

# Briefly

## SPOTLIGHT ON CLIMATE CRISIS

### The end of the Arctic as we know it...

Scientists are investigating why the collapse of Arctic ice is happening faster than climate computer models predict and are trying to understand what this means for the planet. The Arctic has heated up by 2 °C above pre-industrial levels, twice the global average, and some hotspots have warmed by 4 °C. The trend is clear and accelerating: sea ice is melting earlier in the spring and freezing later in the autumn each year. Each summer it thins more and recedes further, leaving greater expanses of the ocean exposed to 24-hour sunlight. This is driving back the frontiers of ice and fragmenting one of the planet's most important climate regulators. Researchers expect ice-free summers in 20–40 years. The effects will be far-reaching: disappearing ice floes cause a shift in plankton organisms, with oxygen loss and acidification of the water, effects on fish, whales and other creatures depending on zooplankton, and large-scale changes in weather patterns.

Source: *The Guardian* (2019) [theguardian.com/environment/2019/jun/07/oceans-de-mise-the-end-of-the-arctic-as-we-know-it](https://www.theguardian.com/environment/2019/jun/07/oceans-de-mise-the-end-of-the-arctic-as-we-know-it)

### ... Emperor penguins flee unsteady ice after failure to breed...

Antarctica's emperor penguins are vulnerable to climate change, because warming water melts the sea ice on which they breed. Penguins have now abandoned one of their biggest colonies, at Halley Bay, after almost completely failing to raise any new chicks there in 3 years. Although this cannot be attributed directly to climate change, it is an ominous sign of things to come for the penguins. Experts from the British Antarctic Survey analysed high-resolution satellite imagery, which shows individual penguins and groups of birds, from 2009 to 2018. Over that time the colony hosted 14,000–25,000 adults and chicks. Since 2016, however, the population has dropped to nearly zero and there were almost no chicks. Many penguins from Halley Bay seem to be moving to the nearest adjacent colony, 55 km away, which increased in population 10-fold.

Source: *Science Magazine* (2019) [science mag.org/news/2019/04/emperor-penguins-flee-unsteady-ice-after-unprecedented-failure- breed](https://www.sciencemag.org/news/2019/04/emperor-penguins-flee-unsteady-ice-after-unprecedented-failure- breed)

### ... and Himalayan glaciers melting twice as fast in recent years

Himalayan glaciers, sometimes referred to as the third pole of the world because of the large volume of ice they hold, melted twice as quickly during 2000–2016 compared to 1975–2000, a result of rising temperatures. Researchers studied 40 years of satellite images from India, China, Nepal and Bhutan to understand how the glaciers transformed over time. The rapid melting of Himalayan glaciers, which hold c. 600 billion t of ice and feed major river systems in the region, is already leading to more frequent and severe floods downstream. The researchers focused on 650 of the largest glaciers in the region and developed 3-dimensional models to capture changes in their elevation. They estimate that during 1975–2000, these glaciers lost c. 25 cm of ice annually; but during 2000–2016 they shed c. 50 cm every year.

Sources: *Science Advances* (2019) [doi.org/10.1126/sciadv.aav7266](https://doi.org/10.1126/sciadv.aav7266) & *Mongabay* (2019) [news.mongabay.com/2019/06/himalayan-glaciers-melting-twice-as-fast-in-recent-years-study-show](https://news.mongabay.com/2019/06/himalayan-glaciers-melting-twice-as-fast-in-recent-years-study-show)

### Hottest June on record as heatwave grips Europe

The extreme heatwave that gripped Europe in late June and sent temperatures soaring to > 45 °C was made at least five times more likely by global warming, scientists said. The heat wave lingered in Europe for days, with hot nights that didn't allow buildings or humans to cool down. It was the hottest June on record globally, with excessive ice melting in Greenland, unprecedented wildfires in the Arctic and a deadly heatwave in India and Pakistan. Worryingly, extreme heatwaves are happening more frequently than projected by climate models, which could be a deadly trend. Heatwave deaths often outnumber deaths from all other natural disasters annually, but they don't get as much public attention because they typically don't appear in the statistics until after the event. Extreme heat also stresses crops, disrupts pollination and can trigger flooding by quickly melting the winter's accumulated snow at higher altitudes.

Source: *Inside Climate News* (2019) [inside climatenews.org/news/02072019/climate-change-attribution-europe-heat-wave-hot-test-june-record-wildfires-world-weather-data](https://www.insideclimatenews.org/news/02072019/climate-change-attribution-europe-heat-wave-hot-test-june-record-wildfires-world-weather-data)

### Climate crisis may be a factor in tufted puffins die-off

The death of thousands of tufted puffins in the Bering Sea may have been partly caused by the climate breakdown. Between 3,150 and 8,500 seabirds died over a 4-month period from October 2016, with hundreds of severely emaciated carcasses washed up on the beaches of the Pribilof Islands in the southern Bering Sea, 480 km west of the Alaskan mainland. Researchers believe the birds died of starvation partly caused by a loss of energy-rich prey species, which was triggered by increased sea and atmospheric temperatures, as well as reductions in winter sea ice recorded since 2014. Tufted puffins breeding in the Bering Sea feed on fish and marine invertebrates, which in turn feed on plankton. The loss of nutritious prey species caused by the climate crisis is also affecting populations of the Atlantic puffin around Britain and Iceland.

Sources: *PLOS ONE* (2019) [doi.org/10.1371/journal.pone.0216532](https://doi.org/10.1371/journal.pone.0216532) & *The Guardian* (2019) [theguardian.com/environment/2019/may/29/climate-crisis-factor-tufted-puffins-die-off-study-says-bering-sea](https://www.theguardian.com/environment/2019/may/29/climate-crisis-factor-tufted-puffins-die-off-study-says-bering-sea)

### Global warming hits sea creatures hardest

Researchers found that global warming has caused twice as many ocean-dwelling species as land-dwelling species to disappear from their habitats. The greater vulnerability of sea creatures may significantly impact human communities that rely on fish and shellfish for food and economic activity. The authors combed through worldwide research on nearly 400 species from lizards and fish to spiders. They calculated safe conditions for 88 marine and 294 land species as well as the coolest temperatures available to each species during the hottest parts of the year. The study notes that ancient extinctions have often been concentrated at specific latitudes and in specific ecosystems when the climate changed rapidly. Future warming is likely to trigger the loss of more marine species from local habitats and more species turnover in the ocean. New conservation efforts will be needed if the ocean is going to continue supporting human well-being, nutrition and economic activity.

Sources: *Nature* (2019) [doi.org/10.1038/s41586-019-1132-4](https://doi.org/10.1038/s41586-019-1132-4) & *Phys.org* (2019) [phys.org/news/2019-04-global-sea-creatures-hardest.html](https://www.phys.org/news/2019-04-global-sea-creatures-hardest.html)

### Past climate change pushed birds from the northern hemisphere to the tropics

Researchers have shown how millions of years of climate change affected the range and habitat of modern birds, suggesting that many groups of tropical birds may be relatively recent arrivals in their equatorial homes. The researchers applied climate and ecological modelling to illustrate how the distribution of major bird groups is linked to climate change. However, whereas past changes often occurred slowly enough to allow species to adapt or shift habitats, current rates of climate change may be too fast for many species, putting them at risk of extinction. The study looked at 10 bird groups currently limited to the tropics, predominantly in areas that were once part of the ancient supercontinent of Gondwana. Early fossil representatives of each of these groups have been found on northern continents, well outside their current ranges. The researchers were able to predict the geographical occurrences of fossil representatives of these groups at different points in Earth's history.

Sources: *Proceedings of the National Academy of Sciences of the United States of America* (2019) [doi.org/10.1073/pnas.1903866116](https://doi.org/10.1073/pnas.1903866116) & *EurekAlert!* (2019) [eurekalert.org/pub\\_releases/2019-06/uoc-pcc060619.php](https://eurekalert.org/pub_releases/2019-06/uoc-pcc060619.php)

### Species facing climate change could find help in urban environments

When it comes to wildlife conservation efforts, urban environments could be far more helpful than we think. A new study shows that animals move faster through low quality habitats—evidence that could change the way conservationists think about managing landscapes to help species move in response to climate change. In light of the recent UN report indicating that 1 million species are threatened with extinction, the study provides a framework for definitive action to help preserve many species at risk. For landscapes to facilitate range expansion, there is a balance to be struck between promoting movement by providing low-quality habitat and promoting population growth with high-quality habitat. They conclude that low-quality habitats that meet a minimum standard could actually provide a benefit as conduits for movement. The underlying behaviour that explains this surprising result is that when animals find themselves in an inhospitable area they tend to make longer and straighter movements.

