

SPOTLIGHT ON HUMAN–WILDLIFE INTERACTIONS

Climate change as a global amplifier of human–wildlife conflict

A new study shows links between rising temperatures and a global increase in negative interactions between people and wildlife. Researchers found evidence of conflicts exacerbated by climate change on six continents, including in marine, terrestrial and freshwater systems. Reported negative interactions involved mammals, reptiles, birds, fish and invertebrates. The team analysed published, peer-reviewed studies of human-wildlife conflicts and identified cases that were linked specifically to the effects of climate change. They showed that climate shifts can alter animal habitats and the timing of events, as well as wildlife behaviours and resource availability. People are also changing their behaviours and locations in response to climate change in ways that increase conflicts.

Sources: *Nature Climate Change* (2023) doi.org/kdc4 & *Science Daily* (2023) science.daily.com/releases/2023/02/230227132619.htm

Disproportionate effects on low-income communities

The burden of negative interactions with wildlife disproportionately falls on people in already impoverished households, a study finds. Researchers analysed the impact of cattle predation by 18 species of large carnivores and found that the impact of such predation on annual per capita income was 2–8 times higher for households in transitioning and developing economies than in developed areas. In addition, 82% of the range of these carnivores falls outside protected areas, and five threatened species have over one-third of their range in the most economically deprived areas. Predation by carnivores often adds to the economic difficulties of farmers who are already under pressure from climate change, increasing droughts and the fragmentation of pasture lands. This affects not only food security, but also the mental health and emotional well-being of affected farmers. The authors highlight the urgent need to implement measures to reconcile carnivore conservation with the needs of affected local communities.

Source: *Communications Biology* (2023) doi.org/10.1038/s42003-023-04493-y

Orangutan death in Sumatra points to human–wildlife conflict

An investigation into the violent death of a Sumatran orangutan in January 2023 has highlighted the persistent problem of human–wildlife conflict and the illegal trade of this Critically Endangered species. Orangutans are a protected species under Indonesian law, and harming or killing one is a criminal offence punishable by up to 7 years in prison and IDR 100 million (USD 6,500) in fines. The coffee farmers who caught the animal stated that they used bamboo, rope and makeshift tools to restrain it and bring it to the hamlet chief, but denied ever hitting the animal. At least 2,200 crimes against orangutans were reported during 2007–2019. Wildlife protection and welfare campaigns are discouraging the capture of the animals without the assistance of officials and experts, and conservationists have urged people to immediately contact local authorities when they encounter threatened species such as orangutans, tigers or elephants inside human-occupied areas.

Source: *Mongabay* (2023) news.mongabay.com/2023/03/sumatran-orangutan-death-killing-human-wildlife-conflict-trafficking-illegal-trade

Reducing human-wildlife conflict: community training in Zimbabwe...

In the Mid-Zambezi Valley in northern Zimbabwe, African Wildlife Foundation and partners are supporting natural resource management and human–wildlife conflict mitigation by raising awareness and offering community training. During March 2022–April 2023, they conducted sessions to promote natural resource protection, restoration and management in the landscape, which comprises numerous protected areas in the Zimbabwe–Mozambique–Zambia Transfrontier Conservation Area. Conflict with wildlife such as crop-using elephants is common in the area. Training sessions were attended by women, youth, ward development committee members, traditional leaders, community scouts, environmental sub-committee members and local government leaders. By educating communities on wildlife behaviour and training them on human–wildlife conflict mitigation strategies, including the use of chili peppers to deter elephants from entering fields, the aim is to reduce deaths and injuries, loss of property and the destruction of crops by wild animals.

Source: *African Wildlife Foundation* (2023) awf.org/news/managing-natural-resources-reduces-human-wildlife-conflict-zimbabwe

... water troughs for wildlife in Mexico...

Beekeepers near the Calakmul Biosphere Reserve in Mexico are working with conservationists to provide water troughs for wild animals in an effort to reduce conflicts with farmers and livestock. Many beekeepers place water bowls at the foot of their apiaries to provide water for the bees and to keep ants away. When water is scarce, these can attract wildlife that often also use them to bathe, thereby knocking over the tanks. To help reduce this problem and protect both wildlife and beekeepers' livelihoods, since 2015, water troughs, known locally as *bebederos*, have been placed in the vicinity of, but at a safe distance from, the apiaries. More than 70 species, including Baird's tapirs, jaguars, ocelots and coatis, have used the troughs. Conservationists caution that such projects must be implemented carefully so as not to introduce pathogens or create so-called predator traps, where prey species congregate around artificial water sources.

