

Briefly

SPOTLIGHT ON PANGOLINS

Threats to pangolins: relentless poaching for their scales . . .

All species of pangolins are threatened and it is illegal to trade them. However, demand for pangolin scales, which are used in traditional Chinese medicine, has led to rampant poaching across Asia and Africa. The magnitude of this illicit trade is difficult to quantify. Occasionally, successful law enforcement campaigns showcase the enormity of the problem: in July 2023, leaders of a global wildlife trafficking gang were convicted after a 4-year under-cover investigation and a trial in Nigeria. The investigations led to the seizure of 7 t of pangolin scales, for which many thousands of pangolins had to be killed. In August 2023, Thai authorities seized more than 1 t of pangolin scales, worth over USD 1.4 million, which was estimated to have come from at least 3,000–4,000 dead pangolins.

Sources: BBC (2023) [bbc.co.uk/news/world-africa-66375281](https://www.bbc.com/news/world-africa-66375281) & ABC News (2023) abcnews.go.com/International/wireStory/ton-endangered-pangolin-scales-seized-thailand-102336171

. . . and deaths from electric fences

Although pangolins are the most trafficked mammals globally, in South Africa the biggest threat comes from electric fences. Research shows that there are > 1,000 pangolin mortalities related to electric fences in the country annually, compared to 50–100 trafficked pangolins. Fences are used in farms and ranches to keep predators out and thus limit human–wildlife conflict, but they can also harm threatened animals such as pangolins. Following abdominal contact with an electrified fence, pangolins roll into a ball, often around the electrified strand. This triggers repeated electric shocks, causing the pangolin to roll tighter instead of uncurling and moving away. Researchers suggest mitigation measures, such as raising the lowest electric strand from 200 mm to a minimum of 300 mm above the ground. This would allow the majority of harmless pangolin-sized and smaller animals to move under the electric strands without being electrocuted.

Sources: *African Journal of Wildlife Research* (2023) doi.org/krf4 & Mongabay (2023) news.mongabay.com/2023/06/shocking-levels-of-pangolin-deaths-from-electric-fences-commentary

Threats to people: pangolin crime networks in Central Africa . . .

In the Congo Basin in Central Africa, international organized criminal groups run pangolin poaching and trafficking networks, with most poached pangolins being exported to China and Southeast Asia. These networks are not only hugely profitable for criminal gangs, they have also been recognized as a destabilizing force across the region. In a podcast published in August 2023, Oluwole Ojewale, the Regional Organized Crime Observatory Coordinator for Central Africa at the Institute for Security Studies, explains how pangolin trafficking is part of a broader criminal network that funds armed groups active in Central Africa. Pangolin scales and other products are often shipped out of the region via major trade ports, hidden in shipments of legally traded goods. Ojewale highlights that in recent years, cartels and criminal organizations previously involved in the illegal trade of elephant ivory have shifted their focus to pangolins, and that the profits from this trade are used to finance armed terrorist groups in the Congo Basin.

Source: UN Dispatch (2023) undispatch.com/the-poaching-and-trafficking-of-pangolins-is-sowing-instability-in-central-africa

. . . and viral spillover risk

In the past 20 years, three zoonotic coronaviruses, MERS-CoV, SARS-CoV and SARS-CoV-2, have spread from animals to humans and caused severe epidemic or endemic diseases. Virus spillover from animals to humans represents a major challenge to public health. A range of SARS-CoV-2-related viruses have been identified in pangolins, but the infectivity and pathogenicity of these in humans remain largely unknown. Researchers sought to characterize the potential infectivity and pathogenicity of a pangolin-origin virus, pCoV-GD01, for humans and to establish animal models in comparison with SARS-CoV-2, the virus that caused the Covid-19 pandemic. They found that pCoV-GD01 was capable of infecting human cells and also efficiently infected mice, causing damage to their lungs. The study also provided experimental evidence that pCoV-GD01 infection could be established via an intranasal route in hamsters. These results highlight the potential risk of spillover from pangolins and circulation in other wild animals.

Source: *Cell Discovery* (2023) doi.org/krgd

Pangolin conservation: an example from Nigeria

Mark Ofua is a wildlife veterinarian in Lagos, Nigeria who runs SaintMarks Animal Hospital and a pangolin orphanage. With his love of wildlife ignited early in life, Ofua read widely and came across information and experiences that contradicted what he had been led to believe about animals that in traditional folklore were often depicted as evil and malicious, such as snakes, bats and owls. Out of compassion for the animals, he started rescuing them from wildlife markets, which is where he first came across a juvenile pangolin; he took the animal home and raised it. From this coincidental encounter has grown a pangolin orphanage that takes in pangolins that are born into the wildmeat trade, rehabilitates them and then releases them into the wild. Importantly, Ofua's efforts go beyond rescuing and releasing animals: he is also teaching others and raising awareness about the illegal wildlife trade and the connections between environmental conservation and human well-being.