Source: *Phys.org* (2019) [phys.org/news/2019-05-species-climate-odd-urban-environments.html](https://phys.org/news/2019-05-species-climate-odd-urban-environments.html)

### 'Outrage is justified': David Attenborough backs school strikers

The outrage of the students striking from school over climate change inaction is 'certainly justified', according to Sir David Attenborough, who said older generations had done terrible damage to the planet. In an interview with the former UN climate chief Christiana Figueres, Attenborough dismissed critics of the widely praised global movement of school strikes as cynics. The protests by young people were enormously encouraging, Attenborough said. Global warming is already increasing the frequency of damaging extreme weather events. Scientists say dramatic declines in carbon emissions are urgently needed to deliver a 50% cut by 2030 and avoid worse droughts, floods, extreme heatwaves and poverty for hundreds of millions of people. However, emissions are still rising. Wildlife is also being annihilated by human activities, with animal populations having fallen by 60% on average since 1970. Attenborough said action to stop climate change and the destruction of the wildlife was essential: 'We have no option, if we want to survive.'

Source: *The Guardian* (2019) [theguardian.com/environment/2019/apr/26/david-attenborough-backs-school-climate-strikes-outrage-greta-thunberg](https://www.theguardian.com/environment/2019/apr/26/david-attenborough-backs-school-climate-strikes-outrage-greta-thunberg)

### Britain passes 1 week without coal power for the first time since 1882

In May 2019 Britain went a week without using coal to generate electricity for the first time since Queen Victoria was on the throne, in a landmark moment in the transition away from the heavily polluting fuel. The last coal generator came off the system at 13.24 on 1 May, meaning the UK reached a week without coal at 13.24 on 8 May, according to the National Grid Electricity System Operator. Coal-fired power stations still play a major part in the UK's energy system as a backup during high demand but the increasing use of renewable energy sources such as wind power means it is required less. High international coal prices have also made the fuel a less attractive source of energy. Burning coal to generate electricity is thought to be incompatible with avoiding catastrophic climate change, reductions in coal use have halved the sector's emissions since 2013, and the UK government has committed to phasing out coal-fired power by 2025.

Source: *The Guardian* (2019) [theguardian.com/environment/2019/may/08/britain-passes-1-week-without-coal-power-for-first-time-since-1882](https://www.theguardian.com/environment/2019/may/08/britain-passes-1-week-without-coal-power-for-first-time-since-1882)

### Planting trees could help tackle climate change...

Researchers from the Crowther Lab in Switzerland say their analysis suggests there is potential for 2.2 billion acres of tree cover in areas that would naturally support woodlands and forests. As the trees grew and matured, they could absorb and store 205 billion t of carbon, which could potentially remove c. two-thirds of the 300 billion t of carbon that are in the atmosphere as a result of human activity since the industrial revolution. The scientists show that forest restoration is the best climate change solution available today and provide evidence to justify investment. However, some climate change scientists believe the conclusions drawn by the study are too optimistic. They argue that although new forests can play a role in absorbing carbon emissions, the only way to stabilize the climate is for greenhouse gas emissions to reach net zero, which means dramatic cuts in emissions from fossil fuels and drastic reduction of ongoing deforestation.

Source: *Sky News* (2019) [news.sky.com/story/planting-a-forest-the-size-of-the-us-could-stop-climate-change-study-11757051](https://www.news.sky.com/story/planting-a-forest-the-size-of-the-us-could-stop-climate-change-study-11757051)

### ... and fertilizing the ocean with iron suggested as potential solution

One idea to save the planet from climate breakdown is to fertilize the ocean with iron, to stimulate algal blooms that absorb CO<sub>2</sub> from the sea and the atmosphere. This form of geoengineering was first explored in the 1990s, but now Sir David King, the former chief scientific adviser to the UK government, is encouraging experts to seriously consider it again. King suggests that re-greening shallow oceans in coastal regions, many of which used to be rich in seaweed and kelp, is technically feasible at low cost. Iron could also be used in the deep ocean to stimulate phytoplankton, a natural carbon sink. However, other scientists believe the ambitious plan carries unknown risks. They warn that ocean fertilization at a scale required to slow global warming would change the ecology of large ocean regions and could reduce oxygen in subsurface waters, which could lead to the production of other greenhouse gases. More research is needed, and iron fertilisation cannot be a substitute for a reduction in emissions.

Source: *The Independent* (2019) [independent.co.uk/environment/climate-change-ocean-iron-aerosols-fertilise-science-david-king-a8988241.html](https://www.independent.co.uk/environment/climate-change-ocean-iron-aerosols-fertilise-science-david-king-a8988241.html)

## INTERNATIONAL

**Newly-identified stick insect species abandon camouflage**

Scientists at the University of Göttingen and the Bavarian State Collection of Zoology have described two new species of Madagascan giant stick insects whose adult males abandon their camouflage. The tactic of hiding in plain sight has proved a successful evolutionary strategy for > 3,000 species of phasmid around the world, but *Achrioptera manga* and *Achrioptera maroloko* (previously assigned to the existing species *Achrioptera fallax* and *Achrioptera spinosissima*, respectively, but since proven genetically distinct), demonstrate considerable differences in colouration in males after their final larval moult. Although females remain camouflaged, males turn blue or multicoloured in an extravagant display, the purpose of which is not yet fully understood. Researchers note that it could play a role in attracting a mate, but suggest it more likely functions as a deterrent to predators, signalling the insect's toxicity as a different form of defence.

Source: Staatliche Naturwissenschaftliche Sammlungen Bayerns (2019) [snsb.de/index.php/en/press-releases/768-giant-stick-insects](https://snsb.de/index.php/en/press-releases/768-giant-stick-insects)

**Omura's whale has a much larger range than previously thought**

A study has indicated that the world's most recently discovered large whale species, *Balaenoptera omurai*, is more widespread than previously thought. A map compiling all known sightings of Omura's whale showed the species has been recorded in tropical and warm temperate ocean waters in every ocean basin except the central and eastern Pacific. To map sightings, the research team made use of all available sources including published papers, unpublished reports, and encounters described online. All records were substantiated by genetic, morphological, photographic, or acoustic documentation. They found 161 accounts of sightings from 95 locations in the waters of 21 range states. Their distribution in predominantly near-coastal waters puts Omura's whales at risk from anthropogenic activities across its range, with the researchers highlighting ship strikes, fisheries bycatch and entanglement, local directed hunting, petroleum exploration and coastal industrial development as particular dangers. However, the species' tropical distribution in often remote and poorly monitored areas makes documenting and assessing threats challenging.

Source: Mongabay (2019) [news.mongabay.com/2019/04/omuras-whale-much-more-widespread-across-the-globe-than-previously-thought](https://news.mongabay.com/2019/04/omuras-whale-much-more-widespread-across-the-globe-than-previously-thought)

**Eurasian otter still at risk**

The Eurasian otter *Lutra lutra* has the widest distribution of all 13 otter species ranging throughout Europe, Asia and North Africa. It is returning to parts of Europe but the rate of this return is largely exaggerated. There is very little data in Asia and North Africa and few modern records. A recent study assessed the species' global status in 2019 using a literature search and questionnaires sent to otter scientists in all 77 range countries that have or used to have otters. The survey asked for data on distribution, estimated population and trends, threats and illegal trade. Positive trends were found in 26% of countries (11% stable, 11% increasing and 4% back from local extinction) and unknown or negative trends in 73% (60% unknown, 12% declining and 1% extinct). Threats to otters include pollution, habitat loss, hunting, fishery conflicts, and legal culling in parts of Europe.

Source: OTTER, the Journal of the International Otter Survival Fund (2019) [otter.org/documents/journals/IOSF\\_Journal\\_Vol5\\_2019.pdf](https://otter.org/documents/journals/IOSF_Journal_Vol5_2019.pdf)

**Narwhals doing well despite long-term low genetic diversity**

After multiple studies uncovered low genetic diversity in several narwhal genes, a team of researchers has analysed the species' entire genome, confirming its limited genetic variation and providing an estimate of its population size into the past. The team found no evidence of a genetic bottleneck caused by inbreeding or a historic die-off, common causes of limited diversity, suggesting that the narwhals' low genetic variation has been stable over an extended evolutionary timescale. A specialised cetacean endemic to the Arctic, in 2017 the narwhal was downgraded on the IUCN Red List from Near Threatened to Least Concern, following an abundance estimate that placed the global population at c. 170,000 individuals. The team pointed out that despite its revised conservation status, the narwhal's low genetic adaptability renders it one of the Arctic marine mammals most vulnerable to ongoing rapid climate changes, especially because of its high specialization and restricted distribution.

