

# Australia's reptiles threatened by invasive species, climate change – IUCN Red List

Thu, 05 Jul 2018

Gland, Switzerland, 5 July 2018 (IUCN) – Australia's unique reptiles – including lizards and snakes – face severe threats from invasive species and climate change, with 7% of them threatened with extinction, reveals the latest update of The IUCN Red List of Threatened Species™, published today. The Mauritian Flying Fox, an important pollinator, is now listed as Endangered due to a culling campaign, today's update also reveals. There is some good news after the rediscovery of four South American amphibian species previously thought to be extinct.



The IUCN Red List now includes 93,577 species, of which 26,197 are threatened with extinction.

"Today's IUCN Red List update reveals the onslaught of threats that our planet's biodiversity is facing," says **IUCN Director General Inger Andersen**. "Invasive species, changes to fire patterns, cyclones and human-wildlife conflict are just some of the many threats wreaking havoc on our planet's ecosystems. As species from Mauritius to Australia slip towards extinction we risk losing a part of our culture and our identity, as well as the life-supporting benefits these species provide by pollinating our crops or preserving healthy soils."

"The UN Strategic Plan for Biodiversity (2011-2020) calls for countries to bring about the sustained recovery of species most at risk of extinction," said **Jane Smart, Global Director of IUCN's Biodiversity Conservation Group**, speaking at a meeting of the Convention on Biological Diversity this week. "Today's update of The IUCN Red List of Threatened Species shows that urgent action is needed to conserve threatened species. IUCN calls for countries to urgently fast track conservation action for threatened species at the national level."

### **Australia's reptiles threatened by invasive species and climate change**

Australia's reptiles face rising threats from invasive species and climate change, with 7% now threatened with extinction, The IUCN Red List update reveals after a comprehensive survey of the continent's reptiles. The Red List now includes 975 Australian reptile species – almost all of Australia's reptiles, the majority of them endemic to the continent.

Invasive species are the main threat to the survival of over half of these threatened reptiles. A recent study found that invasive feral cats alone are estimated to kill about 600 million reptiles each year. One of the many species of reptile predated by feral cats is the Grassland Earless Dragon (*Tympanocryptis pinguicollis*), which moved from the Vulnerable to the Endangered category. Changes to the intensity and frequency of fires – caused by a combination of agricultural management, the loss of traditional indigenous burning practices and invasive weeds – are an additional threat to this species. Like many Australian species, the Grassland Earless Dragon is naturally adapted to the semi-natural wildfire patterns that were in place prior to European settlement.

Another invasive species threatening Australia's reptiles is the toxic Cane Toad, which was introduced to Australia in 1935. For the Mitchell's Water Monitor (*Varanus mitchelli*), which enters the Red List as Critically Endangered, dining on the toxic Cane Toad has resulted in population declines of up to 97% in some areas, following the arrival of toads. Australia's reptiles are particularly vulnerable to poisoning by the Cane Toad as Australia has no native toads or other species that produce the same toxins.

Climate change is also increasingly threatening Australia's reptiles, including the Vulnerable Bartle Frere Cool-skink (*Techmarscincus jigurru*), a cold-adapted species found only on the summit of Queensland's tallest mountain, Mount Bartle Frere. A 1°C increase in temperature is likely to result in a loss of 50% of the Cool-skink's population within 30 years, as there are no cooler areas for the animal to move to.

"This Red List update highlights the vulnerability of Australia's lizards and snakes to invasive alien species, including the toxic Cane Toad and feral cats, often in combination with threats from habitat loss due to invasive weeds, development, and fire," says **Philip Bowles, IUCN SSC Snake and Lizard Red List Authority Coordinator**. "Understanding the threats to each of Australia's native reptile species will help us effectively work with the Australian Government, local conservation groups and Aboriginal people to address them."