Source: *Daily Maverick* (2023)

dailymaverick.co.za/article/2023-08-24-dr-mark-ofua-the-snake-man-of-lagos-and-his-mission-to-save-pangolins

Genetic analysis discovers new pangolin species

Scientists studying contraband scales confiscated in Hong Kong and China during 2012–2019 identified genetic markers not seen in any known pangolins. The genomic analysis revealed robust and compelling evidence of an unexpected ninth species, which the team named *Manis mysteria*. The researchers performed a structural analysis of 33 scale samples from different confiscations. Five scales were attached to skin and three to claws. The remaining samples were from individual scales from tails, backs, bellies or heads. Because *M. mysteria* has only a slight genetic variation from other pangolins, it is currently described as a so-called cryptic species. Such species are difficult to distinguish from others by appearance alone, so the newfound ability to identify pangolin species by testing scales is a boon for conservationists. Little is known of the new species, but now that its existence has been established, conservationists can work to protect it.

Sources: *Nature Communications* (2023)

doi.org/gsskf5 & CNN (2023) edition.cnn.com/2023/09/27/world/new-pangolin-species-discovery-scn

INTERNATIONAL

Loss of Arctic sea ice is threatening beluga whales...

Every July, c. 57,000 beluga whales make their way from the Arctic to warmer waters further south. In the shallower southern waters, they are protected from predators and can feed, give birth and molt their skin on the rocks of riverbeds in safety. As the Arctic sea ice continues to melt rapidly, its important role in the beluga whale migration pattern and the overall ecosystem becomes ever more apparent. As the sea ice disappears, belugas are losing their protection from their main predators: orcas. Belugas do not have dorsal fins, so they can get up close and hide in areas with dense sea ice, away from the orcas that hunt them. Changing ocean temperatures are also bringing more orcas farther north, further increasing predation risk. In addition, warmer waters affect algae growing on sea ice, which sustain many of the fish that beluga whales feed on. And as the sea ice dwindles, it opens up more lanes for commercial shipping. The increase in activity is leading to more noise pollution, which negatively affects belugas, which are known to be the most vocal whale species.

Source: ABC News (2023) abcnews.go.com/US/beluga-whales-migrating-arctic-loss-sea-ice-climate-change/story?id=101162277

... and thousands of penguins die as Antarctic ice breaks up

A catastrophic die-off of emperor penguin chicks has been observed in the Antarctic, with up to 10,000 young birds estimated to have been killed. The sea ice beneath the chicks melted and broke apart before they could develop the waterproof feathers needed to swim in the ocean; the birds most likely drowned or froze to death. The 2022 event, which took place in an area fronting on to the Bellingshausen Sea, was recorded by satellites. More than 90% of emperor penguin colonies are predicted to be all but extinct by the end of the century, as the continent's seasonal sea ice withers in an ever-warming world. Antarctic summer sea ice has been on a sharp downturn since 2016, with the total area of frozen water around the continent diminishing to new record lows. The two absolute lowest years have occurred in the past two summer seasons, in 2021/2022 and in 2022/2023, when the Bellingshausen Sea was almost completely devoid of ice cover.

Sources: *Communications Earth & Environment* (2023) doi.org/kqqn & *BBC* (2023) bbc.co.uk/news/science-environment-66492767

Countries continue to fund activities destroying nature...

Countries have pledged to channel more money toward environmental protection, but that will not be enough to tackle biodiversity loss if they also continue to fund sectors such as the oil and gas industry that are damaging the environment, according to Carlos Manuel Rodríguez, CEO of the Global Environment Facility (GEF). The GEF is an international funding structure that assists countries in reaching global environmental goals. Rodríguez' comments came as country delegates gathered in Vancouver, Canada in August 2023 to discuss how to boost international funding for nature conservation. As part of the meeting, a new fund was to be launched, to support developing countries in reaching nature conservation targets agreed at the 2022 global COP15 biodiversity summit. The creation of the fund was a key condition for developing countries to back the final agreement. Yet even with this funding, targets cannot be reached unless the root causes of biodiversity loss are addressed. Subsidies for activities harmful to the environment are estimated to be USD 500 billion to USD 1.8 trillion per year worldwide. At COP15, countries pledged to cut USD 500 billion in environmentally harmful subsidies.

Source: *Politico* (2023) politico.eu/article/top-environmental-fund-chief-carlos-manuel-rodriguez-calls-countries-stop-destroying-nature

... and forest carbon offsets are failing

A new study has found that carbon credits from some forest conservation projects are being inflated, and may not be offsetting the amount of emissions they are claiming to cancel out; in some instances, there is no actual offsetting at all. As companies use these carbon credits to offset their emissions, millions of tonnes of greenhouse gases released are thus not accounted for. The researchers studied 18 projects under a scheme known as reducing emissions from deforestation and degradation (REDD+). The idea behind the scheme is that forests are saved from clearing and credits are issued for the carbon stored in the forests left standing. However, the researchers found that, on average, the number of carbon credits generated by the studied projects were c. three times the additional carbon actually stored. Just seven of the 18 projects showed any statistically significant reduction in deforestation compared with the controls, and most of those seven fell well short of the projected reductions.