Source: Science Magazine (2019) [sciencemag.org/news/2019/05/narwhals-beat-death-sentence-low-genetic-diversity](https://sciencemag.org/news/2019/05/narwhals-beat-death-sentence-low-genetic-diversity)

**Two-thirds of the world's longest rivers no longer run free**

Approximately two-thirds of the world's longest rivers are no longer free-flowing, compromising their ability to move sediment, facilitate fish migration, and perform other vital ecosystem services. With > 3,700 large dams currently being planned or constructed, the future of free-flowing waterways looks even bleaker. Using aerial, satellite and other data, a team of researchers examined 12 million km of waterways, evaluating their flows in 4.5-km segments. Traditionally, researchers focused on dams when assessing a river's free flow. But in this assessment, the team also considered the impacts on flow created by riverbank levees, other flood control structures, and water diversions for power, irrigation or drinking supplies. In particular, they focused on the 246 longest rivers with > 1000 km of flowing water, such as the Nile and Mississippi rivers, because of their huge ecological impact. Just 90 of those big rivers are still unencumbered. Most of the remaining unblocked rivers are in the Amazon, the Arctic, and Africa's Congo basin.

Sources: Nature (2019) [doi.org/10.1038/s41586-019-1111-9](https://doi.org/10.1038/s41586-019-1111-9) & Science Magazine (2019) [sciencemag.org/news/2019/05/two-thirds-world-s-longest-rivers-no-longer-run-free](https://sciencemag.org/news/2019/05/two-thirds-world-s-longest-rivers-no-longer-run-free)

**Humans threaten 1 million species with extinction. . .**

A 40-page brief published by the Inter-governmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) in May 2019 highlighted the urgent need to respond to nature's rapid global decline. Compiled over 3 years and based on peer-reviewed literature and conservative models, the collaborative report estimates that 1 million plant and animal species are threatened with extinction as a consequence of human activity. Aimed at policy-makers around the world, the brief highlights several direct drivers, among which land use change has the greatest impact: forest clearance for agriculture, livestock and extraction, alongside soil degradation, pollution, loss of wetlands and expansion of urban areas, are key pressures on wildlife. Unsustainable fishing practices are also a major problem: the report states that in 2014, only 3% of the world's oceans were free from human pressure. The authors stress that in the absence of swift, transformative change at a global level, these negative trends for nature will continue to 2050 and beyond.

Source: BBC (2019) [bbc.co.uk/news/science-environment-48169783](https://bbc.co.uk/news/science-environment-48169783)

### ...and 'frightening' number of plant extinctions found in global survey

Human destruction of the living world is causing a 'frightening' number of plant extinctions, according to scientists who have completed the first global analysis of the issue. They found 571 species had definitely gone extinct since 1750, but with knowledge of many plant species still very limited the true number is probably much higher. The researchers said the plant extinction rate was 500 times greater now than before the industrial revolution, and this could be an underestimate. The number of plants that have disappeared from the wild is more than twice the number of extinct birds, mammals and amphibians combined. The new figure is also four times the number of extinct plants recorded in the IUCN Red List. The database of plant extinctions is the result of years of examining fieldwork reports and articles published in scientific journals. The dataset should help conservation in the future by highlighting the types of plants that are particularly vulnerable to extinction.

Sources: *Nature Ecology & Evolution* (2019) [doi.org/10.1038/s41559-019-0906-2](https://doi.org/10.1038/s41559-019-0906-2) & *The Guardian* (2019) [theguardian.com/environment/2019/jun/10/frightening-number-of-plant-extinctions-found-in-global-survey](https://theguardian.com/environment/2019/jun/10/frightening-number-of-plant-extinctions-found-in-global-survey)

### Protected areas worldwide are shrinking

For much of modern history, governments and national leaders have set aside land under their jurisdiction to prevent it from destruction by human activities. However, governments are free to remove such restrictions if they so desire. A team of researchers studied the history of land protection and protected area downgrading, downsizing and degazettement (PADDD), over the past two centuries. They report that c. 186,000 m<sup>2</sup> of land have been subject to PADDD since 1892, with c. 78% of the downgrading having occurred over the past 20 years. The report focused primarily on PADDD in the USA and Amazonia and found that most downgrading happened so the land could be used for industrial purposes. The researchers suggest that the trend of removing restrictions from protected lands in these areas could lead to similar trends in other countries looking to shore up their economies.

Sources: *Science* (2019) [doi.org/10.1126/science.aau5525](https://doi.org/10.1126/science.aau5525) & *Phys.org* (2019) [phys.org/news/2019-05-conservationists-areas-worldwide.amp](https://phys.org/news/2019-05-conservationists-areas-worldwide.amp)

### Plastic pollution killing up to 1 million people per year...

A report on the impact of plastic pollution, one of the first to document the impact of discarded plastic on the health of the poorest people in the world, estimates that between 400,000 and 1 million people die every year because of diseases and accidents linked to poorly managed waste in developing countries. The report, by charities Tearfund, Fauna & Flora International and WasteAid, warns of a growing public health emergency, affecting the poorest and most vulnerable people. Just one in four people around the world have their rubbish collected so plastic and other waste is often discarded in the environment, blocking waterways and drains. This causes flooding, which in countries with poor sanitation leads to outbreaks of cholera and other diarrhoeal diseases, as well as drowning. Disease vectors such as malaria- and dengue-carrying mosquitoes breed in rainwater collecting in discarded plastic, and there is also a link with air pollution. For many people the only way to process plastic waste is to burn it, releasing toxic fumes into the air.

Source: *The Telegraph* (2019) [telegraph.co.uk/news/o/plastics-killing-million-people-year-warns-sir-david-attenborough](https://www.telegraph.co.uk/news/o/plastics-killing-million-people-year-warns-sir-david-attenborough)

### ... biodegradable plastic bags survive 3 years in soil and sea...

Plastic bags labelled as biodegradable were still intact and able to carry shopping 3 years after being exposed to the natural environment. Researchers tested compostable bags, two types of biodegradable bags and conventional carrier bags after long-term exposure to the sea, air and soil. None of the bags decomposed fully in all environments. The compostable bag fared better than the biodegradable bag. The compostable bag sample had completely disappeared after three months in the marine environment. After three years the biodegradable bags that had been buried in the soil and submerged in the sea were still able to carry shopping. The compostable bag was present in the soil 27 months after being buried, but when tested with shopping was unable to hold any weight without tearing. The researchers raise the question of whether biodegradable formulations can be relied on to offer a sufficiently advanced rate of degradation and therefore a realistic solution to the problem of plastic litter.

Sources: *Environmental Science & Technology* (2019) [doi.org/10.1021/acs.est.8bo6984](https://doi.org/10.1021/acs.est.8bo6984) & *The Guardian* (2019) [theguardian.com/environment/2019/apr/29/biodegradable-plastic-bags-survive-three-years-in-soil-and-sea](https://theguardian.com/environment/2019/apr/29/biodegradable-plastic-bags-survive-three-years-in-soil-and-sea)

### ...and deepest ever sub dive in Mariana Trench finds plastic bag

Once regarded remote and desolate, we now know the deep sea teems with life and plays a role in regulating the Earth's chemistry and climate. But it is not free from human disturbance: an American explorer has found plastic waste on the seafloor while breaking the record for the deepest ever dive. Victor Vescovo descended nearly 11 km to the deepest place in the ocean, the Pacific Ocean's Mariana Trench. He found sea creatures, but also a plastic bag and sweets wrappers. The team believes it has discovered four new species of amphipods, saw a creature called a spoon worm 7,000 m down and a pink snailfish at 8,000 m. They also discovered brightly coloured rocky outcrops and collected samples of rock from the seafloor. Humanity's impact was evident with the discovery of plastic pollution, something that other expeditions using landers have seen before. Millions of tonnes of plastic enter the oceans each year, but little is known about where a lot of it ends up. The scientists now plan to test the creatures they collected to see if they contain microplastics.