Australia's unusually diverse reptiles evolved in isolation from those elsewhere and represent almost 10% of the world's reptile fauna. Some of these animals are important components of the environment and wider food chain. For indigenous people, Australian reptiles, particularly the carnivorous and frugivorous lizards and pythons, are an important part of their culture and are used as emblems and in storytelling, as well as food.

### **Invasive plants threaten Azores island beetles**

Over a hundred insect species from the Portuguese islands of the Azores have been assessed for the IUCN Red List, and 74% of these are threatened with extinction. Habitat degradation exacerbated by invasive plant species, land use change and a drying climate are the main threats. All 12 assessed species of Ironclad Beetles (*Tarphius* spp.) are considered threatened with extinction. These beetles rely on decomposing wood, mosses and fern cover for survival, but the Kahili Ginger (*Hedychium gardnerianum*), a plant introduced from the Himalayas, is slowly replacing native plant species. The Terceira Island Ironclad Beetle (*Tarphius relictus*) has been particularly affected by this

change and is now limited to a range of less than one hectare. The recent establishment of a protected area by the Azorean Government, based on the draft assessment of the Ironclad Beetle, provides some hope for the future of this species.

“Beetles are key components of ecosystems, fulfilling critical functions such as predation and pollination,” says **Axel Hochkirch, Chair of the IUCN SSC Invertebrate Conservation Sub-Committee**. “Small changes in habitats have great impacts on invertebrates and species endemic to islands are particularly threatened.”

### **Mauritian Flying Fox now Endangered following culling campaign**

The Mauritian Flying Fox (*Pteropus niger*), a large bat species found only on the Indian Ocean islands of Mauritius and Réunion, has moved from Vulnerable to Endangered on The IUCN Red List. The bat population fell by an estimated 50% between 2015 and 2016 largely due to government-implemented culling of the bats, motivated by alleged damage to lychee and mango fruit crops.

The species also faces threats from deforestation, cyclones, illegal hunting and accidental mortality from power lines. Cyclones have caused population declines of over 95% in flying fox species on other islands, and remain an important threat to the Mauritian Flying Fox as cyclones are predicted to increase in frequency and intensity in the region.

The species fulfils a crucial role in Mauritius ecosystems by pollinating native plants and dispersing seeds. The IUCN SSC Human-Wildlife Conflict Task Force is working with the Mauritian Government, fruit growers, scientists and other stakeholders to address the underlying issues and to seek out alternative ways of protecting fruit crops, such as the use of netting and modernisation of orchard management. In 2015, IUCN warned in a statement that culling will very likely result in the species moving closer to extinction on The IUCN Red List. Meanwhile, through conflict resolution dialogue, the Task Force together with the IUCN SSC Bat Specialist Group and the Mauritian Government have made promising progress towards developing acceptable solutions for all affected parties, and no further culls have taken place since 2016.

### **Amphibian species rediscovered**

Despite extremely high levels of threat to amphibians globally, there is some good news for amphibians after four species previously considered as Critically Endangered (Possibly Extinct) or Extinct were rediscovered in Colombia and Ecuador. The Rio Pescado Stubfoot Toad (*Atelopus balios*), Quito Stubfoot Toad (*Atelopus ignescens*) and *Atelopus nanay* were all suspected to have disappeared due to the effects of the deadly chytridiomycosis disease. The Carchi Andes Toad (*Rhaebo coloma*) was so heavily impacted by habitat loss that it was also feared to be gone forever.

“While these rediscoveries are encouraging news, the species are still negatively impacted by human-induced threats,” says **Jennifer Luedtke, IUCN SSC Amphibian Red List Authority Coordinator**. “These species still have to contend with severe habitat destruction and degradation, predation by non-native trout species, chytridiomycosis, and the effects of a changing climate, highlighting the urgent need to improve the conservation of these species to prevent their extinction.”

