Briefly

SPOTLIGHT ON BIRDS

Rare bird recorded in Croatia after absence of 200 years

An extremely rare and Endangered bird species has been observed in Croatia after more than 200 years. A northern bald ibis *Geronticus eremita* landed in Grobničko polje near the city of Rijeka in October 2021, sparking interest from the media and the scientific community. The species became extinct in Croatia in the 18th century and the last birds nested in the area of Pula. Throughout Europe, habitat loss and hunting are considered the main reasons for the disappearance of the ibis. Waldrappteam, an organization working to protect the species, reported on their Facebook page that the individual had deviated from its usual migration route and flown to the Adriatic coast and across the sea to Croatia, from where it was expected to travel further south.
Source: Croatia Week (2021) croatiaweek.com/rare-and-endangered-bird-returns-to-croatia-after-200-years

Dramatic drop in Europe's bird populations

There are 247 million fewer house sparrows in Europe than there were in 1980, and other once ubiquitous bird species have suffered huge declines, according to a new study. One in six birds, a net loss of 600 million breeding birds in total, have disappeared over < 4 decades. Among the common species that are vanishing are yellow wagtails (97 million fewer), starlings (75 million fewer) and skylarks (68 million fewer). The study by scientists from the Royal Society for the Protection of Birds, BirdLife International and the Czech Society for Ornithology analysed data for 378 of 445 bird species native to the EU and UK, finding that the overall abundance of breeding birds declined by 17–19% during 1980–2017. The house sparrow has been hardest hit, losing half its population, and the tree sparrow has decreased by 30 million birds. Both species have declined because of changing farming practices, but house sparrows have also vanished from many cities for reasons that probably include food shortages, air pollution and diseases such as avian malaria.
Source: The Guardian (2021) theguardian.com/environment/2021/nov/16/house-sparrow-population-in-europe-drops-by-247m

New Zealand's black robin in trouble

The black robin population in the Chatham Islands, 800 km east of New Zealand, was once at the very brink of extinction, following the arrival of pests and intensive farming practices. By 1976 there were just seven individuals left, and only one breeding pair. Conservationists collected their eggs and put them into other birds' nests to be raised. The population has now reached c. 280 birds across two islands, but on Mangere Island there are just 30 birds, and the numbers are decreasing. The population comprises more males than females, and few chicks, but the reasons for this are unknown. There are two Indigenous peoples represented in the Chathams: the original Moriori settlers, who arrived 600–1,000 years ago, and the more recent Māori iwi, Ngāti Mutunga o Wharekauri. It is hoped that with the help of their local knowledge, the black robin can once again be saved from extinction.
Source: The Guardian (2021) theguardian.com/world/2021/nov/06/once-a-global-conservation-success-story-new-zealands-black-robin-in-trouble-again

New species of bird discovered in South America

A team of ornithologists from Brazil and Finland has discovered a cryptic new species of flatbill flycatcher living in the Amazonian lowlands. Flatbill flycatchers are members of the genus *Rhynchocyclus* in the family Tyrannidae. Four known species are distributed from southern Mexico to north-eastern Bolivia, eastern Venezuela, and Brazil: the olivaceous *Rhynchocyclus olivaceus*, the eye-ringed *Rhynchocyclus brevirostris,* the Pacific *Rhynchocyclus pacificus* and the fulvous-breasted flatbill *Rhynchocyclus fulvipectus*. The authors analysed DNA and morphological data from museum specimens of *Rhynchocyclus* species and subspecies, and recordings of their songs. The results suggest the existence of a previously unknown cryptic species in the genus. The new species is named the cryptic flatbill *Rhynchocyclus cryptus* after its morphologically cryptic nature, which strongly contrasts with its high levels of vocal and genetic differentiation, two characteristics that probably facilitate the sympatry with *Rhynchocyclus guianensis* throughout its range.
Source: Sci-News.com (2021) sci-news.com/biology/cryptic-flatbill-rhynchocyclus-cryptus-10344.html

Global heating: rainforest birds shrink but grow longer wings. . .