Source: *BBC* (2019) [bbc.co.uk/news/science-environment-48230157](https://www.bbc.co.uk/news/science-environment-48230157)

### Omnivorous shark grazes like a cow

Sharks are well known to be carnivores, but one small hammerhead shark also feels the need to eat its greens. Bonnethead sharks *Sphyrna tiburo* live in seagrass meadows in the shallow waters off the coasts of the Americas. In addition to consuming invertebrates such as squid, they have been observed eating large quantities of seagrass. But whether the animals digest the plant matter has been a mystery. Samantha Leigh at the University of California, Irvine, and her colleagues fed five captive bonnethead sharks on seagrass grown in water containing carbon-13, an uncommon form of carbon. After several weeks on this regimen, the sharks' blood contained high levels of carbon-13, which must have come from the seagrass in their diet. The team also found that the creatures' guts host enzymes capable of breaking down cellulose and other carbohydrates found in grasses. This makes *S. tiburo* the first omnivorous shark ever recorded. Because they are both predators and grazers, bonnethead sharks play an important part in seagrass ecosystems, the authors say.

Source: *Nature* (2019) [nature.com/articles/d41586-018-06173-y](https://www.nature.com/articles/d41586-018-06173-y)

## EUROPE

**Lionfish cull in Cyprus to tackle threat to Mediterranean ecosystem**

Cyprus has held its first organised cull of lionfish after numbers of the invasive species have proliferated in recent years, threatening the Mediterranean ecosystem and posing a venomous danger to humans. Almost 2 decades ago the fish, normally found in the warm tropical waters of the South Pacific and Indian Ocean, appeared in the Atlantic after pet owners released oversized lionfish from home aquariums into the sea. In the western Atlantic lionfish have been linked to the reduction of coral reef fish by c. 65%. Now they have reached Europe. In 2012, after initial sightings off Turkey, Israel and Lebanon, they were spotted off Cyprus. In 2015 they appeared further south in Greece, Italy and Tunisia, testimony to their ability to enter new territories and spawn at record rates. The flamboyantly coloured fish is said to pose the biggest ecological setback to the Mediterranean ecosystem, which is already under pressure from pollution, tourism and over-exploitation.

Source: *The Guardian* (2019) [theguardian.com/environment/2019/may/29/cyprus-begins-lionfish-cull-to-tackle-threat-to-mediterranean-ecosystem](https://www.theguardian.com/environment/2019/may/29/cyprus-begins-lionfish-cull-to-tackle-threat-to-mediterranean-ecosystem)

**Skinny cod and grey seals reveal changes to Baltic Sea food web**

A study examined how the health and abundance of certain species has changed over 2 decades in the Bothnian Sea and the Baltic Proper. The researchers investigated seal, cod, herring, sprat, isopods, amphipods and zooplankton; species that all occur at different levels in the Baltic Sea food web. The system is complex and several species can be both predators and prey. For example, herrings eat zooplankton and some bottom fauna, and are themselves being eaten by cod and seals. The study primarily shows that there are links between the health of both cod and seals with the availability of bottom-living animals. There is a link to climate change and eutrophication: the fat content and mean weight of herring in the Bothnian Sea have recently improved because the supply of amphipods has increased. These bottom-living crustaceans were previously almost eliminated after a period of extremely heavy rain that had changed the water quality of the Bothnian Sea.

Sources: *Ambio* (2019) [doi.org/10.1007/s13280-019-01201-1](https://doi.org/10.1007/s13280-019-01201-1) & *EurekAlert!* (2019) [eurekalert.org/pub\\_releases/2019-06/su-scao61019.php](https://www.eurekalert.org/pub_releases/2019-06/su-scao61019.php)

**Study reveals the benefits of feeding garden birds**

The popularity of bird feeders in gardens across the UK has helped increase the number of some bird species, according to new research from the British Trust for Ornithology (BTO). The UK spends an estimated GBP 200–300 million on bird-feeding products each year, which could potentially sustain 196 million birds. The study provides strong evidence that garden bird feeding has supported population growth in some bird species, and has increased the diversity of species visiting feeders. The authors examined bird food adverts, which showed that the variety and number of products has grown since the 1970s. They also used results from the BTO's Garden Bird Feeding Survey, through which dedicated volunteers have collected the most comprehensive long-term dataset on bird feeding in the world. In the 1970s garden bird feeders were dominated by two species, house sparrows and starlings, but today a much broader range is commonly taking advantage of the additional food.

Sources: *Nature Communications* (2019) [doi.org/10.1038/s41467-019-10111-5](https://doi.org/10.1038/s41467-019-10111-5) & *Discover Wildlife* (2019) [discoverwildlife.com/news/benefits-feeding-garden-birds](https://www.discoverwildlife.com/news/benefits-feeding-garden-birds)

**Half a billion hoverflies migrate to the UK each year**

Hoverflies are well known for being important pollinators, but they also have a lesser known benefit: their larvae consume aphids, which are pests to many crops. A new radar-based study suggests that hoverflies providing their pest control service each year in the UK must first cross the English Channel from continental Europe. In contrast to other insect migrations, in which the animals seemingly get blown along by whichever winds they get caught in, hoverflies strategically climb to an altitude where the predominant winds are blowing in a particular direction and use this powerful tailwind to travel hundreds of kilometres per day. The populations of the two most common species of hoverfly transport approximately the same amount of pollen as all honeybees in the UK. Perhaps more importantly, the larvae of hoverflies eat c. 20% of the aphids in an average wheat field. And encouragingly, the populations of the two migratory hoverfly species appear to be stable.

Source: *Science Magazine* (2019) [sciencemag.org/news/2019/06/half-billion-hoverflies-migrate-united-kingdom-each-year-benefits-farmers-are-huge](https://www.sciencemag.org/news/2019/06/half-billion-hoverflies-migrate-united-kingdom-each-year-benefits-farmers-are-huge)

## NORTH EURASIA

**First ever international Forest Summit heading to Yerevan, Armenia**

Armenia Tree Project and the American University of Armenia Acopian Center for the Environment have announced plans for a conference that will bring global leaders in forest conservation and restoration to Yerevan, Armenia this October. Forest Summit: Global Action and Armenia will be held during 20–23 October 2019 at the University and will feature discussion and collaborative dialogue on much-needed conservation and reforestation efforts. The inaugural conference will showcase successful conservation and reforestation projects, bringing together experts to collaborate on effective practices and industry innovations that help save trees and forests globally. Armenia Tree Project has helped protect Armenia's environment, empower its citizens, and invigorate local economies since its establishment in 1994. Since the group's inception > 5.7 million trees have been planted across the country (with the 6 million mark set to be hit this autumn) and hundreds of jobs have been created through tree-related work.

Source: *The Armenian Weekly* (2019) [armenianweekly.com/2019/07/17/first-ever-international-forestry-summit-heading-to-yerevan](https://www.armenianweekly.com/2019/07/17/first-ever-international-forestry-summit-heading-to-yerevan)

**Chernobyl transformed into nature reserve**

In the 30 years since the devastating nuclear disaster at Chernobyl, the site has undergone a slow, continual process of rebirth, becoming a haven for all types of wildlife. Across the exclusion zone, which stretches 30 km in all directions around the power plant, nature has begun to reclaim what humans destroyed. In 2015, researchers from the UK released information showing that there were likely more animals present on the site now than prior to the disaster. Elk, deer, foxes, wolves, and many more species roam the land, taking advantage of human absence. Rare species like the Przewalski's horse and European lynx, which were thought to have disappeared from the area, were sighted within the exclusion zone. Unlike other areas of Chernobyl, the site only opened to the public in December 2018. The reserve, which is said to be Europe's largest experiment in rewilding, is now home to nearly 70% of the country's bird species, as well as an abundance of wolves, boars and bears.

Source: *My Modern MET* (2019) [mymodernmet.com/chernobyl-wildlife-tours](https://www.mymodernmet.com/chernobyl-wildlife-tours)

## NORTH AFRICA AND MIDDLE EAST

### Rescued 11 houbara birds rehabilitated

Eleven Asian houbara bustards *Chlamydotis macqueenii* rescued after a failed smuggling attempt on the UAE's border with Oman have been released back into the wild by the International Fund for Houbara Conservation (IFHC). In January 2019 a driver was arrested at Al Darah border, the UAE's northern crossing with Oman, as he attempted to smuggle in the houbara bustards. The birds had been stuffed inside plastic bags with their wings taped and placed in a spare tyre. Categorized as Vulnerable on the IUCN Red List, the species is at high risk of extinction and is hunted and trafficked for its meat. Following extensive medical examinations to assess potential contagious diseases and eight weeks of rehabilitation at IFHC quarantine in Abu Dhabi, the houbaras were released in two groups in the Cholistan Desert in Pakistan on 22 March. All 11 birds have been fitted with GPS trackers to monitor their movement.