## Japanese earthworms assessed for the first time

Of the 43 native species of Japanese earthworms assessed for the Red List through funding from the IUCN – Toyota Motor Corporation Partnership, three species are considered threatened with extinction (*Eisenia anzac*, *Drawida moriokaensis* and *Drawida ofunatoensis*). Agricultural intensification, urban expansion and radioactive fallout from World War II and the 2011 Fukushima Daiichi reactor explosion are the main threats to these species.

Earthworms help maintain healthy soils, increase soil aeration and infiltration of rain. They are also the foundation of many food chains. In Japan, earthworms are traditionally used as fishing bait and medicine. They are also culturally significant, with mythical stories told of giant, singing earthworms ascending to heaven and becoming dragons.

## Demand for perfume threatens one of the world's most valued woods

The *Aquilaria malaccensis* tree, which produces one of the world's most valued woods, moved from Vulnerable to Critically Endangered as logging and deforestation caused populations to decline by more than 80% over the past 150 years. Agarwood develops in the core of some *Aquilaria* trees after they are infected by a mould and the tree produces a fragrant, dark resin as a defence mechanism against the infection. It is difficult to tell which wild trees contain agarwood, leading poachers to cut down large numbers of trees in search of the precious wood. *Aquilaria malaccensis* is one of the world's preferred agarwood-producing species used for perfumery.

### Other Species:

**Precious Stream-toad (*Ansonia smeagol*)** – Named after *The Lord of the Rings* character 'Smeagol', this amphibian enters the IUCN Red List as Vulnerable. The species is endemic to the Genting Highlands in Peninsular Malaysia and is threatened by large and expanding tourist resorts and entertainment complexes. Unless something is done to stop these developments from encroaching on the range of this species and affecting the water quality of the streams the toad relies on for its survival, it might vanish forever.

**Bankoualé Palm (*Livistona carinensis*)** – The Bankoualé Palm has moved from Vulnerable to Endangered on the Red List after its population and range declined because of over-exploitation and habitat loss. This culturally significant palm has been used for thousands of years for house building, firewood and crafts in oasis areas of Djibouti, Yemen and Somalia. Agricultural encroachment from date palm plantations and diversion of surface water for use in gardening pose particular threats in Yemen, exacerbated by increased levels of drought.

**Jamaican Hutia (*Geocapromys brownii*)** – Endemic to Jamaica, this large rodent has moved from Vulnerable to Endangered on The IUCN Red List. Hunting pressure and ongoing habitat loss and degradation are likely to be responsible for its decline, including its apparent disappearance from Cockpit Country in recent decades. Predation by introduced cats, dogs and mongoose are further threats. There is some evidence of population expansion in areas where hunting has been reduced, indicating conservation actions may improve the status of this species.

**Queen Alexandra's Birdwing (*Ornithoptera alexandrae*)** – the world's largest butterfly; a reassessment of this species confirms that it is still Endangered. This striking turquoise and yellow butterfly has a wingspan of 250 mm and is endemic to New Guinea. Until trade became illegal in 1987, this butterfly was a trafficked species for the curio market; one imperfect male was sold for US\$2,850 in 1985. This species thrives in stable habitats, so habitat destruction from cocoa, rubber and oil palm plantations are now the prime threats to this species.

###

### **For more information or interviews please contact:**

**Goska Bonnaveira**, IUCN Media Relations, +41 792760185, [goska.bonnaveira@iucn.org](mailto:goska.bonnaveira@iucn.org)

**Cheryl-Samantha MacSharry**, IUCN Media Relations, +44 1223 331128, [samantha.macsharry@iucn.org](mailto:samantha.macsharry@iucn.org)

### **Notes to editors**

#### **The IUCN Red List**

The IUCN Red List of Threatened Species™ contributes to the achievement of Target 12 of the 2011 to 2020 Strategic Plan for Biodiversity. *Target 12: By 2020 the extinction of known threatened species has been prevented and their conservation status, particularly of those most in decline, has been improved and sustained.*

