



# Endangered Species Student Pack

This pack is aimed for students who require in depth information for course work and also for teachers to aid in their visit to Colchester Zoo.

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# The Meaning of Endangered

Endangered is the broad term used to describe any animal that is threatened with extinction. While this is suitable when talking about a wide range of animals, it becomes less informative when used in individual species.

In order to know a specific species level of endangerment, more precise categories are used. At present there are nine separate categories ranging from extinct to not evaluated. The categories that species belong in are monitored and controlled by the IUCN.

## What is the IUCN?

The IUCN is the World Conservation Union and is the world's largest and oldest environmental network. It includes, 1066 non-government organisations, 16151 experts across the world, 217 state and government agencies and 1300 other member organisations. The IUCN also has 950 staff across the world.



## IUCN Mission

Their mission is to influence, encourage and assist societies throughout the world to conserve the integrity and diversity of nature and to ensure that any use of natural resources is equitable and ecologically sustainable. Also to monitor the world's ecosystems and aid in focusing conservation work.

## What does the IUCN role?

As it is a global network of skilled scientists and experts, the IUCN develops conservation science with a large focus on biodiversity and ecosystems. They explore how humans interact with the environment in both positive and negative ways.

Within the IUCN are, The Global Species Programme work with the Species Survival Commission (SSC) who assess the conservation status of species and subspecies on a global scale to highlight species threatened with extinction and thereby promote their conservation.

The IUCN Red List of Threatened Species was created and provides taxonomic, conservation status and distribution information on plants, fungi and animals. This system was designed to determine the risk of extinction.

The main goals of the IUCN Red List are to:

- Identify and document those species most in need of conservation attention.
- Provide a global index of the state of change of biodiversity.

Link to IUCN website: <http://www.iucn.org/>



# Categories of Endangered

The following are the categories and meaning that make up the Red List.

## **EXTINCT (EX):**

A species where there is no reasonable doubt that the last individual has died.

## **EXTINCT IN THE WILD (EW):**

A species where it is known only to survive in cultivation, in captivity or as a naturalised population (or populations) well outside the past range.

## **CRITICALLY ENDANGERED (CR):**

A species that is considered to be facing an extremely high risk of extinction in the wild.

## **ENDANGERED (EN):**

A species that is considered to be facing a very high risk of extinction in the wild.

## **VULNERABLE (VU):**

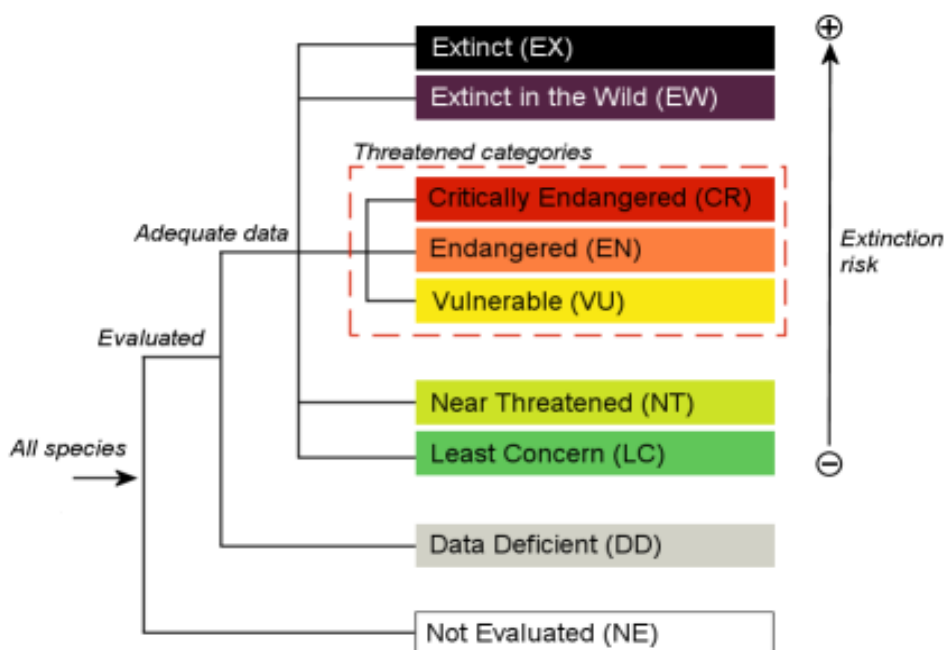
A species that is considered to be facing a high risk of extinction in the wild.

## **NEAR THREATENED (NT):**

A species that has been evaluated against the criteria but does not qualify for any other category, but is close to qualifying for a threatened category in the near future.

## **LEAST CONCERN (LC):**

A species that has been evaluated against the criteria and does not qualify for any other category. Widespread and abundant species are included in this category.





# Extinction

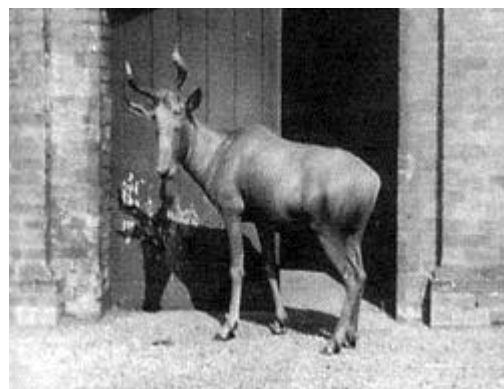
It is important to remember that extinction is a natural process. Many animals and plants have gone extinct long before human activity had any major impact on the world.

The key point is that human activity is accelerating the rate of extinction. Species are going extinct faster than they should go naturally.

The following species are examples of animals that have gone extinct due to human activities.

## Bubal Hartebeest

Found throughout Northern Africa and the Middle East. Mass hunting, with some entire herds being wiped out in one hunting trip, for sport as well as for meat and fur led to this animal declining sharply throughout the 19th century. A small herd of 15 was recorded in 1917, however all but 3 were shot by the same hunter. The last recorded individual was in 1925.



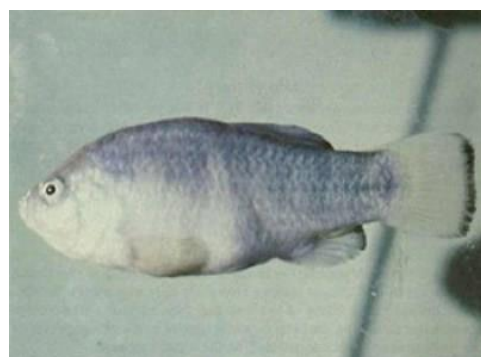
## The Caribbean Monk Seal

The only native seal to the Caribbean Sea and Gulf of Mexico. The last recorded sighting was between Honduras and Jamaica in 1952. However it wasn't officially declared extinct till 2008. Hunted for their natural oils, habitat displacement due to human development along the coast and persecution by fishermen, who saw them as competitors for fish, all led to their extinction.