Birds in the Amazon are becoming smaller but growing longer wings, a new study in a pristine rainforest, at the Amazon Biodiversity Center in Brazil, has found. Since the 1970s, scientists have been using the remote area as a control location to study the effects of deforestation and development. Data on 77 bird species show nearly every non-migratory species in the area has become smaller, some by nearly 10%. One-third of them also bear longer wings. Global heating may be behind this change: since the 1970s, the region has warmed 1.65 °C in the dry and 1.0 °C in the wet season. One plausible explanation for the shrinking birds is a principle called Bergmann's rule: closely related organisms are smaller the closer they live to the equator, probably because larger bodies retain warmth better. As the climate warms, this could also affect the Amazon birds. The increase in wing length is more difficult to explain; it could be because birds may now need to fly further.
Source: The Guardian (2021) theguardian.com/environment/2021/nov/12/amazon-birds-shrink-longer-wings-global-heating-species-aoe

. . . and albatrosses divorce their partners

A new study suggests albatrosses are increasingly breaking their pair bonds, and climate change may be responsible. This so-called albatross divorce happens when one partner of an established couple mates with a different individual. This tends to be rare: just 1% of albatrosses normally separate after choosing their life partner. Researchers studied 15,000 breeding pairs in the Falkland Islands over 15 years. They found that during this period, in years with higher temperatures, up to 8% of all couples split up. Normally, albatross divorce is triggered when a pair fails to breed, so they find new partners in the next breeding season. But the findings showed pairs were divorcing even after successful breeding. There are two possible explanations. Warming waters force the birds to hunt for longer and fly further; if individuals then fail to return in time for the breeding season, their partners may move on with a new partner. Another theory is that the birds' levels of stress hormones rise in response to warmer waters.
Source: BBC (2021) bbc.co.uk/news/newsbeat-59401921

https://doi.org/10.1017/S0030605322000011 Published online by Cambridge University Press

INTERNATIONAL

Countries fail to agree on Antarctic conservation measures

For the fifth year in a row, members of the Commission for the Conservation of Antarctic Marine Living Resources, a multilateral body responsible for Antarctic marine conservation, failed to agree on new measures to protect the Southern Ocean from overfishing. Despite 11 days of negotiations, the 26 representatives (of 25 countries plus the EU) were not able to agree on new Marine Protected Areas in the Weddell Sea, the Antarctic Peninsula and in East Antarctica, which would have covered a combined 3.7 million km² of the Southern Ocean, creating the world's largest protected area against fishing activity. Russia and China blocked all proposals, choosing instead to maintain their fishing rights. The outcome has frustrated scientists and NGOs who are increasingly urging member countries to address fishing activity in the Antarctic. Marine experts have been particularly worried by the increase in the fishing for krill, on which much of Antarctica's biodiversity depends.
Source: Mongabay (2021) news.mongabay.com/2021/11/countries-fail-to-agree-on-antarctic-conservation-measures-for-fifth-straight-year

COP26 and global heating

The commitments made at the 2021 UN Climate Change Conference in Glasgow, UK, are insufficient to keep global heating to 1.5 °C this century. Leading producers and users of coal rejected a proposed agreement to end the use of coal in electricity generation by 2030. In addition, the rapid economic recovery from the COVID-19 pandemic has produced an equally rapid recovery in demand for all forms of energy, resulting in spikes in the prices of coal, oil and gas. Considered over a longer term, the outcomes of the Glasgow conference suggest that the goal of limiting heating below 2 °C still looks attainable. It has become clear, however, that even this would be environmentally disastrous. Even under the current 1.1 °C of warming since the beginning of large-scale greenhouse gas emissions, Earth has experienced severe impacts such as devastating bushfires, coral bleaching and extreme heatwaves. Such events will only become more frequent and intense as Earth warms further. This underscores the importance of urgently pursuing the 1.5 °C goal, which is a matter of life and death for vulnerable human populations and natural ecosystems.
Source: Phys.org (2021) phys.org/news/2021-11-heart-unfolded-cop26-world-global.html

New maps: global networks of underground fungi...

In a project aiming to protect what has been described as the circulatory system of the planet, expansive underground fungal networks are to be mapped for the first time. These mycorrhizal networks, vital to biodiversity and the structure and fertility of soils, can extend for many kilometers. They are under threat from the expansion of agriculture, urbanization, pollution, water scarcity and climate change. The Society for the Protection of Underground Networks (SPUN) is using artificial intelligence to identify global hotspots of mycorrhizal fungi, from which it aims to collect 10,000 samples that can be used to map their networks and pinpoint ecosystems facing the most urgent threats. SPUN hopes to partner with local conservation organizations to create conservation corridors for these underground ecosystems. Research shows ecosystems with thriving mycorrhizal fungal networks store eight times as much carbon as those without them, and some combinations of fungi enhance soil productivity.
Source: The Guardian (2021) theguardian.com/science/2021/nov/30/worlds-vast-networks-of-underground-fungi-to-be-mapped-for-first-time

