EDGE of Existence

The **EDGE of Existence** programme is an innovative ZSL research and conservation initiative designed to highlight and conserve the world's most Evolutionarily Distinct and Globally Endangered (EDGE) species.

EDGE species have few close relatives and are extremely distinct in the way they look, live and behave. These unique species are also on the verge of extinction, and if they disappear there will be nothing like them left on the planet.

Some EDGE species such as elephants and pandas are well known, but others, such as the Yangtze River dolphin (the world's rarest cetacean), the bumblebee bat (the smallest mammal on earth) and the egg-laying long-beaked echidnas, remain poorly understood.

Alarmingly, two-thirds of the top 100 EDGE mammal species are currently receiving little or no conservation attention. The EDGE of Existence programme aims to address this issue by implementing conservation strategies for all of these species within the next five years.

EDGE

EVOLUTIONARILY DISTINCT & GLOBALLY ENDANGERED

ZSL
LIVING CONSERVATION

www.edgeofexistence.org www.zsl.org/edge

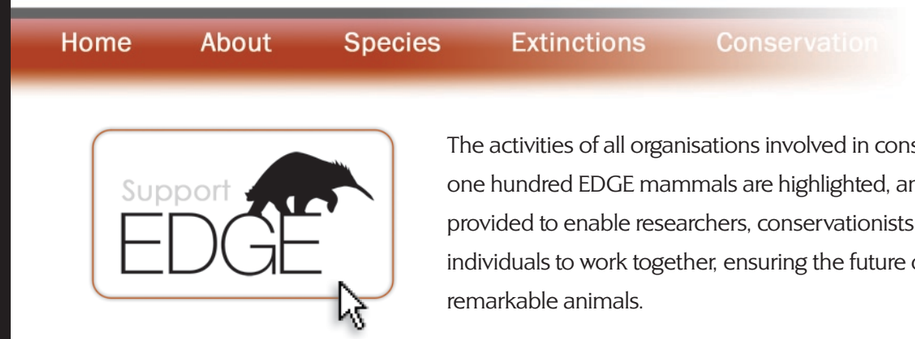
EDGE Goals

The EDGE programme seeks to:

- **Identify the current status of poorly known and possibly extinct EDGE species.**
- **Develop and implement conservation measures for all EDGE species not currently protected.**
- **Support local scientists to research and conserve EDGE species worldwide.**

EDGE Website

The top one hundred EDGE mammals are presented on a comprehensive interactive website which highlights the actions necessary to save them from extinction. Visitors to the website can learn about these extraordinary species, and fund specific research and conservation initiatives to secure their future.



The activities of all organisations involved in conserving the top one hundred EDGE mammals are highlighted, and a forum is provided to enable researchers, conservationists and interested individuals to work together, ensuring the future of these remarkable animals.

The EDGE programme focuses on species that are currently receiving little or no conservation attention. Funds raised through the website support projects that conserve EDGE species in their natural habitats.

EDGE Fellows

Each year, the EDGE programme aims to support up to ten promising young scientists or conservationists who live and work in areas in which EDGE mammals occur.

EDGE Fellows will benefit significantly from the training in conservation techniques required to research and monitor different EDGE species, and will learn the skills necessary to manage and protect endangered species well into the future.

Donors will be able to follow the progress of EDGE Fellows through a regular blog on the EDGE website.

EDGE species are both Evolutionarily Distinct and Globally Endangered

Every mammal species has been given a score based on the amount of unique evolutionary history it represents, and its conservation status according to the IUCN Red List of Threatened Species, the world's most comprehensive assessment of the conservation status of plant and animal species.