Sources: *Science* (2023) doi.org/krdw & *ABC News* (2023) abc.net.au/news/science/2023-08-25/forest-conservation-carbon-offsets-overestimated/102755212

Plastic crisis: overshoot day announced for the first time...

A new report has revealed 28 July 2023 as the date humans could no longer properly manage the plastic waste produced during this year. The landmark date has been announced for the first time internationally in 2023 to raise awareness of the growing global plastic crisis. Despite increased eco-consciousness and rising recycling capabilities, plastic production has increased 20 times more rapidly than the recycling capacity over the past 10 years, according to Swiss-based research consultancy Earth Action. Based on the global capacity for plastic waste to be collected and then recycled, incinerated or deposited in a sanitary landfill, the amount of plastic waste produced this year up to the overshoot day could have been well managed. However, with global production expected to reach 159 million t in 2023, the international capacity for managing short-life plastics will not meet the demand. As a result, 43% of all plastic waste is projected to be mismanaged, equivalent to > 68.5 million t of plastics polluting the environment this year alone.

Source: *Oceanographic* (2023)

oceanographicmagazine.com/news/earth-reaches-plastic-overshoot-day-for-the-first-time-ever

... and threatened seabirds forage at pollution hotspots

Analysis of global tracking data for seabirds has revealed that a quarter of all plastics potentially encountered in their search for food are in remote international waters, requiring international collaboration to address. The study assessed the movements of 7,137 individual birds from 77 species of petrel, a group of wide-ranging migratory seabirds including threatened species such as the Critically Endangered Newell's shearwater. This is the first time that tracking data for so many seabird species have been combined and overlaid onto global maps of plastic distribution in the oceans. The results show that plastic pollution threatens marine life on a scale beyond national boundaries: a quarter of plastic exposure risk occurs in the high seas. This is largely linked to gyres—large systems of rotating ocean currents—where vast accumulations of plastics form, fed by waste entering the sea from boats, and from different countries. Seabirds often mistake small plastic fragments for food or ingest plastic that has been eaten by their prey. This can lead to injury, poisoning and starvation.

Sources: *Nature Communications* (2023) doi.org/kh3s & *University of Cambridge* (2023) cam.ac.uk/research/news/worlds-most-threatened-seabirds-visit-remote-plastic-pollution-hotspots-study-finds-o

EUROPE

Spain and Portugal recruit bison and horses to reduce wildfire risk

In a groundbreaking experiment in the Iberian Peninsula, the Garrano horse and European bison have been introduced to combat the risk of wildfires. These grazers are playing a crucial role in clearing scrubland and vegetation that serve as fuel for devastating blazes. The Garrano horse, with a population of c. 300, roams semi-wild in the Serra da Cabreira mountain range in Portugal. This breed, which traces its origins back to prehistoric times, faced a significant decline in numbers since the mid 20th century. Each horse consumes c. 30 kg of vegetation daily, and by targeting the areas beneath telegraph poles, the horses contribute to creating fire-breaks that prevent fires from spreading across the landscape. Bison, known for their indiscriminate eating habits, consume over 130 different plant species, effectively clearing and rejuvenating the landscape. Their presence helps prevent the undergrowth from becoming a potential fire hazard.

Source: Euronews (2023) [euronews.com/green/2023/07/22/spain-and-portugal-recruit-bison-and-rare-horses-to-help-reduce-risk-of-blazes](https://www.euronews.com/green/2023/07/22/spain-and-portugal-recruit-bison-and-rare-horses-to-help-reduce-risk-of-blazes)

Iceland lifts ban on commercial whale hunt

The Icelandic government has announced that commercial whaling can resume after the activity was suspended for more than 2 months. In June 2023, Svandís Svavarsdóttir, the country's minister of food, agriculture and fisheries, banned whale hunting until the end of August because of animal welfare concerns. A government-commissioned independent report had found that the whale hunts did not comply with animal welfare laws, noting that 41% of whales harpooned in the Icelandic hunts did not die immediately but suffered long after being shot. However, the government has since stated that whaling will be able to recommence from 1 September, with increased monitoring and stricter regulations around hunting methods. Iceland's decision to allow whaling to recommence has drawn criticism from environmentalists and animal rights advocates. There is only one company currently holding a whaling licence in Iceland, and this license is set to expire in 2023. It is unclear whether Iceland will allow whaling to continue in the coming years.

Source: Mongabay (2023) [news.mongabay.com/2023/09/international-outcry-as-iceland-lifts-ban-on-what-could-be-last-whale-hunt](https://www.mongabay.com/2023/09/international-outcry-as-iceland-lifts-ban-on-what-could-be-last-whale-hunt)

Reintroductions: white-tailed eagles spread their wings in Irish skies...