... and priority sites for preventing carbon emissions from natural areas

A mapping project has sought to quantify how much irrecoverable carbon is stored in peatlands, mangroves and forests around the globe, and which areas are most in need of protection to prevent its release into the atmosphere. The project estimates the total amount of irrecoverable carbon to be 139 gigatons, equivalent to c. 15 years of anthropogenic carbon dioxide emissions at current levels. To map this at-risk carbon, researchers combined satellite data with estimates of how much total carbon is stored in ecosystems vulnerable to human incursion. They excluded areas such as permafrost, which is a significant carbon store but is unlikely to be developed, although it is increasingly thawing because of warming, and tree plantations, which have already been altered. The team calculated how much carbon would be released by land conversions, such as clearing a forest for farmland. Approximately half of this irrecoverable carbon sits on just 3.3% of Earth's total land area, equivalent to roughly the area of India and Mexico combined. Key areas of high density are in the Amazon, the Pacific Northwest, and the tropical forests and mangroves of Borneo.
Source: Science News (2021) sciencenews.org/article/climate-change-natural-carbon-stores-new-map

Peatland conservation vital to address climate change

Despite being often thought of as inhospitable, eerie places, moors and swamps play a crucial role in our response to climate change. These waterlogged, acidic, low-nutrient ecosystems are the most carbon-dense lands on Earth. From the boreal north to the tropical south, peatlands store twice as much carbon as all the planet's forests combined, although they cover only 10% of the landmass. Climate scientists have long appreciated the role oceans and forests play in storing mega-amounts of carbon, but are only now recognizing the power of peat. Unlike a forest, where trees fall and decompose relatively quickly, peat accumulates year after year, because in waterlogged conditions the decomposition of plant material is slowed down. Preserving and restoring peatlands is now considered a powerful tool to counter rising emissions, and is counted among effective nature-based solutions: using natural ecosystems to soak up carbon.
Source: Portland Press Herald (2021) pressherald.com/2021/11/10/serious-about-climate-change-get-serious-about-peat

Hydroelectric dams linked to declines of tiger and jaguar populations

The global expansion of hydroelectric dams has had a destructive impact on the habitats of many species, including wild felids. In a new study, researchers identified > 1,000 existing dams that intersect with the ranges of tigers and jaguars. They reported that dam construction, particularly in Asia, has affected more than one-fifth of the world's remaining tigers. In some local forest areas, the dams are said to have precipitated tiger extinction. Despite their iconic and fearsome reputation, tigers have disappeared from > 90% of their original range over the past century. Although their numbers have increased in recent years to c. 3,500, they are still categorized as Endangered on the IUCN Red List. The researchers calculated the size of forest areas affected by dam construction and concluded that > 13,000 km² of tiger habitat had been flooded to create reservoirs. The jaguar also faces an increasing threat, with dams in its range expected to quadruple. Many of the new dams will be located in the Amazon, with Brazil planning to build > 300 dams within jaguar areas. This raises the question whether the benefits of these future developments outweigh the environmental costs.
Sources: Nature (2021) doi.org/10.1038/s42003-021-02878-5 & *BBC* (2021) bbc.co.uk/news/science-environment-59595962

EUROPE

Fish feared extinct found in Turkey

A freshwater fish that scientists thought was extinct has been found in south-east Turkey, after an absence of nearly 50 years. The Critically Endangered Batman River loach *Paraschistura chrysicristinae*, a tiny yellow and brown striped fish that grows to a maximum length of 3.6 cm, was previously found in streams and tributaries of the Batman and Ambar Rivers, where it was last seen in 1974. Dr Cüneyt Kaya, a fish taxonomist, and Dr Münevver Oral, a geneticist, searched for the loach upstream of the Batman Dam, which was built between 1986 and 1999. Using tight-weave nets, Kaya and Oral found 14 loaches in shallow, rocky, fast-flowing areas of the Sarim stream and another nine in the Han stream. More work is now needed to help secure the loach's future, including examining possible threats such as drought, pollution, and population fragmentation caused by the dam.
Source: The Guardian (2021) theguardian.com/environment/2021/dec/09/batman-loach-returns-fish-feared-extinct-for-decades-spotted-in-turkey-aoe