Source: *Mongabay* (2023) news.mongabay.com/2023/03/in-calakmul-water-troughs-offer-possible-solution-to-human-wildlife-conflict

... and buffalo walls in the Virunga mountains

Negative interactions between people and wildlife in the Virunga mountain range have significantly declined since the construction of so-called buffalo walls between protected areas and neighbouring communities. The stone walls were erected a few years ago to prevent wild animals from venturing into human settlements and damaging crops. In addition to the wall, trenches are sometimes dug as a further barrier. The animals still occasionally manage to break through; the walls are therefore monitored carefully on a daily basis, and any damage is swiftly repaired. On the Ugandan side of Mgahinga National Park, the introduction of *Erythrina abyssinica* trees, also known as lucky bean or flame trees, has proven successful in strengthening the walls as the trees grow. Although fewer cases of human–wildlife conflict are now being registered in the Virunga mountain range, wild animals still occasionally damage crops, and buffer zones around protected areas remain crucially important.

Source: *The New Times* (2023) newtimes.co.rw/article/8224/news/tourism/buffalo-wall-in-virunga-mountains-reduces-human-wildlife-conflict

INTERNATIONAL

Rewilding can help mitigate the worst effects of climate change

A new study underlines how the recovery of wildlife populations could play a critical role in keeping rising global temperatures below the critical 1.5 °C threshold. This would minimize the risk of extreme climate-related effects such as heatwaves, droughts, rising sea levels and wildfires. Co-authored by 15 scientists from eight countries, the findings demonstrate the value and urgency of not only protecting the functional wild nature we have left, but enabling degraded ecosystems to recover through rewilding at a large scale. The data show that protecting or restoring populations of nine key taxa (marine fish, whales, sharks, grey wolf, wildebeest, sea otter, musk ox, African forest elephant and American bison) could collectively facilitate the additional capture of 6.4 billion t of carbon dioxide annually. This is > 95% of the amount needed to meet the global target of removing 500 billion t of carbon dioxide from the atmosphere by 2100. Sources: *Nature Climate Change* (2023) doi.org/10.1038/s41561-023-0371-1 & *Rewilding Europe* (2023) rewildingeurope.com/news/new-paper-underlines-the-importance-of-wildlife-comeback-as-a-climate-change-solution

Alarming lack of traceability in rubber supply chains

Research data from the Zoological Society of London's latest assessment indicates that 79% of the natural rubber manufacturers assessed do not publicly claim being able to trace where their rubber comes from. This void of traceability increases the risk of deforestation, biodiversity loss and rights abuses, as rubber plantations expand. The majority of rubber production occurs in Southeast Asia, and pilot projects have shown that it is possible to trace rubber from processing facilities back to smallholder farms, enabling buyers to target interventions to improve sustainability. The assessment also illustrates that rubber companies may not be ready for the implementation of the upcoming EU Deforestation Regulation, which aims to reduce deforestation and forest degradation associated with the production and trade of agricultural commodities such as palm oil, soy, timber, beef and rubber. Under the Regulation, companies must demonstrate that their products are deforestation-free and legal, including rubber derivatives such as tyres, gloves and apparel. Source: *Zoological Society of London* (2023) zsl.org/news-and-events/news/opaque-rubber-supply-chains-are-obscuring-deforestation-and-biodiversity-risks

Censoring of observation data could hurt threatened species

A recent study demonstrates how obscuring the exact locations of animal and plant observations in the app *iNaturalist* could lead to errors in scientific studies and ultimately be detrimental for threatened species. The app allows the public to upload plant and animal photos to an online repository and report the locations of species. However, when a user records a species that is listed as threatened, *iNaturalist* automatically obscures the exact coordinates, creating a random location within a certain distance, in an effort to prevent contributing to the poaching and exploitation of these animals. In the new study, researchers tested the possibility that the practice could harm conservation efforts by distorting maps of species distribution. The team used location data for three amphibian species in Argentina and generated a random location within 30 km of the original. They modelled each species' range using the modified and original data sets and found that they overlapped by only 45–56%.

Sources: *Biological Conservation* (2023) doi.org/10.1016/j.biocon.2023.109811 & *Science* (2023) [science.org/content/article/conservation-app-s-censoring-observation-data-could-hurt-threatened-species-scientists](https://www.sciencemag.org/content/article/conservation-app-s-censoring-observation-data-could-hurt-threatened-species-scientists)

Marine fish are responding to ocean warming by relocating

Analysing current world-wide data on marine fish in recent years, researchers have revealed how fish populations are responding to rising sea temperatures. They found that many marine fish populations are shifting toward colder waters nearer the Earth's poles or are moving to deeper waters in a bid to stay cool. The study examined 115 fish species spanning all major oceanic regions, with data on the responses of a total of 595 marine fish populations. This is the first time such a comprehensive global analysis has been undertaken. The results showed a striking trend, with species living in areas that are warming faster showing the most rapid shifts in their geographical distributions. For marine life, the temperature of the surrounding water affects critical functions such as metabolism, growth and reproduction, and marine species often have a very narrow temperature range that they can tolerate, making even small differences in the water impossible to cope with. As a result, marine life changes caused by global warming have been up to seven times faster than animal responses on land.