As part of an ongoing National Parks and Wildlife Service programme to reintroduce the once extinct species, a total of 24 white-tailed eagle chicks were released around Ireland in August 2023. Once native to the country, the species became locally extinct in the 19th century, but the Service has been working with partners in Norway along with farmers and communities to reintroduce the eagles to Ireland. The released juveniles join a growing population of the apex predators, and can now be monitored as they disperse around the country thanks to a comprehensive satellite tagging system. There has been substantial interest from the public in the reintroduction programme, and locations where they are spotted attract many visitors and local interest. The first Irish-bred female to breed in over a hundred years has fledged seven chicks in 3 years.

Source: *The Irish Times* (2023) [irishtimes.com/ireland/2023/08/14/white-tailed-eagles-spread-their-wings-with-24-new-chicks-released-into-irish-skies](https://www.irishtimes.com/ireland/2023/08/14/white-tailed-eagles-spread-their-wings-with-24-new-chicks-released-into-irish-skies)

... first Swiss northern bald ibis chicks in 400 years...

The northern bald ibis *Geronticus eremita* was native to central Europe until it was extirpated in the 17th century. However, an ambitious EU-funded reintroduction scheme, Waldrappteam, was launched in the mid 2000s, based on a partnership of eight conservation organizations from Austria, Germany and Italy. Captive-bred ibises were raised by human foster parents and taught to migrate across the alps to winter feeding grounds in Italy with the help of microflight aircraft. In June 2023, a pair of reintroduced northern bald ibises were spotted nesting on a windowsill in Switzerland, marking the species' first breeding effort in the country for 400 years. The birds, who were breeding for the first time, constructed a nest at the unlikely setting of a Harley-Davidson shop close to Zürich Airport. Chicks were observed in the nest in July. Northern bald ibises remain categorized as Endangered on the IUCN Red List and continue to face threats from power lines and illegal hunting. Continued efforts are needed to boost their population for long-term survival (see also *Oryx*, 57, 673–648).

Sources: *BirdGuides* (2023) [birdguides.com/news/northern-bald-ibis-pair-nests-on-motorbike-shop-window-in-switzerland](https://www.birdguides.com/news/northern-bald-ibis-pair-nests-on-motorbike-shop-window-in-switzerland), *IamExpat* (2023) [iamexpat.ch/lifestyle/lifestyle-news/northern-bald-ibis-returns-switzerland-400-year-absence](https://www.iamexpat.ch/lifestyle/lifestyle-news/northern-bald-ibis-returns-switzerland-400-year-absence) & *Independent* (2023) [independent.co.uk/tv/lifestyle/switzerland-bird-northern-bald-ibis-b2367746.html](https://www.independent.co.uk/tv/lifestyle/switzerland-bird-northern-bald-ibis-b2367746.html)

... and first beaver kits in Sussex in 500 years

Beavers have been born in Sussex, UK for the first time in 500 years. The young beavers, known as kits, were born at a wilding project at Knepp Castle Estate near Horsham. Despite being native to Great Britain, beavers became extinct on the island in the 16th century after being hunted for their meat and fur. Two adult beavers, called Brooke and Banksy, were moved to Knepp Wilding from Scotland last year. The two kits, which were already almost adult size, were captured on trail cameras playing in one of the many ponds their parents had created. Penny Green, resident ecologist at the Knepp project, described the beavers as ecosystem engineers, whose recent dam building activity had created habitats for other wildlife, leading to the resurgence of species such as kingfishers, dragonflies and reed warblers. Beavers have also been reintroduced to other parts of the UK in similar rewilding projects.

Source: BBC (2023) [bbc.co.uk/news/articles/cjezxl5q12no](https://www.bbc.co.uk/news/articles/cjezxl5q12no)

Nature Restoration Law: what does it mean for rivers?

Healthy ecosystems are vital for human well-being, but natural areas within the European Union are deteriorating quickly, undermining biodiversity, ecosystem functioning and our future. Free-flowing rivers are amongst the nature-based solutions for a warming world: they help relieve the impact of intensifying droughts, floods and storms. The European Commission, having recognized the importance of free-flowing rivers, supports dam removal. In June 2022, the European Commission proposed the Nature Restoration Law, setting targets to restore biodiversity and degraded ecosystems. A free-flowing rivers target was included, to identify and remove obsolete barriers; i.e. dams and weirs that no longer serve a purpose and are neither maintained nor repaired. Removal of such barriers would free at least 25,000 km of European rivers. In July 2023, the Nature Restoration Law narrowly passed the EU Parliament and Council, with the free-flowing rivers target intact, whereas many other ambitions were significantly weakened. The Trilogue (interinstitutional negotiations) is underway to resolve differences in the legislative proposals. In this crucial forum for negotiation, the co-legislators (Parliament and Council) will have to find a consensus. The final proposal that emerges from these discussions will have to be voted for final approval by both the Council and Parliament.