## The Tecopa Pupfish

Only found in two hot springs, which were just under 10 metres apart, in California, U.S.A. In the 1940's the area of the hot springs became a popular tourist destination and led to the hot springs being diverted, merged and enlarged to allow the construction of bathhouses plus the construction of hotels further impacted on the surrounding environment. By 1966 they were nearly extinct. A further impact on the species population was due to the introduction of other pupfish species that now populated the area due to the changes made to hot springs allowing them to move into the area. This resulted in the two pupfish species breeding. By 1981 the Tecopa pupfish was declared extinct.



# Functionally Extinct

The term functionally extinct refers to a species that still has a small number of individuals alive but are unable to increase their population. This could be due to the fact the animals are too old to breed or there are only males and no females and vis versa. Can also be used if there is only one members of that species left.

An example of an animal that is functionally extinct is the northern white rhino.

Once found throughout Central Africa from Chad to Democratic Republic of Congo they are classed as a sub-species of white rhino.

In 1960 there were 2000 individuals and by 1984 there were 15. As of 2015 there are 3 members left of the northern white rhino sub-species. These 3 were born in captivity and later moved to a reserve in Kenya. The last confirmed sighting of wild northern white rhino within their natural range was in 2006.

Hunting for rhino horn has lead to all 5 species of rhinos population decreasing and it is due to hunting for the horn the numbers of the northern white rhino dropped. The reason why rhinos are poached for their horn will be looked at in further detail on page 11.

The 2 remaining northern white rhino are both females, meaning as there are no northern white rhino males, they females can't breed with anyone, which is the reason why they are classed as functional extinct.

Step have been taken to protect the last 3 northern white rhino. They have 24 hour armed protection and can have their horns shaved off to make them less of a target as well.

One possible way to overcome the problem of them being too old to breed is to take the eggs from the females and sperm from the male and use surrogate southern white rhino females. This is in the early stages and is currently being debated if this is the most appropriate course of action to take.





# Reasons for Becoming Endangered

There are several human activities that can accelerate a species rate of extinction and thus make them classed as endangered.

The major threats are (in no particular order):

- Habitat loss
- The pet trade
- The bushmeat trade
- Fur and skin trade
- Traditional medicine trade
- Ivory trade
- Invasive species
- Over Use
- Pollution



# Habitat Loss

Habitat loss is when the species habitat is lost due to human activity. Habitat loss can happen in a number of ways some of which are more obvious than others.

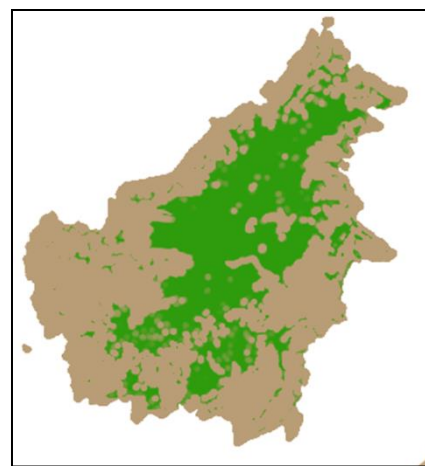
Habitat loss happens all over the world and affects multiple species of animals and plants and is reasonable for the decline of millions as well as the extinction of species.

The most recognisable form of habitat loss is deforestation. This when forests are cut down for the wood, to make room for growing towns and cities, an increase in industry and to make way for farm land to grow a variety of crops.

An example of deforestation is the tropical rainforest of Borneo. Below are two pictures of Borneo showing how much of the rainforest has been cut down.



Borneo rainforest coverage  
in 1950



Borneo rainforest coverage  
in 2010

The main reason why the Bornean rainforest has been cut down is due to palm oil farming. Palm oil is used in a variety of everyday items such as food but also in cleaning products and cosmetics. The U.K. is the second largest consumer of palm oil in Europe, the first is the Netherlands.



Untouched rainforest



Palm oil plantation



# Habitat Loss

Habitat loss is not just something happen elsewhere, the lose of hedgerow, woodland and wild flower meadows as well as intense agriculture in the U.K. has resulted in over 150 species disappearing over the last 100 years. Since 1800 nearly 500 species of animals and plants have become extinct with many of whom were only found in the U.K. At present there are over 943 species at risk of extinct in the U.K.

Below are some examples of specific species that have seen their numbers drop in the U.K. due to habitat loss.

- A third of the hedgehog population has gone since 2000
- The population of V-moths is estimated to be 1% of what it was in the 1960's
- The turtle dove population has dropped by 93% since 1970
- The small tortoiseshell butterfly population has declined by 77% in the last 10 years

## Other examples of habitat loss from around the world



The ice caps are melting 3 times faster than ever before. Leading to the ice sheets shirking, making feeding opportunities harder as well as realising large amounts of fresh water into the sea affecting the flow of the ocean currents.



90% of coral reefs will be gone in the next 20 years, due to rising sea temperatures, pollution, bleaching and damage from industry and being taken for the pet trade. The reef itself is home to thousands of species of animals and plants. The white coral in the picture are dead or dying coral.



Grasslands (savannahs, parries) are being lost due to the spread of invasive species, the suppression of natural fire and the fragmentation and urbanisation of grassland habitat. Only 5 % of the worlds grasslands are protected.

# The Pet Trade

Many exotic animals kept as pets, such as parrots and lizards, are illegally taken from the wild and exported abroad. Most of these species are endangered because of the large number of individuals caught. If the animals are already at risk from other threats, such as habitat loss, then trapping for the pet trade further impacts their numbers.

## Primates

Many primates species are targeted by the pet trade. This mostly effects the small primates such as the tamarins, capuchins and squirrel monkeys. This particularly effects the tamarins as their populations are already decreasing due to the deforestation and fragmentation occurring in the Atlantic rainforest.

One primate whose numbers have dropped due to the pet trade is the slow lorries. Videos on social media of them being 'tickled' has lead to huge demand for them as pets. However they are have a 90% death rate in transit and the slow lorries is in fact venomous. To prevent their future owner being bitten, the front teeth of the slow lorries are pulled out, often with no anesthetic.



## Parrots

Parrots such as macaws are the largest species of parrots and come from the rainforests of South America. Due to their bright colours, they make attractive yet highly unsuitable pets, they are noisy, destructive and have the intelligence of a 3 year old human and can live well into their 70's. It is not only macaws that are caught, Amazon parrots and African greys are also caught due to their smaller size.