Sources: *Global Change Biology* (2023) doi.org/10.1111/gcb.16100 & *Phys.org* (2023) phys.org/news/2023-05-marine-fish-ocean-relocating-poles.html

Plastic bags are leaving their mark on the deep-sea floor

Plastic pollution is everywhere, from the summit of Mount Everest to the bottom of the Mariana Trench, with many unexpected and often detrimental effects. On the bottom of the Philippine Trench, the world's third-deepest trench at a depth of 10,000 m, plastic is reshaping life on the seafloor. In a 2021 expedition, researchers found that the deep-sea current in the trench was dragging plastic bags along the seafloor, scraping it with parallel lines like tyre tracks. Such lines had been observed in other deep-sea environments before, but it had remained unclear where they had come from. The plastic bags' impact on the seafloor could have repercussions for deep-sea life, the researchers said. The main source of food for many deep-sea creatures is the organic matter that falls from the surface. Plastic bags barrelling across and gouging into the sediment could bury this scarce food, with an effect similar to bulldozing a forest. The tracks could also disrupt how carbon is stored in deep-sea sediments, but further research is required to fully understand the impacts on deep-sea ecological processes.

Source: *Hakai Magazine* (2023) hakaimagazine.com/news/plastic-bags-are-leaving-their-mark-on-the-deep-sea-floor

First ever assessment of the management of river dolphin sites

There are six species of river dolphins, all of which are categorized as Endangered or Critically Endangered on the IUCN Red List and thus require urgent and effective protection. In March 2023, during the UN Water Conference in New York, USA, conservation organization WWF launched a new report on the first ever assessment of the management effectiveness of protected areas for river dolphins in Asia and South America. The survey focussed on site threats and management actions. Threats to river dolphins are similar on both continents: fishing activities are the major threat, along with the impacts of climate change. In Asia, however, the threats to river dolphin survival are higher, and river dolphin populations are significantly smaller. Management effectiveness varied widely between the assessed sites, ranging from 27% to 96% of management actions properly implemented, with an average score of 52% across all sites. It is hoped the report will stimulate site managers and other stakeholders to increase the effectiveness of their site management.

Source: WWF (2023) riverdolphins.org/wp-content/uploads/2023/03/Safe-havens-for-river-dolphins_CARDS-Lite-March-2023.pdf

EUROPE

Europe's grassland butterflies in steep decline

A new report on the trends of grassland butterflies across Europe shows that numbers declined by a shocking 36% in the decade to 2020. The European Grassland Butterfly Indicator, recently calculated for the eighth time by Butterfly Conservation Europe, is a key indicator of the health of European grasslands. It is based on trends from 17 widespread grassland species. The decline of these butterflies shows that grasslands across the continent have deteriorated over the last 30 years. The main cause is agricultural intensification: grasslands are converted to arable fields, and the heavy use of fertilizers and herbicides reduces wildflowers. Nitrogen deposition from agriculture and car exhausts is also a growing factor, as is climate change. Butterflies can serve as indicators of other insect populations, which are vital for ecosystem function. Insects are important parts of the diet of many other animals and are responsible for the pollination of most wildflowers and many crops.

Source: *BirdGuides* (2023) birdguides.com/news/europes-grassland-butterflies-in-steep-decline

Illegal irrigation practices threaten Spanish national park

Doñana National Park, located in the south of Spain, is under threat from illegal irrigation practices. The Park, declared a UNESCO World Heritage Site in 1994, is home to many threatened plant and animal species. Experts estimate that over 1,000 illegal wells have been dug near the Park, with some farmers using powerful pumps to extract water from the wetlands. This practice is causing significant damage to the area's natural habitats, impacting both plant and animals, including many birds, which depend on the wetlands for food and shelter. New proposals by the regional government to legalize many of these wells are putting additional pressure on the system. The illegal irrigation practices are causing soil degradation, loss of biodiversity, and even changes to the flow of rivers. Some experts predict that all of the Park's freshwater wetlands could dry up year-round within the next decade if action is not taken to address the problem. The impact on bird populations has been devastating: birds like the marbled teal, white-headed duck and purple swamphen rely on the wetlands for their survival, but their numbers have plummeted in recent years.

