've enlisted thousands to make their neighbourhoods hedgehog friendly.

Conserving Britain's wild mammals remains an absolute priority for us and recording wildlife is at the heart of our efforts. Without the combination of surveys and your support, we wouldn't be able to carry out some of our most important work. Fact finding doesn't always sound exciting, but without the facts we can't help the animals that need us most. Thank you for all your help and support. ●

Jill Nelson is the Chief Executive of People's Trust for Endangered Species.

Proud to be bunny huggers

Only one of the three species of lagomorph resident in the British Isles, mountain hares, are truly native, and their declining numbers are a real concern. The other two are unusual among introduced species in having achieved honorary native status. In the case of rabbits, this acceptance reflects their long history, their role in our landscape and their importance as prey, while European brown hares have secured a unique position in our national psyche as spirits of wildness and harbingers of spring. At PTES, we're helping all three species.

Brown hares and biofuel

Work we funded by **Phil Wheeler** (Open University) and **Silviu Petrovan** (University of Cambridge) into the impact of the biomass crop *Miscanthus* (Asian elephant grass) on brown hares was published in May this year and widely reported in the media. The research found that *Miscanthus* (which is harvested repeatedly from the same site for many years) can be beneficial to hares, as long as it's planted in small blocks. Hares use the dense, thickety growth for shelter but emerge to feed on other plants nearby, including cereals, grass and herbaceous species. In large blocks, however, elephant grass may have an adverse effect, forcing hares to use much larger home ranges. ●

England's last mountain hares

© iStockphoto.com / MikeLane45

Carl Bedson is deploying a range of techniques to study England's only mountain hares, which face threats from road traffic, hunting, persecution, climate change, genetic depression and competition from brown hares. Carl intends to improve on previous population estimates by using a combination of line transect surveys, remote camera traps and drone surveys. He'll also be gathering genetic material from dung samples and carcasses. These data will be used in models to predict likely population responses to changes in land-use, levels of persecution, interactions with brown hares, and climate change. ●

North of the border

Graham Pettigrew is addressing the shortage of mountain hare data in Scotland, where they are often culled and numbers are thought to be declining. Graham is using several methods including thermal imaging to generate a reliable independent estimate of mountain hare numbers in the Lammermuir Hills. Using information from grouse estates about the timing, number and location of culls, Graham will compare the short and longer term effects of culling over at least three years. The results will inform the debate on the environmental and biodiversity implications of moorland management practices. ●

© iStockphoto.com / DamianKuzak

Counting on you

It's important that we record common species as well as rare ones, because data like these are essential in assessing overall ecosystem condition and in flagging up trends that might be of concern. So please don't forget to count rabbits when you take part in *Mammals on Roads* and *Living with Mammals* surveys, even if they are two a penny! Join in at www.ptes.org/surveys ●

Scrapbook

We love hearing from PTES people, be they supporters or conservationists we fund. Pictures, reports, emails, web posts and letters give a great sense of your passion for wildlife, so please keep them coming!

Dormouse conservationists of the world unite

Every three years, dormouse researchers and enthusiasts from around the world gather to share their results and ideas. This year the event took place in the Belgian city of Liege. As always it was a delight to take part.

We also had the pleasure of welcoming Japanese dormouse expert Prof Shusaku Minato to London last summer. Shusaku, picture above with Nida, our Grants Manager and a giant dormouse, is visiting the UK to conduct his own research and see how we manage dormouse monitoring on a national scale in Britain.

New Hedgehog Officer

In June we bade a fond farewell to Henry Johnson as he embarked on a new career in teaching. We're delighted to introduce Emily Wilson who has replaced Henry as our Hedgehog Officer.

Wilder-Nessie!

We loved this entry to the wildlife-themed schools' scarecrow competition at the RHS Hampton Court Flower Show. Wilder-Nessie had a pond in her head, a bat cave, lots of wildlife friendly plants and food for the local birds to eat and was decorated with the logos of wildife-friendly organisations including PTES. Well done Southhill Lower Gardening Club.

The art of support

A huge thank you to Ariadna Dane, for her generous donation of proceeds from her first art exhibition. You can view her work at www.ariadnadane.com

Beavers, bed & breakfast

Percy's Country Hotel & Restaurant in West Devon is an award-winning rural retreat. In addition to a host of wonderful wildlife on the organically farmed estate, the valley is home to something really special – a family of wild beavers, which can be seen at dawn and dusk. For an exclusive discount on a Devon Beaver Break, use the code PTES2 for £25 off the room rate for 2 nights or PTES3 for £50 off a 3-night stay. Visit www.percys.co.uk to find out more.

Alfie the hedgehog was the star attraction at our recent event at Battersea Park Children's Zoo.

© Battersea Park Children's Zoo

/PTES

Favourites from Twitter

Educational and fun Hedgehog day at @battersea_zoo. Thank you @PTES & Alfie!

Shiny new interns

We recently awarded two new internships to promising young conservationists working on priority species. **Alice Master** of Liverpool John Moores University is developing a DNA assay that will allow field-based identification of items suspected to contain illegally traded wildlife derivatives, specifically tiger parts. Meanwhile, closer to home, **Fiona Bell** is working with Butterfly Conservation preparing a report on the 2017 status of Lulworth skipper butterflies. We'll be bringing you news of their work soon.

Meet the team

Our 18 dedicated members of staff have a diverse range of jobs. Zoe designs our many communications, including *Wildlife World*, and Jackie is one of our charity shop managers.