## Reptiles

Many reptiles are sold as pets after being taken out of the wild and demand for most of the species can only be supplied by individuals from the wild. These animals are very difficult and expensive to look after, as they require a large amount of specialised equipment. Many snakes are also captured from the wild and then sold as pets as well as tortoises and terrapins.

## Fish and coral

Marine (salt water) fish are taken from the wild to sell as pets as well as coral being sold to pet shops around the world. It is estimated that 25 to 30 million fish are taken from coral reefs alone and 90% of the fish caught die in transit. Fresh water fish are also affected by the pet trade but not as much as marine fish.





# Bushmeat Trade

Hunting for the bushmeat trade has increased in West Africa and Asia due to an increase of commercial logging and more roads being built which creates access to areas which were not once available.

Bushmeat is the term that applies to all wildlife species hunted for meat. The indigenous people of the rainforests have always hunted wild animals such as wild deer and monkeys as a source of food. This hunting is “sustainable” and has very little or no impact on the local populations of animals.

However, as more of the forest becomes reachable due to increase in logging and the creations of access roads to the work sites, provide access to the heart of the forests and commercial hunters are exploiting this. Commercial hunting is both illegal and unsustainable and the hunters kill as many animals as possible to sell the meat to market traders.

A big problem that faces some species are the specialised hunters, who hunt to supply a specific demand. Some animals are seen as a delicacy and a status symbol. It can be seen more impressive to serve dinner guests gorilla rather than pork. The specialist hunters, rather than hunting animals that are abundant, will specifically hunt gorillas, usually not killing just one but whole family groups.

Elephants, forest antelope, bush pigs, gorillas, chimpanzees, bonobos, colobus monkeys, mandrills and drills, leopards, golden cats, duiker and pangolin are all known victims of the bushmeat trade and many other animals are also hunted.

The rarer the animal the more money the hunter can make. It is the larger animals in particular that raise the greatest money, in particular great apes, buffalo and elephant.





# Fur and Skin Trade

Many different animals are hunted for their fur or skin. The species most people are conscious of are the big cats. Leopards, jaguars and tigers have all been hunted due to their prized coats, as well as the smaller cat species such as the ocelot, fishing cat and Geoffroy's cat. The highly decorative patterns of these animals means that they fetch a high price at market.

An example of an animal that is hunted for its fur is the snow leopard.

Snow Leopards are found in the snow covered regions of Central Asia and hunt hoofed mammals and birds. Their coat acts as a camouflage for stalking their prey, as well as keeping the leopard warm in the harsh weather. However their thick coat also makes them prone to poaching from poachers, as a single pelt can fetch prices of £30,000.



An example of a smaller cat species that is hunted for its fur is the ocelot.

The ocelot is a wild cat found in the forests of South America. Their orange-yellow coats are covered in black spots and their tails are striped. While the ocelot is on the protected list in Peru and Chile, neighbouring Latin American countries allow trade to continue and pelts are sold for several hundred dollars.



Other animals are hunted for their fur, which include the wolf, seal, fox and antelope. Primates such as colobus monkeys are often hunted for their fur to make garments and rugs.



Reptiles are also hunted for their skin. Some reptiles are farmed for their skin but many are hunted in the wild. The skin of reptiles has tough leathery properties, which makes it ideal for handbags, wallets and shoes. Snakes and crocodiles are most at risk due to their large size and elaborate patterns, however lizards are also at risk.



# Traditional Medicine Trade

Traditional Asian Medicine practitioners believe that certain animal parts and plants can be used to treat a variety of illness and conditions. There is no proven scientific evidence that the medicines made from animal parts actually cure any illness or help any condition. However there is a demand across Asia and is a major cause of animals becoming endangered.

One animal that has been directly affected is the rhino. Rhinos across Asia and Africa are poached as it is believed their horn can be used as medicine.

People believe that rhino horn can cure the following:

- Fever
- Gout
- Rheumatism
- Cure snake bites
- Is believed to help with:
- Stop hallucination
- Help relieve the symptoms of Typhoid
- Reduce the pain of headaches
- Stop vomiting
- Help get over a hangover
- Plus many more



However there is no scientific evidence that rhino horn cures any of illness. In fact rhino horn is made of the same material as human hair and finger nails, called keratin. Regardless of this rhino horn is still used in traditional Asian medicine.

Since 2008 5,940 African rhinos have been poached for their horn. In 2015 alone 1,338 were killed in Africa with 1,175 rhinos killed just in South Africa. In South Africa rhino poaching has increased from 13 rhinos killed in 2007 to 1,004 rhinos killed 2013.



Rhino horn is also worth lots of money with 1kg of rhino horn being worth twice as much as 1kg of platinum is worth £31,000.





# Traditional Medicine Trade

Many other animals are used for traditional Asian medicines and as species decline in Asia, animals in Africa and other parts of the world are being poached to supply the demand for traditional medicines. While many people believe and rely on traditional Asian medicine, there has never been any scientific evidence to prove that any of the animal based ingredients have any medicinal value. Below are four examples of animals that used in the traditional Asian medicine trade.



## **Musk Deer**

The glands of this species of deer are used in the belief they can treat skin infections and stop abdominal pain.



## **Bears**

Asiatic black and sloth bears are often 'farmed' for their bile by having a catheter inserted into the bears gall bladder to drain the bile directly. It is believed the bile treats headaches and liver ailments.



## **Seahorses**

The whole animal is used and 20 million seahorses across several species, are used per year. Believed to cure kidney ailments and impotence.



## **Tiger**

Many parts of the tiger are used, ranging from bones to internal organs to the tigers eyes. Believed to cure malaria, ulcers and control epilepsy as well aid in burn recovery.

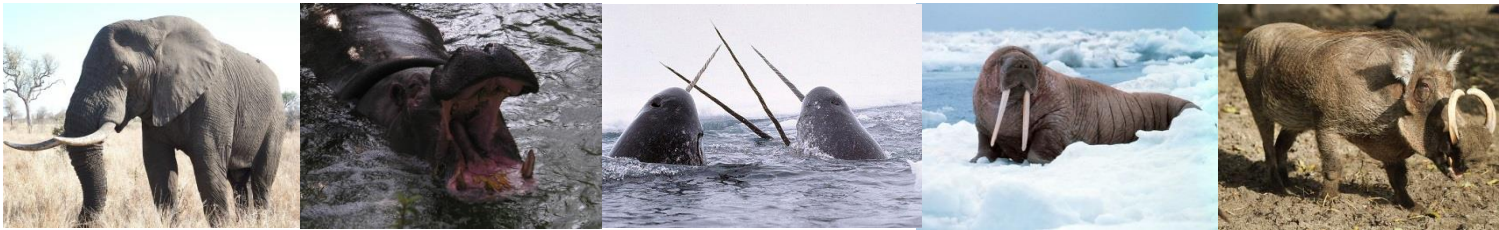


# Ivory Trade

Ivory is a white material from teeth and tusks and has been used for thousands of years to make jewelry and ornaments.