Source: *BirdLife International* (2023) birdlife.org/news/2023/05/15/donana-is-going-extinct

Conservation Carpathia to open third bison release point

A bison reintroduction project developed by Conservation Carpathia, through the European Commission's LIFE programme, is launching the third reintroduction spot in the Dobroneagu area of the Făgăraş Mountains in Romania in the commune of Nucşoara. The reintroduction program covers two other areas in Făgăraş: Bunea, in the area of Rucăr commune, and Lereşti. Thirty-six bison have been reintroduced so far, and 22 were to be added this spring, with aims to release 75 bison into the Carpathians by mid-2024. The enclosure in Nucşoara spreads across 76 ha, and, like the other sites, is located in a wild area. It has feeding facilities and is divided into a quarantine area and an acclimatization area. The acclimatization area is surrounded by an electric fence, specially designed to allow local wildlife to roam inside and the bison to become accustomed to the presence of other species. The project aims to develop an independent, healthy bison population that is ecologically efficient, and that will allow for exchange between individuals among neighbouring free-roaming populations in the long term.

Source: *Romania Insider* (2023) romania-insider.com/third-bison-reintroduction-area-fagaras-apr-2023

Dorset super reserve recreates ancient savannah habitat

In 2020, on Purbeck Heath in Dorset, UK, seven landowners joined forces to create what has been called the UK's first super national nature reserve, a 3,400-ha area of prime wildlife habitat. Within this reserve, a new project is now underway to create 1,370 ha of open savannah-type habitat with free-ranging, grazing animals. Thousands of years ago, there would have been aurochs, tarpans and wild boars but as these are now extinct or no longer found in the area, modern-day substitutes have been drafted in to create more of the sort of habitat where precious species such as the sand lizard, southern damselfly and heath tiger beetle can thrive. Red Devon cattle, Exmoor ponies and curly coated Mangalitsa pigs roam freely in the reserve, grazing and rooting alongside deer to help shape a more diverse landscape with richer habitats. Large herbivores can play a crucial role in helping plants and less mobile insect species move around the landscape, carrying seeds and larvae on their fur and hooves, or in their dung.

Source: *The Guardian* (2023) theguardian.com/environment/2023/may/26/dorset-super-reserve-recreates-ancient-savannah-habitat-boost-biodiversity

New report reveals record-breaking year for dam removal in Europe

The latest report from Dam Removal Europe revealed another record-breaking year for dam removal in 2022, and a new country joining the movement. According to the report, at least 325 river barriers were removed across the continent, a 36% increase on the previous record set in 2021. Most of the removed barriers were weirs; these structures are often old and obsolete and can be removed in a cost-efficient way. Several factors have contributed to the increased number of removed barriers, including newly available funding opportunities such as the Open Rivers Programme, the coordinated efforts of national and regional public authorities to report removed barriers, and the interest created by findings of the previous report, which had been disseminated across Europe. As in 2021, Spain remained the European leader in dam removal, followed by Sweden and France. Luxembourg recorded its first-ever barrier removal in 2022, with the deconstruction of a weir as part of a bigger project aimed to restore the ecological continuity of the Pétrusse River.

Source: *Dam Removal Europe* (2023) damremoval.eu/dre-report-2022

Scientists plan a brighter future for Ukraine's war-ravaged forests

The war in Ukraine has inflicted widespread damage on the nation's forests, with bombs and missiles sparking thousands of fires and artillery causing severe damage to countless trees. Some forestry experts, however, say that the destruction may lead to a major change in forest management, which could help ensure these landscapes can better cope with climate change, support biodiversity, and protect water quality. Even before the current war, Ukraine's forests were considered some of the most degraded, and the expansion of agriculture had vastly reduced forest cover. Many of the remaining forests were crowded, fire-prone monoculture plantations. Converting plantations to more resilient forests could have many benefits. Forests with mixed species and well-spaced trees of varying ages are less susceptible to intense fires and droughts, which are expected to become more common. The researchers also hope to build groundwater protection into forest management. Sandy landscapes such as those in south-eastern Ukraine allow water to soak into the ground and replenish aquifers, but plantations can interfere. When fires thin them, wetlands often reappear and groundwater levels rebound.