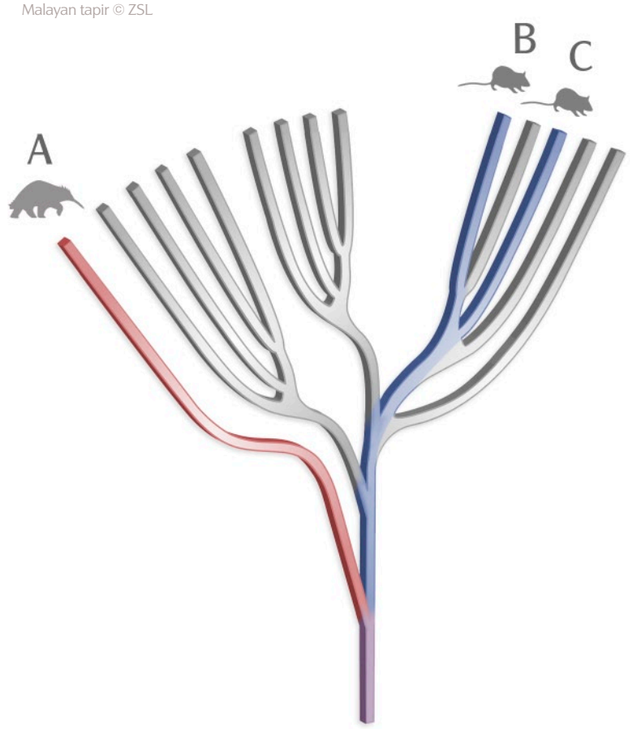
Saiga © Pavel Sorokin

Slender loris © ZSL

Malayan tapir © ZSL

Evolutionarily Distinct

Each species is given an 'Evolutionary Distinctiveness' (ED) score, which is calculated from a family tree or phylogeny. In the phylogeny on the right, species A would have a higher ED score than either species B or C – it represents a branch rather than a twig on the tree of life. If species A were to go extinct, there would be no similar species left on the planet and a disproportionate amount of unique evolutionary history would be lost forever.



Globally Endangered

A 'Globally Endangered' (GE) score is then calculated for each species based on the 2006 IUCN Red List. Species which are Critically Endangered receive a higher score than less threatened species, which in turn receive a higher score than those not currently in danger of extinction. The two scores are then combined to produce an EDGE score for each species

EDGE species are species which have an above-average ED score and are threatened with extinction (Critically Endangered, Endangered or Vulnerable).

Ten high-scoring EDGE mammals have been selected as Focal Species for 2007/8.

Attenborough's Long-beaked Echidna

- One of only five surviving egg-laying mammal species (monotremes)
- Relatively unchanged since the age of the dinosaurs
- Known only from a remote mountain peak in New Guinea
- Has not been reported for many years - possibly extinct

Proposed conservation: Extensive survey to determine population status, distribution and threats so that appropriate conservation measures can be implemented.

Zaglossus bruijni
© Pavel German

Bactrian Camel

- Superbly adapted to life in the Gobi desert, one of the most hostile and fragile regions on earth
- Fewer than 1,000 individuals survive
- Found only along the border of China and Mongolia
- Threatened by hunting and habitat degradation

Proposed conservation: Support for Mongolian students to research how local communities interact with the wild camels in order to develop a viable long-term conservation strategy.

© D Enkhbileg

Yangtze River Dolphin or Baiji

- The world's rarest and most threatened cetacean – only a handful might survive
- The only living representative of an entire family of mammals
- Endemic to the Yangtze River in China
- Threatened by massive human impact on the river system

© Wang Ding

Proposed conservation: Comprehensive interviews with local fishermen throughout the species' range to ascertain whether any animals still survive.

Pygmy Hippopotamus

- Secretes oils known as "blood-sweat" which are thought to help keep the skin waterproof
- Fewer than 3,000 survive, in scattered populations across Western Africa
- Declining as a result of habitat loss and degradation due to human activities

Proposed conservation: Support for Liberian researchers to monitor the species within Sapo National Park, Liberia.

© ZSL

Hispaniolan Solenodon

- Can inject venom into its prey through its teeth
- Thought to be extremely rare
- Endemic to the island of Hispaniola
- Threatened by habitat destruction and predation by introduced animals

Proposed conservation: Survey with camera traps, establish current distribution and protect remaining habitat.

© Eladio Fernandez

Slender Loris

- Enormous eyes give this species excellent night vision for hunting insects
- The tears of the slender loris are used in traditional medicine
- Occurs in Sri Lanka
- Populations are declining as a result of hunting and habitat destruction

Proposed conservation: Establish wildlife corridors between heavily fragmented forest patches.

© ZSL

Bumblebee bat © Merlin D. Tuttle / Bat Conservation International Inc.

Golden-rumped elephant-shrew © Galen Rathbun

Bumblebee Bat

- Possibly the smallest mammal in the world; roughly the size of a large bumblebee
- The sole known representative of an entire family of bats
- Thought to have last shared a common ancestor with other species more than 40 million years ago

Proposed conservation: Support for Thai scientists to collect basic ecological data on the bats and the threats they face so that appropriate conservation guidelines can be produced.

Golden-rumped elephant-shrew

- Elephant-shrews have extraordinarily long, flexible trunks
- Recent studies indicate that they are distantly related to elephants
- Endemic to Kenya
- Threatened by the destruction and fragmentation of its forest habitat

Proposed conservation: A comprehensive status survey followed by the production of a conservation action plan.

Hirola

- Perhaps the world's rarest and most threatened antelope
- Numbers have plummeted from around 14,000 in the 1970s to around 600 today
- Known from Kenya and Somalia
- Threatened by drought and poachers, and forced to compete with introduced livestock for limited resources

Proposed conservation: Support for the establishment of a research station from which hirola monitoring and protection programmes can be coordinated.

Hirola © Richard Kock

Long-eared Jerboa

- Jerboas resemble mice with long-tufted tails and very long hind legs for jumping
- This species' enormous ears are about a third larger than its head
- Occurs on the border of China and Mongolia
- Thought to be declining as a result of human disturbance of its habitat

Proposed conservation: Support for Mongolian students to monitor and protect the species in its natural habitat.