Animals poached for their ivory include elephants, hippopotamus, narwhals, walrus and warthogs and other large pigs .



The ivory trade has resulted in the decline of a number of animals. The elephant is an animal that's numbers have dropped due to the demand for ivory and almost lead to the African elephants extinction. However international agreements and restriction on the trade along with the formation of national parks have helped numbers to recover.

Today, 470,000 African elephants remain, however the demand for ivory is still high and poaching still takes place and it is estimated 38,000 elephants are killed annually for their ivory.

Asian elephants are also affected by the ivory trade and now numbers between 40,000 to 50,000 left.

The Asian ivory trade has brought about a unique situation reducing the population further. This is a loss of genetic diversity. As only male Asian elephants have tusks it is the males that are hunted, which has lead to a situation of an unbalanced sex ration.

Between 1969 and 1989 the male to female sex ration was 1 male to every 6 females. Now it is 1 male to every 122 females. This reduces the gene pool and makes it harder for females and males to come into contact with one another, further reducing birth rates and slowing the rate of population growth.



# Invasive Species

An invasive species is a species which establishes a population in an area where it is not native. These invasive species can have major impacts not only on the habitat but on entire food chains. With developments in travel, these invasive species are able to 'hitch' a ride on planes, cars, boats.

Isolated regions can be affected most by invasive species and displace native species, which can result in the extinction of the native species. One example of the impact invasive species had on a native species is the case of the dodo, which went extinct in the 17th Century.

Dodos were a large flightless bird which inhabited the island nation of Mauritius; as sailors started to use Mauritius as a trade port, black rats which were living on the ships began to establish a population. The rats ate the dodo's eggs and thus prevented subsequent generations developing. Pigs were also introduced on purpose to establish a food source for humans, however the pigs destroyed the dodo's nest as well as eating the eggs. This eventually led to the dodo's extinction.

A current example of invasive species affecting native species, is on the Galapagos Islands. Since their discovery in 1535, humans have introduced goats, pigs and cats to the islands on purpose as well as introducing plants such as fruiting plants. Other animals that have established populations on the islands are brown rats and several species of insect. These animals have reached the island by traveling on ships or in cargo and where accidentally brought to the islands.



30 species of animals have become established on the Galapagos Islands, including 1 freshwater fish, 2 frogs species, 4 species of geckos, 10 birds including the domesticated chickens and ducks, and 13 mammals including goats, rats, cats, pigs, and dogs.

Animals can also be introduced to new countries as a biological aid - i.e. introduce a predator to an area in the hope it will control a pest species. In the majority of cases they go wrong and this new introduced species becomes invasive and does not eat the targeted pest; instead it eats native flora and fauna and outcompetes the native wildlife.

This happened in Australia after the introduction of the cane toad. This toad, which is native to Central and South America, was introduced in the hope that it would eat the pest species - the cane beetle. The cane toad instead started to eat the native wildlife as well as spreading disease to native frogs and to humans. With no natural predators to control the populations the cane toad is now classed as a pest.



# Over-Use

Over-use simply refers to taking/using too much and can be used to cover all of the trades previously mentioned. The term over-use is best used when referring to over fishing, which is when too much fish is taken during commercial fishing.

Traditional fishing was done by small boats with limited space and the use of basic technology to find the fish. Today however commercial fishing ships are larger with a large amount of storage and are able to stay at sea for longer periods. Some of the most advance ships use military grade sensor technology to locate the fish, meaning the chance of catching fish is much higher.



Methods used to catch the fish not only target the desired fish, but many non-targeted fish and other animals, such as turtles, seals, sealions, dolphins and smaller whales; this is called by-catch. Large nets that are used by trawlers (pictured above), where the net is dragged through the sea, also damages and can destroy the seabed.

Most fisheries have a quota of fish they are legally allowed to take from the sea. There are quotas in place to prevent overfishing however, in many cases this does not work well. This is because this quota is divided amongst many different ships, some shipping fleets may take more fish than others. Furthermore, catches are only weighed once the ships have docked, which means a shipping fleet may have caught over their quota without knowing.



The methods used to catch the fish doesn't allow much control on what age of fish is caught. In an effort to over come this some fishing fleets use nets with different sized holes to allow the younger fish to escape. If most of the fish removed from the oceans are of reproductive age and only the old or very young are left, the population cannot repopulate itself effectively and the population drops.



# Human—Animal Conflict

Human—animal conflict refers to when interactions between humans and animals results in a negative situation and can effect human economic and social life as well as conservation work in the area.



As human populations increase, resulting in larger settlements and an increased demand for resources, humans and animals increasingly come into conflict over space and resources such as food. For example, in India there were 120.4 million hectares of cropland in 1970 and as of 2010 this has increased to 140.1 million hectares. In 1970 urban areas in India covered 1.02 million hectares, that has increased to 2.04 million hectares as of 2010.

Many species have been identified as animals involved in human – animal conflict. In India 88 species are involved in human – animal conflict and range from elephants and leopards to hares and peacocks.

In Botswana between 1994 and 2006 there were 19776 reported elephant – human conflict incidents including crop damage and loss, as well as loss of livestock.

Farming is often the cause of this conflict. From elephants in Africa to rhinos in Asia destroying crops and European wolves to baboons in Namibia killing livestock, farmers often take measures that mean wildlife loses out and are either killed or pushed further into conflict with humans.

Animals that are involved are often killed in retaliation and to prevent such incidences occurring again.

There are techniques used to manage human-animal conflict. Historically this has been lethal control, however now relocation of problem animals to areas with less human activity is more common. Behavioural change in humans through education is also done to help people understand animal behaviour to minimise interactions.

Investment in better fencing, compensation for farmers and environmental support are also techniques used.

Research into more cost effective controls and methods that are less harmful to animals is now being done.

It has been discovered that elephants show a dislike to chilli pepper plants and actively avoid them, this has led to farmers planting these plants around the perimeter of the crops. Elephants also avoid bees and several farmers now use bee hives as a fence line to keep elephants away. Using bee hives also provides the farmers with a second source of income as they can harvest the honey and sell it.

# Human - Predator Conflict

A common source of conflict with animals are with farmers and predators. Predators have long been prosecuted due to fear they will kill and eat livestock, this was the case for the Tasmanian tiger, also known as the thylacine, who were thought to be responsible for sheep deaths. In the 1800's bounties were offered to anyone who brought a dead Tasmanian tiger. For adult Tasmanian tigers, people were offered up to the equivalent of £100 in today's money per animal.