Source: *Science* (2023) science.org/content/article/scientists-plan-comeback-ukraine-s-war-ravaged-forests

AFRICA

Big discovery for a tiny cat

A new study has provided new information on the little-known sand cat *Felis margarita*, the only feline to live exclusively in deserts. After tracking 22 individuals with radio collars and intermittently following and observing them in southern Morocco, the team discovered that sand cat ranges are far more extensive than previously thought, rivalling ranges of much larger species such as leopards and tigers. Sand cats probably maintain the largest range of cats of the *Felis* genus, including the black-footed cats and African wildcats. Despite harsh desert conditions and limited equipment, high-quality data were collected for 10 of the 22 cats over the 4 years. Sand cats may not have defined home ranges, but rather maintain a somewhat nomadic lifestyle, moving from one location to another based on factors such as rainfall fluctuations; a pattern of movement previously not recorded among wild felids. The authors indicate that changing the species' conservation status from Least Concern to Near Threatened may be warranted.

Sources: *Journal of Arid Environments* (2023) doi.org/10.1016/j.jaridenv.2022.104909 & *Treehugger* (2023) [treehugger.com/moroccos-sand-cats-behavior-never-before-seen-wild-cats-7375350](https://www.treehugger.com/moroccos-sand-cats-behavior-never-before-seen-wild-cats-7375350)

Controversy surrounding water development project in UNESCO site

Conservationists are protesting against a project inside Lake Malawi National Park, a UNESCO World Heritage Site, for breach of environmental protection safeguards. The project aims to supply water to 93,000 people in the lakeshore district of Mangochi, but protests began in 2021 when it emerged that construction started before the government had made available an Environmental and Social Impact Assessment report for scrutiny. Activists subsequently obtained a court order that stopped the project, but construction work resumed in June 2022. Protestors still believe the contractors are not complying with the environmental protection measures for the project and have described the situation as an environmental catastrophe. The government agency, however, says the contractors are complying with approval conditions and that measures have been put in place to mitigate some of the issues, including erosion caused by increased water flows.

Source: *Fairplanet* (2023) [fairplanet.org/story/inside-the-protests-to-save-one-of-africas-most-critical-biodiversity-hubs](https://www.fairplanet.org/story/inside-the-protests-to-save-one-of-africas-most-critical-biodiversity-hubs)

First map of every tree in Africa

Scientists have published a map of every single tree in Africa in a single year, providing the most accurate and complete picture of tree cover outside forests across the continent to date. The snapshot of trees in Africa in 2019 is the first tree-level map of any continent, offering a cost-effective technique that could help researchers to measure and verify tree cover annually at a large scale. The map exceeds all previous attempts to map woody vegetation across large scales and finds almost 30% of Africa's trees outside forests, such as in grasslands, savannahs and croplands. The scientific breakthrough was only possible because of recent advances in remote sensing and data processing using artificial intelligence. To build the map, the scientists analyzed > 200,000 satellite images at 3-m resolution. The new technique supports the scientists' goal of creating a global, tree-level map, updated annually.

Source: *CTrees* (2023) ctrees.org/news/first-map-of-all-trees-in-africa-offers-prototype-for

Remote cameras confirm healthy populations of Critically Endangered eastern lowland gorillas

New camera-trap images from Tayna Nature Reserve in the Democratic Republic of the Congo have captured a family group of eastern lowland gorillas *Gorilla beringei graueri*, confirming a healthy population of the Critically Endangered species in the community-managed reserve. The Reserve is home to > 150 individuals, making it one of the species' last strongholds. Near the Reserve, Re:wild partner Gorilla Rehabilitation and Conservation Education Center operates the only sanctuary for rescued eastern lowland gorillas. The sanctuary also works with local communities on conservation education, forest protection and sustainable livelihoods, to help secure a future for eastern lowland gorillas and to foster a peaceful coexistence between apes and people. The local community is an integral part of the monitoring effort, with all monitoring teams hired and trained locally, in partnership with the elected management authority. Two monitoring teams follow a single gorilla group, providing a continuous presence in an area of the Reserve with a high density of gorillas. A third team places camera traps in the forest and systematically surveys the remainder of the Reserve. Vital monitoring information, including camera-trap images, helps conservationists protect this little-studied subspecies.

Source: *Re:wild* (2023) rewild.org/press/remote-cameras-confirm-healthy-populations-of-critically-endangered-eastern

New partnership for the protection of the African–Eurasian Flyway

Migratory birds travel vast distances, relying on sites across many countries to complete their journeys. Work to protect them therefore needs to be on a global scale. In June 2023, the Royal Society for the Protection of Birds and BirdLife International announced a new GBP 3 million partnership with the Ecological Restoration Fund, to support work along the African–Eurasian Flyway. Stretching from the Arctic to southern Africa, the African–Eurasian Flyway is one of four great global pathways used by migratory birds, including large flocks of barnacle geese, dunlins and wigeons. However, all along the flyway, habitat destruction and degradation, illegal hunting and climate change threaten the future of some of the important sites on which birds rely to breed, rest and refuel. The new funding will enable the conservationists to scale up work across the flyway. This will include boosting the capacity of local conservation organizations.