Restoring ancient pond life in England

Botanists restoring ancient wetlands in England have made an unlikely discovery: so-called zombie pond life that comes back from the dead. The Norfolk Ponds Project was launched 10 years ago, developed by University College London's Pond Restoration Research Group. Studying 200-year-old maps to locate ancient watering holes, researchers discovered thousands of ponds that had been filled and ploughed to create farmland. As they began restoring those ponds, the research team was surprised to find the seeds of water plants were still alive underneath the earth, even though it had been ploughed, furrowed and fertilized to grow crops. Restoration of these ponds involves digging out the profile of the original watering hole, taking care not to disturb the earth below the old pond sediment, which contains the precious seed bank. The ponds then fill up from rain and groundwater, and plants start to grow. This process has led to rare plant species returning that were extinct regionally and are scarce in the UK as a whole. One example is the rare grass-poly, found on the fringes of an old cattle-watering pond in Norfolk after willows had been removed. The species had not been seen in the county for more than 100 years.
Source: Positive News (2021) positive.news/environment/the-curious-case-of-the-zombie-plants-that-come-back-from-the-dead

Debate over response to mass-dieback of Germany's trees

Germany invented modern industrial forestry in the early 1700s. Now, a huge dieback triggered by climate change has ignited a fierce debate over how the nation should manage its trees and forests. Since 2018, > 300,000 ha of Germany's trees—more than 2.5% of the country's total forest area—have died because of beetle invasions and drought, fuelled by a warming climate. The massive dieback has raised questions about how the country should manage forests so they can continue to produce wood and protect ecosystems. Most agree that existing monocultures, so important to European forestry's past, cannot ensure its future. The consensus breaks down, however, when it comes to solutions. Some say that to meet economic, environmental and climate goals, Germany must double down on tree planting—but using more resilient varieties, including some barely known in the country today. Others want Germany's government and forest industry to stop promoting the widespread planting of commercially valuable trees such as Norway spruces, and instead encourage landowners to allow forests to regenerate on their own. They argue that more diverse, naturally regenerating forests will probably cope better with future drought and pests.
Source: Science (2021) science.org/content/article/germany-s-trees-are-dying-fierce-debate-has-broken-out-over-how-respond

Sour fig plant causing environmental emergency in Alderney

An invasive plant is causing an environmental emergency in the Channel Islands. Alderney Wildlife Trust said the sour fig *Carpobrotus edulis* was threatening sand dunes on the island. In November 2021, 3–4 t of the plant were removed from the dunes at Saye, the largest amount removed in a single day. The groud-creeping plant prevents many other species, including wildflowers, from growing. Native to South Africa, the sour fig was first introduced to the island in the 1950s and has since spread exponentially. As global heating reduces the occurrence of frosts, many such non-native species have the opportunity to damage the rich local wildlife. The UK government has made it illegal to plant sour fig or contribute to its growth. Alderney Wildlife Trust wants to see a similar rule brought in on the island. They hope that the sour fig invasion will eventually be recognized as an environmental emergency and a more permanent solution can be agreed upon.
Source: BBC (2021) bbc.co.uk/news/world-europe-guernsey-59276178

Europe's butterflies are vanishing as small farms disappear

Approximately 90% of butterfly species in Catalonia, Spain, live in open spaces and thrive in flower-rich grasslands, as they do in most temperate climates. But across Europe these butterflies are undergoing huge declines. According to one of the EU's most comprehensive indices, grassland butterfly abundance dropped by 39% during 1990–2017. Catalonia is an extreme example: over the last 25 years, populations of the most common grassland species have declined here by 71%. Butterflies and other pollinators are threatened by a combination of factors. In some places, as small-scale livestock farms give way to industrial agriculture, meadows are being aggregated into large, single-crop fields. In others, pastures and fields are being abandoned and are turning to forest. Both trends threaten butterflies. Butterfly monitoring schemes are in place across Europe, some stretching back decades. Researchers and citizen scientists have thus generated a robust dataset, and the trends are alarming: c. 20% of European butterflies are considered threatened or nearly so, the Netherlands has lost half of its butterflies since 1990, and insect populations in general are collapsing.
Source: National Geographic (2021) nationalgeographic.com/environment/article/europe-butterflies-vanishing-along-with-small-farms

Poland's border wall will cut Europe's oldest forest in half

Poland is planning to build a wall along its border with Belarus, primarily to block migrants fleeing the Middle East and Asia. But the wall would also divide the vast and ancient Białowieża Forest, a UNESCO World Heritage site that harbours > 12,000 animal species and includes the largest remnants of primeval forest that once covered most of lowland Europe. The core of Białowieża is characterized by old-growth forest, rich in dead and decaying wood on which mosses, lichens, fungi, insects and many vertebrates depend. Large mammals such as the European bison, boar, lynx and wolf inhabit the forest on both sides of the border. A wall would block the movement of these animals, risk plant invasions and introduce noise and light pollution that will displace wildlife. The proposed wall resembles the barrier built along parts of the USA–Mexico border. Research there based on camera-trap data shows that such walls deter people less than they impede wildlife.
Source: United Press International (2021) upi.com/Voices/2021/12/16/poland-Poland-border-wall-Belarus-Biaowiea-Forest/2261639661208