Another example of this form of conflict are the gray wolves from Yellowstone in the United States of America. The native gray wolves were eradicated in the 1920's, however the loss of the wolves caused the population of elk to increase quickly, causing over grazing and killing off young brush and trees.

By the 1930's there were growing concerns about the rate at which Yellowstone was degrading and worries that more plant species would decline and result in more soil erosion. The loss of tree species also caused the song bird populations to crash, as well as beavers who had lost their food source and weren't able to create dams, which in turn made streams erode making them deeper rather than wider, which prevented plants, mainly willows from establishing. In 1996 a programme was established to reintroduce wolves back in Yellowstone.

This proposal was met with concern from farmers who kept livestock along the boundaries of Yellowstone, who feared the wolves would prey on their livestock. After several decades, starting in the 1960's, a 'wolf compensation fund' was to be put in place to pay the market value of any livestock lost. This fund was established by Defenders of Wildlife who use donations to fund the scheme.

Since the reintroduction in 1996 there have been cases of wolf packs preying on livestock. Most cases equate to a small amount of the wolves natural diet, and many packs ignore the livestock. However some packs persistently prey on livestock. The compensation fund has allocated \$1,400,000 to farmers and private land owners who can prove loss of livestock due to wolves.

In most countries a compensation scheme is not possible, due to limited funds. A charity called N/a'an Ku sê Carnivore Conservation Research Project in Namibia, Africa, works to stop farmers shooting these animals. Their focus is reducing farmer and cheetah conflict as well as with leopards and hyenas. They have two aims, first to solve and reduce conflict through researching behaviours, habitat use and population studies. They also work with farmers to try and improve prevention methods by looking at protective measures and include effective fencing, guardian animals, bio-boundary repellents and herders.

Their second method is tracking and relocation of problem animals. If all other methods haven't worked, the animal is trapped and fitted with a GPS tracker, which allows the charity to monitor the animal movements, allowing them to inform the farmer so they can move their livestock. For a few animals the final step is complete relocation to a new area that can support them and is distant from livestock farms. They are then intensely monitored.

To date, they have responded to 698 human-carnivore conflict calls from landowners and collared 84 carnivores. The project impact area has increased from 8% of Namibian commercial farmland in 2008, to 60% in 2016. The number of requests for support is also growing 15 – 20% per year. Farmers are now more likely to contact this charity rather than shoot the animal and has changed people's attitude towards the native predators.

# Pollution

Pollution is a term that refers to anything that doesn't belong in nature and pollution comes in a variety of forms. Below are some examples of the types of pollution humans cause and their effects of on animals and the environment.



## Light Pollution

The use of artificial light to light up roads and human settlements can cause animals to get disorientated. Over 1000 birds per minute die during the night in North America and Europe due to collision with buildings that leave their office lights on. Nocturnal animals can also get confused.

## Water Pollution

Oil spills, fertilisers and pesticides can contaminate fresh and salt water. Litter is a major water pollutant and many animals get caught up in the litter and can eat it mistaking it for food. Disregarded fishing nets are also a major problem causing marine mammals and turtles to drown.



## Air Pollution

Car fumes, waste gas from factories and the burning of wood or coal for fuel realise mainly carbon dioxide and sulphur dioxide into the atmosphere. Sulphur dioxide (SO<sub>2</sub>) is toxic to all life and results in acid rain. Climate change is being accelerated by the high levels of these gases being realised.

## Noise Pollution

Increases in air travel and large cities have resulted in higher levels of noise in the environment making it harder for animals to find mates as courtship calls can get lost and predators also find it harder to find prey. Whales are affected by ship noise and sonar which can leads to beaching.





# What is Being Done?

Governments, individuals, organisations and charities can and are trying to help undo the damage done as well as finding ways to prevent further damage.

This work can be done in a variety of forms. The list below is of some of the work taking place.

- International agreements
- Investment in law enforcement controls
- Investment in renewable energy sources
- Raising awareness of humans impact on the environment
- Educating people in ways they can help the environment
- Funding conservation work
- International breeding programmes for endangered animals and plants
- Creating nature reserves
- Reintroduction programmes
- Monitoring programmes to ensure good practice in industry

The next pages will look at some of the points stated above as well as highlight how individuals can help as well.

# International Agreement

The largest international agreement in affect is the CITES Treaty. CITES stands for the Convention on International Trade in Endangered Species.



CITES is an international agreement between governments and aims to ensure that trade in wild animals and plants does not threaten their survival. Annually, international wildlife trade is estimated to be worth billions of dollars and include hundreds of millions of plants and animals, ranging from live specimens to derived products such as food, leather goods, timber, tourist curiosities and medicines. Trade in some species, together with other factors, is heavily depleting their populations and bringing them close to extinction. The agreement ensures the sustainability of these resources for the future. Today CITES accords varying protection to more than 30,000 species of animals and plants, whether traded as live specimens, fur coats or dried herbs.

Not one species protected by CITES has become extinct as a result of trade since the convention was officially stated in 1975. CITES is one of the largest conservation agreements in existence with 183 member countries.

The species covered by CITES are listed according to the degree of protection they need. Below is a summary of the appendices:

- Appendix I includes species threatened with extinction. Trade in these animals is permitted only in exceptional circumstances.
- Appendix II includes species whose trade must be controlled to ensure sustainability.
- Appendix III contains species that are protected in at least one country, which has asked CITES for assistance in controlling the trade.

For more information about CITES and full descriptions of the appendices, follow the below link:  
<https://www.cites.org/eng>

# National and International Groups

Many zoos in the U.K. are members of national and international groups. Below are the groups Colchester Zoo are members of. These groups coordinate conservation work, education and breeding programmes.



BIAZA is a conservation, education and scientific wildlife charity, that ensure the principles and practices of animal management are practiced at a high standard. Also aids in increasing knowledge with in the zoological community.

<http://www.biaza.org.uk/>



EAZA coordinate conservation work and breeding programmes across Europe. Also aids in increasing knowledge with in the zoological community.

<http://www.eaza.net/>



WAZA provide leadership and support for zoos, aquariums, and partner organisations of the world in animal care and welfare, conservation of biodiversity, environmental education and global sustainability.

<http://www.waza.org/en/site/home>



# International Breeding Programmes

Captive breeding is essential to maintain the species in captivity as a back up against extinction, and sometimes to provide healthy animals for reintroductions. Breeding programmes are also in place to reduce and prevent inbreeding. Colchester Zoo participates in the following breeding programmes.