#### **Global figures for the 2018-1 IUCN Red List of Threatened Species:**

TOTAL SPECIES ASSESSED = 93,577

(Total threatened species = 26,197)

Extinct = 872

Extinct in the Wild = 69

Critically Endangered = 5,664

Endangered = 8,701

Vulnerable = 11,832

Near Threatened = 6,052

Lower Risk/conservation dependent = 210 (this is an old category that is gradually being phased out of The IUCN Red List)

Least Concern = 45,561

Data Deficient = 14,616

The figures presented above are only for those species that have been assessed for The IUCN Red List to date. Although not all of the world's species have been assessed, The IUCN Red List provides a useful snapshot of what is happening to species today and highlights the urgent need for conservation action. Relative percentages for threatened species cannot be provided for many taxonomic groups on The IUCN Red List because they have not been comprehensively assessed. For many of these groups, assessment efforts have focused on threatened species; therefore, the percentage of threatened species for these groups would be heavily biased.

For those groups that have been comprehensively assessed, the percentage of threatened species can be calculated, but the actual number of threatened species is often uncertain because it is not known whether Data Deficient (DD) species are actually threatened or not. Therefore, the percentages presented above provide the best estimate of extinction risk for those groups that have been comprehensively assessed (excluding Extinct species), based on the assumption that Data Deficient species are equally threatened as data sufficient species. In other words, this is a mid-point figure within a range from x% threatened species (if all DD species are not threatened) to y% threatened species (if all DD species are threatened). Available evidence indicates that this is a best estimate.

The IUCN Red List threat categories are as follows, in descending order of threat:

### ***Extinct or Extinct in the Wild***

***Critically Endangered, Endangered and Vulnerable:*** species threatened with global extinction.

***Near Threatened:*** species close to the threatened thresholds or that would be threatened without ongoing conservation measures.

***Least Concern:*** species evaluated with a lower risk of extinction.

***Data Deficient:*** no assessment because of insufficient data.

***Critically Endangered (Possibly Extinct):*** this is not a new IUCN Red List Category, but is a flag developed to identify those Critically Endangered species that are in all probability already extinct but for which confirmation is required; for example, through more extensive surveys being carried out and failing to find any individuals.

### **Highlights from the 2018-1 update**

Below are a few other examples from this update to The IUCN Red List.

#### **Examples of other species that have been added in this update**

**Madagascan Banana (*Ensete perrieri*)** – This relative (and potential gene donor) to the crop banana is endemic to Madagascar, where it is known from only five localities in the wild. It is also grown as a garden ornamental plant. The wild population is under threat from burning of forest

areas to make way for agriculture. The species enters The IUCN Red List as Critically Endangered.

***Physemacris papillosa*** – This species of Bladder Grasshopper is endemic to South Africa where it has a small geographic distribution along the southern Cape coastline. It enters The IUCN Red List as Endangered. This is an extremely rare species and it is likely to be declining. It has been documented only three times in the past 118 years in an area which has been extensively surveyed. Potential threats to *Physemacris papillosa* include habitat destruction due to agriculture (livestock farming) and urban development, and climate change leading to increased droughts. The distribution of this grasshopper is believed to be restricted by moisture availability, so an increasingly dry climate will negatively impact the species. Furthermore, it will result in loss or change of vegetation type and thus reduced availability of host plants on which the species depends.