Source: *BirdLife International* (2023) birdlife.org/news/2023/06/02/new-3-million-partnership-will-help-bolster-the-protection-of-the-african-eurasian-flyway

South African start-up puts cattle to work for conservation

Livestock herding and wildlife conservation are often perceived as conflicting pursuits, with the belief that one must come at the expense of the other. However, in South Africa, a fresh approach centered on Indigenous knowledge is challenging this perception. Meat Naturally is a promising start-up that aims to revive traditional grazing practices that work with nature's rhythms, rather than against them, to promote ecological balance across the landscape. Rotational grazing, whereby pastoralists move with wildlife populations based on rainfall and seasonal resource availability, allows for periods of grazing followed by periods during which vegetation can recover from grazing pressure of both wildlife and cattle. This ancient practice has greatly diminished in recent times and much traditional knowledge has been lost as young people move to urban areas. This has contributed to the degradation of rangelands, as cattle are left to graze continuously in the same areas, leading to environmental damage and malnourished cattle. Meat Naturally is now working to help small-scale farmers to reimplement rotational grazing regimes to help solve these problems.

Source: *Conservation International* (2023) conservation.org/blog/meet-the-south-african-start-up-putting-cattle-to-work-for-conservation

AMERICAS

Southern flying squirrel rediscovered in Honduras after 43 years

The southern flying squirrel *Glaucomys volans*, last documented in Honduras 43 years ago, has been recorded in the municipality of Concordia in the department of Olancho. The recently published discovery confirms that there is at least one population of *G. volans* in the country, in the Las Lechuzas site, which is currently the southernmost distribution known for the species. The species is categorized as Least Concern on the IUCN Red List, but is considered Data Deficient on the Red List of Honduran species. Considering the low number of records and the high rate of destruction of pine forests in Honduras, the squirrel is a priority for conservation in the country. The discovery was possible thanks to a project supported by El Asserradero Sansone, a company focused on sustainable forestry activities. The company is now committed to aiding the conservation of the species in the area, using recommendations from the study such as increasing the quantity and quality of tree seedlings growing in the canopy and raising awareness in the community. Sources: *Check List* (2023) doi.org/10.15560/19.1.133 & *Phys.org* (2023) phys.org/news/2023-03-southern-flying-squirrel-rediscovered-honduras.html

Invasion of voracious lionfish in Brazil enters worrying new phase

Lionfish are native to the Indian and Pacific oceans, but were introduced to the Atlantic decades ago. First spotted off Florida in the 1980s, they have since spread across the Caribbean, affecting coral reefs and other ecosystems by feasting on fish unfamiliar with the voracious predator. Scientists predicted they would eventually move into Brazilian waters, but the invasion has progressed alarmingly quickly, with lionfish observed along c. half of the country's coastline. Researchers say the invasion is entering a worrying new phase, as the fish have reached areas where the Brazil current flows south, speeding the spread of drifting larvae and putting vast new swaths of ecologically rich waters at risk. Particularly concerning is the potential impact on native fish found around Brazil's oceanic islands, which host dozens of endemic reef species that are exactly the kind of fish that lionfish tend to prey on. Despite efforts to eradicate the species, researchers forecast that lionfish will become a permanent part of Brazil's marine fauna. Source: *Science* (2023) science.org/content/article/brazil-s-invasion-voracious-lionfish-has-reached-worrisome-phase

Frogs as pollinators

Izecksohn's Brazilian treefrog *Xenohyla truncata* has been observed dunking its body inside the flowers of the Brazilian milk fruit tree *Cordia taguayensis*, suggesting that these frogs may act as pollinators. Unusually for frogs, the species is omnivorous with a special liking for fruits and is already known as a seed disperser, and now researchers believe it could also be dispersing pollen. The frogs were observed eating both the petals and nectar of the milk fruit tree and eating flowers from a second tree species, the alien bearded iris *Iris x germanica*. One frog was observed fully entering a flower and emerging approximately 5 min later with pollen grains stuck to its back. These observations represent the first time that any frog species has been observed actively feeding on nectar and flowers. Consuming nectar could help them meet the high energy demands of calling and producing oocytes. Sources: *Food Webs* (2023) doi.org/10.1016/j.fooweb.2023.e00281 & *IPL Science* (2023) iflscience.com/never-before-seen-frog-behavior-suggests-they-could-be-plant-pollinators-68802