## **EEP: European Endangered Species Breeding Programme**

The EEP is the most intensive type of population management for a species kept in EAZA (European Association of Zoos and Aquaria) zoos. Each EEP has a coordinator (someone with a special interest in and knowledge of the species concerned, who is working in an EAZA zoo or aquarium). They are assisted by a Species Committee.



The coordinator has many tasks to fulfil, such as collecting information on the status of all the individuals of the species which they are responsible for kept in EAZA zoos and aquaria, producing a record of birth and deaths, carrying out demographical and genetic analyses, and producing a plan for the future management of the species.

Together with the Species Committee, recommendations are made each year on which animals should breed or should not breed, which individual animals should go from one zoo to another, and so on.

## **ESB: European Stud Book**

The ESB is less intensive than the EEP programme. Each ESB has a coordinator who is responsible for a certain ESB species collects all the data on births, deaths, transfers from all the EAZA zoos that keep the species in question. This data is entered into a computer software programme, which allows the ESB coordinator to carry out analyses of the population of that species. EAZA zoos may ask the studbook keepers for recommendations on breeding or transfers.



By collecting and analysing all the relevant information on the species, the ESB coordinator can judge if it is doing well in EAZA zoos, or if maybe a more rigid management programmes is needed to maintain a healthy population over the long term. In that case, the ESB coordinator may propose that the species be managed as an EEP programme.

For a full list of species which are part of a breeding program at Colchester Zoo please refer page 28, Colchester Zoo Breeding Programmes.

# Conservation Translocations

(Formally known as Reintroduction Programmes)

In 1988 the Species Survival Commission of the IUCN established the Reintroduction Specialist Group (RSG) to join the expertise and information on reintroduction projects worldwide. The RSG stores information and data on hundreds of reintroductions that have taken place over the past 20 years. The process of a species reintroduction is a hard and expensive one and because it is still fairly “new”, it has had some failures, but also some successes. The information collected so far has led to a series of guidelines being drawn up to help prevent these mistakes being repeated. In 2017 the programme was redefined as Conservation Translocations.

## What is a Conservation Translocation?

Conservation translocation is the deliberate movement and release of organisms from one location to another. It must result in having conservational benefit to more than just the translocated organism. i.e. restoring ecosystem functions.

Conservation translocations consist of:

- Population restoration which consist of: Reinforcement and Reintroduction, which are within a species' historical and natural range.
- Conservation introductions, which are the assisted colonisation and ecological replacement, outside of the organisms historical and natural range.

## Population Restoration

**Reinforcement** is the movement and release of an organism into an existing population of the same species. This is sometimes referred to as re-stocking.

The aims of reinforcements is to enhance population viability, which can be done by increasing population size, by increasing genetic diversity, or by increasing the representation of specific groups or life cycle stages.

**Reintroduction** is the movement and release of an organism inside its historical and natural range from which it has disappeared.

The aims of reintroductions to re-establish a viable population of the species within its historical and natural range.

## Conservation Introductions

Conservation introduction is the movement and release of an organism outside its historic and natural range.

There are two types of conservation introduction, assisted colonisation and ecological replacement.

**Assisted colonisation** is the movement and release of an organism outside its historic and natural range to avoid extinction.

**Ecological replacement** is the movement and release of an organism outside its historic and natural range to perform a specific ecological function.

This is used to re-establish an ecological function lost through extinction, and will often be the most suitable existing sub-species, or a close relative of the extinct species within the same genus.

# Conservation Translocations

(Formally known as Reintroduction Programmes)

## Designing Conservation Translocations

A successful conservation translocation involves the following:

- Long term planning.
- The release of a large number of animals.
- The involvement of the local people.

The design of each conservation translocation is unique to each species. For different animals, different approaches are necessary. In general there are two types of releases:

- **Hard Release:** This is where the animals are released and have to fend for themselves.
- **Soft Release:** This is a more gradual process. The animals are provided with food and/or shelter until they are able to cope on their own in the wild. This is a more time consuming and expensive process, but usually the most appropriate method of release.

## Costs of Conservation Translocations

Conservation translocations can be expensive, due to the conservation translocation doing more than just releasing the animals. For example the release programme for the Golden lion Tamarins in Brazil, the budget not only covered the release but also, education within the local community, management and reforestation, translocation, studies of other flora and fauna of the area, internships for students and other long term field studies of the wild population. Funding for such programmes comes from donations from local and international conservation groups via fund raising, from funding by zoos and also via publicity and the interest generated by this.

## How Long does it Take?

A project can be considered successful once a reintroduced population can sustain itself in the wild. It may take several generations until this can be made certain and results do vary between species. Other factors such as securing the land, working with government departments, breeding a healthy release population and raising the funds all add time to any real project. Some projects can take over 100 years.

## Factors to Consider During a Conservation Translocation

There are many factors that need addressing before a conservation translocation is to take place.

The following are the main factors in the wild that need to be investigated before the conservation translocation is to take place:

- **Security:** the reason why the animal became extinct in its natural range must be removed and prevented to occur again
- **Biology:** habitat preference, social and feeding behaviour, home range, predators, disease, migratory areas, what effect the reintroduced animals will have on the ecosystem
- **Social economic and legal requirements:** long term commitment of financial and political support
- After the conservation translocation has taken place:
- Monitor how well all animals are doing directly or indirectly and also to evaluate the success of the reintroduction and technique used.

Animals that are part of conservation translocations and are starting to increase in numbers are:

**The Przewalski's horse:** was classed as extinct in the wild, now has over 300 individuals. **The Arabian Oryx:** was classed as extinct in the wild, now has over 1000 individuals. **The golden lion tamarin:** had 150 left in the wild in 1969, now numbers over 1000 individuals.



# Conservation Translocations

(Formally known as Reintroduction Programmes)

Colchester Zoo is part of a breeding programme, reinforcement and assisted colonisation conservation translocation for a rare moth found only along a very small area on the North-East Essex coast. The Fisher's Estuarine moth is a rare and highly threatened species and therefore, is of a high conservation priority and is legally protected under the Conservation of Habitats and Species Regulations 2010, as well as listed in the British Red Data Book and has an Essex Biodiversity Action Plan (BAP).



The moth is completely reliant on Hog's Fennel as its sole larval food plant; a plant species which is also threatened. It is also reliant on long coarse grass species to fulfil its egg laying requirements. Favoured grasses for egg laying include Cock's-foot and False oat-grass. In the UK Hog's Fennel is limited to two main localities; the north Essex coast and the north Kent coast. Suitable habitat for the plant is dwindling, due to rising sea levels along the coast line, mowing of the plant and trampling by walkers.

In 2006, a project was set up to plant up a sustainable landscape-scale network of Hog's fennel sites. To date, over 20 sites have been created along the Essex coast line.

