

Briefly

INTERNATIONAL

Untouched forests essential for conserving biodiversity

The results of a review of 138 existing studies, comparing wildlife in tropical forests that had been modified and those that had not, have shown there is no substitute for primary forests when it comes to maintaining tropical biodiversity. Researchers analysed the impact of disturbance and land conversion in tropical forests where changes ranged in severity from complete clearance for agriculture to plantation and agroforestry usage to selectively logged forests. Although mammals were found to do better under some kinds of forest modification, birds, insects and plants all undergo an unequivocal loss. The study is pertinent to current debates on how best to preserve biodiversity across the tropics in areas where the most rapid human development is taking place. The researchers believe it is crucial that funds, available through the UN's Reducing Emissions from Deforestation and Forest Degradation initiative, are prioritized for the preservation of primary forest.

Source: *BBC News* (2011), <http://www.bbc.co.uk/news/science-environment-14912813>, and *Nature* (2011), <http://dx.doi.org/10.1038/nature10425>

Conservationists broadly agree that the future looks bleak

A survey in which 583 conservation scientists were interviewed about a range of conservation issues has revealed a general consensus of views, including near unanimity (99.5%) that a serious loss of biological diversity is likely, very likely or virtually certain. The habitat considered most at risk by those interviewed was marine tropical coral, with 38.7% and 49.3% of respondents believing that a serious loss of biological diversity in marine tropical coral is very likely or virtually certain, respectively. Tropical moist and dry broadleaf forest and mangrove ecosystems were also considered to be at risk of serious levels of biodiversity loss. The most commonly identified priorities among interviewees were gaining an understanding of how people and nature interact under certain conditions, and the role of biological diversity in maintaining ecosystem function.

Source: *Conservation Biology* (2011), <http://dx.doi.org/10.1111/j.1523-1739.2011.01772.x>

Arctic sea ice sheds more light underwater

In the summer months Arctic sea ice, increasingly composed of first-year ice as opposed to multi-year ice, forms a mosaic of bare ice, meltwater and ice floes. Now research into the physical and optical properties of this mosaic in the Chukchi Sea in the summer of 2010 has revealed that the distribution of solar radiation is unexpectedly complicated in the water beneath these floes. Sunlight's transmission to the water below meltwater ponds is generally an order of magnitude greater than through bare ice, partly because the latter is thicker. In addition light was also found to travel further in areas with a mosaic of meltwater and ice, because the ice was responsible for scattering the light. This increase in light in the sea water of the Arctic may have significant effects on the biological productivity of these waters.

Source: *Geological Research Letters* (2011), <http://dx.doi.org/10.1029/2011GL049421>, and *Nature* (2011), 479(7372), 153

Fatal stress

Experiments in which dragonfly larvae were exposed to predators showed that the stress of exposure to predators was sufficient to increase the mortality rate of the larvae. In the first experiment, in which one group of larvae were exposed to a high density of predatory fish, and another to a high density of an invertebrate predator, survival was 2.5–4.3 times greater for the larvae that were not exposed to any predator. In a second experiment, 11% of dragonfly larvae exposed to predators died during metamorphosis, compared to just 2% in the predator-free treatment. The study's authors speculate that stress induced by the presence of predators may have rendered the larval dragonflies more susceptible to other mortality factors.

Source: *Ecology* (2011), <http://dx.doi.org/10.1890/11-0455.1>

Small ranges and a historically stable climate pose threat in face of future climate change

A comparison of the speed of climate change over the last 21,000 years in various parts of the world with patterns in the range sizes and numbers of species in those areas has shown that places that have undergone rapid changes in climate, such as Europe and north-eastern America, contain fewer

endemic species. The results from this study provide evidence for a link between dispersal ability and extinction risk from climate change, as the relationship between climate-change velocity and endemism was weakest in birds and strongest in amphibians. This suggests that species in areas of the world where the climate has been relatively stable in recent geological time periods, such as the Andes, are at an increased risk of extinction in future climate fluctuations.

Source: *Science* (2011), <http://dx.doi.org/10.1126/science.1210173>, and *Nature* (2011), 478(7368), 158–159

Washing machines latest culprit in marine pollution

Samples from sites on 18 shorelines located around the world have found pieces of microplastic (plastic particles < 1 mm) at each site, with a greater density of microplastic particles at densely populated sites. The proportions of polyester and acrylic fibres found in sediments from habitats that receive sewage-water discharge are similar to the proportions of these fibres used in clothing. Further experiments in which wastewater from domestic washing machines was sampled showed that a single article of clothing can produce over 1,900 fibres per wash, suggesting that many of the microplastic particles found in the marine environment may originate from this source. The effects of microplastics in the marine environment are not yet fully understood, but the ingestion of these particles by marine species may result in the transfer of pollutants within marine food webs.

Source: *Environmental Science & Technology* (2011), <http://dx.doi.org/10.1021/es201811s>

Genetics sheds light on spread of chytridiomycosis ...

A fungal infection that is responsible for amphibian declines worldwide, *Batrachochytrium dendrobatidis* (*Bd*), has been found to occur in three deeply diverged lineages. One of these lineages, the global panzootic lineage (*Bd*GPL), has spread to at least five continents during the 20th century, and is highly virulent. *Bd*GPL shows evidence of genetic recombination, suggesting that contact between previously genetically isolated populations of *Bd* enabled the development of this

hypervirulent strain of the fungus. Researchers postulate that a combination of the pet and food trades may have provided this opportunity. Some suggest that the only way to protect amphibians is to employ strict quarantine processes for all imported amphibians, particularly in South-East Asia and Madagascar, two areas of high amphibian diversity and currently still free of the GPL strain of *B. dendrobatidis*.

Source: *Proceedings of the National Academy of Sciences of the USA* (2011), <http://dx.doi.org/10.1073/pnas.111915108>, and *New Scientist* (2011), 212(2838), 5

... while zooplankton eat *Batrachochytrium dendrobatidis* spores

The fungus *Batrachochytrium dendrobatidis*, which causes the disease chytridiomycosis, is responsible for amphibian declines and extinctions around the world, and is proving hard to eradicate, despite concerted efforts. Now researchers investigating other means of controlling the fungus have had some positive results under experimental conditions in which the zooplankton *Daphnia magna* consumed the zoospores of *B. dendrobatidis*. The free-living zoospores are the infective stage of the fungus, and some evidence suggests that limiting the number of zoospores in an environment may be a means of controlling the disease. The researchers suggest that increasing the numbers of *Batrachochytrium*-eating zooplankton may be a way to control outbreaks of *B. dendrobatidis*, and recommend investigating this relationship further within natural systems.

Source: *Biodiversity Conservation* (2011), <http://dx.doi.org/10.1007/s10531-011-0147-4>

Whales meet in the Arctic's North-west Passage ...

Researchers who have been monitoring bowhead whales in the Arctic through the use of satellite transmitters have recorded evidence of whales from two different oceans meeting in the North-West Passage, a shipping pathway through the Arctic. Sea ice in the North-West Passage had previously been considered to act as a barrier to the movement of bowhead whales from the Pacific and Atlantic Oceans, but satellite evidence revealed two bowhead whales, one from each ocean, entered the Passage from opposite ends in the summer of 2010, and spent over 2 weeks within 130 km of one another, before crossing paths and then finally returning to their normal seasonal ranges. The researchers

suggest that the mixing of bowhead whales in the North-West Passage could be a sign of the ice-free Arctic becoming a dispersal corridor for other marine species.