Alligators are wetland engineers

A new study shows alligators do more than just care for themselves when they create alligator ponds: they also create a habitat for other organisms and move nutrients around, radically changing the ecosystem around them. The research is the first to show that alligators act as ecosystem engineers by altering nutrient cycling and keeping the ecosystem healthy. When the alligators dig holes to fill with water, they give fish and other wildlife refuge from falling water levels in the dry season. These ponds, in turn, provide the alligator with a steady supply of food and a place to mate. To maintain their ponds and keep them from filling in with vegetation, alligators use their snouts, claws and tails to move sediment and nutrients around. This disturbance enriches the soil, with alligator ponds showing higher nutrient levels compared to that found in surrounding marshes. The team found that the alligators' extricating movements can also prevent communities of organisms made up of bacteria and fungi from forming large mats over the area. Alligators have only recovered from near extinction in the past 50 years, but their habitats remain under threat from human disturbances and climate change. This latest research adds to the growing evidence of the many ways in which predators preserve the health and stability of ecosystems. Sources: *Journal of Animal Ecology* (2023) doi.org/gr9x2s & *Phys.org* (2023) phys.org/news/2023-05-alligators-wetlands.html

The quest to restore kelp forests across coastal British Columbia

Researchers from Vancouver-based NGO Ocean Wise are trying to figure out how to transform the barren parts of British Columbia's sea floor into vibrant kelp forests that sequester carbon and support increased biodiversity. These forests were common in the waters off British Columbia before hunting for the fur trade extirpated sea otters in the early 20th century. When the sea otter population declined, their main prey, kelp-eating sea urchins, flourished, decimating kelp forests by 40–60%. This significant loss of kelp reduced habitat for numerous marine species and also limited the ocean's capacity for absorbing greenhouse gas emissions. However, sea otters have recently started returning to these waters, raising hope they could help reduce sea urchin populations sufficiently to enable kelp forests to grow back. Biologists are trying to speed up the process, attempting techniques such as coaxing seaweed to grow on pebbles and gluing spores to the sea floor. Dropping gravel inoculated with baby kelp on to the seabed in 2022 triggered the growth of a kelp forest 3 m tall. Source: *Canada's National Observer* (2023) nationalobserver.com/2023/04/10/news/inside-quest-regenerate-kelp

Can Mexico save its reefs from excessive tourism?

Cozumel, an island in the Caribbean Sea off the eastern coast of Mexico's Yucatán Peninsula, attracts large numbers of tourists that come to see the world's second-largest coral reef. The Mesoamerican Reef stretches from just north of Cancun to Honduras, and intense tourism is one of the threats that the reef faces, along with the warming waters of climate change and a rise in deadly coral diseases. The growing number of visitors has pitted the long-term health of the coral against those whose businesses depend on reef tourism. However, this has started to change since the Covid-19 pandemic gave tour operators the chance to reexamine their approach. The lockdown-enforced downtime allowed tour operators to train staff in sustainable best practices such as avoiding all contact with the reef and using proper fin techniques to avoid disturbing the coral. Although the federal government remains keen to further expand tourism in the area to maximize revenue, the Coral Reef Alliance, an environmental NGO working to protect coral ecosystems, is aiming to reduce the overall number of tourists visiting the reef annually, to ensure sustainability. Source: *Corporate Knights* (2023) corporateknights.com/leadership/can-mexico-save-its-reefs-from-overtourism

ASIA & OCEANIA

Endemic Southeast Asian birds seized far from home raise questions

Hornbills endemic to the Philippines and bowerbirds found only in Indonesia and Papua New Guinea have been seized thousands of miles away near the India–Myanmar border. The haul was made in India's state of Mizoram by police conducting random checks, and included 13 birds and four monkeys, believed to have been smuggled into India from Myanmar. Of the 59 recognized hornbill species in the world, 32 are found in Asia and 11 are endemic to the Philippines. They play an important role of seed dispersal in forest ecosystems, but face a double threat of forest loss and poaching for illegal trade. All three species of hornbill discovered in the seizure (Mindanao tarictic hornbill, Southern Philippine hornbill and Mindanao writhed hornbill) are listed as threatened in the National List of Threatened Terrestrial Fauna of the Philippines. The detection of these birds has raised questions as to whether traffickers are beginning to target them to satisfy demand from collectors of rare species in Asia. Source: *TRAFFIC* (2023) traffic.org/news/hornbill-bowerbird-seizure-mar-2023

Largest reintroduction in history brings snails back from the brink

Thousands of threatened partula snails reared at London Zoo and Whipsnade Zoo, The Royal Zoological Society of Scotland and St Louis Zoo, have been returned to their French Polynesian island homes, almost 30 years after they were wiped out by an introduced invasive species. In April 2023, more than 5,000 of the snails were carefully flown over 15,000 km to the islands of Moorea and Tahiti, for the largest reintroduction in history. The efforts saw eight species and subspecies reintroduced, all categorized as Extinct in the Wild, Critically Endangered or Vulnerable. Prior to the 2-day journey to the islands, the nocturnal snails, which measure 1–2 cm in length, were individually marked with a dot of red, UV-reflective paint, meaning they will glow under UV torchlight, to help conservationists monitor the populations at night when they are most active. Partula snails eat decaying plant tissue and fungi, and thus play an important role in maintaining forest health. The collaborative conservation initiative is helping to bring the species back from the brink of extinction and contribute towards restoring the ecological balance of these islands.