**Yellow Fatu (*Abutilon pitcairnense*)** – This species of plant is assessed as Extinct in the Wild. Yellow Fatu was first discovered on Pitcairn Island in the southern Pacific Ocean in 1898. It was presumed extinct until a flowering specimen was found in the native forest in 2003. There are considerable challenges in preserving the remaining forest where this species was found. Despite conservation efforts, the last wild surviving plant died in a landslide in 2005, making the plant Extinct in the Wild. *Ex-situ* conservation efforts to grow and reintroduce the species back into its natural habitat were carried out on Pitcairn Island and one *ex-situ* conservation site remains on island. The native vegetation of Pitcairn still needs to be restored and invasive species need to be removed and controlled. The native forest species are being out competed by the non-native, introduced species *Syzygium jambos* (locally known as roseapple) and other invasive species. *Syzygium jambos* was originally brought to the island for fuel wood; however, because of its aggressive growth and a decrease in it being harvested for fuel, the plants have become very large trees. Their branches spread laterally, forming a dense canopy and stopping native species from regenerating. Adding to this pressure, heavy soil erosion is also degrading this species' habitat.

### **Rediscovered species**

**Rio Pescado Stubfoot Toad (*Atelopus balios*)** – Previously listed as Critically Endangered (Possibly Extinct), this toad is endemic to Ecuador. In the 1980s, habitat loss (and possibly chytridiomycosis) caused a drastic population decline resulting in the disappearance of most of its subpopulations. It had not been recorded since April 1995 despite repeated searches, until one individual was rediscovered in October 2010. More individuals have since been found (in 2011 and 2012). The entire known population is restricted to a single small area that is under severe pressure from expanding agricultural areas and mining, and it is currently assessed as Critically Endangered.

**Quito Stubfoot Toad (*Atelopus ignescens*)** – This Ecuadorean endemic toad was very abundant along streams until the 1980s, after which it became scarce and was last seen in 1988. Intensive surveys between 1999 and 2001 failed to find the species, and it was subsequently declared Extinct, due mainly to the impact of chytridiomycosis and climatic change (local warming and droughts). However, 27 individuals were found in 2016. Apparently, this is the only known subpopulation remaining, and it is still under severe threat from the synergistic effects of chytridiomycosis, climatic change and habitat loss. It is now listed as Critically Endangered.

***Atelopus nanay*** – Another Ecuadorean endemic amphibian, this species had not been recorded since July 1989 despite surveys within its range, suggesting a serious population decline. In 2004 it was assessed as Critically Endangered (Possibly Extinct) due to chytridiomycosis. However in 2007 one individual was sighted and seven females were found in 2008. Although it has been rediscovered, the population is suspected to still be declining due to habitat loss and degradation and predation by introduced trout.

**Carchi Andes Toad (*Rhaebo colomai*)** - Known only from northwestern Ecuador and southwestern Colombia, this toad was last seen in Ecuador in September 1984. It was also thought to have disappeared from Colombia, leading to it being listed as Critically Endangered (Possibly Extinct). However a new subpopulation was discovered in Colombia. The greatest threat is habitat change, fragmentation and loss, especially due to expansion of the agricultural frontier, logging and mining. It has been reassessed as Endangered.

***Geomitra grabhami*** – Previously listed as Critically Endangered (Possibly Extinct), this mollusc is now Critically Endangered. The species is endemic to Madeira (Portugal) and it was originally considered to possibly be extinct in 1983. In 2008, it was rediscovered on the eastern coast of Deserta Grande by Teixeira and was found again in 2013. The main current threat to the species is the high risk of land-slides, and also predation by introduced mice, which have not been eradicated from the island yet. There is also an increase in the frequency of droughts, which impacts the species as well as adding to ground instability.

***Bulbophyllum zaratananae*** – This plant is endemic to Madagascar and in 2008 it was assessed as Critically Endangered (Possibly Extinct). Its habitat (humid forest) has decreased in area by 33% since the 1970s, and deforestation has continued in recent years with 384,000 hectares of forest lost across Madagascar in 2016. The main threats are slash and burn agriculture, but logging and mining are also threats. Previously, the species was only known from two herbarium specimens collected nearly 100 years ago. However, more recent specimens were collected (in 2001 and 2003), confirming that the species does still exist and increasing its distribution area. The plant has now been reassessed as Endangered.