Source: *Muscat Daily* (2019) [muscatdaily.com/Archive/Oman/Rescued-11-houbara-birds-rehabilitated-in-Pakistan-5dwx](https://muscatdaily.com/Archive/Oman/Rescued-11-houbara-birds-rehabilitated-in-Pakistan-5dwx)

### How Band-e-Amir National Park became Afghanistan's oasis of peace

In 2009, after decades of delay caused by war, Afghanistan officially designated a c. 600 km<sup>2</sup> area as Band-e-Amir National Park in the hope that it would offer citizens a respite from the turmoil that has ravaged their country. A decade later, the peaceful site now tells a different story of a country whose recent history has been defined by violence. The Park is located in the central Bamiyan province, which despite being one of the country's poorest and least developed regions remains one of the safest areas of Afghanistan today. It is home to a diverse array of transcontinental flora and fauna, and serves as one of the most notable places in Afghanistan where people from different localities, ethnicities and religious denominations can find peace and tranquillity. Band-e-Amir is also noted for employing the country's first-ever female park rangers, who assist with the growing number of local Afghan visitors and families who have been attracted to the Park in recent years.

Source: *CNN* (2019) [edition.cnn.com/travel/article/band-e-amir-afghanistan-national-park/index.html](https://edition.cnn.com/travel/article/band-e-amir-afghanistan-national-park/index.html)

### Study reveals extent of beach pollution in Oman

Quriyat and Barka recorded the highest rate of pollution among Omani beaches, with discarded plastic the most common waste, according to a study prepared by the National Centre for Environmental Conservation. During the study, 3,926 pieces of waste weighing 85.48 kg were collected from 13 beaches along the coastline of the Sea of Oman, in an area 1,300 m long. The study revealed that although plastic debris was the most prevalent, wood made up most of the total weight of beach waste. Ahmed Al Busaidi, a senior researcher at the Centre, explained the highest density of contamination was at the beach of Wilayat Quriyat with 6.4 pieces/m, whereas the lowest pollution levels were found at Muttrah with 0.7 pieces/m. In addition to measuring general cleanliness levels and the most common waste indicators, the study also looked at how the beaches are cleaned and the levels of public awareness of litter.

Source: *Times of Oman* (2019) [timesofoman.com/article/1106256/Oman/These-beaches-in-Oman-among-most-polluted](https://timesofoman.com/article/1106256/Oman/These-beaches-in-Oman-among-most-polluted)

## SUB-SAHARAN AFRICA

### New project tackles illegal trade in vulture body parts

In Nigeria and across Africa vultures are being killed and their body parts used for various belief-based practices including traditional medicine. This is a severe threat for a group of birds already beleaguered by poisoning and habitat loss. In May 2019 scientists, officials, community members and celebrity vulture ambassadors gathered in Nigeria to launch a new project titled 'Combatting the West African illegal trade in threatened vultures and their parts for belief-based use'. Developed by the Nigerian Conservation Foundation (NCF) in partnership with BirdLife Africa and funded by the U.S. Fish and Wildlife Service, this 2-year project aims to tackle the complex issue at its source. Dr Muhtari Aminu-Kano, Director-General of NCF, highlighted the crucial role of vultures for a functioning ecosystem in his welcoming address. NCF's work includes raising awareness amongst traditional medicine practitioners of herbal alternatives to vulture parts, as well as seeking collaboration with law enforcement agencies.

Source: *BirdLife International* (2019) [birdlife.org/worldwide/news/new-project-tackles-illegal-trade-vulture-body-parts](https://birdlife.org/worldwide/news/new-project-tackles-illegal-trade-vulture-body-parts)

### Namibia forced by drought to auction 1,000 wild animals

Namibia's government plans to auction off some of the wildlife living in its national parks because of the severe drought that has left the animals without water and vegetation to sustain them. Included in the auction are 500–600 buffalo living in Waterberg Plateau Park, which will reduce the population by more than half, and 60 giraffes. Approximately 150 springboks and 65 oryxes from Hardap and Naute preserves, along with 20 impalas and 16 wildebeest from other parks, are also amongst the animals for sale. So are 28 elephants from Khaudum National Park and the Omatjete area, which has raised concern about the well-being of the elephants separated from their herds, and questions as to who the buyers will be. According to the government, without the sale the animals are at risk of dying from starvation. Namibia says it hopes to raise c. USD 1 million from the sale, which it will place into a conservation trust fund.

Source: *Africa Times* (2019) [africatimes.com/2019/06/17/namibias-drought-forces-wildlife-auction/](https://africatimes.com/2019/06/17/namibias-drought-forces-wildlife-auction/)

### Penguin chicks could influence fishery management for marine conservation

A new study found that the bodily condition of penguin chicks and how adult penguins fish are directly linked to local fish abundance. Understanding these factors in their environment could influence fishery management for the purpose of marine conservation. The research showed that when the local abundance of anchovies and sardines was low, adult penguins increased foraging effort, foraging for longer, swimming further and diving more often. The chicks' body condition also declined, because finding fish was a greater challenge for breeding adults and required more of their energy. A 3-year commercial fisheries closure around Robben Island, South Africa created a unique opportunity to study how African penguins respond to natural changes in local abundance of their prey. Since these short-term changes will probably have knock-on effects on chick survival and penguin population size, they could be used as powerful early warning signs to inform fisheries' policies and marine conservation efforts.

Source: *Scitech Europa* (2019) [scitech.europa.eu/marine-conservation-penguin-chicks-fishery-management/95220](https://scitech.europa.eu/marine-conservation-penguin-chicks-fishery-management/95220)

## SOUTH AND SOUTH-EAST ASIA

### New species of pit viper discovered in India

A new species of snake has been found in Arunachal Pradesh's West Kameng district. The reddish brown pit viper *Trimeresurus arunachalensis*, a venomous snake with a unique heat-sensing system, was found in a forest in West Kameng district by a team of herpetologists. India had four brown pit vipers—malabar, horseshoe, hump-nosed and Himalayan—before the Arunachal Pradesh discovery. A research team from Pune-based Indian Institute of Science Education and Research found the snake while conducting biodiversity surveys in the Eaglenest region of Arunachal Pradesh. A resident of the area had first shown the snake to the team in a forest patch near Ramda village. Comparative analyses of DNA sequences and examination of morphological features suggested that the snake belonged to a species not described before. *Trimeresurus* is the most diverse genus of pitvipers; there are c. 50 known species distributed across the southern and south-eastern parts of Asia. The addition of *T. arunachalensis* brings the number of pitvipers in India up to 24.

Source: *Hindustan Times* (2019) [hindustanimes.com/india-news/unique-new-species-of-pit-viper-with-heat-sensing-system-found-in-arunachal-pradesh/story-wK6tztctzwitRx UICcW8tK.html](http://hindustanimes.com/india-news/unique-new-species-of-pit-viper-with-heat-sensing-system-found-in-arunachal-pradesh/story-wK6tztctzwitRx UICcW8tK.html)

### Good news for vultures in Nepal

Following precipitous declines of white-rumped, Indian and slender-billed vultures across the Indian subcontinent, positive news have recently been reported. Vulture populations had declined rapidly in the early 2000s, caused by the non-steroidal anti-inflammatory drug diclofenac given to livestock to treat pain or swelling. Diclofenac is highly toxic to vultures, leading to kidney failure within a few days of eating flesh from a cow or water buffalo given the drug. It was banned in India, Pakistan and Nepal in 2006, but implementation varied substantially between countries. In Nepal a Vulture Safe Zone programme was launched to raise awareness, provide vultures with toxin-free food and encourage the veterinary use of a vulture-safe alternative drug called meloxicam. Long-term monitoring before and after the implementation of the programme showed a rapid decline of the white-rumped vulture population during 2002–2013, but this gave way to a fast and continuing recovery since c. 2013. Limited data for

the rarer slender-billed vulture show a similar pattern.