AFRICA

Using photography to inspire the next generation of conservationists

For the past 60 years, the African Wildlife Foundation (AWF) has protected animals, restored lost habitats and advocated for policy changes that benefit wildlife. Now, the conservation organization is trying a new approach. In 2021, AWF launched the inaugural Benjamin Mkapa African Wildlife Photography Awards. Named after the late Tanzanian president, a longstanding AWF board member, the contest aims to reach a new audience. Photography competitions are nothing new, but the AWF hopes that the exhibition of winning entries will encourage African people to actively engage in conservation. Photographers of all ages and backgrounds were invited to enter the competition, resulting in nearly 9,000 entries from 50 countries globally. A judging panel, comprised of photographers, conservationists, activists and safari guides, selected photos from 12 categories. In November 2021, the category winners were announced at an awards ceremony at Nairobi National Museum, Kenya, along with four additional awardees.
Source: CNN (2021) edition.cnn.com/style/article/awf-africa-photography-conservation-hnk-spc-intl/index.html

The Great Green Wall to hold back the desert across Africa

Restoration is not only about improving things for nature, but also for people. In Africa's Sahel region, a largely semi-arid expanse across the breadth of the continent on the southern fringes of the Sahara Desert, 80% of people depend on agriculture. But climate change, over-farming and overgrazing have eroded this once green band, threatening the food security and livelihoods of 130 million people. To tackle this crisis, in 2007 the African Union and the UN Convention to Combat Desertification joined forces to launch the Great Green Wall initiative, spanning 11 countries and aiming to restore degraded soil by creating a mosaic of land uses, including sustainable farming and restored patches of natural habitat. A key aspect of the Great Green Wall initiative is its localized approach, with participating countries addressing the problem using local contexts. The efforts are already beginning to bear fruit: c. 20 million ha of land have been restored so far, for the benefit of people and wildlife.
Source: BirdLife International (2021) birdlife.org/news/2021/11/03/the-great-green-wall-an-epic-plan-to-hold-back-desert-in-africa

White rhinoceroses flown from South Africa to Rwanda

In 2021, 30 white rhinoceroses were flown from South Africa to Akagera National Park in eastern Rwanda. It is hoped that Akagera will become a new breeding stronghold to support the long-term survival of the species. Down to an estimated 18,000 individuals across Africa, the white rhinoceros is categorized as Near Threatened on the IUCN Red List. Numbers are in decline largely because of poaching, driven by demand for horns. To safeguard the species, it is vital to increase the range of the white rhinoceros across the continent, where there are safe habitats, and not necessarily only where it used to occur. In Rwanda, the white rhinoceros is a newly introduced species. The translocation team are starting with 30 individuals, but Akagera could be home to 500–1,000 white rhinoceroses in the future. Moving the 19 females and 11 males, a mix of adults and subadults, was a massive logistical undertaking. The move was the first of its kind and sets the benchmark for future conservation efforts.
Source: The Guardian (2021) theguardian.com/environment/2021/nov/29/white-rhinos-flown-from-south-africa-to-rwanda-in-largest-single-translocation

South Africa's cave-dwelling bats need more protection

Caves are overlooked but essential parts of the natural world. Many animals such as bats use caves for shelter and for raising their young. The landscape immediately surrounding a cave is also important to bats: they usually hunt and find water to drink within a 5-km radius of their home caves. Any disturbance of a cave or its surrounds can have major consequences for local bat populations. Researchers investigated the state of the landscape around 47 important bat caves in South Africa. They found that during 2014–2018, tree cover decreased by 4.26% around the caves, and urban and agricultural land cover increased. The distances between urban areas and caves also decreased in this period; the mean distance between caves and the nearest urban settlements was 4.15 km in 2018, a decrease of 0.17 km from 2014. This also means potentially more contact between people and bats, which may lead to future outbreaks of zoonotic diseases. Cave-specific conservation actions are therefore essential to protect bats and the well-being of people.
Sources: BMC Zoology (2021) doi.org/10.1186/s40850-021-00095-5 & *Phys.org* (2021) phys.org/news/2021-12-south-africa-cave-dwelling-people-safe.html