***Firmiana major*** – This tree previously appeared on The IUCN Red List as Extinct in the Wild. It is now reassessed as Endangered. The species is endemic to China and, until recently, it was thought only to exist as planted trees around temples and villages. In 2004, a wild population of 200 individuals was found in a nature reserve in Sichuan province, China. In 2017 another two fruiting subpopulations were found in Yunnan province. Current threats to this tree are severe degradation of its habitat.

### **Examples of other species whose conservation status has declined**

**Jamaican Hutia (*Geocapromys brownii*)** – This Jamaican species moved from Vulnerable to Endangered. The species has a severely fragmented distribution, and there is evidence that it no longer exists in Cockpit Country (western Jamaica). In the early 1980s it was known to still be extant in this area, but it was already considered to have a sparse distribution or occur at low densities;

there has been no evidence of the species in Cockpit Country in the last 15+ years. Ongoing habitat loss and degradation, and hunting are the major threats to this species. Predation by introduced dogs, cats and mongooses may also threaten the species.

**Mesilau Stream Toad (*Ansonia guibeï*)** – Previously assessed as Endangered in 2004, this toad moved into the Critically Endangered category in 2018. The species is endemic to northwestern Sabah, Malaysia. In the 2004 assessment it was considered to be locally very abundant, particularly in the form of tadpoles. However, in 2015 earthquakes and subsequent landslides completely destroyed its forest habitat at Mesilau, which is thought to have caused a significant population decline (at least 80% reduction in population size). A short survey was conducted at Mesilau in 2017 and no individuals were found, however additional surveys are required.

***Hystricella echinulate*** – This snail moved from Least Concern to Endangered. The species is restricted to Porto Santo in the Madeira Archipelago and surveys undertaken in the late 1990s suggested that the populations were reasonably abundant in spite of declining habitat quality over the last thirty years. However, fieldwork during the past five to six years has shown that subpopulations appear not to be as frequent as they were in the late 1990s. The population is believed to be declining. Habitat quality has been declining over the last 30-40 years following changing land-use practices including an increase of tourism, changes in grazing practices as well as an increase of fire incidents and longer periods of droughts which are possibly associated to effects of climate change. Hybridisation with the closely related *Hystricella bicarinata* could be considered as an additional threat to the survival of the species, although the extent of this is currently not known.

***Nepenthes mapuluensis*** – Previously assessed as Near Threatened, this carnivorous plant moved to Endangered in 2018. It is endemic to northeast Kalimantan, Indonesia, and is severely threatened by habitat degradation and destruction, particularly as a result of fire. Illegal collection of plants from the wild represents a secondary threat, which does not appear to be significant for this species at this stage.

### **Examples of other species whose conservation status has improved**

**Kinabalu Slender Litter Frog (*Leptobrachella arayai*)** – This amphibian moved from Vulnerable to Least Concern in 2018. It is known from Kinabalu National Park and Crocker Range National Park (Trus Madi) in Malaysia. In 2004, the major threat to this species was rapid logging of sub-montane forests for timber. However, industrial logging activities at Trus Madi have nearly ceased and are not occurring at elevations where this species occurs. Both of the national parks are well protected and well-managed, and Trus Madi is a High Conservation Value Forest.

**Distaff Thistle of Majorca (*Carthamus balearicus*)** – Previously assessed as Vulnerable, this species has now moved out of the threatened categories and is reassessed as Near Threatened. This small shrub is endemic to Menorca in the Balearic Islands (Spain), where it still has a very restricted range. It is a coastal species, growing in open scrublands close to the sea. In the last 12 years some of the most important threats to this species (i.e. uncontrolled road building, alien invasive plant species (mainly *Carpobrotus* species), soil tillage from small-holder farming, and excessive recreational activities) have been controlled in the two most important subpopulations.

However, the subpopulation at Fornells-Tirant is still threatened with soil tillage, concentrated to small areas, and with the development of touristic resorts. In recent years, with the implementation of several conservation projects, populations have stabilized and there are now signs of recovery for this species.