Sources: *Bird Conservation International* (2019) [doi.org/10.1017/S0959270919000169](https://doi.org/10.1017/S0959270919000169) & *Save Vultures* (2019) [save-vultures.org/post/june-2019-good-news-for-vultures-in-nepal-evidence-that-the-vulture-safe-zones-approach-is-working](https://save-vultures.org/post/june-2019-good-news-for-vultures-in-nepal-evidence-that-the-vulture-safe-zones-approach-is-working)

### Arrests in Indonesia over online sale of Komodo dragons

Indonesian authorities arrested seven suspected members of a trafficking ring believed to have used Facebook and other social media platforms to sell at least 40 Komodo dragons and other protected species. The suspects were found in possession of six baby Komodo dragons *Varanus komodoensis*, bearcats *Arctictis binturong* (a type of civet), and various threatened birds, including cockatoos and cassowaries. The suspected network of traffickers sold the dragons for c. IDR 500 million (USD 35,000) each to buyers across South-east Asia, via Singapore. Indonesian authorities have launched an investigation to go after the poachers. The seized juvenile dragons were being assessed by wildlife experts and veterinarians before a possible release back into the wild. The komodo dragon, the world's biggest lizard species, is found only on the northern coast of the island of Flores and within the small archipelago that makes up Komodo National Park, a UNESCO World Heritage Site.

Source: *Mongabay* (2019) [news.mongabay.com/2019/04/indonesia-arrests-7-for-allegedly-selling-komodo-dragons-over-facebook](https://news.mongabay.com/2019/04/indonesia-arrests-7-for-allegedly-selling-komodo-dragons-over-facebook)

## EAST ASIA

### Rare giant softshell turtle dies in Chinese zoo

The world's rarest turtle, the Yangtze giant softshell turtle *Rafetus swinhoei*, has moved closer to extinction after a female died in a Chinese zoo, leaving just three known members of the species. The animal was believed to be over 90 years old and died in Suzhou Zoo in April. Its death came a day after staff at the facility attempted to artificially inseminate the animal using semen from a male more than 10 years her senior. The zoo had tried unsuccessfully for several years to get the pair to reproduce naturally. The species is the largest freshwater turtle in the world, grows to 100 cm and weighs up to 100 kg. Its main habitat was the Yangtze River and other inland Chinese waterways, however, aquatic life in China's rivers has

dwindled after centuries of hunting and, more recently, decades of pollution, shipping traffic and ecological disruption by hydroelectric dams.

Source: *The Guardian* (2019) [theguardian.com/world/2019/apr/15/last-female-world-rarest-yangtze-giant-softshell-turtle-species-dies-chinese-zoo](https://theguardian.com/world/2019/apr/15/last-female-world-rarest-yangtze-giant-softshell-turtle-species-dies-chinese-zoo)

### Japan resumes commercial whaling

On 1 July 2019, to the fury of conservationists around the world, Japanese whalers landed their first commercial kill for more than 30 years, a minke whale. In 1986, the countries of the International Whaling Commission, of which Japan was one, had agreed to a moratorium on whaling. This allowed the animals to recover to sustainable numbers after several species had been driven to the brink of extinction by unrestricted hunting. Exceptions were permitted for Indigenous groups of hunters, such as aboriginal Alaskans, who had an established culture of whaling, and for scientists studying whale biology—a loophole Japan has exploited ever since. Japanese whalers have killed 200–1,200 of the animals every year since the moratorium, under the banner of research. Few outsiders have believed that banner to be anything other than cover for trading in whale meat. The government has set this year's quota at 227, with minke, Bryde's and sei whales as the permitted targets.

Source: *The Economist* (2019) [economist.com/science-and-technology/2019/07/04/japan-resumes-commercial-whaling](https://economist.com/science-and-technology/2019/07/04/japan-resumes-commercial-whaling)

## NORTH AMERICA

### Concerns over Canada's chinook salmon

Half of Canada's chinook salmon populations are threatened, with nearly all others in precarious decline, confirming fears that prospects for the species remain dire. The report by the Committee on the Status of Endangered Wildlife in Canada concluded that of the country's 16 populations only one is believed to be stable. Watershed Watch, an organisation that monitors ecosystem health, has renewed calls for chinook to be listed under federal legislation which would afford the ailing populations more robust government protection. Chinook salmon are a critical part of the ecosystem in British Columbia. During spawning periods, millions of fish can travel up waterways, providing a critical source of food for eagles, bears, seals and sea

lions. No single culprit has been identified for the decline. Some blame a surge in populations of seals and sea lions, whereas others fear ocean temperatures are rising too much for the highly sensitive fish.

Source: *The Guardian* (2019) [theguardian.com/environment/2018/dec/05/canada-chinook-salmon-endangered](https://www.theguardian.com/environment/2018/dec/05/canada-chinook-salmon-endangered)

### Canada ratifies agreement blocking commercial fishing in the High Arctic

Canada has ratified an agreement that would prevent commercial fishing in the High Arctic for 16 years. The deal was initially signed in October 2018 by Canada and nine other governments but will not be enforceable until all parties ratify the agreement. The governments that have signed include Norway, the USA, China, Iceland, Japan, the Republic of Korea, and Denmark, but it has only been ratified by Canada, the EU and the Russian Federation. Arctic experts have called the treaty a rare example of governments cooperating in advance of a problem, instead of just reacting to it. The agreement applies to northern waters at least 200 nautical miles away from the shores of any coastal state, which amounts to 2.8 million km<sup>2</sup> of ocean, approximately the size of the Mediterranean Sea. It also provides for the participation and inclusion of Arctic Indigenous Peoples and their communities, recognizing the critical value of their local knowledge in the conservation of the Arctic Ocean.

Source: *CTV News* (2019) [ctvnews.ca/business/canada-ratifies-agreement-blocking-commercial-fishing-in-the-high-arctic-1.4443100](https://www.ctvnews.ca/business/canada-ratifies-agreement-blocking-commercial-fishing-in-the-high-arctic-1.4443100)

### Buildings are killing up to 1 billion birds per year in the USA

At least 100 million and maybe as many as 1 billion birds die each year in the USA when they collide with buildings, especially glass-covered or illuminated skyscrapers. Most birds migrating through the country do so at night, when the airspace is cool and calm. Any city with glass structures and bright lights at night is a culprit, but some are more perilous to birds than others: Chicago is the most dangerous, followed by Houston and Dallas. New York, Los Angeles, St Louis and Atlanta also pose risks during migration. The vast majority of collision deaths are caused by low- and medium-rise buildings, but skyscrapers cause a higher rate of deaths. Turning out the lights in buildings at night for a few weeks during peak migration could be a simple first step that would make a big difference. Conservationists also advocate that buildings adopt more bird-

friendly designs, for example using patterned glass and dimmer lighting.

Source: *The Guardian* (2019) [theguardian.com/environment/2019/apr/07/how-many-birds-killed-by-skyscrapers-american-cities-report](https://www.theguardian.com/environment/2019/apr/07/how-many-birds-killed-by-skyscrapers-american-cities-report)

### Corals devastated by Miami dredging project

Scientists have found that a large dredging project at the port of Miami, Florida, killed more than half a million corals during 2013–2015, devastating the only nearshore coral reef in the continental USA. Sediment churned up by the project buried up to 90% of nearby reefs, with the impacts felt as far as 24 km away, according to a new study. The mass coral death in southeast Florida was previously attributed to a region-wide outbreak of coral disease that occurred at the same time as the USD 220 million Port Miami project, which widened and deepened the city's shipping channel to allow larger container vessels to enter the harbour. A team of researchers examined data collected by the port project's environmental consultants. They found that many of the coral species that died were not susceptible to the disease, and that the closer susceptible corals were to the dredging site, the more likely they were to perish.