Zoe Roden Design and Communications Officer

After spending years explaining a degree in Zoology doesn't necessarily mean I'd work in a zoo, my first job after graduating was at... London Zoo. After a couple of exciting years there, feeding lions and marvelling at tarantulas, I moved to PTES where I've been happily transforming the look and feel of our publications ever since. I design and help edit everything we produce, from this magazine to the tote bags in our Christmas catalogue. There are lots of different technical elements to my job but my aim's always the same; to create something that inspires you to be as excited about conservation and the natural world as I am. I enjoy hearing feedback from our amazing supporters so, if you have any comments or suggestions on how we can improve, please let me know.

Jackie Holton Shop Manager

My association with PTES started when some friends and I opened a 'pop-up' shop in Maidenhead in March 2015. We only expected to trade for a couple of months, but have now been operating for over two years. I began as one of the volunteers and became joint Manager at the end of 2016. I've always loved wildlife and enjoy talking to customers about how they can make their gardens hedgehog and stag beetle friendly, and alerting them when we make an appearance on television! Every day is different because we never know what the next bag of donations will bring. I also sell lots of donated items on the PTES eBay site, and gain great satisfaction from every pound we raise!

Magical moths at Briddlesford

Briddlesford is a great site for moths, with species such as the handsome red underwing (above) and the strange but beautiful twenty plume moth (below) among the local specialities. Moth watchers accumulated an impressive haul at our Moth Night in May. Seventy species were recorded in all, including a tortix and an excellent count of 58 great prominents.

Building a beetle

Aidan Kemp-Harper really impressed us with his life-like stag beetle model, which he built at school. Aidan, 12, told us, 'I enjoyed the project because I had never attempted to create anything similar to a stag beetle and it has an unusual shape. I used a 2D design progamme that input into a lazer cutter then added detail with a white pen. I've now learnt loads about stag beetles. I think they're facinating and I especially like their antlers. Just because they're small doesn't make them insignificant. I will be looking out for them now'. Wise words Aidan!

f/ptes.org

Favourites from Facebook

Saved by Olivia from our kitten in the garden. 5cm male stag beetle. Logged on website and released behind our play house next to a little pile of wood :) **Vanessa Mann**

My Hedgehog Champion drilling through engineering bricks. It took 90' to make hole. Our little close is now a hedgehog highway. **Catherine Verdier-Stott**

Publications

Latest publications from PTES projects

Fonturbel & Medel: *Frugivore-mediated selection in a habitat transformation scenario*; Nature Scientific Reports; March 2017; DOI: 10.1038/srep45371

Fonturbel et al: *Increased resource availability prevents the disruption of key ecological interactions in disturbed habitats*; Ecosphere 8(4); April 2017; Article e01768

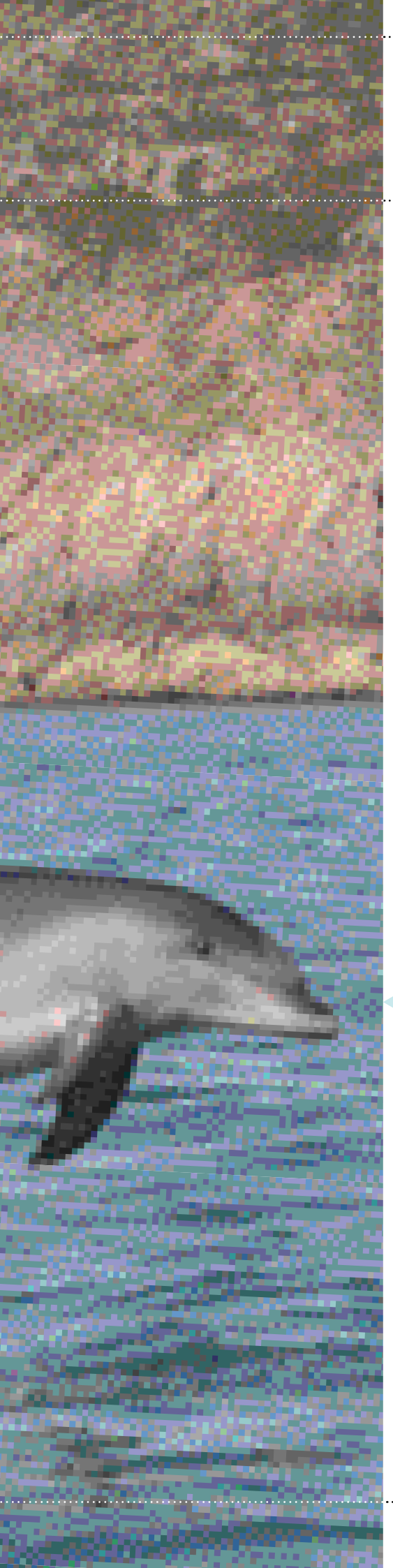
Koziarski et al: *Patterns and correlates of perceived conflict between humans and large carnivores in Northern Tanzania*; Biological Conservation 199; 2017 pp41-50

update

Troubled waters

Marine species are especially vulnerable to manmade threats because their declines often go unnoticed for too long. We're changing that with a variety of projects around the world.