**The Aichi Target 12:** By 2020 the extinction of known threatened species has been prevented and their conservation status, particularly of those most in decline, has been improved and sustained.

####

### **About The IUCN Red List of Threatened Species™**

The IUCN Red List of Threatened Species™ (or The IUCN Red List) is an invaluable resource to guide conservation action and policy decisions. It is a health check for our planet – a Barometer of Life. It is the world's most comprehensive information source on the global conservation status of plant, animal and fungi species. It is based on an objective system for assessing the risk of extinction of a species should no conservation action be taken.

Species are assigned to one of eight categories of threat based on whether they meet criteria linked to population trend, population size and structure and geographic range. Species listed as Critically Endangered, Endangered or Vulnerable are collectively described as 'threatened'.

The IUCN Red List is not just a register of names and associated threat categories. It is a rich compendium of information on the threats to the species, their ecological requirements, where they live, and information on conservation actions that can be used to reduce or prevent extinctions. The IUCN Red List is a joint effort between IUCN and its Species Survival Commission, working with its IUCN Red List partners - Arizona State University, BirdLife International; Botanic Gardens Conservation International; Conservation International; NatureServe; Royal Botanic Gardens, Kew; Sapienza University of Rome; Texas A&M University; and Zoological Society of London.  
[www.iucnredlist.org](http://www.iucnredlist.org) <https://www.facebook.com/iucn.red.list> <https://twitter.com/IUCNRedList>  
<http://support.iucnredlist.org/>

### **About IUCN**

IUCN is a membership Union composed of both government and civil society organisations. It harnesses the experience, resources and reach of its more than 1,300 Member organisations and the input of more than 10,000 experts. This year, IUCN celebrates its 70th anniversary. Since its establishment in 1948 in the French town of Fontainebleau, IUCN has become the global authority on the status of the natural world and the measures needed to safeguard it. [www.iucn.org](http://www.iucn.org)

### **About the Species Survival Commission**

The Species Survival Commission (SSC) is the largest of IUCN's six volunteer commissions with a global membership of around 7,500 experts. SSC advises IUCN and its members on the wide range of technical and scientific aspects of species conservation, and is dedicated to securing a future for

biodiversity. SSC has significant input into the international agreements dealing with biodiversity conservation.

### **About Arizona State University (ASU)**

Ranked #1 in the U.S. for innovation, Arizona State University (ASU) is a new model for American higher education, combining academic excellence, entrepreneurial energy and broad access. It serves more than 70,000 students in metropolitan Phoenix, AZ. ASU champions intellectual and cultural diversity, and welcomes students from all fifty states and more than one hundred nations across the globe. ASU's Center for Biodiversity Outcomes (CBO) is a partnership between the Julie Ann Wrigley Global Institute of Sustainability (GIOS) and the School of Life Sciences (SoLS) via partnerships with NGO's, companies, and governmental organizations. Follow CBO's work on Twitter.

### **About BirdLife**

BirdLife International is the world's largest nature conservation Partnership. Together we are 120 BirdLife Partners worldwide – one per country – and growing, with almost 11 million supporters, 7000 local conservation groups and 7400 staff. Find out more at [www.birdlife.org](http://www.birdlife.org) / [www.facebook.com/BirdLifeInternational](https://www.facebook.com/BirdLifeInternational)

### **About Botanic Gardens Conservation International**

BGCI is an international organization that exists to ensure the world-wide conservation of threatened plants, the continued existence of which are intrinsically linked to global issues including poverty, human well-being and climate change. BGCI represents over 700 members - mostly botanic gardens - in 118 countries. We aim to support and empower our members and the wider conservation community so that their knowledge and expertise can be applied to reversing the threat of extinction crisis facing one third of all plants. <http://www.bgci.org>

### **About Conservation International (CI)**

Building upon a strong foundation of science, partnership and field demonstration, CI empowers societies to responsibly and sustainably care for nature, our global biodiversity, for the long term well-being of people. Founded in 1987 and marking its 25th anniversary in 2012, CI has headquarters in the Washington DC area, and 900 employees working in nearly 30 countries on four continents, plus 1,000+ partners around the world. For more information, please visit at [www.conservation.org](http://www.conservation.org) , or follow us on Facebook or Twitter.