In 2008, Colchester Zoo teamed up with Tendring District Council, Natural England and Writtle College to initiate the captive breeding programme for the Fisher's Estuarine Moth at Colchester Zoo. This will enable the species to be established at the newly created sites of Hog's fennel. The breeding programme provide a readily available supply of moths that will ensure the sustainability of the programme for the long-term.



Initially, 40 breeding cages were established in an off show location at Colchester Zoo, a rabbit proof mesh was built around the nets and a Hog's fennel plant and grass species were placed in each cage, to fulfil the moths life history requirements. Eggs were collected under licence from Skipper's Island Nature Reserve, an Essex Wildlife Trust site. The caterpillars subsequently hatch in April and are immediately placed onto a Hog's fennel plant, where they remain feeding throughout the summer until pupation. Adult moths then emerge in September and Colchester Zoo keepers ensure unrelated pairs are

mixed for mating. Resulting eggs are then used for the following year's captive breeding programme and any additional eggs are released into the newly created sites. To date, eggs have been released annually since 2009.

Since the release of the eggs into the wild, signs of caterpillar feeding and adult moths have been seen at the new sites. In addition to this work, surveys conducted by Tendring District Council have also shown a high number of moths recorded at an existing sites, evidence of the spread of the moths within such sites and even sightings of the caterpillar feeding signs and of an adult moth on Hog's fennel plants away from existing colonies, which had not been populated by the breeding programme. This news shows the moth is capable of extending its range naturally.

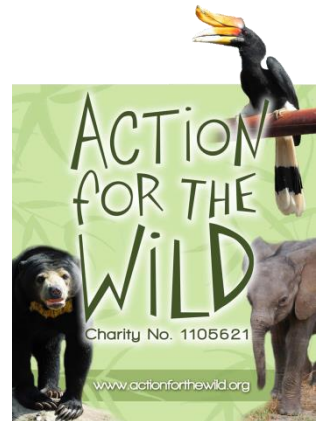
# Conservation Charities

Zoos assist in the conservation of wild animals by supporting many in situ projects. In situ means work that takes place in the animals natural habitat. Providing funds to these charities and their projects allows them to educate and supporting the local community, to pay for rangers, fund research, create reserves and aid in the rehabilitation of rescued animals. Colchester Zoo offers financial support to many conservation organisations through its Action for the Wild charity.

Action for the Wild aims to provide financial assistance and technical advice to national and overseas in situ projects in order to support the conservation of endangered species and their habitats.

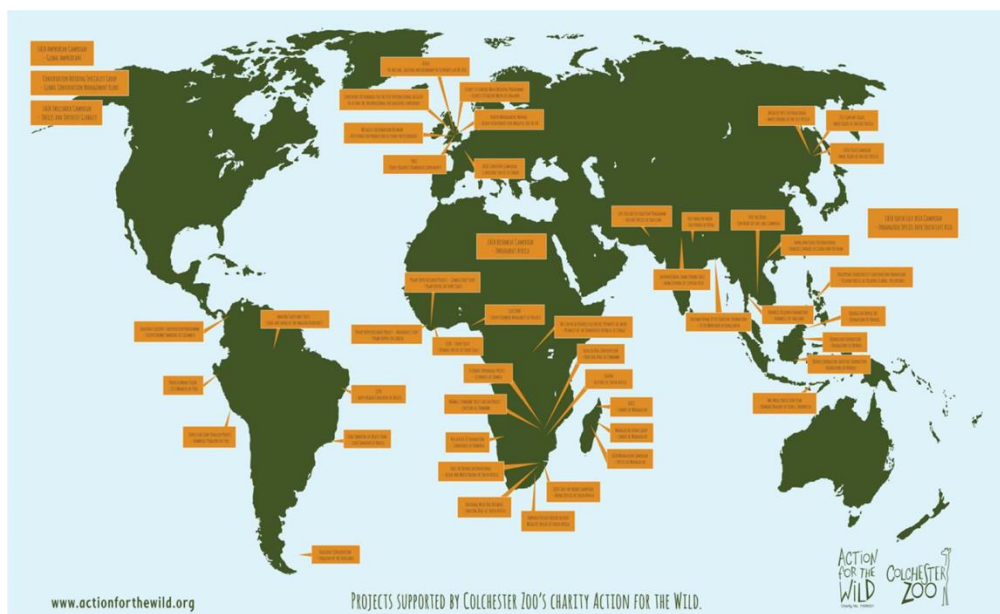
Action for the Wild aims to provide habitat and survival aids for native species and support of nature projects across the world. In co-operation with other bodies, it aims to establish protected areas, implement habitat management and be involved in breeding and translocation of threatened flora and fauna.

Action for the Wild aims to raise awareness and respect for nature through formal and informal education programmes. It also aims to encourage and support scientific and quantitative research from which conservation and animal welfare benefits can accrue.



Conservation projects that are funded and assessed on their own merit taking into consideration the principle species or habitats involved, and the in situ work that is to be carried out. As Colchester Zoo evolves, Action for the Wild intends to assess in situ conservation projects and find projects to fund, with respect to major exhibits and species additions to the Colchester Zoo collection.

Since 2004 Action for the Wild has raised £2 million for conservation charities all over the world. Below is a map of the projects that have been supported by Action of the Wild.



A full list of our projects and regular updates can be found on our charity website:  
<http://www.actionforthewild.org/>

# Nature Reserve

The UmPhafa Private Nature Reserve, situated in KwaZulu Natal, South Africa, is a 6,000 hectare reserve comprised of a selection of farms previously managed for cattle and encompasses a wide range of habitats from acacia savannah to mountainous terrain. Colchester Zoo manages the reserve through their charity Action for the Wild.



The aim of Action for the Wild is to rehabilitate UmPhafa as an example of the region's previous natural condition. Although some mammal populations had remained and have thrived since the reserve was established, many more species have been released. Action for the Wild translocate species onto the reserve to recreate the historical animal assemblage and to help secure the future of these species.

UmPhafa is now home to a wide range of fauna including white rhino, giraffe, kudu, impala, common reedbuck, mountain reedbuck, zebra, blesbok, red hartebeest, wildebeest, waterbuck, nyala, warthog, aardvark and porcupine - to name only some. Leopard and spotted hyena have more recently returned to the area naturally and are regularly recorded through camera trapping and tracking. Small to medium sized carnivores such as black-backed jackal, caracal, serval, genet, and several species of mongoose are also common.



UmPhafa was established entirely as a site for conservation, education and research and as such its management is not defined by other influences. Without the reliance upon general tourism, wildlife can be maintained at natural equilibrium for the environment. Numerous research projects have been undertaken on the site to better understand the local ecosystems and the animals which live there. UmPhafa works closely with the local community for management and research as well as to deliver an education alongside the work on the reserve in order to the values of the reserve and to ensure the-term sustainability of the project.