© Marie Louis

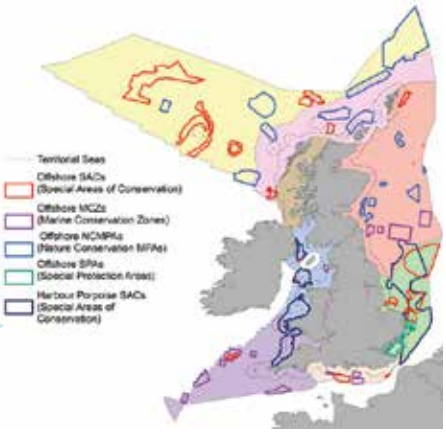


Atlantic bottlenose dolphins

As an island nation, Britain has a special responsibility for marine conservation, and the patchwork of Marine Protected Areas (MPAs) developing around our coasts is yielding local improvements in biodiversity and abundance. But is it enough? Levels of protection within MPAs vary widely and only a very tiny percentage of our territorial and offshore waters are designated 'no-take' zones. PTES is funding **Marie Louis** at the University of St Andrews, working with colleagues at University College Cork, to assess how well MPAs meet the habitat needs of iconic marine mammals, bottlenose dolphins. In particular, the team is interested in connectivity between populations. In a healthy system, dolphins from one area should be able to disperse freely, and interbreed with individuals from elsewhere. Crossbreeding is an important part of maintaining a healthy gene pool, so the team is looking at genetic relationships. The findings will be used to appraise the quality and connectivity of the habitat, and show how both can be improved.

LEFT: The acrobatic displays and cheerful expression of bottlenose dolphins make them extremely popular cetaceans to watch.

RIGHT: Charts of UK territorial waters are scattered with European Special Areas for Conservation (SACs) and Special Protection Areas (SPAs); English, Northern Irish and Welsh Marine Conservation Zones; Scottish Marine Protected Areas and a Manx Marine Nature Reserve.



© JNCC

Fact File

SPECIES NAME
Tursiops truncatus

COMMON NAME
Atlantic bottlenose dolphin

DISTINGUISHING FEATURES
2–4m long, body grey, paler on underside; tapered rostrum meets bulging forehead 'melon'; single blowhole

HABITS
Highly intelligent, active and social, typically live in groups of 10–30

LIFE HISTORY
Single young (very occasonally twins) born after 12 month gestation; weaned at 18 months, mature at 6–12 years, live 60 years or more

HABITAT & DISTRIBUTION
Temperate and tropical areas of Atlantic Ocean and adjoining seas

CONSERVATION STATUS
Not globally endangered, but British populations are small and face threats including distubrance, pollution and overfishing of prey

Mantas and mobulas

There are eleven species of large ray in the family *Mobulidae*, which includes two species of manta and nine mobulas, or devil rays. Rays are relatives of sharks, characterised by cartilaginous skeletons and flattened body shape, with muscular wings that enable them to 'fly' underwater. Like sharks, rays take oxygen from water flowing over their gills, and must keep swimming to maintain this flow. The gill plates serve a second important function, as filters for food, including small fish, crustaceans and a wide variety of plankton. Unfortunately for the rays, their gill plates are an increasingly commercial product used in Chinese traditional medicine.

At a recent meeting of CITES nations, delegates voted to give mobula rays equal protection to mantas, placing them on Appendix II, which means that countries trading them must prove that the trade is sustainable and not detrimental to the species' survival. However the problem remains that once cut and dried, gill plates from different species of ray look very much alike, so it's relatively easy to trade illegal products by passing them off as something else. We're funding PhD student **Jane Hosegood** to develop the genetic tools needed to identify ray tissues to species.

Jane's approach is to take tissue samples from individuals of known species and sequence short fragments of the DNA that they contain, ultimately building a genetic signature for each species and population, with which samples from unknown individuals or parts can be compared. When illegal body parts are seized in future, it'll be easier to determine which species and regions are most threatened, so that they can be protected. ●

Manta rays (below and above right) are beautifully named. The word 'manta' comes from the same root as mantle, meaning cloak. Mobulas (below right), on the other hand, are known, less appropriately, as 'devil rays'.

Spot the difference...

Manta and mobula rays are open water specialists with similar diamond-shaped bodies. As a rule, mobulas are smaller than mantas, and have shorter lower jaws, so that their mouths are set back under the head, while manta mouths open at the front.

The head fins of mobula rays are flaps that furl into hornlike structures when not being used to guide food into the mouth. The cephalic fins of mantas are larger and more paddle-shaped, and create a food funnel as wide as the head. Both mantas and mobulas are capable of acrobatic leaps, but mobulas are much more wary of divers than mantas and thus more difficult to observe up close in the wild.

All ray images © Guy Stevens, Manta Trust

Indo-Pacific humpback dolphins

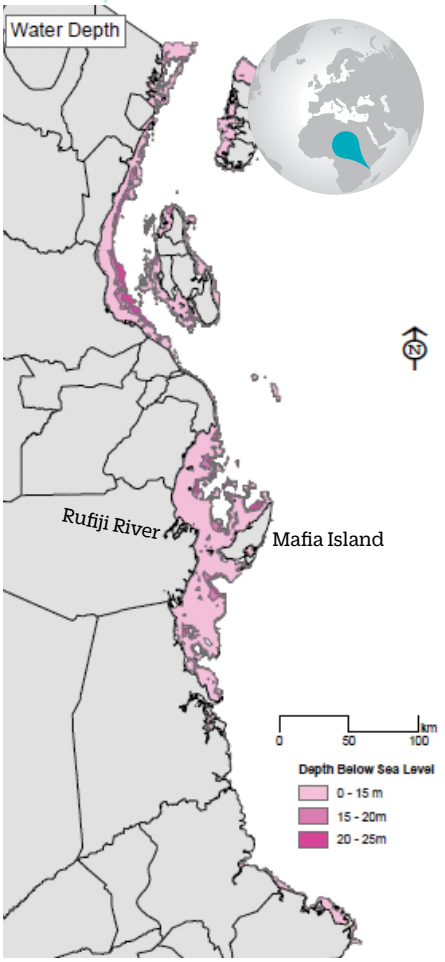
Humpback dolphins in the Indian and Pacific Oceans are the subject of ongoing genetic studies, which are likely to show that those living along the east coast of Africa are a distinct species, and one that is severely threatened by human impacts such as pollution and fishery operations. **Gill Braulik** of the Wildlife Conservation Society is leading research to confirm the local distribution, range and abundance of various species of cetacean off Tanzania. Her results provide the first detailed account of humpback dolphin distribution range and abundance for the area and will be vital in enacting the protection the population badly needs.