Source: *Biology Letters* (2011), <http://dx.doi.org/10.1098/rsbl.2011.0731>

... while sea ice levels hit all-time low

The sea ice cover in the Arctic has retreated to the lowest level since records began, according to researchers. The Arctic sea ice extent on 8 September 2011 was 4.24 million km², 0.6% lower than the previous record from 2007, and the final extent may well be smaller still as the ice may still be melting. Ice maps drawn up of the Arctic show that both the North-west and North-east Passages were ice-free this summer, and this summer has also seen a tanker travelling between Houston in the USA and Map Ta Phut in Thailand in a record time of 8 days. The yearly maximum of sea ice extent, which occurs in March, is decreasing less quickly because large parts of the Arctic still freeze in the winter. However, much of this winter ice is first-year ice, which melts much faster than multi-year ice.

Source: *University of Bremen Press Release* (2011), <http://www.iup.uni-bremen.de:8084/amr/minimum2011-en.pdf>

Dirt contains information on species richness

Scat sampling is a commonly used method in ecology to extract the DNA of species in an ecosystem but now research done in safari parks, zoos and farms has shown that soil itself can also be a good way of extracting this information. DNA analysis of samples from the parks, zoos and farms, chosen because their species composition was already known, showed that DNA extracted from the soil surface was sufficient to indicate overall taxonomic richness and relative biomass of individual species. However, a species that had recently been introduced did not show up in the soil analysis, and DNA detection rates were also found to be linked to animal behaviour. The researchers suggest that this technique is a good alternative to classical ecological surveys for biodiversity.

Source: *Molecular Ecology* (2011), <http://dx.doi.org/10.1111/j.1365-294X.2011.05261.x>

Albatrosses let off the hook

Accidentally snagged on long-line fishing hooks and then left to drown, the albatross populations in the South Atlantic are among the fastest declining in the world. Now a new resolution ratified by The International Commission for the

Conservation of Atlantic Tunas (ICCAT) means Atlantic tuna and swordfish fishing nations will have to ensure their vessels take preventative action to avoid catching the birds. Jointly proposed by the European Union, Brazil, South Africa and Uruguay, the resolution requires all long-line vessels fishing south of latitude 25°S (approximately Brazil to Namibia) to use two out of three measures to reduce bycatch from a choice of bird streamer (tori) lines, setting lines at night, or adding weight to their baited hooks. The ICCAT manages all tuna and swordfish fisheries outside territorial waters in the Atlantic and it is hoped the new measures will significantly reduce the number of albatrosses and other seabirds killed as a result of bycatch.

Source: *RSPB Press Release* (2011), <http://www.rspb.org.uk/media/releases/297856-measures-to-protect-uk-albatrosses-get-them-off-the-hook-in-the-nick-of-time>

Stressed corals

Coral reefs face many threats worldwide, and conservation managers would thus benefit from the identification of spatial gradients to illustrate the exposure of reefs to local and global stressors so as to be able to develop appropriate counter-measures. To develop such spatial gradients, researchers classified factors affecting corals as radiation stress factors (temperature, UV light, doldrums), stress-reinforcing factors (sedimentation and eutrophication), and stress-reducing factors (temperature variability and tidal amplitude). When these three groups were mapped onto coral distribution around the world, coral regions were found to cluster around two exposure extremes, with South-East Asia, the Eastern Pacific and Central Indian Ocean exposed to high levels of radiation stress and few stress-reducing factors, and a second cluster (the Caribbean, Great Barrier Reef, Central Pacific, Polynesia and the western India Ocean) associated with moderate-high levels of radiation stress. It is hoped that these data will support the development of spatially targeted management strategies.

Source: *PLoS One* (2011), <http://dx.doi.org/10.1371/journal.pone.0023064>

Loggerhead turtles must wait 45 years to become mothers

A new estimate of the time it takes for the loggerhead turtle to reach maturity has important implications for their conservation. Based on the examination of several decades of data on the turtles' growth, researchers found that a female will not start to lay eggs until she is 45. Because it is so difficult to monitor this long-lived

species over vast distances and impossible to follow one individual throughout its life, previous estimates of age of maturity have ranged from 10 to 35 years. To overcome this problem, researchers estimated the growth rate of the turtles by collating measurements of hatchlings at a nesting site in Florida as well as many hundreds of existing measurements obtained from captured, marked and recaptured individuals. The team were then able to use the size of mature loggerhead turtle mothers to estimate their ages.

Source: *BBC News* (2011), <http://www.bbc.co.uk/nature/15625291>, and *Functional Ecology* (2011), <http://dx.doi.org/10.1111/j.1365-2435.2011.01915.x/abstract>

Marine oxygen layer squeezed

One effect of global warming on the oceans is a decrease in the amount of dissolved oxygen in the water, on which many fishes depend. Now a study in the tropical north-east Atlantic Ocean has quantified the decrease of dissolved oxygen in this area, and illustrated some of the effects this may have on marine life. Estimates from this part of the Atlantic indicate that the oxygen layer decreased by 15% between 1960 and 2010, narrowing the area of the ocean available to fast swimming predatory fish such as billfishes and tuna. Furthermore, a narrower oxygen layer renders these fishes more susceptible to surface fishing gear, which may be linked to the 10–50% decline observed in pelagic predator diversity worldwide.

Source: *Nature Climate Change* (2011), <http://dx.doi.org/10.1038/nclimate1304>

Priority-setting applied to turtles

Given the limited resources available to conservationists, priority-setting frameworks are crucial to enable these resources to be directed at the areas of greatest need. A group of researchers has now developed an assessment framework for marine turtle Regional Management Units (RMUs) that evaluates the 58 RMUs according to status and threat criteria. The analysis categorized 19 of the 58 RMUs as high risk–high threats, nine as high risk–low threats, 12 as low risk–low threats, and 17 as low risk–high threats. Of the 19 RMUs in the high risk–high threats category 11 can be considered the RMUs most in danger of extinction. Five of these RMUs occur in the Indian Ocean, where bycatch and take pose particular problems for turtles, and four are RMUs for the Critically Endangered hawksbill turtle.

Source: *PLoS One* (2011), <http://dx.doi.org/10.1371/journal.pone.0024510>

EUROPE

Never mind the economy ... Italy gains a new sparrow

A molecular investigation of sparrows that occur in Italy has revealed the existence of a new species, the Italian sparrow. This new species is apparently the result of hybrid mixing between the house sparrow and the Spanish sparrow. Furthermore, investigations indicate that Italian sparrows are not breeding with Spanish sparrows in the Gargano peninsula in south-east Italy, an area where both species co-exist. There does appear to be some interbreeding between Italian sparrows and house sparrows in a sparsely populated area in the Alps, although species-specific male plumage traits suggest that there is an element of reproductive isolation occurring. Hybrid speciation is considered a rare event, which requires unusual circumstances, but this study's authors suggest this process of speciation may be more common than originally expected.