Gabon is the largest stronghold for African forest elephants

The most comprehensive survey conducted of elephant numbers in the Central African nation of Gabon since the late 1980s has found elephants occurring in higher numbers than previously thought. The study marked the first-known DNA-based assessment of a free-ranging large mammal species in Africa. The team used spatial capture–recapture techniques based on non-invasive molecular sampling from dung. It estimated that 95,000 forest elephants *Loxodonta cyclotis* now live in Gabon, confirming it as the principal stronghold for this Critically Endangered species. Gabon not only has more forest elephants than any other country but also the largest intact habitat in the species' range, with elephants ranging across $> 250{,}000\ km^2$, c. 90% of the country's total area. These findings provide hope for the future of the species and the impact that conservation-focused policies can have.
Sources: Global Ecology and Conservation (2020) dx.doi.org/10.1016/j.gecco.2021.e01894 & *Science Daily* (2021) sciencedaily.com/releases/2021/11/211118203716.htm

Africa's growing road network may affect ecosystems

The mission to integrate African economies relies on the development and construction of major infrastructure, from roads to railways and ports across the continent. Many researchers claim these large-scale road developments will have detrimental impacts on natural ecosystems. They are concerned about a reduction in habitat availability and connectivity. Roads can also lead to changes in land use, facilitate illegal access into previously inaccessible areas, and result in negative interactions between people and wildlife. In a systematic review of existing literature, a team of researchers extracted and synthesized information on c. 270 reported effects of roads on ecosystems. They found these effects of roads were usually related to land-cover change, habitat degradation and impacts on biodiversity such as altered species composition or distribution. Their findings suggest that the presence of roads may pose a significant threat to species even inside protected areas. Roads were associated with a decrease in animal abundance, and major roads had a strong influence on observed land-use patterns.
Sources: Environmental Research Letters (2021) doi.org/10.1088/1748-9326/ac2ad9 & *Phys.org* (2021) phys.org/news/2021-12-africa-road-network-affect-ecosystems.html

AMERICAS

Latin American countries join reserves to create vast marine protected area

Four Pacific-facing Latin American nations have committed to joining their marine reserves to form one interconnected area, creating one of the world's richest pockets of ocean biodiversity. Panama, Ecuador, Colombia and Costa Rica announced in November 2021 the creation of the Eastern Tropical Pacific Marine Corridor initiative, which would both join and increase the size of their protected territorial waters to create a fishing-free corridor covering more than 500,000 km² in one of the world's most important migratory routes for sea turtles, whales, sharks and rays. The move comes amid growing clamour for action to protect rare marine species and commercial fish populations against foreign fishing fleets exploiting the region's rich marine biodiversity, as well as to limit illegal, under-reported and unregulated fishing by local fishing communities. The expansion creates a safe swimway connecting Ecuadorian with Costa Rican waters, where threatened migratory species, such as sharks, whales, turtles and manta rays travel.

Source: The Guardian (2021) theguardian.com/environment/2021/nov/02/four-latin-american-countries-join-protected-marine-reserves-to-create-mega-mpa

New research on non-native freshwater fishes in Florida

People sometimes release unwanted pet fishes from their aquariums into nearby waterways, where they can destabilize local ecosystems. Damage caused by non-native species is estimated to be USD 120 billion per year in the USA, and billions more are spent on prevention, detection, control and management of invasive alien species, and on habitat restoration. To predict which non-native freshwater fishes might successfully establish populations in Peninsular Florida, researchers studied life history and behavioural traits of fishes that increase their chances of survival in their new environment. They found that successful species have a high investment in their offspring and tend to be larger bodied. Parental care was particularly important, with only one of the established species lacking parental care. Understanding such life history strategies is key for effective risk assessment and management of invasive species.

Sources: Diversity and Distributions (2021) doi.org/10.1111/ddi.13448 & *Phys.org* (2021) phys.org/news/2021-12-nonnative-fish-lakes-rivers-florida.html

Rarest North American mammal found in home garage

An Endangered black-footed ferret *Mustela nigripes*, believed to be the rarest mammal in North America, was found inside a homeowner's garage in Colorado, USA, in late 2021. The homeowner reported the ferret to Colorado Parks and Wildlife after coaxing it into a box. A microchip implanted in the ferret revealed that it had been released, together with eight other ferrets, 2 weeks before the incident on a nearby ranch. The release was part of a conservation effort with the U.S. Fish & Wildlife Service to restore the species. Black-footed ferrets are nocturnal and normally extremely shy, so this was a surprising find. The individual appeared healthy and was released back on the ranch. Since 2013, > 120 black-footed ferrets have been released on the Walker Ranch, the location of a c. 650 ha prairie dog colony. Colorado Parks and Wildlife biologists help to monitor the population. Prairie dogs are the ferrets' primary source of food, and the ferrets also use their burrows for shelter.