Much of the data comes from boat surveys carried out over more than 2500 kilometres of transects. Humpback dolphins were the second most commonly sighted of 11 cetacean species, behind spinner dolphins, but slightly ahead of Indo-Pacific bottlenose dolphins. It's clear that these three species are occupying quite distinct ranges, with spinners in deeper offshore waters, bottlenoses closer to land, and humpbacks in the very shallow nearshore zone. The humpbacks frequent water less than 25 metres deep, within 3km of the coast, including bays, lagoons, and areas of coral reef and mangrove. A Geographic Information System (GIS) model incorporating the survey data has been used to identify all areas of suitable habitat off Tanzania to target for protection. The most promising area is between the Rufiji Delta and Mafia Island. Interestingly, the records suggest a habitat gap from Rufiji to the border with Mozambique. If humpback dolphins avoid dispersing through this unsuitable zone, the result may be genetic isolation from the South African population and a further risk to the species' future.

ABOVE: An Indo-Pacific humpback dolphin. As a bonus, the project has recorded three other species for the first time in Tanzanian waters – long-beaked common dolphins, dwarf sperm whales and Blainville's beaked whales.

BELOW LEFT: There's still no real substitute for sharp-eyed observers when it comes to surveying dolphins.

BELOW: This map of the survey area off Tanzania shows the distribution of the humpback dolphins' preferred shallow in-shore water habitats. Habitat gaps may threaten the species' survival.



Fact File

SPECIES NAME
Sousa chinensis plumbea

COMMON NAME
Indo-Pacific humpback dolphin

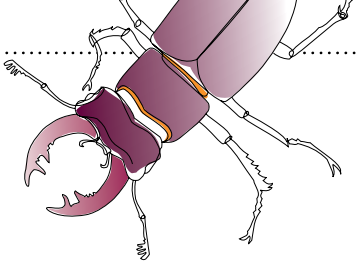
DISTINGUISHING FEATURES
Medium sized (2–2.8m) dolphin with pronounced hump of fatty tissue on the back. Body dark grey (Pacific subspecies is much paler), head with pointed rostrum and melon not unlike bottlenose dolphin

HABITS
Social, typically occurs in small schools. Vocal and moderately acrobatic, swims with typical 'porpoising' action, occasionally associates with other dolphin species. Diet comprises mainly fish and squid

LIFE HISTORY
Single calves born Jan–Aug, matures at 10 years, lives up to 40 years

HABITAT & DISTRIBUTION
Western Indian Ocean, along coasts of East Africa, Middle East and India

CONSERVATION STATUS
Near theatened, but may change to Vulnerable if full species status is given



Dead wood is dead important

It's the rotting wood in traditionally managed tree habitats that makes them so biodiverse. **Steve Oram** and **Megan Gimber** explain how we're using expertise from surveying traditional orchards in an ambitious new venture assessing the state of wood pastures and parklands in Britain.

The idea that wildlife could ever 'run out' is unlikely to have occurred to a 16th Century crofter planting a tree like the ones pictured here. But the legacy of this bygone way of life is a rare habitat, crucial to thousands of species including insects, fungi, bats, and hole-nesting animals and birds. It might be known as 'deadwood' but, in reality, it hums with life. Compared with fallen deadwood, which is wet and rots relatively fast, the deadwood inside a living tree is dry and can persist for decades. When sunlight reaches main branches and warms the wood, biodiversity value increases further still. Deadwood like this is an extremely rare commodity and, remarkably, most of it is found in manmade habitats like orchards and wood pastures.

When trees reach a certain age, they develop cavities and hollows as the heartwood dies and rots or is eaten, pecked, gnawed or otherwise removed over time. In fruit trees, these veteran features begin to appear at a relatively young age, around 40 or 50 years, and this is an important factor in the wildlife value of traditional orchards. In most other tree species, however, the process of 'veteranisation' takes centuries to develop, and very few trees make it that long before being felled as part of woodland management operations, for development or for health and safety reasons.

It is said that an oak tree takes three hundred years to grow, three hundred years to mature, and three hundred years to die. In this latter phase, the tree retrenches: the highest boughs die back and a new, more modest crown forms lower down. In dense woodland this diminished tree is easily shaded out, hastening its death. However, in the open sunny structure of a wood pasture, it can live on for hundreds of years in a progressively reduced form. Thus most of our truly ancient trees are found in the relatively open context of wood pastures or parklands, whose astonishing value as habitats have only recently begun to be fully appreciated. The veteran trees of wood pasture and parklands are among the oldest living things in our landscape, and they provide a direct link to bygone times and a home for some of the most threatened species in Europe.

Despite its value to wildlife, we don't really know how much wood pasture is left in Britain, or what condition it's in. Historically, wood pastures have often been regarded as degraded woodlands, a misjudgement that has led to many fine examples being overlooked or neglected.

Building on our great success in mapping and assessing the condition of traditional orchards in England and Wales, we've devised a simple method for surveying wood pastures and parklands. The protocol, involving a structured walk around one of these beautiful landscapes, was trialed in Suffolk over the summer. We're now considering the feedback from volunteers before rolling the scheme out in other counties.

Find out more
www.ptes.org/wpp
megan.gimber@ptes.org

Inonotus hispidus, also known as shaggy bracket fungus

You can see stages of decomposition in this section of oak

This wide crown of an open-grown tree shows veteran features

An amazing veteran oak

Landscapes for dormice

Our partners at **Warwickshire Wildlife Trust** have spent four years preparing a welcome, and now a woodland in the county is home once more to a much missed native.