Source: *Molecular Ecology* (2011), <http://dx.doi.org/10.1111/j.1365-294X.2011.05183.x>, and *BBC News* (2011), <http://www.bbc.co.uk/nature/14947902>

Higher marine temperatures cause changes in north-east Atlantic fish assemblages

An examination of the fish that occur on the commercially important European continental shelf provides an insight into how climate change may affect assemblages such as this one, and how such changes may be reflected in commercial fisheries. Data from 25,612 trawls from fisheries around the UK and in the North Sea, where the water temperature has risen by 0.05 °C per year since 1980, show that populations of 27 of the 50 most common fish increased between 1980 and 2008. The nine fish populations that were in decline were cold-adapted species, whereas fish adapted to warmer temperatures were increasing in abundance. This increase in warm-adapted species is reflected in market trends, with species such as red gurnard, a species whose population has increased in recent years, now commanding higher market prices.

Source: *Current Biology* (2011), <http://dx.doi.org/10.1016/j.cub.2011.08.016>, and *New Scientist* (2011), 211(2831), 12

Illegal trade in caviar poses threat to wild sturgeons

According to a recently published TRAFFIC report the wild sturgeons of the Danube river basin are at risk because of

the persistent illegal trade in their caviar. Five of the six native sturgeon species in the Danube are Critically Endangered, and Bulgaria and Romania are the only countries in the European Union to hold viable populations. Fishing of the species has been banned there but a total of 14 seizures of illegal caviar originating from the two countries was reported by EU Member States between 2000 and 2009. While both countries are permitted to trade in farmed caviar, neither Bulgaria nor Romania reported illegal caviar seizures themselves. Furthermore, their geographical position means they are potential gateways for the illicit caviar trade from the Caspian Sea. The TRAFFIC report recommends that Bulgaria and Romania raise awareness amongst enforcement agencies and strengthen their capacity to control and monitor the trade in illegal caviar.

Source: *TRAFFIC* (2011), <http://www.traffic.org/home/2011/11/14/illegal-caviar-trade-poses-major-threat-to-danube-sturgeons.html>

Highs and lows of UK's wintering wetland birds

Published in *The State of the UK's Birds 2011* report, the latest population figures on wetland birds in the UK has revealed dramatic changes for some species, with a few species reaching their highest and lowest levels in the UK. The mallard duck has hit an all-time low, with winter numbers declining by 38% since 1982 and by 22% since 1998. Numbers of Bewick's swans have also decreased by 44% in the last 10 years, while the whooper swan has reached its highest levels (increasing by 122% over the same period). Overall, numbers of wintering waterbirds have been in shallow decline since the late 1990s but the reasons for the underlying changes are complex and not yet fully understood.

Source: *RSPB Press Release* (2011), <http://www.rspb.org.uk/media/releases/298018-duck-down-new-report-reveals-changing-fortunes-of-wetland-birds>

Biodiversity hotspots are destroyed by fire in Bosnia and Herzegovina

Two important areas for biodiversity conservation in Bosnia and Herzegovina were destroyed by fire in October 2011, an indication, according to conservationists, of the lack of interest in conservation by government authorities. Fire is used in the country as a weed control measure, but often spreads out of control. One of the areas affected, Hutovo blato National Park, is a Ramsar site, an Important Bird Area and has formal designation as a protected

area. However, the government has reduced the budget available for conservation in recent years, with the consequent loss of ranger services, no maintenance in the Park and increased poaching. The other area destroyed by fire is Livanjsko polje, the biggest karst field in the world.

Source: *BirdLife International News* (2011), <http://www.birdlife.org/community/2011/10/fires-are-destroying-the-main-biodiversity-hotspots-in-bosnia-and-herzegovina/>

10,000 songbirds seized in Hungary

Hungarian border police seized c. 10,000 songbirds from a Romanian truck close to the border with Romania after becoming suspicious that several boxes in the truck's hold appeared different to those containing meat products. On opening these boxes the contents turned out to be songbirds that had been recently shot. The majority of species were Eurasian skylarks but other species included calandra larks, red-throated pipits, bluethroats, European goldfinches, fieldfares, mistle thrushes, reed buntings and white wagtails. The driver of the lorry was arrested and prosecuted under a fast-track procedure, and now faces a 10-month prison sentence. Past research by TRAFFIC has revealed the existence of illegal trade networks in Europe for songbird smuggling, with birds generally killed in south-east and central Europe, and then smuggled through Slovenia, Croatia and Hungary to northern Italy, where they are sold as a delicacy in restaurants.

Source: *TRAFFIC News* (2011), <http://www.traffic.org/home/2011/11/9/hungarian-police-seize-thousands-of-dead-songbirds.html>

Spoonies reach Britain

Thirteen spoon-billed sandpipers arrived in the UK in November 2011, bringing with them a sliver of hope for this Critically Endangered species. The birds had been transported 8,000 km from their breeding grounds in Russia's Far East as part of an international campaign to save this species, with these 13 individuals destined to form a captive breeding population to be based at the Wildfowl and Wetlands Trust's reserve at Slimbridge. The spoon-billed sandpiper is a small wader that migrates over 8,000 km from Russia to its wintering grounds in South and South-East Asia. The species has suffered significant population declines and now numbers fewer than 100 pairs in the wild, chiefly as a result of their shoreline feeding sites being lost to development but also because of hunting.

Source: *BBC News* (2011), <http://www.bbc.co.uk/nature/15692417>

Baltic waterbird population takes a dive

A recent report presenting the results of a census of wintering waterbirds in the Baltic Sea has revealed that overall numbers have declined by more than 40% since the 1990s. Internationally coordinated counts were undertaken in 2007–2009 and of the 20 species covered in the *Waterbird Populations and Pressures in the Baltic Sea* report, seven had decreased by > 30%. The number of long-tailed ducks declined by 65%, with similar declines recorded for the Vulnerable Steller's eider. Common eider, common scoter and red-breasted merganser all declined by between 42 and 51%. Now that the trends of these species are known, a top priority will be to identify and address the causes of their declines. A conservation workshop involving the IUCN-SSC/WI Duck Specialist Group, the Wildfowl & Wetlands Trust, BirdLife International, Wetlands International and the African-Eurasian Waterbird Agreement is planned for 2012.

Source: *BirdLife International News* (2011), <http://www.birdlife.org/community/2011/12/baltic-seaduck-take-a-dive/>

Shock discovery made in Hula Nature Reserve

The Hula painted frog, thought to have gone extinct more than 50 years ago, has been found in an Israeli nature reserve. The discovery was made in the Hula Nature Reserve by a Nature and Parks Authority warden during a routine patrol to monitor birds. The species had not been seen in its native country since the drying of Lake Hula in the 1950s. Researchers had been trying to locate the frog for many years, searching in and around springs and streambeds in the area where the Hula marshes had been, but without success. It is thought the recent discovery is linked to environmental improvements in the Hula reserve, including improvements in water quality in ponds and springs. The rare frog is currently being held in captivity and it is hoped researchers will be able to determine whether there are more frogs in the Reserve in addition to the recent discovery.

Source: *Haaretz.com* (2011), <http://www.haaretz.com/print-edition/news/long-thought-extinct-hula-painted-frog-found-once-again-in-israeli-nature-reserve-1.396000>

NORTH EURASIA

Overeating caused mass mortality of saiga in Kazakhstan

A re-examination of the mass die-off of the Critically Endangered saiga antelope in

May 2010 and 2011 in western Kazakhstan found that the primary cause of mortality was not an epidemic of pasteurellosis, as previously believed, but overeating of moisture-laden grass. After calving, saiga are hungry and thirsty and thus select rich grass pasture to compensate for fluid and energy demands. In 2010 and 2011 this behaviour was associated with unusually warm weather, with saiga seeking out particularly rich grass pastures. The engorgement is likely to have caused the dysfunction of the saiga's rumen (stomach), leading to excessive gas bloat that also affected the lungs, with the consequence that many animals died from asphyxia. Those surviving may then have succumbed to secondary bacterial infections, possibly explaining the earlier diagnosis of pasteurellosis, although it is just as likely that post-mortems detected commensal bacteria that occur in healthy animals. Saiga have experienced one of the fastest declines recorded for mammals in recent decades, with a 95% reduction in population in the past 20 years.