### **About NatureServe**

NatureServe is a non-profit conservation organization dedicated to providing the scientific basis for effective conservation action. Through its network of 82 natural heritage programs and conservation data centres in the United States, Canada, and Latin America, NatureServe provides a unique body of detailed scientific information and conservation biodiversity expertise about the plants, animals, and ecosystems of the Americas. [www.natureserve.org](http://www.natureserve.org)

### **About the Royal Botanic Gardens, Kew**

The Royal Botanic Gardens, Kew is a world famous scientific organisation, internationally respected for its outstanding living collection of plants and world-class Herbarium as well as its scientific expertise in plant diversity, conservation and sustainable development in the UK and around the

world. Kew Gardens is a major international visitor attraction. Its landscaped 132 hectares and RBG Kew's country estate, Wakehurst Place, attract nearly 2 million visitors every year. Kew was made a UNESCO World Heritage Site in July 2003 and celebrated its 250th anniversary in 2009. Wakehurst Place is home to Kew's Millennium Seed Bank, the largest wild plant seed bank in the world. RBG Kew and its partners have collected and conserved seed from 10 per cent of the world's wild flowering plant species (c.30, 000 species). The aim is to conserve 25 per cent by 2020, and its enormous potential for future conservation can only be fulfilled with the support of the public and other funders. [www.kew.org](http://www.kew.org)

### **About Sapienza University of Rome**

With over 700 years of history and 110,000 students, Sapienza is the largest University in Europe, the second in the world after El Cairo: a city within the city. The University includes 11 faculties and 67 departments. In Sapienza there are over 4,500 professors, and 5,000 administrative and technical staff. Sapienza offers a wide choice of courses including 300 degree programs and 200 specialized qualifications. Students coming from other regions are over 30,000 and the foreign students are over 7,000. Sapienza plans and carries out important scientific investigations in almost all disciplines, achieving high-standard results both on a national and on an international level. Eugenio Gaudio has been the Rector of Sapienza University since November 2014. <http://www.uniroma1.it/>

### **About Texas A&M University**

From humble beginnings in 1876 as Texas' first public institution of higher learning, to a bustling 5,200-acre campus with a nationally recognized faculty, Texas A&M University is one of a select few universities with land-grant, sea-grant and space-grant designations. With an enrolment of about half men and half women, 25 percent of the freshman class are the first in their family to attend college. Here, 39,000-plus undergraduates and more than 9,400 graduate students have access to world-class research programs and award-winning faculty. Texas A&M has two branch campuses, one in Galveston, Texas, and one in the Middle Eastern country of Qatar. This research-intensive flagship university with 10 colleges was recently ranked first in the nation by Smart Money magazine for "pay-back ratio" (what graduates earn compared to the cost of their education). The 2011 U.S. News and World Report ranked Texas A&M second nationally in their "Great Schools, Great Prices" category among public universities and 22nd overall. Many degree programs are ranked among the top 10 in the country. [www.tamu.edu](http://www.tamu.edu)

### **About the Zoological Society of London (ZSL)**

Founded in 1826, the Zoological Society of London (ZSL) is an international scientific, conservation and educational charity: the key role is the conservation of animals and their habitats. The Society runs ZSL London Zoo and ZSL Whipsnade Zoo, carries out scientific research at the Institute of Zoology and is actively involved in field conservation in over 50 countries worldwide. [www.zsl.org](http://www.zsl.org)

## Languages

English

# Learn more

Species