Since 1993 PTES has released 898 dormice at 23 woodland sites in 12 different counties. The first reintroduction took place in Cambridgeshire as part of Natural England's species recovery programme, and dormice are still present there today. In fact they're now dispersing into the surrounding landscape. This dispersal is crucial. When the reintroduction programme began, it was considered enough to find single woodlands suitable for dormice. But in recent years we've been thinking bigger. Now, for each new area, we find two suitable woodlands about 4–5 kilometres apart and do two reintroductions in consecutive years. As the populations become established in their new homes, we restore woody components of the surrounding area so that in the long-term landscapes are linked with hedgerows and woodlands serving as both habitat and dispersal corridors for dormice.

In 2013 we funded Warwickshire Wildlife Trust to look for dormice in some of their woodlands and to map local hedgerows. This work gave rise to a successful bid to the Heritage Lottery Fund to restore the woodlands and local landscape ready for the reintroduction of dormice into two sites.

In June, using our tried and tested 'soft release' protocol, we released 40 captive-bred dormice into large cages fixed to busy coppiced hazels. The animals were fed daily by a team of volunteers for ten days and then the cages were opened, freeing the dormice to come and go as they wished. The volunteers continued to provide food for the dormice as they began to set up homes in the woodland.

The team was rewarded in early September when they found 29 adult dormice and 20 young animals from six litters. This means that they've already reached the important milestone of finding more dormice at the site than were released. Some of these dormice turned up in the nest boxes away from the release site – a promising start to the future of dormice in the Princethorpe area. ●

ABOVE: A captive-bred dormouse, bound for a new life in the wild.

LEFT: Our Dormouse Officer, Ian White, chats to local media.

BELOW: We're delighted to hear news of the patter of very tiny paws!

Our Black Hut still stands!

Anyone who's visited our Briddlesford Woods reserve on the Isle of Wight will be familiar with the Black Hut, the cabin we use as an education centre, a training room, a store for woodland equipment and a shelter. We meet there with volunteers when we carry out our regular dormouse checks and woodland management sessions, and we run our wildlife training courses there too.

But earlier this year, disaster struck! We discovered in August that the hut's timber corner posts had rotted away, meaning the structure didn't have proper support and was at risk of becoming unsafe and collapsing. Rather than make running repairs that might not last, we decided to do a thorough job and give the hut some solid and long-lasting brick foundations. Each brick was going to cost £1, so we asked some of our supporters to support the Black Hut by 'buying' a brick or several.

We had an amazing response to our appeal, with supporters donating over £1,000, almost enough to cover the full cost. The money has already gone directly to the repairs, and we're pleased to say the hut is now safe and back to its former glory. We recently visited Briddlesford to carry out our autumn dormouse check (finding 50 dormice) and the Black Hut was a welcome place for us to gather and keep warm, so we want to say a really big thank you to everyone who donated. ●

Donate to the black hut appeal
We haven't quite covered the full cost of the foundations' rebuild, so if you would like to help support our hut, please visit www.ptes.org/blackhut.

Orangutans on the edge

Less than 15 percent of the world's Bornean orangutans live in forests that are actively protected. That's why we're supporting the sterling efforts of the **Orangutan Foundation** to help the rest.

Orangutans are the world's largest arboreal mammals and the only great apes native to Asia, other than humans. They were once widespread across Southeast Asia, but are now restricted to the islands of Sumatra and Borneo, where they favour low-lying swampy forest. The two populations were recently reclassified as separate species, *Pongo pygmaeus* on Borneo and *Pongo abelii* on Sumatra.

In 85 to 90 percent of the Borean orangutan's range, most of which lies in the Indonesian part of the island, there is no management authority assigned to protect them. Despite the efforts of conservationists, the orangutans have declined by about a quarter in the past decade and deforestation continues at such a rate that last year the IUCN upgraded their status to Critically Endangered. It's a desperate situation.

The principle threats to Bornean orangutans are direct killing, by hunters or in conflict with local people, and the loss and degradation of good quality forest habitat, mainly as a result of the conversion

A boost for Cambodian crocs

With fewer than 1000 mature individuals remaining in the wild, the once widespread and abundant Siamese crocodile is Critically Endangered and badly in need of our continued support.

Siamese crocodiles were once found in rivers and swamps across Southeast Asia. Their disappearance from more than 99% of their range during the past century is due to wetland habitat loss and hunting. They were thought to be extinct in the wild until their rediscovery in Cambodia in 2000. This precious but depleted population urgently needs conservation measures that will allow it to recover.

PTES has previously helped **Flora and Fauna International (FFI)** and its partners to make significant steps including the release of 20 hatchling crocodiles in 2014, the development of a strategic plan, and ensuring recognition of five sanctuaries at community, district and provincial levels. Poaching has been significantly reduced and there are good prospects for rebuilding populations by enlisting the help of indigenous communities and releasing genetically-screened captive-bred stock. Now we're funding a further release project using locally-bred Siamese crocodiles to boost depleted colonies in key areas and reintroducing the species to safe locations elsewhere. The FFI team are also helping communities to protect and manage crocodile sanctuaries. All project sites will be monitored carefully to evaluate how well our conservation aims are met.

Siamese crocodiles are regarded as an ecological keystone species in Asian wetlands. PTES support will help save this impressive reptile from extinction and benefit a host of other rare and endemic species that depend on the same fragile habitats.

ABOVE: Staff employed in the management of Indonesian state forests enjoy training sessions run by the Orangutan Foundation.