Source: The Gazette (2021) gazette.com/news/wildlife/rarest-mammal-in-north-america-found-in-pueblo-west-homeowner-s-garage/article_42b7876a-4261-11ec-8792-07cd977f015d.html

Satellite and crowd-sourced data help create range maps for threatened birds

Accurate maps of species ranges are essential to inform conservation, but time-consuming to produce and update. Using satellite data and hundreds of thousands of crowd-sourced field observations, scientists have developed a more precise method for mapping the locations of habitats critical for the survival of > 1,300 threatened Central and South American forest bird species. The new method allows conservationists to quickly and easily create customized, updatable maps that pinpoint areas of suitable habitat within a species' geographical range and, in many cases, identify areas of suitable habitat outside the known range. Maps created using this framework have revealed some unexpected findings: c. 40% of the Critically Endangered bird species whose ranges were mapped had areas of suitable habitat that were larger than their current published ranges, as did 43% of the Endangered and 55% of the Vulnerable species whose ranges were mapped. The research team expects that the newly created mapping method will be applied to more species and taxa and will incorporate more data sources in the future.

Sources: PLOS ONE (2021) doi.org/10.1371/journal.pone.0259299 & *Phys.org* (2021) phys.org/news/2021-12-satellite-citizen-precise-range-at-risk.html

Colombia seizes hundreds of arachnids being illegally sent to Europe

Colombian authorities seized hundreds of arachnids as they were being taken illegally to Europe via the airport in the capital city Bogotá. Two German nationals were found to carry 210 plastic containers housing the arachnids, which included 232 tarantula spiders, nine spider eggs and a scorpion with seven young, as well as 67 cockroaches. Colombia, one of the world's 17 megadiverse countries and home to tens of thousands of different species, is a prime target for wildlife traffickers: more than 11,000 specimens have been seized during 2021. The would-be traffickers argued that they were shipping the arthropods for academic reasons but authorities said they did not have the required permits to do so. The animals were examined by professionals, who later decided whether to release or relocate them.

Source: Reuters (2021) reuters.com/world/americas/colombia-seizes-hundreds-arachnids-being-illegally-smuggled-europe-2021-12-02

Frog back from the dead helps fight plans for mine in Ecuador

The longnose harlequin frog *Atelopus longirostris*, known for its pointed snout, is categorized as Extinct on the IUCN Red List. Despite this, it is about to play a central role in a fight against mining in the Intag valley in Imbabura province, Ecuador, which campaigners say could be a catastrophe for the biodiverse cloud forests in this area. In 2016, four longnose harlequin frogs, previously last observed in 1989, were discovered in the valley. The planned copper opencast mine would destroy the frog's primary habitat, and conservationists are concerned the result could be devastating for the species. Carlos Zorrilla, the Executive Director of the environmental organization Decoin, has suggested that an article of Ecuador's constitution could be used to fight the construction of the mine. He said mining would violate the 'rights of nature', which are enshrined in Ecuador's constitution. This refers to Article 73, added to Ecuador's constitution in 2008, which made the country the first in the world to acknowledge the rights and protection of nature. Article 73 reads: 'The state shall apply preventive and restrictive measures on activities that might lead to the extinction of species, the destruction of ecosystems and the permanent alteration of natural cycles.' Zorilla is leading a team that has brought a lawsuit against the proposed mine to stop its construction.

Source: Changing America (2021) thehill.com/changing-america/sustainability/environment/582825-extinct-frog-comes-back-from-the-dead-for-now

ASIA & OCEANIA

Hong Kong culls wild boar amid public safety fears

Hong Kong authorities have captured and killed seven wild boars as they began a campaign to reduce boar numbers in urban areas around the financial centre. This was deemed necessary after a boar bit a policeman. The boar round-up happened in a district where authorities said some people were feeding the animals. It marks a policy shift in controlling the city's boar population. Boars in the residential area, which is near the heart of the financial district, were accustomed to wandering along the road and looking for food from passers-by or even chasing vehicles. Approximately 30 boar attacks have been reported in recent years. Hong Kong's previous policy had been to capture the animals, then sterilize and relocate them to remote areas away from people. The city is home to c. 3,000 wild boars, according to government data, and they are not a protected species. The cull has sparked criticism from animal rights groups.
Source: The Guardian (2021) theguardian.com/world/2021/nov/18/hong-kong-begins-hunting-wild-boar-amid-public-safety-fears