Source: *Dam Removal Europe* (2023) damremoval.eu/nature-restoration-law

AFRICA

Captive-born foals raise hopes for Critically Endangered African wild ass

An African wild ass *Equus africanus* was born at Marwell Zoo in Hampshire, UK in August 2023, raising hopes for the species' continued survival. The healthy male foal was born to mother Nadifa, who was herself born at the zoo in 2007 to parents who had been there since 1993. The zoo's multi-generational breeding programme has become increasingly important as wild populations have declined severely because of historic hunting and competition for resources with livestock (see also *Oryx*, 57, 592–599). Earlier in the year, new foals were also born in Ramat Gan Safari zoological park in Israel (a male foal, in February) and in a private zoo in Chile (a female foal, in June). African wild asses are native to Eritrea, Ethiopia and Somalia. The wild donkeys have light grey coats, with a single black stripe along their spines and horizontal stripes on their legs, similar to zebra markings. The species is categorized as Critically Endangered on the IUCN Red List, with only a few hundred individuals left in the wild.

Sources: *Live Science* (2023) [livescience.com/animals/land-mammals/critically-endangered-donkey-with-stripy-zebra-legs-born-in-uk-zoo](https://www.livescience.com/animals/land-mammals/critically-endangered-donkey-with-stripy-zebra-legs-born-in-uk-zoo), *Phys.org* (2023) phys.org/news/2023-07-rare-somali-wild-ass-born.html & *ISRAEL21c* (2023) israel21c.org/fighting-to-save-the-rare-african-donkey-at-ramat-gan-safari

Ten-year fishing ban could benefit African penguin colonies

South Africa will impose a decade-long ban on commercial fishing around six areas that harbour the Endangered African penguin *Spheniscus demersus*, starting next year. The measure, announced in August 2023, comes after an expert panel concluded that a full ban on fishing was vital for the recovery of Africa's only penguin species, which is found only along the coastline of Namibia and South Africa and is at risk of extinction. The number of breeding pairs in South Africa plummeted by 73% from 1991 to 2021, falling from 42,500 to 10,400. The decline is partly attributed to a fall in anchovy and sardine stocks—the birds' main food source—because of environmental changes and commercial fishing around island breeding colonies. African penguins lay eggs and care for chicks year-round, so preventing fishing around these colonies could reduce the competition the penguins face for food. Source: *Science* (2023) doi.org/10.1126/science.adk3685

Climate change is driving African wild dogs to extinction

African wild dog *Lycaon pictus* populations could face total collapse unless urgent action is taken to stop global temperatures soaring, according to new research led by the Zoological Society of London. The study combines 16 years of data on the impacts of temperature on the Endangered species in northern Kenya, to simulate how the canines will fare as temperatures rise. The results show that if local temperatures increase by 3 °C, it could push African wild dog populations over an irreversible tipping point as early as 2070. Past this point, models predict population extinction within just a few decades. The study only focused on one aspect of how the climate crisis contributes to biodiversity loss—rising temperatures—but other factors, such as disease spread and loss of habitat and prey species, will all be exacerbated by a warming planet and pose additional threats to the wild dogs' survival.

Sources: *Global Change Biology* (2023) doi.org/10.1111/gcb.15868 & *Zoological Society of London* (2023) [zsl.org/news-and-events/news/climate-change-driving-dogs-extinction](https://www.zsl.org/news-and-events/news/climate-change-driving-dogs-extinction)

Kordofan giraffes face local extinction in Cameroon

Poaching of just two Critically Endangered Kordofan giraffes per year could result in extinction in as little as 15 years within Cameroon's Bénoué National Park without intervention, according to a new study. Current estimates indicate that there are fewer than 50 Kordofan giraffes left in the Park, which is home to one of the last populations of the species. Poaching is frequently cited as a cause of population decline, with illegal hunters killing giraffes for their meat, pelts, bones, hair and tails, which are highly valued by some cultures. However, evidence of poaching remains mostly anecdotal and there is little research into its overall impact. Researchers sought to analyse the effectiveness of different conservation interventions using population modelling. The team compared anti-poaching interventions, population supplementation and habitat protection. Their modelling found the removal of one male and one female giraffe every year would result in an average time to extinction of just 15 years. The findings confirm that conservation management should prioritize strengthening existing anti-poaching activity in conjunction with protecting wildlife corridors to aid dispersal. Sources: *African Journal of Ecology* (2023) [doi.org/gsj6gt](https://doi.org/10.1111/aje.12666) & *University of Bristol* (2023) [bristol.ac.uk/news/2023/august/kordofan-giraffes.html](https://www.bristol.ac.uk/news/2023/august/kordofan-giraffes.html)

Two-thousand rhinoceroses to be rewilded in Africa

Conservation group African Parks has purchased the world's largest private captive rhinoceros breeding operation, to rescue and rewild 2,000 southern white rhinoceroses that were facing an uncertain future. The group secured emergency funding to buy the financially struggling 7,800-ha Platinum Rhino farm in South Africa. The 2,000 animals, the largest group of privately owned rhinoceroses, represent up to 15% of the remaining global wild southern white rhinoceros population, which is under pressure from poaching. African Parks has extensive experience managing protected areas and conducting large-scale wildlife translocations, and plan to phase out the breeding programme and relocate all individuals to protected areas across Africa, by working with funding partners, governments and other conservation groups. By supplementing strategic populations and establishing new ones, the move could significantly boost the future prospects of the species.