Source: *Zoological Society of London* (2023) zsl.org/news-and-events/news/extinct-snails-return-wild

China is cracking down on its wildlife trade. Is it enough?

On 1 May 2023, a revised and strengthened Wildlife Protection Law came into effect in China. The new law expands China's list of protected species and criminalizes the sale or consumption of meat from certain animals known to harbour viruses that can infect humans. The law was finalized in December 2022 and has been welcomed by many scientists, although others say the rules have worrying weaknesses, such as permitting farmers to raise raccoon dogs and other mammals for their fur, fueling concerns that the farmers could facilitate the emergence of new human diseases. China is taking steps to strengthen animal disease surveillance, quarantine controls and the use of protective equipment among farm workers, but given the scale of China's animal farms, pathogens will likely still flow between animals and their keepers. The government has also relaxed rules governing the captive breeding of animals used in traditional Chinese medicine and as pets. It is feared this could enable poachers to use farms to launder animals illegally caught in the wild to legal markets. Source: *Science* (2023) science.org/content/article/china-cracking-down-its-wildlife-trade-it-enough

Death of last female Yangtze softshell turtle

The last known female Yangtze giant softshell turtle *Rafetus swinhoei* died of unknown causes in April 2023, leaving just two males as the only known living members of a species that has been on the brink of extinction for years. The Yangtze giant softshell turtle used to live in China's Red River basin and lower Yangtze River, as well as northern Viet Nam. It was wiped out across much of its range because of the damming of rivers, destruction of wetlands, overfishing, pollution and hunting for its meat and eggs. In Vietnamese mythology, the species is a representative of Kim Qui, a turtle god who helped the Vietnamese overthrow the Chinese after a millennium of rule. The closest relative to *R. swinhoei* is the Euphrates softshell turtle *Rafetus euphraticus*, an Endangered species found in the Euphrates River in West Asia. The remaining hope for the Yangtze giant softshell turtle lies in the possibility that a few may still roam, unknown, in Viet Nam and Laos (see *Oryx*, 56, 396–403). A female can lay more than 30 eggs in a clutch, and more than one clutch a year, so even a single breeding pair could prevent extinction.

Source: *Mongabay* (2023) news.mongabay.com/2023/05/death-of-last-female-yangtze-softshell-turtle-signals-end-for-god-turtle

Tasmanian devil released in mainland Australia gives birth

Earlier this year, three joeys were born to a Tasmanian devil that was one of 11 individuals released into a 400-ha wildlife sanctuary in Australia in 2020. Since then, 21 additional adults have been released into the wild and a total of 16 joeys have been born. Tasmanian devils vanished entirely from mainland Australia, mostly because they were outcompeted by introduced dingoes. Across Tasmania, a transmissible, painful and fatal disease called Devil Facial Tumor Disease—the only known contagious cancer—decimated up to 90% of the wild population of Tasmanian devils. Just 25,000 devils are left in the wild of Tasmania today. For the last decade, conservationists have been working to create an insurance population of Tasmania's native apex predator, which is also the largest carnivorous marsupial.

Source: *Re:wild* (2023) rewild.org/press/first-tasmanian-devil-to-return-to-the-wilds-of-mainland-australia-gives

Local communities take action to conserve Critically Endangered carp

Jullien's golden carp *Probarbus jullieni* is a large migratory freshwater fish that occurs in the Mekong River and its major tributaries in Cambodia, Laos, Thailand, Viet Nam and Malaysia. It is categorized as Critically Endangered on the IUCN Red List, the major threats being habitat loss, large-scale agriculture, overfishing and hydropower dams. The community network ComNetMekong has initiated a project employing a local participatory action research approach. ComNetMekong conducts surveys and studies the behaviour, key habitats and threats to the species. Workshops to gather additional information about the species have also been organized with various stakeholders including the Department of Fisheries and academics from local universities. Combining local community knowledge with scientific findings leads to a more comprehensive understanding of the species' status.

Source: *IUCN* (2023) iucn.org/story/202306/local-communities-take-action-safeguard-critically-endangered-julliens-golden-carp

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.