Long-eared jerboa © R. Samiya

The top 100 EDGE Species

● No conservation attention ● Limited conservation attention ● Conservation underway

1.	●	Yangtze River dolphin	51.	●	Muennink's spiny rat
2.	●	Long-beaked echidna	52.	●	Small-toothed mole
3.	●	Riverine rabbit	53.	●	Dugong
4.	●	Cuban solenodon	54.	●	Leadbeater's possum
5.	●	Hispaniolan solenodon	55.	●	Nimba otter-shrew
6.	●	Sumatran rhinoceros	56.	●	New Zealand lesser short-tailed bat
7.	●	Black rhinoceros	57.	●	Short-tailed chinchilla
8.	●	Bactrian camel	58=	●	Malayan water shrew
9.	●	Northern hairy-nosed wombat	58=	●	Sumatran water shrew
10.	●	Sumatran rabbit	60.	●	Desert dormouse
11.	●	Javan rhinoceros	61.	●	Salenski's shrew
12.	●	Asian elephant	62.	●	Saiga antelope
13.	●	African wild ass	63.	●	Maned three-toed sloth
14.	●	Onager	64.	●	Iranian jerboa
15.	●	Vietnam leaf-nosed bat	65=	●	Ganges River dolphin
16.	●	Aye-aye	65=	●	Indus River dolphin
17.	●	Japanese dormouse	67.	●	Chacoan peccary
18.	●	Giant panda	68.	●	Senkaku mole
19.	●	Red panda	69.	●	Handley's slender mouse opossum
20.	●	Wroughton's free-tailed bat	70.	●	Long-footed potoroo
21.	●	Pygmy hippopotamus	71.	●	Philippine flying lemur
22.	●	Slender loris	72=	●	Inquisitive shrew-mole
23=	●	Golden bamboo lemur	72=	●	Chinese shrew-mole
23=	●	Greater bamboo lemur	74.	●	Indian rhinoceros
25.	●	Seychelles sheath-tailed bat	75.	●	Armenian birch mouse
26.	●	Anderson's mouse opossum	76.	●	Chapa pygmy dormouse
27.	●	Mediterranean monk seal	77.	●	African elephant
28.	●	Mountain pygmy possum	78.	●	Vaquita
29.	●	Golden-crowned sifaka	79.	●	Yellow-tailed woolly monkey
30=	●	Northern marsupial mole	80.	●	Mountain tapir
30=	●	Southern marsupial mole	81.	●	Long-eared jerboa
32.	●	Puerto Rican hutia	82=	●	Grevy's zebra
33.	●	Bulmer's fruit bat	82=	●	Mountain zebra
34.	●	Baird's tapir	84.	●	Amazonian manatee
35.	●	Gracile mouse opossum	85.	●	Peter's tube-nosed bat
36.	●	Indri	86.	●	Chinese dormouse
37.	●	Hirola	87.	●	Blunt-eared bat
38.	●	Greater big-footed mouse	88=	●	Blue whale
39.	●	New-Guinea big-eared bat	88=	●	Fin whale
40.	●	Persian mole	90.	●	Falanouc
41.	●	Volcano rabbit	91.	●	Mount Kahuzi climbing mouse
42.	●	Monito del monte	92.	●	Bushy-tailed opossum
43.	●	Fossa	93.	●	Gallagher's free-tailed bat
44.	●	Amami rabbit	94.	●	Old World sucker-footed bat
45.	●	Hainan gymnure	95.	●	Malagasy giant jumping rat
46.	●	Golden-rumped elephant shrew	96.	●	Imaizumi's horseshoe bat
47=	●	Dinagat moonrat	97.	●	Orangutan
47=	●	Mindanao gymnure	98.	●	Chiapan climbing-rat
49.	●	Bumblebee bat	99.	●	Tumbala climbing-rat
50.	●	Hairy-eared dwarf lemur	100.	●	Setzer's mouse-tailed dormouse

Future directions

The EDGE of Existence programme will be an invaluable resource for setting future conservation priorities. It will serve as a novel template for incorporating species relationships into a global priority-setting approach to conservation.

The project will initially focus on mammals but will expand to cover other groups, including amphibians, birds, reptiles, fish and plants as the infrastructure and methods develop. With a firm basis in science, it has the potential to inform future international directives such as the Convention on Biological Diversity.

Please support the EDGE of Existence programme

www.edgeofexistence.org
www.zsl.org/edge

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The Thylacine - a lesson for the future

The thylacine was the largest marsupial carnivore and the last remaining representative of an entire mammal family.

Driven to the brink of extinction by human persecution, the species was finally awarded legal protection in 1936. Sadly, this action came too late for the thylacine. The last known individual died just two months later and the species was officially declared extinct in 1986.