Source: *FFI News* (2011), <http://www.fauna-flora.org/news/mass-die-off-of-saiga-examined-in-kazakhstan/>

Distemper affects Siberian tigers

Two Siberian tigers have been diagnosed as suffering from distemper, a virus that affects domestic dogs, which has also been linked to mortality of lions in the Serengeti. The two tigresses found to be suffering from the disease had each wandered into villages in Russia's Far East, before one was shot by police and the other removed by conservationists, later dying in captivity. Since 2000 there have been a number of reports of tigers entering villages or causing problems on roads in this region, behaviour that can be indicative of distemper infection. As well as lions and tigers, other species are also susceptible to distemper, including seals, lynx and the Endangered black-footed ferret. A distemper vaccination does exist for domestic dogs, and a vaccination programme carried out in villages surrounding the Serengeti appears to have reduced the effects of this disease on lions.

Source: *WCS Press Release* (2011), <http://www.wcs.org/wcs-org/press/press-releases/tiger-distemper.aspx#>

NORTH AFRICA AND MIDDLE EAST

Gulf's coastal developments affect marine life

Coastal development in the Persian/Arabian Gulf is threatening the unique marine environments that exist there,

according to a new report by the UN University's Institute for Water, Environment and Health. Some Gulf countries have developed over 40% of their coastline in the last 20 years, with such development coming on top of additional pressures such as pollution and over-exploitation of marine biological resources. Of particular concern is the creation of artificial islands along the Gulf coast; experiments carried out around Dubai's Palm Jumeirah found that water moves sluggishly around the fronds of this palm-shaped development, which may result in anoxia and thus poses a threat to marine life. Elsewhere, the construction of Palm Jebel Ali has resulted in the loss of > 8 km of natural reef habitat. A lack of adequate legal and regulatory frameworks in the Gulf, coupled with poor institutional Environmental Impact Assessment processes, hamper efforts to protect the marine environment during development projects.

Source: *Managing the Growing Impacts of Development on Fragile Coastal and Marine Ecosystems: Lessons from the Gulf* (2011), http://www.inweh.unu.edu/Coastal/Palm/documents/PolicyReport_LessonsFromTheGulf.pdf

Seeing the light is not good for some desert bat species

With an increase in human habitation in formerly undeveloped areas, such as deserts, comes a concomitant increase in light levels. A study carried out in a village in the Negev desert, known for its rich bat fauna, found that a desert-dwelling bat, *Eptesicus bottae*, did not forage within an area lit by artificial lights, while the non-desert synanthropic bat, *Pipistrellus kuhlii*, did forage under these conditions. Under conditions of natural darkness each bat species, both of which feed on aerial insects, foraged as normal. The evidence from this study suggests that non-desert synanthropic bat species have a competitive advantage over native desert species, and the study's authors recommend controlling light pollution in deserts and keeping important bat foraging areas unlit to reduce this advantage.

Source: *Journal of Zoology* (2011), <http://dx.doi.org/10.1111/j.1469-7998.2011.00808.x>

Hima Fund open for business

A new funding stream, established by a donation from Her Highness Sheikha Jawaher Bint Hamad Bin Sahim Al-Thani, is now available for applications that seek to manage Important Bird Areas (IBAs) as Himas in Qatar, Saudi Arabia, Bahrain, United Arab Emirates, Oman, Lebanon, Yemen, Syria, Jordan, Iraq, Kuwait and

Palestine. The Hima system is an ancient means of managing land in a responsible and equitable manner where the role, rights and values of local communities are recognized. The Society for the Protection of Nature in Lebanon has been at the forefront of reviving the Hima idea in conjunction with IBA management, with the result that six IBAs have already been declared as Himas in Lebanon. Saudi Arabia and Oman are already home to traditional Himas, and more have been proposed in Syria and Yemen.

Source: *BirdLife International News* (2011), <http://www.birdlife.org/community/2011/10/hima-fund-now-available-for-middle-east-ibas/>

Woe betide the birds migrating through Cyprus

The number of birds killed in mist nets and on limesticks in Cyprus between 1 September and 9 October 2011 was > 866,000, with these figures expected to rise further, according to a systematic surveillance programme being carried out by BirdLife International. The hunters are aiming to capture blackcaps and other warblers, which are sold to restaurants for use as *ambelopoulia*, a costly, and illegal, delicacy. However, the indiscriminate trapping methods mean that many other species are also caught, including owls, hoopoes and kingfishers. Conservationists are calling on Cypriot ministers to take immediate action, including targeting the restaurants that sell *ambelopoulia*.

Source: *BirdLife International News* (2011), <http://www.birdlife.org/community/2011/10/update-over-866000-birds-slaughtered-so-far-this-autumn-in-cyprus-sign-the-petition-to-stop-this-now/>

Arabian oryx's fortunes on the up

From a low of six individuals in 1972, the population of the Arabian oryx now stands at > 1,000 in parts of its native range in Saudi Arabia, Israel, the United Arab Emirates and Jordan. The oryx's recovery is the result of a broad alliance of conservation groups, governments and zoos that worked together to create a captive world herd of Arabian oryx, which included descendants of the last wild oryxes and royal stock from the UAE, Qatar and Saudi Arabia. In 1982 oryxes started to be reintroduced into protected areas, and now the population appears to be thriving. So much so that the species has been downgraded from Endangered to Vulnerable in the most recent IUCN Red List, the first time that a species previously categorized as Extinct in the Wild

has moved down from the Critically Endangered and Endangered categories.

Source: *National Geographic Daily News* (2011), <http://news.nationalgeographic.com/news/2011/06/110617-arabian-oryx-unicorn-endangered-extinct-species-animals>

SUB-SAHARAN AFRICA

Park ranger dies at hands of poachers in Cameroon

Gorilla poachers have killed a park ranger in Lobéké National Park, Cameroon, leaving another ranger seriously injured. The two men were patrolling the Park, located close to Cameroon's border with the Central African Republic, when they discovered the carcasses of two Critically Endangered Western lowland gorillas. The rangers confronted the poachers when they returned to collect the bodies, and the gang of six or more poachers opened fire on the rangers. Attacks on rangers by poachers have increased recently, following increased law enforcement efforts by the Cameroonian government. Had the gorilla meat been sold as bushmeat the two carcasses would have fetched c. USD 200.

Source: *WWF News* (2011), http://www.wwf.org.uk/what_we_do/press_centre/?uNewsID=5316, and *New Scientist* (2011), 212(2834), 4

Human-leopard food competition in the Congo Basin

Research into the prey items consumed by leopards in rainforests in the Congo Basin suggests that the proportion of large prey items (> 20 kg) in leopard diet increased with distance from human settlements. Furthermore, camera-trap evidence revealed an absence of leopards at the study site closest to the settlements. A comparison of hunter return data with leopard diet at sites located at similar distances from settlements indicated a significant overlap of prey items, suggesting that exploitative competition between bushmeat hunters and leopards may be resulting in a decline in leopard numbers. Areas with a high level of hunting are unlikely to support leopards, and the study's authors suggest that effective protected areas and regulated hunting by humans of leopard prey are required to protect the species.