Source: *African Parks* (2023) [africanparks.org/2000-southern-white-rhino-be-rewilded-wild-over-next-10-years](https://www.africanparks.org/2000-southern-white-rhino-be-rewilded-wild-over-next-10-years)

A framework for evaluating African lion conservation

New research raises concerns about dwindling lion populations in Africa, but it also provides new insight into conservation strategies and a framework for evaluating investments into lion conservation across Africa. The study identified and mapped wild African lion populations, and then identified factors within two categories of population fragility—ecological and socio-political—that may influence the lions' survival. Both socio-political and ecological factors were then combined into a single overall fragility index, and each lion population was compared relative to all others. This score highlights the varying pressures facing different populations and which populations may require relatively more resources to conserve. The results indicated lion populations in Somalia and Malawi were the most fragile. Ensuring stakeholders, investors and conservation groups are aware of these differences in fragility between lion populations will enable them to determine the most effective approach to lion conservation in each area.

Sources: *Communications Earth & Environment* (2023) [doi.org/ksx8](https://doi.org/10.1038/s43247-023-00147-3) & *The Endangered Wildlife Trust* (2023) [voxlite.evlink17.net/public/messages/view-online/jzaZS17nwgTuGtEG/WEGFCFQoZtE5yJxg/huo527z7m7efmrDv](https://www.voxlites.com/public/messages/view-online/jzaZS17nwgTuGtEG/WEGFCFQoZtE5yJxg/huo527z7m7efmrDv)

AMERICAS

Amazon leaders fail to commit to end deforestation by 2030

Members of the Amazon Cooperation Treaty Organization failed to agree a shared commitment to end deforestation this decade, which had been hoped for in the run-up to a 2-day summit in Brazil in August 2023. Instead, the Amazon leaders have called on rich countries to help develop a Marshall-style plan to protect the world's largest rainforest. In a joint declaration, the eight South American countries that are home to the Amazon rainforest said ensuring its survival could not be solely up to them, as resources from the forest were consumed globally. The countries were unable to agree a united position on the role of extractive industries in the region such as beef, oil and mining, which are drivers of forest destruction. Amazon leaders called for debt relief in exchange for climate action, agreed to strengthen law enforcement cooperation, and urged industrialized countries to comply with obligations to provide financial support. Source: *The Guardian* (2023) [theguardian.com/environment/2023/aug/09/amazon-leaders-rich-countries-support-rainforest-deforestation-brazil](https://www.theguardian.com/environment/2023/aug/09/amazon-leaders-rich-countries-support-rainforest-deforestation-brazil)

Antigua: Redonda designated as a protected area

The Caribbean island of Redonda, an uninhabited island that is part of Antigua and Barbuda, has been granted legal protection after having undergone a remarkable transformation from a barren moonscape to a thriving wildlife sanctuary in just a few years. The newly established Redonda Ecosystem Reserve, spanning nearly 30,000 ha of land and sea, encompasses the entire island, its surrounding seagrass meadows and a 180 km² coral reef. This achievement is the result of collaborative efforts by the government of Antigua and Barbuda, particularly the Department of Environment, alongside local and international conservation organizations including the Environmental Awareness Group, Fauna & Flora and Re:wild. The restoration programme began in 2016, turning Redonda from a barren landscape into a thriving biodiversity hub. The initial phases of this programme involved the removal of invasive rats and feral goats from the island, allowing native species to recover. The island is now believed to house c. 30 globally threatened and near-threatened species, along with globally significant seabird colonies. Source: *Loop News* (2023) [caribbean.loopnews.com/content/antigua-redonda-designated-protected-area](https://www.loopnews.com/content/antigua-redonda-designated-protected-area)

Scientists discover deep-sea octopus nursery

A team of international scientists have discovered a new deep-sea octopus nursery at a low-temperature hydrothermal vent off the shore of Costa Rica, bringing the number of known octopus nurseries globally to three. Scientists believe this octopus is potentially a new species of *Mussoctopus*, a genus of small to medium-sized octopuses without an ink sac. This nursery, the Dorado Outcrop, was originally discovered in 2013 and was the very first observation of female octopuses gathering together to brood their eggs. No developing embryos were seen when the site was first explored, leading scientists to believe conditions at the Dorado Outcrop may not support octopus growth, but researchers on the recent Octopus Odyssey expedition witnessed the species hatch. Five never-before-seen seamounts in Costa Rica's waters were also explored and contained thriving biodiversity. During the expedition, scientists used an underwater robot, ROV SuBastian, to observe the seamounts and baby octopuses. Source: *Oceanographic* (2023) [oceanographicmagazine.com/news/scientists-discover-deep-sea-octopus-nursery](https://www.oceanographicmagazine.com/news/scientists-discover-deep-sea-octopus-nursery)