LEFT: The vast forests of Borneo have been home to orangutans for tens of thousands of years. Palm oil and logging now threaten almost every hectare of remaining habitat.

of forests to palm oil plantations. Indonesia and Malaysia are by far the world's biggest producers of palm oil, which is used as an ingredient in a vast range of foods and household products. More recently it's also become a significant biofuel, leading to even more rapid destruction of forests. Most of Borneo's remaining orangutans live in scraps of residual forest within oil palm concessions or in forests designated as timber concessions. In recent years, the Orangutan Foundation (OF) has rescued hundreds of orangutans from these areas, often from the last tree standing.

The Government of Indonesia has recently embarked on a long-term programme to develop a system of Forest Management Units (FMU's) to manage the state forest. Unfortunately, officials in the FMUs whose areas contain orangutan habitat, generally have no experience of managing endangered apes. This is where the OF can help, and with PTES support they are building capacity within FMU staff, and establishing formal relationships with government agents and local bodies. They are giving training in fieldcraft and effective monitoring techniques, and offering technical support so that FMU staff can create local management plans that take into account what is best for the highly endangered great apes living in their particular area. ●

Palm oil - how you can help
Since 2014, under EU regulations, palm oil must be listed on packaging. If you want to know who's using it sustainably, Greenpeace produces a scorecard. You can see it online at goo.gl/RTY4cz.

You can donate to our emergency orangtan appeal at ptes.org/save-orangutans Thank you.

Dwindling river dolphins

Much needed protection for river dolphins in East Kalimantan is now on the cards, thanks to long-running monitoring funded by PTES

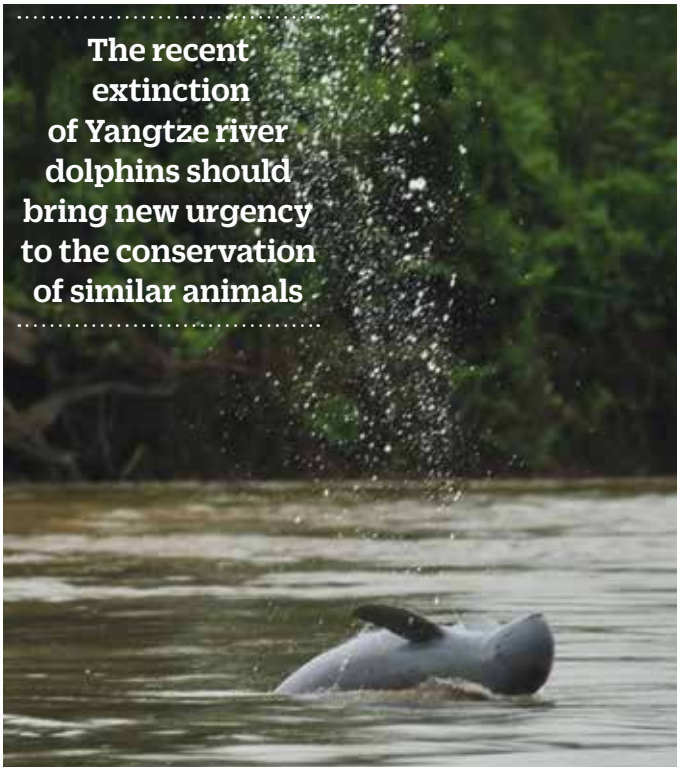
For a species as specialist as the Irrawaddy river dolphin, every population matters. Local losses in river catchments scattered over their wide range in India and Southeast Asia carry a real risk of extinction at species level.

The dolphins inhabiting the main channel, tributaries and lakes of the Mahakam River in Indonesian Borneo, known locally as pesuts, have been the subject of close monitoring by **Danielle Kreb** and her colleagues at the Conservation Foundation for Rare Aquatic Species of Indonesia (RASI) since 2005. The project gathers data on population dynamics (abundance, birth and mortality) and investigates the impact of coal barge traffic on dolphin numbers.

With our support the team has carried out acoustic surveys and visual observations, comparing undisturbed confluence areas with confluences where there's disturbance from tugboats pulling coal barges. They also used photo-identification and mark-recapture analysis to estimate the total pesut population of the area. As a result we know that the downward population trend seen since 2005 is continuing, with an estimated 73 individuals remaining. We also know the critical areas where protection will have most effect.

The findings were shared at a workshop convened with local government organisations in order to drive forward the establishment of a suitable protected area where coal barges should be excluded . A final proposal was subsequently approved by the regent of the Central Kutai region. This important progress comes not a moment too soon for this truly unique cetacean. ●

The recent extinction of Yangtze river dolphins should bring new urgency to the conservation of similar animals



© RASI

Martens and molecules

We're proudly supporting the **Vincent Wildlife Trust's** translocation of pine martens from Scotland to mid-Wales, and monitoring the donor populations as well as the introduced one.

The Welsh Pine Marten Project has so far successfully relocated 39 individuals from donor sites owned by Forestry Commission Scotland. The sites were selected for their size and likely density of pine martens to minimise the risk of over-harvesting. The number of animals being removed is low but, to ensure the process is wholly sustainable, the impact on the local gene pool is being assessed by geneticist Catherine O'Reilly of the Waterford Institute of Technology in Ireland.

Project staff and volunteers collected 620 scat and hair samples from the donor sites before and after each translocation. Catherine's molecular analysis will identify individuals so that she can estimate the population at each site and calculate the maximum number of martens it would be safe to take. ●

This won't hurt a bit...

The screening required to test for potentially catastrophic diseases such as squirrelpox and adenovirus is a major complication in red squirrel translocation. We're looking at ways to improve matters.