Source: *Journal of Zoology* (2011), <http://dx.doi.org/10.1111/j.1469-7998.2011.00826.x>

Action plan for wildlife enforcement network

In November 2011 representatives from the eight member countries of the Commission

of Central African Forests (COMIFAC) met in Cameroon to finalize the COMIFAC Regional Action Plan for Strengthening National Wildlife Law Implementation. The new Action Plan covers the period 2012–2017 and consists of four main components: cooperation and collaboration among relevant wildlife law enforcement and prosecution authorities; investigations at key border and transit points, domestic markets and transboundary areas; effective deterrents and prosecutions; and awareness of illegal wildlife trade issues. The Action Plan will form the basis of a wildlife enforcement network in Central Africa, similar to networks operational or in development in Central America, Europe, South and South-East Asia.

Source: *TRAFFIC News* (2011), <http://www.traffic.org/home/2011/11/15/central-african-countries-agree-plan-to-strengthen-wildlife.html>

Record number of rhinos killed in South Africa

The number of rhinoceroses killed in South Africa in the 10 months between January and November 2011 exceeds the entire number killed in 2010, itself a record year for rhino killing. Three hundred and forty one rhinos had been killed by the beginning of November 2011 according to statistics from South Africa National Parks. A CITES meeting held in 2010 concluded that demand for rhino horn in Vietnam, where it is believed to have medicinal properties, is largely to blame for the surge in poaching. This news comes at the same time as news of the extinction of the Javan rhino from Vietnam, with the last individual of this subspecies found with gunshot wounds and missing its horn.

Source: *TRAFFIC News* (2011), <http://www.traffic.org/home/2011/11/3/rhino-horn-demand-leads-to-record-poaching.html>

Gola Forest protected by Sierra Leone

The future of Sierra Leone's most important forest, Gola Forest, is now more secure as a result of the creation of Gola Rainforest National Park. The new National Park is 710 km² in size, and is a global biodiversity hotspot and home to the world's most important population of pygmy hippo as well as hundreds of other species. Furthermore, the protection of this forest will protect 13.6 million t of carbon, which provides hope for the future of the forest, particularly as Sierra Leone is investigating new mechanisms to attract long-term funding through the UN's Reducing Emissions from Deforestation and Forest Degradation in Developing Countries

programme. It is hoped that the creation of the National Park will reduce the threats currently posed to the forest in the form of commercial logging and small-scale mining. Source: *RSPB Press Release* (2011), <http://www.rspb.org.uk/news/298937-sierra-leone-protects-gola-forest-for-the-world>

Straw-coloured bats are a significant constituent of bushmeat in Ghana

A survey of bat hunters, vendors and consumers in Ghana has revealed that an estimated 128,000 straw-coloured bats are sold in the country each year. Unlike most bushmeat in Ghana, which is sold in specialized bushmeat markets and in restaurants, straw-coloured bats are generally sold in marketplaces, and many hunters also take bats for personal consumption. Straw-coloured bats are an easy target for hunters, as they gather in large roosts and their capture is not illegal in Ghana. Bat hunting is particularly prevalent during the dry season in Ghana, when agricultural produce is less abundant. The population of straw-coloured bats in Ghana is c. 2.5 million, but the authors estimate that a population of 10 million is needed to support current rates of hunting. Not only is the current offtake unsustainable but the consumption of straw-coloured bats is also potentially dangerous, as the species is the ideal host for a number of diseases.

Source: *Biological Conservation* (2011), <http://dx.doi.org/10.1016/j.biocon.2011.09.003>, and *Conservation Magazine* (2011), <http://www.conservationmagazine.org/2011/11/the-new-bushmeat/>

SOUTH AND SOUTH-EAST ASIA

Last Javan rhino confirmed extinct in Vietnam

Despite concerted efforts by conservationists the Critically Endangered Javan rhinoceros is now extinct in Vietnam, meaning that the *annamiticus* subspecies of the Javan rhino has become extinct. Of three original subspecies, only one, the *sondaicus* subspecies, now survives, and is restricted to a small population on Java, Indonesia. The extinction of the subspecies from Vietnam was confirmed by surveys carried out in Cat Tien National Park. Dung collected between 2003 and 2006 indicated the presence of at least two individual rhinos but subsequent surveys between October 2009 and February 2010 only found dung from one individual. Genetic analysis confirmed that these dung samples came from a rhino that was found dead at the end

of April 2010. This rhinoceros appeared to have been the victim of poachers, as it had been shot in the leg, and its horn had been removed.

Source: *WWF report—Extinction of the Javan Rhinoceros* (*Rhinoceros sondaicus*) from Vietnam (2011), http://wwf.panda.org/wwf_news/?202074/Inadequate-protection-causes-Javan-rhino-extinction-in-Vietnam

High numbers of orang-utans killed in Kalimantan

Interviews with 6,983 people living in 687 villages in the range of the Critically Endangered orang-utan in Kalimantan, Indonesia, have revealed that an estimated 750–1,800 orang-utans were killed in the year leading up to April 2008. Within the lifetime of the survey respondents an estimated 1,970–3,100 orang-utans were killed per year. Reasons for killing orang-utans included for food (54% of respondents), self-defence (14%) and protecting crops (10%). Although only a small number of incidences of human–orang-utan conflict were mentioned, the data suggest that loss of orang-utan habitat can result in orang-utans entering villagers' gardens and raiding crops, which can result in orang-utans being killed. The results of this study are perturbing for orang-utan conservation. The number of orang-utans being killed is higher than previously thought, and appears to exceed the maximum sustainable off-take rates for the population.

Source: *PLoS One* (2011), <http://dx.doi.org/10.1371/journal.pone.0027491>

Malaysia seizes tusks

Malaysia has been criticized in recent months for its apparently lax approach to ivory smuggling, which has led it to becoming a transshipment point for ivory smuggled from Kenya and Tanzania. Now it appears that the authorities in the country are taking action; between July and September 2011 > 1,500 tusks were confiscated in three seizures. All three were made at ports in Malaysia, with the most recent consisting of 695 tusks in two containers labeled 'recycled craft plastic' and weighing nearly 2,000 kg. This confiscated shipment originated in Tanzania and was en route to China. Conservationists have urged continued vigilance, as the crackdown on ivory smuggling into Malaysia's ports may cause the smugglers to turn to other entry points for their illegal trade.

Source: *TRAFFIC News* (2011), <http://www.traffic.org/home/2011/9/5/large-ivory-seizure-in-malaysia-the-third-in-past-three-month.html>

Wild-caught pythons exported under guise of captive-breeding

Pythons harvested from the wild are being laundered through breeding farms in Indonesia and then exported to the pet trade as captive-bred specimens, according to new research. Surveys of wildlife traders in three Indonesian provinces carried out between August 2009 and April 2011 recorded 4,227 illegally collected green pythons, a level of offtake that is having a significant effect on some island populations of this species. The researchers traced the journey of these snakes from their point of capture to captive breeding farms. Extrapolation of the monthly rates of python capture suggests that at least 5,337 green pythons are collected from the wild annually, with the study's authors using this figure to estimate that at least 80% of green pythons exported from Indonesia every year may have been harvested from the wild.