Wild sea otters could help generate funds for local communities

A recent study has found that sea otters attract recreational visitors to Elkhorn Slough, generating more than USD 3 million in revenues to local communities annually. The research assessed the economic value provided by recreational visitors to the central Californian estuary where people can enjoy kayaking, hiking, fishing and other activities. It revealed that the opportunity to view sea otters is a major reason for people appreciating their visit, and this correlated with the financial value visitors placed on protecting the area and sea otters. Elkhorn Slough was chosen as a case study because of its known recreational interest and the presence of diverse wildlife. The 12-km long tidal estuary supports a resident population of sea otters that has grown over 2 decades thanks to improved legal protections, as well as efforts of the Sea Otter Program of Monterey Bay Aquarium (see also *Oryx*, 55, 535–545). The Program primarily used Elkhorn Slough as a release site for rescued and surrogate-reared juvenile sea otters, and in turn contributed significantly to the population growth in the estuary during 2002–2016. Sources: *Journal of Ocean and Coastal Economics* (2023) [doi.org/ks33](https://doi.org/10.1016/j.joce.2023.06.001) & *Phys.org* (2023) [phys.org/news/2023-06-wild-sea-otters-generate-millions.html](https://www.phys.org/news/2023-06-wild-sea-otters-generate-millions.html)

World's largest limpet is slipping into extinction

The world's largest limpet *Scutellastra mexicana* is at risk of extinction and requires urgent conservation action, according to a study published in *Aquatic Conservation*. Once widely distributed, the species has already been extirpated from its historical range along Mexico's Pacific coast. The few remaining viable populations are now found in Islas Mariás in Mexico, a biosphere reserve. Researchers counted the limpets around the island, which was a prison until 2019. They found only around 2,300 individuals, at low density and without recent recruitment. Exploitation of *S. mexicana* in Mexico dates back to precolonial times, but heavy harvesting for meat and shells peaked in the 1970s and 1980s, with tons of limpets picked from coastlines. Although it is now officially protected, the limpet continues to be harvested. Limpet species play an important role in maintaining coastal ecosystems, and researchers are calling for effective protection for *S. mexicana* and the Islas Mariás to halt the species' decline. Sources: *Aquatic Conservation* (2023) [doi.org/ks6h](https://doi.org/10.1016/j.aqucon.2023.08.001) & *Mongabay* (2023) [news.mongabay.com/2023/08/off-mexicos-coast-worlds-largest-limpet-is-slipping-into-extinction](https://www.news.mongabay.com/2023/08/off-mexicos-coast-worlds-largest-limpet-is-slipping-into-extinction)

Climate change poses significant threat to leatherback turtle hatchlings

Researchers have examined the effects of incubation temperature on leatherback turtle *Dermochelys coriacea* hatchlings in the USA. Previous studies on nest temperatures and hatchling performance have primarily focused on green and loggerhead sea turtles. Results showed that hatchling morphology, performance and nest success were all influenced by nest temperature. Temperature data loggers were placed in 13 leatherback turtle nests along 9.6 km of coastline along Juno Beach, Florida on the day they were laid during the early, middle and late nesting seasons. Nests with lower temperatures produced longer hatchlings, and the highest nest temperatures produced hatchlings with thicker body depths and shorter flippers. Hatching and emergence success also correlated with temperature, with the mid-season, cooler nests most successful. Nests at higher temperatures also had a shorter incubation period, meaning reduced embryo developmental time. Increasing temperatures pose a significant threat to the species, which already has a lower nest success than other turtle species nesting on the same beach. Sources: *Endangered Species Research* (2023) [doi.org/gspmtf](https://doi.org/10.1016/j.esr.2023.09.001) & *Phys.org* (2023) [phys.org/news/2023-09-temperature-impacts-leatherback-hatchlings.html](https://www.phys.org/news/2023-09-temperature-impacts-leatherback-hatchlings.html)

ASIA & OCEANIA

Effects still being felt years after Pacific heat wave

In late 2013, a mass of warm water now known as the Blob appeared in the north-east Pacific and, bolstered by an El Niño event, wreaked havoc on marine ecosystems: thousands of seabirds died, and blooms of harmful algae poisoned marine mammals and shellfish. The warmed water also brought an influx of new animals to the north-east Pacific: ocean sunfish appeared in Alaska and yellow-bellied sea snakes in Southern California. By 2017, the Blob had waned and many of these more tropical species had retreated, but some have remained. Historically, it has been common that a few individuals from warm-water species ended up further north during warmer years, but normally in small numbers insufficient to sustain a long-term population. But because the Blob was so intense and lasted so long, populations large enough to establish themselves more permanently made the move into these normally cooler habitats.

Sources: *Global Change Biology* (2023) doi.org/10.1111/gcb.16862 & *Hakai Magazine* (2023) hakaimagazine.com/news/years-after-the-blob-the-pacific-still-doesnt-look-the-same

The quest to save the Guam kingfisher

The accidental introduction of brown tree snakes to the Pacific island of Guam, at the end of the second world war, is counted amongst the worst conservation disasters. The snakes wiped out huge numbers of native birds, mammals and lizards including the Guam kingfisher, Guam rail and Guam flycatcher. Now conservationists from Guam, the UK and the USA are preparing to return the kingfisher—also known as the Sihék—to the wild. A shipping container in Sedgwick County Zoo, in Wichita, USA is used as a quarantine unit for rearing fledglings. The kingfisher population was almost wiped out when the last 29 were captured and sent to collections in the USA where they have been bred, increasing their captive population to c. 140 in zoos in the USA and Guam. Eggs from these collections are now being sent to Sedgwick to hatch and grow young birds that will be returned to the wild next year. The birds will not go back to Guam, which is still home to > 2 million brown tree snakes. Instead, conservationists plan to introduce the birds to Palmyra Atoll, almost 6,000 km from Guam.