International guidelines stipulate that red squirrels in captivity, and wild ones living in areas where releases are planned, must be tested for various pathogens and diseases. Currently this has to be done by anaesthetising the animals to take blood samples. Finding a less stressful and invasive method for obtaining samples is a priority in terms of both welfare and conservation.

With our help, **David Everest** at the Animal and Plant Health Agency in Weybridge is testing to find out whether effective screening for squirrel viruses can be done using hair samples instead of blood. He's comparing the detectability of adenovirus DNA from hair collected by clipping or in sticky hair tubes with that from organ tissue. If hair samples turn out to be sufficient, the process of reintroduction and translocation can be greatly simplified and used more widely to help red squirrels recover. ●

Voles on a roll

Ewan McHenry of the University of Aberdeen is finding out whether removing breeding mink from the north-eastern Scottish landscape is really leading to water vole recovery.

As American mink established across our waterways in the late 20th century, water voles disappeared from 90% of their historic sites. Various strategies have been tried to remove mink, but it's not always easy to see what effect these measures have.

Ewan and his collaborators have surveyed for water voles over a huge swathe of Scotland, including areas where mink control has been more and less effective. Initial findings are encouraging. Water voles have dramatically recovered since mink control started, particularly where mink control has been most effective. Fifteen years ago, water voles were constrained in small fragmented areas; now they've expanded into mink-free areas and established some exceptional strongholds. Even better news, the water voles appear undeterred by the increasing numbers of otters, which are staging their own comeback in the region. ●

© PTES and Froglife

ABOVE: Bank voles aplenty turned up in small mammal traps set around the new Frankfield Loch development.

RIGHT: Wildlife subways like this are designed with amphibians in mind, but also provide safe passage under roads for a variety of small mammals.

Who goes there?

The amphibian charity **Froglife** has led research on the use of amphibian tunnels that allow migrating animals to pass safely under new roads. In doing so they noticed that other small animals use them too.

Habitat fragmentation caused by the building of roads is a problem for many small terrestrial animals. Where such development takes place in areas of amphibian habitat, developers are often required to construct tunnels under the road so that frogs, toads and newts can cross in safety. Previous work by Froglife measuring the effectiveness of these measures has shown that the tunnels are sometimes also used by other species, including a variety of small mammals.

When a housing development at Frankfield Loch near Glasgow required a road to be built between the loch and an area of land newly designated as a local nature reserve, tunnels were installed at intervals along the road. Before the development the area was also home to hedgehogs and water voles, and so with our support Froglife set out to see what they could learn about these other priority species. The team used a combination of monitoring methods including cameras, footprint tunnels and small mammal trapping surveys to assess local populations and see who was using the tunnels. The footprint method is relatively new, so back-up information from trapping is required.

We anticipate that the results, which are still being analysed, will highlight the habitat preferences of both hedgehogs and voles and provide information that can be used to improve potential future projects on road mitigation for the species.

The team compared the results from each monitoring method, demonstrating that the less labour-intensive footprint traps and tunnel camera provide high quality data – good news given the very high cost of live trapping sessions. Camera traps are expensive too, but using them in bottlenecks such as tunnels greatly boosts their effectiveness in recording species present in the area. The team also added a further six mammal species to ecological records for the site: field and bank voles, common and pygmy shrews, brown rats and wood mice. It will be important that this diversity is supported in any future development of the area.

And there's more! We don't have room to tell you about every project, but your donations have also been supporting...

RED SQUIRRELS

© iStockphoto.com / Rickochet

The Saving Scotland's Red Squirrels project has been running for six years and is making valuable progress. The number of greys trapped is falling and the number of reds has increased hugely in each area. It's good news, but there is much more to do.

RUAHA CARNIVORE PROJECT

© RCP

One of the many ways RCP uses PTES funding is in the local school Porridge Project. RCP pays a local women's cooperative to supply and prepare nutritious breakfasts for all students. Attendance and academic achievement have dramatically improved and goodwill towards RCP and the carnivores they support continues to grow as a result.

SLOW LORIS

© LFP

Little Fireface Project is working to tackle the cruel and damaging industry exploiting slow lorises as tourist photo props. Social media platforms, and in particular Instagram, are fuelling this illegal trade, which has sadly made it to Europe. With our support LFP is working with TRAFFIC and other groups to curtail this awful business.

THE INSIDERS GUIDE TO...

Our Insider is **Stuart Newson,** Senior Research Ecologist at the British Trust for Ornithology (BTO) and lead scientist on the Norfolk Bat Project.

Full spectrum bat surveys

© Mark Carmody

What and why?

Bats are difficult to study because of their nocturnal habits and the large area over which individuals range. They're noisy animals, but their echolocation calls are outside the frequency range most humans can hear. Bat detectors are devices that translate these high-pitched shouts into signals we can detect. Most volunteer-based bat monitoring programmes use simple tuneable 'heterodyne' detectors that focus on detecting relatively easily identifiable species. These have the advantage of being fairly inexpensive, but they suffer from the fact that many species have similar sounding calls, and so the number of species that can be confidently identified is rather small. But times are changing. One of the most notable developments has been the arrival of broadband bat detectors, offering automatic call identification software. These amazing devices come in two main types, 'frequency division' and 'full spectrum', and are transforming our understanding of bats.

Choosing a detector

01 We use full-spectrum detectors in BTO surveys because they capture bat calls at their original frequency, and retain more detail of the calls than other broadband detector types. Full-spectrum bat detectors continually scan their surroundings for sound, but can be set to trigger and record only when they detect sound within a defined frequency range, such as that used by echolocating bats. Initially the cost of this technology meant it was really only available to professional surveyors, but they're rapidly becoming more affordable for the wider public.