Hundreds of cane toads found in Taiwan

A proliferation of wild cane toads in Taiwan has authorities concerned about the damage the invasive animals might wreak on the ecosystem. A photo of some of the toads in a community garden was uploaded to social media, sparking worries over how many may be in the wild. Volunteers from Taiwan's Amphibian Conservation Society attended the garden and found more than 20 cane toads in the vicinity. Some of them were younger toads, indicating the animals had been breeding. Since those first finds, the government-run Endemic Species Research Institute has retrieved more than 200 toads from the wild. Cane toads are native to Central and South America, but have been imported into various countries across the world as a predator to control populations of local species that attack crops such as sugarcane. But in addition to being efficient and voracious predators, the toads are highly adaptable and can cause great damage to local ecosystems. It is unknown how the toads came to live wild in Taiwan, but until 2016 it was legal to import them as pets. Experts think that some toads may have escaped from or been released by local breeders.
Source: 9 News (2021) 9news.com.au/world/cane-toads-found-taiwan-race-to-contain-invasive-species

Bat wins New Zealand's Bird of the Year contest

The result of New Zealand's 2021 Bird of the Year contest caused some uproar because the winner was not a bird, but the long-tailed bat *Chalinolobus tuberculatus*, also known as pekapeka-tou-roa. With varying degrees of seriousness, bird lovers have responded online by demanding a recount. 'We certainly ruffled some feathers,' said Laura Keown, communications adviser at Forest & Bird, the conservation group that organizes the annual online contest. The long-tailed and short-tailed bats are New Zealand's only native land mammals, so it made sense to include them in the contest, Keown explained, adding that 'Land Mammal of the Year' would have been a really boring competition. The bat debate helped draw a record number of 58,561 votes and thus helped achieve the contest's goal, which is to raise awareness of the country's threatened native species. New Zealand's bats face many of the same challenges as its birds, including habitat loss, climate change and introduced predators. The long-tailed bat has declined in number and is now so rare that it is unclear how many are left.
Source: NBC News (2021) nbcnews.com/news/world/long-tailed-bat-wins-new-zealand-s-bird-year-contest-n1282845

Satellite collars pave the way for smarter saiga conservation

Satellite telemetry has become a vital tool in efforts to protect the saiga antelope *Saiga tatarica* across the vast expanse of its grassland habitat. Saiga are migratory animals that travel thousands of kilometres annually as they move between their feeding, calving and overwintering grounds in the Central Asian steppes. The immense size of their territory poses a challenge both for the saiga and for those working hard to conserve them. Since 2009, the Association for the Conservation of Biodiversity of Khazakstan, with the support of Fauna & Flora International and other partners, has fitted 180 saiga with satellite collars. The data collected show how infrastructure projects such as roads, border fences and railways affect these animals by blocking or diverting migration routes. This enables conservationists and authorities to mitigate those impacts through modifications to the infrastructure. The information also allows field staff to monitor the herds and combat poaching, and has proved helpful in the design and establishment of c. 2.4 million ha of new protected areas and ecological corridors.
Source: Phys.org (2021) phys.org/news/2021-12-satellite-collars-paving-smarter-saiga.html

Crocodile conservation centre at former tin mine in Indonesia

Bangka Belitung Province will develop a crocodile conservation centre at a former tin mine in Air Anyir Village, Bangka District, Indonesia, which will serve as a new educational tourist destination. The provincial administration will work closely with Bangka Belitung's Wildlife Rescue Center Alobi Foundation for the conservation of the reptiles. It is hoped that the centre will help reduce human–crocodile conflicts, which have increased in frequency over the past few years. A representative of the mining company that ran the former tin mine noted that the development of a crocodile conservation area is part of the company's corporate social responsibility programme, aiming to safeguard the reptiles from environmental damage caused by illegal tin mining and land-use change.
Source: Antara News (2021) en.antaranews.com/news/197713/bangka-belitung-to-build-crocodile-conservation-center-at-ex-tin-mine

Forests could be key to estuarine fish conservation

Estuaries, where rivers meet the sea, are vulnerable ecosystems. Given the threats they face, including biodiversity loss and the collapse of natural fisheries, it is vital to determine the factors contributing to the maintenance of estuarine biodiversity. A team of scientists from Japan determined that the amount of forest and farmland surrounding rivers as they flow into the open sea plays an important role. The scientists used environmental DNA metabarcoding, looking for fish DNA in water samples from 22 estuary locations around Japan. They found more threatened fish species in estuaries that were surrounded by higher forest cover, compared to waters surrounded by more agricultural land. Forests retain water, thus preventing flooding, erosion and strong run-off after heavy rain, whereas agricultural land releases harmful fine sediments and pesticides into aquatic systems.
Sources: Conservation Biology (2021) doi.org/10.1111/cobi.13849 & *EurekAlert!* (2021) eurekalert.org/news-releases/933819

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