Source: *The Guardian* (2023) theguardian.com/environment/2023/jul/23/scientists-battle-to-save-guam-kingfisher-after-snakes-introduced

Reptile discoveries: rare dragon still exists in the wild...

A tiny earless lizard thought to be extinct in the wild has been spotted for the first time in more than 50 years in grasslands west of Melbourne, Australia. The Victorian grassland earless dragon *Tympanocryptis pinguicolla* was once commonly found in the region, but its numbers were decimated by habitat loss and predators such as foxes and feral cats. In February 2023, two early-career ecologists snapped a photo of the lizard and sent it off to a reptile expert in the state of Victoria, who identified the animal as the Critically Endangered dragon. Since then, scientists have been conducting surveys to estimate the population size, and Australia is investing in a project using trained detection dogs to sniff out more of the animals. Sixteen lizards have been collected to participate in a breeding program, which will be run by Zoos Victoria. The conservation organization has been actively looking for the small, light-brown dragons since 2017. The lizards are c. 15 cm long when fully grown and lack external ear openings, which earned them their name.

Source: *Smithsonian Magazine* (2023) smithsonianmag.com/smart-news/scientists-find-the-extinct-victorian-earless-dragon-not-seen-since-1969-180982440

... and new species of snake identified in Viet Nam

During an expedition to collect data on threatened frog species in north-west Viet Nam, scientists came across a small, metallic purple snake. With an orange neck and a pale line along its upper jaw, this individual was unlike any known species of snake. Further examination of photographs suggested it may belong to a group called keelbacks: generally medium-sized, semi-aquatic snakes found across South, East and Southeast Asia. Keelback snakes produce venom and some are also poisonous, storing toxins from toads and firefly larvae in glands in their necks. DNA analysis later confirmed that the individual belonged to the keelback group, genus *Rhabdophis*, and that it was not of any previously known species. The new species has been named H'mong keelback snake *Rhabdophis hmongorum*, in honour of the H'mong people, with whom the snake shares its habitat in the Hoang Lien Mountains. Further research is now needed to determine where the species is found, which threats it faces and which conservation measures are needed to protect it.

Sources: *Zootaxa* (2023) [doi.org/kx89](https://doi.org/10.1111/zoo.15189) & *Zoological Society of London* (2023) zsl.org/news-and-events/feature/news-snake-species-vietnam

Innovative aerial surveys help monitor dugongs

An innovative project aims to implement new technologies to monitor dugongs on the Great Barrier Reef, Australia using a combination of methods including custom-designed camera systems on survey aircrafts, as well as drones and machine learning-based image analysis. During aerial surveys, a plane is flown in parallel lines along the coastline, with observers looking out for dugongs and other animals, while cameras attached to the bottom of the plane take photos. Drones are also being trialed. Dugongs are threatened by entanglement in fishing gear, collisions with boats and habitat loss. The Great Barrier Reef supports one of the largest dugong populations. By using new technologies, this project fills knowledge gaps and establishes innovation and collaboration as guiding principles for the design of future monitoring projects.

Source: *Great Barrier Reef Foundation* (2023) barrierreef.org/news/blog/spotted-from-above-innovative-aerial-surveys-help-monitor-the-reef-s-dugongs

Small urban greening projects benefit insect diversity in cities

A study by researchers at the University of Melbourne, Australia has transformed a small urban greenspace into a native plant haven, increasing the number of insect species found by seven times and confirming several benefits of urban greening projects. Originally the space contained only a grass lawn and two trees, but by using fertilization, organic mulching, new topsoil and soil decompaction, the researchers created habitat for 12 native plant species. In the following 3 years, the team carried out 14 insect surveys, studying ants, bees, wasps and more. Overall, 94 insects were identified, 91 of which were indigenous to Victoria, Australia. Despite losing three plant species across the study period, the nine remaining species supported seven times more insects than the original two species found on the plot.

Sources: *Ecological Solutions and Evidence* (2023) [doi.org/ks34](https://doi.org/10.1016/j.ese.2023.100000) & *The British Ecological Society* (2023) britishecologicalsociety.org/small-urban-greening-projects-can-dramatically-increase-number-of-insect-species-in-cities

All internet addresses were up to date at the time of writing. The Briefly section in this issue was written and compiled by Emma Sinnett, Julia Hochbach and Martin Fisher. Contributions from authoritative published sources (including websites) are always welcome. Please send contributions by e-mail to oryx@fauna-flora.org.