Sources: *Marine Pollution Bulletin* (2019) [doi.org/10.1016/j.marpolbul.2019.05.027](https://doi.org/10.1016/j.marpolbul.2019.05.027) & *Yale Environment* 360 (2019) [e360.yale.edu/digest/miami-dredging-project-killed-more-than-half-a-million-corals](https://e360.yale.edu/digest/miami-dredging-project-killed-more-than-half-a-million-corals)

## CENTRAL AMERICA AND CARIBBEAN

### Belize to nearly triple marine area under strict protection

Belize's marine protected waters have increased from 4.5% to 11.6% thanks to the national government approving a proposal to expand fisheries replenishment (no-take) zones. This is the result of a collaborative process conducted by the Fisheries Department, local stakeholders, and local and international researchers. The proposal included the establishment of the first protected area in Belize's Exclusive Economic Zone, known as the Corona Reef because of its extensive coral reef complex. The expansion is in a deep-sea area, with depths of 200–3000 m, which includes some of the most underrepresented habitats in the country's current system of marine protected areas. This is expected to help conserve deep-slope and demersal biodiversity, support tourism and

secure sustainable and economically valuable fisheries for the long term. The approved proposal represents a pivotal contribution within the national development framework set by the Growth and Sustainable Development Strategy and the Belize Horizon 2030.

Source: *Wildlife Conservation Society* (2019) [newsroom.wcs.org/News-Releases/article/Type/ArticleView/articleId/12150/Government-of-Belize-Expands-Marine-Protected-Areas-in-Biodiverse-Offshore-Waters.aspx](https://www.wcs.org/News-Releases/article/Type/ArticleView/articleId/12150/Government-of-Belize-Expands-Marine-Protected-Areas-in-Biodiverse-Offshore-Waters.aspx)

### Bermuda land snail reintroduced after near-extinction

Thousands of Critically Endangered greater Bermuda land snails *Poecilozonites bermudensis* have been released into the wild after being rescued from the edge of extinction, with help from a British zoo. The endemic species was thought to have disappeared for many years until an empty shell turned up in Hamilton, the territory's capital city, in 2014. A small, but thriving population of live snails was then found among litter in a nearby alleyway, and some were flown to Chester Zoo for a unique breeding programme. Many thousands of snails have been raised in captivity and > 4,000 have now been taken back to the island and released. Once abundant on the islands that make up the territory of Bermuda, the population went through a dramatic decline during the 20th century after being preyed on by invasive snails. The reintroduced snails are thought to be doing well in their new home.

Source: *BBC* (2019) [bbc.co.uk/news/science-environment-48527398](https://www.bbc.co.uk/news/science-environment-48527398)

### Deforestation affects migratory birds

Migratory birds are experiencing precipitous population declines caused by land-use change in Central and South America. A recent study, conducted in Guatemala, focused on how 42 species of migratory birds spend their time in different types of agricultural landscapes. The researchers identified five of these species as conservation priorities. The birds rely on forested areas in their southern overwintering grounds for sustenance, but these have been widely replaced by less hospitable agricultural landscapes. Tropical forests and complex agroforests are both declining, and many migratory bird populations are decreasing along with them. Some vulnerable migratory birds use tropical hardwood plantations at the same rate as forests, making these profitable plantations attractive for conservation as they could provide an alternative to poorer habitats including cattle pastures and soy monocultures. Agroforestry solutions (e.g. retention of tall trees) can also provide habitats for at-risk species such as the



golden-winged warbler, and provide ecosystem services to farmers.

Source: *Mongabay* (2019) [news.mongabay.com/2019/04/deforested-habitats-leave-migratory-birds-ill-prepared-for-journey-north](https://news.mongabay.com/2019/04/deforested-habitats-leave-migratory-birds-ill-prepared-for-journey-north)

## SOUTH AMERICA

### Over 40,000 acres of wildlife habitat to be protected in Argentina

Payunia Reserve, the largest protected area in the Patagonian steppe and home to iconic wildlife such as the guanaco, the Andean cat and Andean condor, has now been further protected. The Wildlife Conservation Society, Fundación Vida Silvestre Argentina and the associate organization to the World Wide Fund for Nature in Argentina have negotiated the resignation of grazing rights from livestock producers for 43,570 acres in the Payunia Natural Protected Area of Mendoza, Argentina. The reserve's imposing landscape has one of the world's highest concentrations of old volcanoes and is dominated by two volcanic mountains reaching > 3,500 m altitude. The core area will protect the breeding range of a large migratory population of guanacos, allowing them to avoid competition with livestock for food and water in this arid environment. This land also protects the habitat of the Endangered Andean cat, only recently discovered in this region, providing a refuge from retaliatory killing by livestock producers for predation on young goats.

Source: *Globe Newswire* (2019) [globenewswire.com/news-release/2019/06/04/1864194/0/en/More-Than-40-000-Acres-of-Critical-Wildlife-Habitat-to-be-Protected-in-the-Spectacular-Payunia-Reserve-of-Argentina.html](https://globenewswire.com/news-release/2019/06/04/1864194/0/en/More-Than-40-000-Acres-of-Critical-Wildlife-Habitat-to-be-Protected-in-the-Spectacular-Payunia-Reserve-of-Argentina.html)

### Amphibians infected by ranavirus found in Atlantic rain forest

Researchers have found tadpoles of native species and the non-native American bullfrog with clear signs of infection by ranavirus in Brazil. The specimens were collected from two ponds in the city of Passo Fundo in November 2017. Ranavirus causes skin ulcerations, oedema and internal haemorrhage. It does not affect humans but can be lethal to amphibians and fish. This is the first infection of wild amphibians detected in Brazil, a discovery that causes concern. Epidemics were reported in 2006 and 2009, but they occurred at bullfrog farms, not in the wild. The virus has been detected in nature elsewhere and is associated with the decline in amphibian

populations. The discovery also raises questions about the relations between invasive and native species. The invasive American bullfrog can be infected with ranavirus without contracting any disease, thereby acting as a vector for its dissemination.

Sources: *Journal of Wildlife Diseases* (2019) [doi.org/10.7589/2018-09-224](https://doi.org/10.7589/2018-09-224) & *EurekAlert!* (2019) [eurekalert.org/pub\\_releases/2019-06/fda-aibo62819.php](https://eurekalert.org/pub_releases/2019-06/fda-aibo62819.php)

### Darwin's finches sing out of tune after parasites deform beak

Tree finches made famous by Charles Darwin's visit to the Galápagos islands in the 19th century have gone out of tune because of parasitic infections that damage the birds' beaks and nostrils. Researchers found that male finches that picked up the fly parasite had malformed beaks and enlarged nostrils that led to 'subpar songs', making it harder for the birds to find mates and reproduce. The infection is caused by the fly *Philornis downsi*, which was probably accidentally introduced to the islands in the 1960s. The larvae are now rife and kill more than half of all nestling finches. Those that survive can have badly damaged nasal cavities and nostrils, and their beaks can be deformed to the point that they no longer close properly. The result was off-putting to females, and out-of-tune males struggled to find mates. The fly occurs on 13 of 15 islands surveyed to date and is considered the greatest risk to the survival of Galápagos land birds.

Sources: *Proceedings of the Royal Society B* (2019) [doi.org/10.1098/rspb.2019.0461](https://doi.org/10.1098/rspb.2019.0461) & *The Guardian* (2019) [theguardian.com/environment/2019/jun/12/darwins-finches-sing-out-of-tune-mating-call-parasites-deform-beaks](https://theguardian.com/environment/2019/jun/12/darwins-finches-sing-out-of-tune-mating-call-parasites-deform-beaks)

### Whitley Gold Award for Venezuelan parrot conservation

The Whitley Awards, sometimes referred to as the 'Green Oscars', recognize international conservation excellence in countries rich in biodiversity but poor in resources. Conservation ecologist and population modeller Jon Paul Rodríguez recently received the prestigious Whitley Gold Award by the Whitley Fund for Nature (WFN), a UK-based NGO. This prize honours the 3 decades that he and his team have devoted to protecting the imperilled yellow-shouldered Amazon parrot *Amazona barbadensis* in Venezuela. The Gold Award is the WFN's highest honour. Thanks to Rodríguez and his team's concerted efforts to protect and conserve the parrots on Isla Margarita since the early 1990s, their number has increased from just 650 to > 1,700. The team, who won their original Whitley

Award in 2003 and several more prizes since then, were bestowed with funding of GBP 60,000, which will allow them to continue and expand their critically important work.