Source: *Biological Conservation* (2011), <http://dx.doi.org/10.1016/j.biocon.2011.10.002>

EAST ASIA

UK home to Japanese plant species under threat

A study conducted by Botanic Gardens Conservation International (BGCI) has revealed the UK is home to many Japanese plant species that are under threat in their native land. Researchers found more than 350 such plant species in gardens and collections in the UK. Japan became a magnet for European plant hunters from the mid 19th century onwards and the popularity of Japanese flora led to over-collection of plants and contributed to their subsequent decline. A number of species included on the Red List of Japanese vascular plants, such as the star magnolia and a maple, *Acer pycnanthum*, are relatively common in gardens and collections in the UK but are under threat in their native habitats. While the BGCI report focused on Japanese flora found in UK gardens researchers hope the model will be applied to other countries and the findings used to help protect threatened plants.

Source: *BBC News* (2011), <http://www.bbc.co.uk/news/science-environment-15019834>

Clumsy fish reduce pesticide need

For over 1,200 years fish and rice have been cultivated alongside one another in southern China. Without the presence of fish, these fields generate the same rice yield, but paddies that also contain fish

require 68% less pesticide and 24% less chemical fertilizer than rice monocultures. Observational studies of the fish, an indigenous soft-scaled carp, showed that when they hit the rice stems some pests, notably planthoppers, are dislodged, which accounts in part for the reduced need for pesticides in paddies with fish. Fish are also thought to play a role in controlling other rice pests, as well as controlling weeds within the rice fields. Rice fields are also of benefit to fish, as the shade of the rice plants reduces water temperature during the hot season, and the rice also acts as a nitrogen sink, reducing the concentration of ammonia in the water.

Source: *Proceedings of the National Academy of Sciences of the USA* (2011), <http://dx.doi.org/10.1073/pnas.1111043108>

Caught on camera

A 3-month survey conducted in 2011 produced photographs of five of the seven wild cat species found on the Indonesian island of Sumatra. Researchers and field staff from WWF used cameras equipped with infrared triggers to capture images of Sumatran tigers, clouded leopards, golden cats, leopard cats and marble cats in an unprotected forest corridor in the area known as Thirty Hills or Bukit Tigapuluh. All five species are dependent on densely forested habitat but the forests of Sumatra are experiencing the highest rate of deforestation in the world. Four of the five species of cat caught on camera are listed as threatened and there are as few as 400 Sumatran tigers left in the wild. The images provide a stark reminder of what could be lost to logging, plantations and illegal encroachment, and urgent action is required to ensure the area is appreciated and protected.

Source: *WWF E-news* (2011), <http://www.worldwildlife.org/who/media/press/2011/WWFpresitem25032.html>

NORTH AMERICA

Review halts tar sands pipeline

A controversial pipeline planned between Canada's tar sands in Nebraska and oil refineries in the Gulf of Mexico has been put on hold following a decision by the US government. The Keystone XL pipeline will carry bitumen between Nebraska and the Gulf but this particular bitumen is more carbon-intensive and corrosive than other types. This led to concerns about leaks, with fears for the safety of Nebraska's Sand Hills in particular prompting a review of the scheme by the US government. The Sand

Hills are a wildlife-rich system of prairie-covered dunes and wetlands located above the Ogallala aquifer, which provides drinking and irrigation water. The review will examine alternative routes for the pipeline, with a decision now expected in 2013.

Source: *New Scientist* (2011), 212(2839), 7

Glimmer of hope for depleted fisheries

Overfishing of predatory fishes led to population collapses on the Scotian Shelf off Canada's east coast in the early 1990s, and the subsequent domination of the ecosystem by macroinvertebrates and planktivorous, forage fish species, which reached biomass levels 900% greater than before the removal of the predators. This resulted in predator-prey reversal, whereby erstwhile prey items compete directly with their predators and/or prey on the predators' larval stages. In recent years, however, the forage fish biomass has declined dramatically from a peak of c. 10 million t in 1999 to c. 3 million t as a result of their outstripping their zooplankton food supply. Consequently, zooplankton numbers are increasing and, significantly, the benthic fish species have also started to show signs of recovery, with numbers of Atlantic cod and redfish reaching levels not seen since the early 1990s. The study's authors suggest that the increased zooplankton population may enable increased food availability for the larval stages of the benthic predators.

Source: *Nature* (2011), <http://dx.doi.org/10.1038/nature10285>

Jaguar spotted in USA

A hunter in southern Arizona has recorded the presence of the first jaguar to occur in the state since 2009. The jaguar, a male in good condition, was chased up a tree by the hunter's dogs but these were called off and the jaguar was given space to escape. Jaguars are known to breed in Mexico and it is hoped that they will commence breeding in the USA following numerous recolonization attempts from the south. The last female jaguar in the USA was killed in Arizona in 1963, and no jaguar reproduction has been recorded since then. The largest cat native to the western hemisphere, the jaguar was added to the Endangered Species Act in 1997, and a draft recovery plan and critical habitat rule for the species are expected from the US Fish and Wildlife Service in 2012.

Source: *Center for Biological Diversity* (2011), http://www.biologicaldiversity.org/news/press_releases/2011/jaguar-11-21-2011.html

Trout going with the flow

Models that investigated how altered flows and increased temperatures resulting from climate change would affect four trout species in the interior western USA have found that, overall, a 47% decline in total suitable habitat for all the trout species is to be expected by 2080. Native cutthroat trout are set to lose an additional 58% of suitable habitat as a result of temperature increases and negative impacts of other trout species. Non-native brook trout habitat is likely to decrease by 77% both as a result of temperature increases and increased winter flood frequency, the latter of which is a particular threat to autumn-spawning trout. Rainbow trout may lose the least habitat (35%) because, although negatively affected by temperature rises, this species stands to benefit from increasing winter high flow frequency. This study indicates the importance of including multiple drivers of species' distributions when considering the impacts of climate change on species.

Source: *Proceedings of the National Academy of Sciences of the USA* (2011), <http://dx.doi.org/10.1073/pnas.1103097108>

Mitigation measures appear to work for turtles

Estimates of sea turtle bycatch across the fisheries of the USA appear to show that the implementation of fisheries-specific bycatch mitigation measures has benefitted turtle populations. Mitigation measures vary according to the type of fishery but include observer coverage and the use of circular hooks or turtle-excluder devices. Before the mitigation measures were introduced US fisheries had an average of 346,500 turtle interactions annually, which resulted in c. 71,000 turtle deaths per year. Since the mitigation implementation bycatch rates have dropped by c. 60% annually while the estimates of turtle mortality have fallen to 4,600, a decrease of 94%. Although the authors urge caution regarding the interpretation of their results because of sampling discrepancies, the findings of this work illustrate a significant success in reducing turtle mortality.

Source: *Biological Conservation* (2011), <http://dx.doi.org/10.1016/j.biocon.2011.07.033>

Two species from Florida declared extinct

A petition filed by the Center for Biological Diversity in 2010 seeking protection under the Endangered Species Act for over 400 aquatic species in the south-eastern United

States was too late for two species on the list. The South Florida rainbow snake and the Florida fairy shrimp have been judged by the US Fish and Wildlife Service to be extinct following the filing of the petition. The brightly-coloured snake was only known from one creek that flows into Lake Okeechobee, and was last seen in 1952, while the shrimp only occurred in a pond south of Gainesville that was destroyed by development. The US Fish and Wildlife Service have announced that 374 other species on the petition may warrant protection under the Endangered Species Act, and will now receive a full review.