Selecting a site

02 Bats can be recorded from the centre of cities to the tops of mountains. For the amateur naturalist, the natural temptation is to focus survey effort on known 'batty' sites or areas perceived to be of greater value for bats – we all like to boost our chances of success. However when studying bats over a large area, it's as important to know where bats aren't as where they are. The best approach is to survey the whole area of interest. But we also need to design our surveys to maximise the use of volunteers, and this sometimes means allowing for greater survey effort in areas where there are more people.

A full spectrum bat detector is a box of tricks anyone can use to access and explore the nocturnal world of bats.

© BTO

IN PRACTICE

Full spectrum bat detectors in citizen science

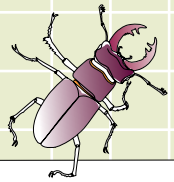
The Norfolk Bat Survey was set up in 2013 with funding from PTES. Since then we've enlisted over 900 volunteers, each of whom can borrow a full-spectrum bat detector from 21 centres around the county. Many of these centres already had a network of volunteers or members, and involving them opened up citizen science to a broad set of people. The bat calls recorded by the devices are saved to a memory card, which is returned to us for processing. So far, volunteers have surveyed 1,445 1km squares (about 27% of Norfolk) and generated a staggering 1.4 million bat recordings.

Survey approach

03 Bat detectors can either be installed at a fixed point and left to record, or used actively by surveyors to record bats along walked or driven transects. The method chosen depends on the objectives of the study, and each has its pros and cons. Transect surveys can cover a greater area than fixed point surveys, and are arguably more interesting for the person taking part. However fixed point surveys generate a lot more data for the amount of effort invested, and several detectors can be deployed by a single person to survey multiple sites each night.

© Nikki Smith

The microphones of full spectrum detectors are active all the time, but to reduce processing time, the detector can be set to only trigger and record sounds within a defined frequency range.



© Barry Tallack

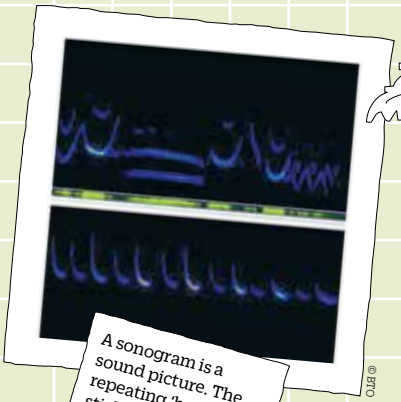
Bats are tricky to watch and even trickier to identify if we rely solely on the evidence of our eyes. With a broadband detector we listen as if with the ears of a bat.

Installing a detector

04 Our guidelines for volunteers focus on choosing a recording location that maximises the number and quality of recordings. Where it's practical to do so, microphones should be deployed at least 1.5 metres from any vegetation or other obstructions. They should be sited away from lighting (e.g. an illuminated house), because several bat species are known to avoid light. It's also important to avoid positioning the microphone directly next to water, because sounds reflected from water surfaces are distorted. Because bats often follow linear landscape features such as hedgerows or tree lines, placing detectors adjacent to these features maximises the number of recordings.

Analysing the data

05 Processing the potentially enormous number of sound recordings generated using full-spectrum bat detectors (often over 1000 per detector per night) is a job for a computer. There are a number of free and commercial software options for viewing spectrograms (a visual representation of the bat calls over time), either in real time in the field, or after the event. Automatic recognition software is a massive help when it comes to assigning recordings to species. Such tools are becoming invaluable in dealing with the volume of bat data that can now be collected, and carry the further advantage that species identification is standardised. Even so, when making a scientific interpretation, it's still important to look critically at the limitations of the software and bear in mind any likely biases of the tool being used.



© BTO

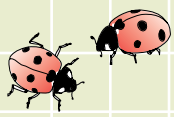
A sonogram is a sound picture. The repeating 'hockey stick' motif represents a descending chirp, while the constant frequency traces sound as peeps.

© Ian Svetlik

The project has already greatly improved our picture of the occurrence and activity of Norfolk's bats, from near ubiquitous common pipistrelles to locally scarce Leisler's bats. Having proved the cost-effectiveness of the concept, in 2016 we were asked by Scottish Natural Heritage to start a larger project focussing on the southern third of Scotland. The approach has proved to be both scalable and effective in remote areas, and we're now working on a NERC-funded project with the Bat Conservation Trust (BCT), University College London and Oxford University to scale things up further still. Ultimately the BCT aims to incorporate full-spectrum surveying into its National Bat Monitoring Programme.

Another exciting development stems from the huge volume of non-bat records gathered in Norfolk. These include 520,000 recordings of bush-crickets, 300,000 of nocturnal birds and 20,000 of other mammals. Working with the Museum of Natural History in Paris, we've developed an acoustic classifier for UK bush-crickets, and are now extending this to nocturnal birds. So as well as improving our understanding of bats, full-spectrum detectors may contribute more widely to biological recording in the future. ●

© BTO

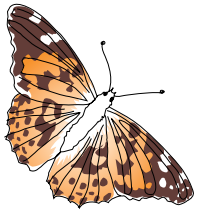


Hazel dormice suffered drastic declines in Britain during the 20th century. In 1885, they were present in 49 English counties; now they're found in only 32. They were extinct in Yorkshire by the 1960s but, after two successful reintroductions orchestrated by us, they've regained a foothold in the east of the Yorkshire Dales National Park.

We're working with the National Park Authority to plant more than 1,700 metres of hedgerows to join the two woodland sites with leafy habitat. Soon the dormice will be able to spread out along these new corridors to the woods beyond, giving the population a much better chance of long-term survival.

Your support is vital.

Thank you.



people's trust for endangered species