Source: *Forbes* (2019) [forbes.com/sites/grrlscientist/2019/05/13/green-oscar-awarded-for-venezuelan-parrot-conservation/#11bcbb9f2fbc](https://forbes.com/sites/grrlscientist/2019/05/13/green-oscar-awarded-for-venezuelan-parrot-conservation/#11bcbb9f2fbc)

## PACIFIC

### Seabirds enhance coral reef growth...

A collaborative research effort shows evidence that nutrients produced by seabirds directly increase coral reef growth rates. Although we know seabird presence supports marine ecosystem health, no previous study had looked at these effects specifically. The study was conducted near an isolated Pacific island, Namenalailai (Namena), and demonstrates the importance of this ecological balance. The island has both a large population of nesting seabirds and an expansive marine protected area, and is surrounded by abundant coral reefs. Samples of coral were taken from Namena and compared with samples from Cousteau, a neighbouring island with a similar environment and a marine protected area, but far fewer nesting seabirds. Namena corals were planted within Cousteau coral reefs and vice versa, to analyse growth rates. The coral near Namena, the island with a higher seabird population, showed increased growth rates, four times greater than coral grown near Cousteau, without seabird nutrients.

Sources: *Scientific Reports* (2019) [doi.org/10.1038/s41598-019-41030-6](https://doi.org/10.1038/s41598-019-41030-6) & *Island Conservation* (2019) [islandconservation.org/seabirds-enhance-coral-reef-growth-new-scientific-research](https://islandconservation.org/seabirds-enhance-coral-reef-growth-new-scientific-research)

### ... and advanced virtual technology captures coral reefs recovery

Researchers at Scripps Institution of Oceanography and engineers at University of California San Diego have used new imaging software to detect dramatic recovery after a bleaching event on the reefs surrounding the remote Palmyra Atoll in the tropical Pacific. In 2015 Palmyra experienced its warmest water in recorded history, prompting a widespread bleaching event that affected > 90% of the corals surrounding the island. Researchers found that despite the widespread bleaching, most of the corals recovered, with < 10% dying. The conclusions are based on comprehensive monitoring of the reefs that resulted in a long-term dataset of thousands of

pictures of the same reef area collected over 8 years. These images were combined using custom software to create 3-dimensional photo mosaics of the ecosystem, a virtual representation of the corals. The technology was developed by the 100 Island Challenge team, a collaborative group of marine ecologists and engineers using the latest technology to monitor coral reefs globally.

Sources: *Coral Reefs* (2019) [doi.org/10.1007/s00338-019-01796-7](https://doi.org/10.1007/s00338-019-01796-7) & *Phys.org* (2019) [phys.org/news/2019-04-advanced-virtual-technology-captures-coral.html](https://phys.org/news/2019-04-advanced-virtual-technology-captures-coral.html)

### Extinct bird evolved into existence again

The Aldabra white-throated rail *Dryolimnas cuvieri* subsp. *aldabranus*, a flightless bird that lives on its namesake atoll in the Indian Ocean, has effectively evolved into existence twice after first going extinct during the middle Pleistocene. According to a recent study, the rail is an example of a rarely observed phenomenon called iterative evolution, in which the same ancestral lineage produces parallel offshoot species at different points in time. This means that near-identical species can pop up multiple times in different eras and locations, even if past iterations have gone extinct. Fossils of the flightless bird were found both before and after Albadra was submerged by an inundation event that occurred c. 136,000 years ago. Those rising sea levels wiped out the first iteration of the flightless rail, which was descended from flying forebears that originated in the Seychelles Islands and Madagascar. Remarkably, the same parent species appears to have recolonized the atoll once it emerged tens of thousands of years later.

Sources: *Zoological Journal of the Linnean Society* (2019) [doi.org/10.1093/zoolinnean/zlzo18](https://doi.org/10.1093/zoolinnean/zlzo18) & *Vice* (2019) [vice.com/en\\_us/article/vb9bpm/this-bird-went-extinct-and-then-evolved-into-existence-again](https://www.vice.com/en_us/article/vb9bpm/this-bird-went-extinct-and-then-evolved-into-existence-again)

## AUSTRALIA/ANTARCTICA/ NEW ZEALAND

### Western Australia makes history with national park expansions

To counter rising threats to nature, Western Australia plans to safeguard 12 million acres of land and sea. The proposed expansion is the largest single commitment ever made to national parks on land in Australia, a historic step that shows the government's appreciation and respect for its natural places. Although every boundary of the commitment has not been determined, the opportunities identified cover a diverse range of habitats.

The government selected the areas before making its announcement, but details about their natural values emerged only recently in a report produced by the Centre for Conservation Geography. The properties hold an extraordinary concentration of plants, animals and places, and the parks will improve protection for three nationally important wetlands, two World Heritage sites, four national biodiversity hotspots, and almost 200 threatened species, as well as thousands of endemic species. Only through large-scale initiatives like this one can the government maintain healthy rivers, abundant wildlife and plentiful fisheries.

Source: *The PEW Charitable Trusts* (2019) [pewtrusts.org/en/research-and-analysis/articles/2019/05/29/western-australia-makes-history-with-national-park-expansions](https://pewtrusts.org/en/research-and-analysis/articles/2019/05/29/western-australia-makes-history-with-national-park-expansions)

### Protecting Indigenous conservation practices

A new study on pollinator conservation explores how Indigenous and local communities around the world approach the conservation of pollinators such as bees, birds and bats. Researchers reviewed academic and community writings about traditional knowledge pertaining to pollinators, while participating Indigenous and local people held dialogues in their communities to decide which parts of their cultural practices to share. The result is a list of seven policy recommendations for protecting pollinators and respecting the practices of deeply rooted communities that can be applied not just to pollinator protection, but to conservation issues more broadly: (1) Require informed consent from Indigenous people and local communities for conservation and development initiatives, (2) support customary land management practices, (3) bolster Indigenous and community conserved areas, (4) bring together different forms of knowledge, (5) promote listing of heritage sites, (6) foster environmentally friendly beekeeping and (7) champion food sovereignty.

Sources: *Nature Sustainability* [doi.org/10.1038/s41893-019-0244-z](https://doi.org/10.1038/s41893-019-0244-z) & *Ensia* (2019) [ensia.com/notable/protecting-indigenous-conservation-practices/](https://ensia.com/notable/protecting-indigenous-conservation-practices/)

### New Zealand's environment is in serious trouble

A report on the state of New Zealand's environment has painted a bleak picture of catastrophic biodiversity loss, polluted waterways and the destructive rise of the dairy industry and urban sprawl. Environment Aotearoa is the first major environmental report in 4 years. It found New

Zealand is now considered one of the most invaded countries, with 75 animal and plant species having gone extinct since human settlement. The once-vibrant bird life has fared particularly badly, with 90% of seabirds and 80% of shorebirds threatened with extinction. Almost two-thirds of New Zealand's rare ecosystems are under threat of collapse, and over the last 15 years the extinction risk increased for 86 species, compared with the conservation status of just 26 species improving in the past 10 years. The scale of what is being lost is impossible to gauge accurately, because only c. 20% of New Zealand's species have been identified and recorded.

Source: *The Guardian* (2019) [theguardian.com/world/2019/apr/18/decades-of-denial-major-report-finds-new-zealands-environment-is-in-serious-trouble](https://www.theguardian.com/world/2019/apr/18/decades-of-denial-major-report-finds-new-zealands-environment-is-in-serious-trouble)

### Newly described moths link mythological deities to films

Two new species of macro-moths have been discovered on New Zealand's South Island. Both *Arctesthes titanica* and *Arctesthes avatar* were named after mythological deities and top-grossing blockbusters by famous filmmaker James Cameron: Titanic and Avatar, respectively. The species are believed to be restricted to only a few sub-alpine/alpine localities. They are therefore particularly vulnerable to extinction and need to be considered of very high priority for conservation. Because of its relatively large size *A. titanica* was named in reference to the Titans and the legendary, if ill-fated, record-breaking passenger ship Titanic. The moth's small wetland habitat is located in an area currently subject to damaging farming practices. *Arctesthes avatar* received its name after Forest & Bird, the New Zealand conservation organization behind the 2012 BioBlitz at which the new species was collected, ran a public competition where 'the avatar moth' turned out to be the winning entry.

Sources: *Alpine Entomology* (2019) [doi.org/10.3897/alpento.3.33944](https://doi.org/10.3897/alpento.3.33944) & *EurekAlert!* (2019) [eurekalert.org/pub\\_releases/2019-06/pp-ntso6119.php](https://eurekalert.org/pub_releases/2019-06/pp-ntso6119.php)

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 Ben Jobson, Filippo Marino, Hannah McCormick, Annkathrin Sharp, Paul Yoxon and Ben Yoxon. Contributions from authoritative published sources (including websites) are always welcome. Please send contributions by e-mail to [oryx@fauna-flora.org](mailto:oryx@fauna-flora.org).