Source: *Center for Biological Diversity* (2011), http://www.biologicaldiversity.org/news/press_releases/2011/florida-extinct-species-10-05-2011.html

CENTRAL AMERICA AND CARIBBEAN

Migratory shorebirds lack protection in the Caribbean

Two whimbrels were shot by hunters in September 2011 on the Caribbean island of Guadeloupe, highlighting the continuing lack of protection for migratory shorebirds. The whimbrels had been monitored as part of a 4-year tracking study and were killed within a few hours of their arrival on the island. Many other migratory shorebird species pass over the Caribbean region and when they encounter severe hurricanes and tropical storms seek refuge on Guadeloupe. But the island's isolated mangrove swamps serve to concentrate the migratory birds in large numbers, where they are hunted by unregulated shooting clubs. Although Guadeloupe is an overseas département of France, in common with other French, British and Dutch territories in the Caribbean, it is not covered by the European Birds and Habitats Directives or the Natura 2000 network. However, the whimbrel deaths have sparked calls for regulation of shorebird hunting in the Caribbean where European nature directives do not apply.

Source: *BirdLife International News* (2011), <http://www.birdlife.org/community/2011/09/shooting-of-whimbrels-sparks-calls-forregulation-of-shorebird-hunting-in-the-caribbean/>

Human waste affects corals

Populations of a common coral species in the Caribbean, elkhorn coral, are declining as a result of infection by a bacterial disease called white pox or acroporid serratosiosis.

Researchers working in Florida have isolated a strain of the bacterium that causes this disease, *Serratia marcescens* PDR60, from human wastewater. When exposed to the PDR60 strain extracted from human wastewater, elkhorn coral developed the white lesions that characterize the disease in 4–5 days. Furthermore, some other coral species, and a corallivorous snail, were identified as potential reservoirs or vectors of the pathogen. This is a rare example of reverse zoonosis, where a pathogen moves from humans into wildlife. The study's authors recommend the adoption of advanced wastewater treatment as this removes *S. marcescens* to undetectable levels; at present most wastewater in the Florida Keys and the wider Caribbean is not treated in this way.

Source: *PLoS One* (2011), <http://dx.doi.org/10.1371/journal.pone.0023468>

Whistling-ducks make an appearance in Barbados

Two Vulnerable West Indian whistling-ducks have been spotted in Barbados, the first time the species has been recorded on the island since 1961. The ducks were first recorded in Woodbourne Shorebird Refuge, a 5-ha wetland that had previously been managed for shorebird hunting before falling into disrepair. The BirdLife Caribbean Programme carried out the restoration of this site in 2009 with financial support from the US Fish and Wildlife Service, the Canadian Wildlife Service and the Barbados Wildfowling Association. In the 2 years since its creation Woodbourne Shorebird Refuge has provided shelter and feeding opportunities for 24 species of shorebirds. 2011 has not been a straightforward year for the Refuge's management, as above average rainfall in 2010 and further rains in autumn 2011 has meant high water levels in the Refuge, with the result that there has been limited shallow water and shoreline habitat for birds to alight on.

Source: *BirdLife International News* (2011), <http://www.birdlife.org/community/2011/11/threatened-whistling-ducks-arrive-at-woodbourne-barbados/>

SOUTH AMERICA

New plant species 'bends down' to bury seeds

A new plant species that 'bends down' to release its seeds to the ground has been discovered by an amateur botanist in the state of Bahia, north-eastern Brazil. Found in the Atlantic forest, the new species has

been named *Spigelia genuflexa* after its unusual adaptation. A study has recently been completed and it is thought the plant may have evolved its amazing seed-planting ability because it is a short-lived annual that seems to be restricted to sandy-soil habitat. As the plant lives for just a few months, it is most successful if it deposits seeds nearby rather than spreading them further into less suitable environments. The discovery of the new species highlights the urgent need to protect the biodiversity of the Atlantic Forest, which is under threat from deforestation.

Source: *BBC News* (2011), <http://www.bbc.co.uk/nature/15033695>, and *Phytokeys* (2011), <http://dx.doi.org/10.3897/phytokeys.6.1654>

Another development in Belo Monte Amazon dam saga

Hot on the heels of a decision by Brazil's environment agency to back the development of the world's third largest dam, in the Amazon region, a judge has ordered a halt to the construction currently underway. The ruling was made in favour of a fisheries group that claim the dam will affect fish stocks and could thus have knock-on effects on indigenous groups who depend on fishing for their livelihood. Works currently underway on the construction of living quarters for dam workers are allowed to proceed, as they are not deemed to affect the flow of the Xingu river. In June 2011, the Brazilian environment agency backed the dam's construction, saying that there had been 'robust analysis' of the projected impact of the dam on the environment.

Source: *BBC News* (2011), <http://www.bbc.co.uk/news/world-latin-america-15102520>

PACIFIC

Rat-free monitoring in New Caledonia ...

Table, Double and Tiam'bouène islands in New Caledonia are officially rat-free. Follow-up surveys, conducted over a period of 24 months, confirm a project undertaken in 2008 by the Société Calédonienne d'Ornithologie to eradicate invasive black rats and Pacific rats from the islands has been successful. Furthermore the ecosystems and bird populations on the three islands, which form part of the Îlots du Nord-Ouest Important Bird Areas (IBA) complex in north-west New Caledonia, are already showing signs of recovery. The area is globally important for wedge-tailed shearwater, roseate tern, fairy tern,

dark-brown honeyeater and green-backed white-eye, which were previously being predated by introduced rats. Monitoring of the biodiversity recovery of the islands is set to continue and it is hoped to expand rat eradication operations to additional islands included within this IBA complex.

Source: *BirdLife International News* (2011) <http://www.birdlife.org/community/2011/09/rat-eradication-success-in-new-caledonia/>

... and rodent-eradication operations on Kayangel Atoll

Led by Palau Conservation Society (PCS), a rodent eradication operation on four islands that comprise the Kayangel Atoll, Palau has recently been completed. The islands of Ngeriungs, Orak, Ngerobelas and Kayangel together cover 160 ha. According to the latest reports no rats have been seen since the project's completion and bananas and coconuts have been harvested without showing any signs of rat damage. The greatest factor in the success of the project is thought to be the high level of voluntary community participation, with 60 community members from Kayangel participating in the field operations with PCS staff. Plans are now underway to replant numerous crops including corn, tapioca, cucumbers and other vegetables on the islands. Information sharing between island restoration projects in New Caledonia, French Polynesia, Fiji and the Cook Islands is recognised as a means of generating valuable opportunities for improving the success of eradication operations and their resultant benefits.

Source: *BirdLife International News* (2011), <http://www.birdlife.org/community/2011/09/rodent-eradication-in-palau-shows-early-signs-of-success/>

Shipwrecks threaten reefs

Shipwrecks in parts of the oceans that are traditionally iron-limited pose a risk to nearby reefs, according to the results of a study around the Line Islands in the central Pacific. These coral atolls have had a number of ship groundings in recent years, and the coral reefs close to these wrecks are characterized by algal growth, and live coral coverage dropped from c. 60% on healthy reefs to c. 10% on the reefs close to the shipwrecks. These reefs are called black reefs, because the growth on their surface is of a dark colour and the water column above the reefs is cloudy. Samples taken from algae on black reefs and genetic sequencing of the microbial communities reveal high levels of iron in the algal tissues, and the presence of iron-associated virulence genes and pathogens.

The researchers suggest that shipwrecks and associated iron pose a serious threat to corals in iron-limited areas.

Source: *ISME Journal* (2011), <http://dx.doi.org/10.1038/ismej.2011.114>, and *Nature* (2011), 477(7364), 253

AUSTRALIA/ANTARCTICA/ NEW ZEALAND

King crabs found on edge of Antarctica

A remotely operated vehicle survey has revealed a large population of king crabs in Palmer Deep, a basin cut in the continental shelf on the edge of Antarctica. As the crabs are not thought to be able to tolerate water colder than 1.4 °C, it is believed they were washed in as a result of warming in the region. The species are living and reproducing in abundance and it is estimated there may be 1.5 million in the basin. The crabs have only been found below a depth of 850 m and cannot as yet survive on the colder continental shelf at a depth of c. 500 m. But king crabs are voracious predators and researchers warn that they may profoundly change the ecosystem of the Antarctic perimeter if they spread further. Should the seas continue to warm at current rates it is predicted the waters of the continental shelf may rise to above 1.4 °C within a couple of decades and that the crabs are likely to be found in the shallower waters.

Source: *BBC News* (2011), <http://www.bbc.co.uk/news/science-environment-14803840>, and *Proceedings of the Royal Society B* (2011), <http://dx.doi.org/10.1098/rspb.2011.1496>

The devil's in the detail

Models that investigate the effectiveness of culling Tasmanian devils to control Tasmanian devil facial tumour disease, which has led to a decline of at least 60% in the devil population since its detection in 1996, show that culling is unlikely to have the desired effect. The modelling results suggest that a near-continuous removal of nearly all infected individuals in a population is required for culling to be effective. However, an experimental trial on an isolated Tasmanian devil population on the Forestier Peninsula demonstrates that at least 20% of the population are trap-shy and thus never caught in traps. Even if continuous trapping were possible, therefore, culling would still be unlikely to suppress the spread of the disease.

Source: *Journal of Applied Ecology* (2011), <http://dx.doi.org/10.1111/j.1365-2664.2011.02060.x>

Rabbit eradication has unexpected effect on seabirds

Rabbits introduced onto islands are generally blamed for negative effects on vegetation but studies carried out on Ile Verte, in the sub-Antarctic Kerguelen Archipelago, illustrate the indirect effects invasive rabbits can have on an ecosystem. The removal of rabbits from Ile Verte occurred in 1992, and researchers have now investigated the effects of this eradication on two native seabird populations and their predator. The density of breeding pairs of the most abundant petrel species, the blue petrel, has increased eightfold since the rabbit eradication. However, there has been an approximately fourfold reduction in the breeding density of the Antarctic prion at sites with the same deep soil as the nesting sites of the blue petrel. The researchers suggest that the decrease in prion numbers may have resulted from the exclusion from deep soil sites by blue petrels.

Source: *Animal Conservation* (2011), <http://dx.doi.org/10.1111/j.1469-1795.2011.00455.x>

Anti-toad arsenal grows

Attempts to thwart the advance of invasive, toxic cane toads in Australia may have gained a new weapon: the toads themselves. When cane toad eggs were kept in water that contained cane toad tadpoles, the resultant hatchling tadpoles had a 41% lower body mass than eggs hatched in conditions without tadpoles present. Furthermore, these tadpoles had a 40% lower survival rate at metamorphosis than a control group. The water-borne cane toad pheromones that are responsible for this effect appear not to affect native amphibians, and thus these chemical cues may be suitable as a means to control the toads' numbers.

Source: *Biology Letters* (2011), <http://dx.doi.org/10.1098/rsbl.2011.0794>, and *Nature* (2011), 477(7364), 253

Inter-species competition is crucial

The removal of invasive species from ecosystems can have unexpected effects within the food chain of that ecosystem, such as the flourishing of an invasive prey species when a predator is removed. Now evidence from a field experiment in New Zealand reveals that competition is the key

dynamic between four invasive mammal species in this forest habitat. The removal of stoats from the forest did not result in an increase in the numbers of black rats or mice, both stoat prey items. However, eradicating one of the rat's competitors, the herbivorous Australian brushtail possum, did result in an increase in rats. Likewise, the removal of rats resulted in the population of their competitor species, the mouse, increasing in numbers.

Source: *Nature* (2011), 477(7363), 135, and *Ecology Letters* (2011), <http://dx.doi.org/10.1111/j.1461-0248.2011.01673.x>

Bettongs reveal how weather affects species distribution

Researchers studying the reliability of species distribution models for revealing the response of animals to climate change have focused their study on a marsupial, the northern bettong. Their findings suggest that studying weather events, rather than gradual changes of the climate, offers a clearer insight into the bettong's movements, range boundaries and likely contact with competitors. The results showed that the bettong occurred in smaller numbers in areas that were more likely to experience droughts and other fluctuations in short-term weather suitability. According to the researchers, weather events determined both range boundaries and the outcomes of competition between the northern bettong and the more widespread rufous bettong, which were not detected by traditional species distribution models that rely on long-term climate averages.

Source: *Wiley-Blackwell Press Release* (2011), <http://dmmclick.wiley.com/view.asp?m=wuxrobhdzgbv2qaib004&u=9504821&f=h>, and *Ecography* (2011), <http://doi.wiley.com/10.1111/j.1600-0587.2011.06871.x>

Concern for birds in the Bay of Plenty

The oil spill from the *Rena* container ship off the Bay of Plenty in New Zealand has coincided with the breeding season for many bird species in the area, thus posing the threat of a lasting legacy from the spill. Many oiled birds have already washed up on the area's beaches but this represents only a fraction of the birds affected, as some oil-covered birds will sink at sea and others with only a light covering of

oil will fly back to their colonies. Many of the birds that breed in this area use burrows, so there is a serious risk to chicks if oiled parent birds enter the nesting burrows. In some cases conservationists have taken pre-emptive action to protect species, with five New Zealand dotterels removed from three areas threatened by oil pollution. The Endangered New Zealand dotterel population numbers only c. 1,500 individuals, and the species was just starting to breed when the spill occurred.

Source: *BirdLife International News* (2011), <http://www.birdlife.org/community/2011/10/tragic-impact-on-wildlife-from-new-zealand-oil-disaster/>

Coral Sea to be designated as a marine reserve

A new marine protected area, the Coral Sea Commonwealth Marine Reserve, has been proposed by the Australian government. The Coral Sea is recognized as a significant area of marine biodiversity and contains a variety of types of marine habitat, including coral reefs, sandy cays and canyons. At 989,842 km² the Reserve will be the largest marine park in the world, and will start 60 km from the Australian coast, extending out to 1,100 km offshore. Recreation and charter fishing will be permitted on one side of the Reserve. Some conservation groups and politicians have criticized the fact that the decision has not gone further, with only half the Coral Sea set to receive full protection.

Source: *The Sidney Morning Herald* (2011), <http://www.smh.com.au/environment/conservation/coral-sea-marine-reserve-on-the-way-20111125-1mytd.html>

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