More information can be found at: [www.umphafa.com](http://www.umphafa.com)



# How Individuals Can Help

It is not just charities or international agreements that can help support wildlife and the environment, the individual can and does play an important role in helping.

Below are just some of the ways an individual can help.

To help reduce the amount of air pollution the use public transport as well as walking more helps reduce the number of cars on the road. Also buying energy saving light bulbs, turning the thermostat down and turn electronics off at the mains rather than having left on stand-by also helps. Also buying electronic devices with the Energy Star logo. This means the device is using energy in an efficient way and using less.



To reduce the amount of waste going to landfill, recycle domestic waste. If recycling isn't an option, using the bin to prevent litter pollution also helps.



Responsible shopping is getting easier to do. Buying products and food with the FSC (sustainable wood), Rainforest Alliance (sustainable fruit, tea and coffee, sugar etc) and MSC (fish) logos on ensures food is sustainable sources and thus reduce the impact on the environment.



Not buying pets from unreliable sources and not buy animal products will reduce the demand for those items.



# What is the Zoo doing?

Colchester Zoo also has a responsibility to monitor and reduce the impact the Zoo itself has on the environment. This is done through a number of ways as mentioned below.

## **Energy Efficient**

Colchester Zoo has a number of biomass boilers that have been installed to help reduce the Zoo's carbon emissions. These boilers run on pellets which are made from compressed sawdust shavings, left over from the wood industry. This energy source has a much lower carbon footprint because the emissions are the same as what the plant can absorb over its lifetime. It makes it much more eco-friendly than burning fossil fuels. A biomass boiler can be seen at the Butterfly Glade exhibit.

Colchester Zoo has 7 biomass pellet boilers at various points around the Zoo and are used to heat animal enclosures, buildings and offices. The Zoo is also registered as a self-supplier with BSL, to use recycled wood from around the zoo as fuel.

Colchester Zoo has also installed solar panelling situated at two animal enclosures, which are used to heat and light the buildings; helping to reduce the Zoo's energy output.

## **Water Conservation**

As well as monitoring and creating energy, water use is also assessed. Currently the Zoo collects rainwater through water butts and roofs as well using natural water filtration systems where possible through reed bed systems. The Zoo also used grey water (clean but old water) for hosing down exhibits and toilet flushing.

## **Waste Reduction**

The Zoo has worked for many years to reduce the waste produced via the Zoo's visitors and recycle the contents of the bins. The Zoo is now also working to reduce its contribution to landfill.

After sorting for recycling, the Zoo waste is now going to go to produce energy-from-waste, where the waste is burnt at high temperatures to reduce its volume and to create heat energy which is then converted into electrical power.

In waste to energy technologies, nearly all of the carbon content in the waste is emitted as carbon dioxide to the atmosphere. If the waste went to landfill, the amount of methane generated via decomposition of the biodegradable part of the waste would have a higher global warming potential than the carbon dioxide produced by this combustion.

## **Responsible Produce & Packaging**

All of food served at the Zoo is sourced as locally as possible and work is done to ensure that any ingredients do not conflict with any of the Zoos conservation policies.

This includes using sustainable palm oil, Rainforest Alliance coffee, tea and chocolate and Red Tractor assured ingredients.

The Zoo has also introduced paper straws as well as Birchwood cutlery in all the Catering outlets. As well as using recycled plastic water bottles and sourcing the bottled water from a company who do not transport their water outside the U.K. further reducing the carbon footprint.

# Success Stories

Below are some success stories of animals that have seen their number increase due to actions taken to reverse the damage done to the environment. This has been done by putting laws in place, conservation translocations and habitat management, as well as other methods.

1969 – 150 in wild      2017 – 3,500 in wild



Golden Lion Tamarin  
**HABITAT PROTECTED**

Kakapo



**INVASIVE SPECIES MANAGED**

1996 <50 animals      2017 – 154 in wild

Sea Otter



**OVERHUNTING STOPPED**

1969 – 1,000 animals      2017 – 125,000 in wild

Peregrine Falcon



**POLLUTION CLEANED**

1970's – 1,000 animals      2016 – 300,000 in wild



# Colchester Zoo Breeding Programmes

The tables on the following pages list the species at Colchester Zoo that are part of European international Breeding Programs as well as stating their IUCN status and if they are covered by CITES.

Below is a table of the number of species kept at Colchester Zoo as of 2016.

	NO. OF SPECIES IN INVENTORY 2016
<b>MAMMALS</b>	77
<b>BIRDS</b>	41
<b>REPTILES</b>	29
<b>AMPHIBIANS</b>	9
<b>FISH</b>	73
<b>INVERTS</b>	32
<b>TOTAL</b>	<b>261</b>

## Code Descriptions

Code	Description
LC, NT, VU, EN, CR, EW	<b>IUCN Red List Categories</b> LC = Least Concern NT = Near Threatened VU = Vulnerable EN = Endangered CR = Critically Endangered EW = Extinct in the Wild
EEP	European Endangered Species Programme
ESB	European Studbook
1,2 or 3	<b>CITES Appendices I,II or III</b> As assigned by the Convention on the International Trade of Endangered Species

Species (Common name, Scientific name)	Status	Program	CITES Appendix listing
<b>Vertebrates</b>			
<b>Class: Mammals</b>			
Aardvark ( <i>Orycteropus afer</i> )	LC	ESB	Not Listed
African elephant ( <i>Loxodonta africana</i> )	VU	EEP	2
African hunting dog ( <i>Lycaon pictus</i> )	EN	EEP	3 (pending)
Amur leopard ( <i>Panthera pardus orientalis</i> )	CR	EEP	1
Amur tiger ( <i>Panthera tigris altaica</i> )	EN	EEP	1
Binturong ( <i>Arctictis binturong</i> )	VU	EEP	3
Black & white ruffed lemur ( <i>Varecia variegata variegata</i> )	CR	EEP	1
Buffy-headed capuchin ( <i>Sapajus xanthosternos</i> )	CR	EEP	2
Cherry-crowned mangabey ( <i>Cercocebus torquatus torquatus</i> )	VU	ESB	2
Colombian black spider monkey ( <i>Ateles fusciceps robustus</i> )	CR	EEP	2
Common chimpanzee ( <i>Pan troglodytes</i> )	EN	EEP	1

Species (Common name, Scientific name)	Status	Program	CITES Appendix listing
<b>Vertebrates</b>			
<b>Class: Mammals</b>			
Common squirrel monkey ( <i>Saimiri sciureus</i> )	LC	EEP	2
Eastern black and white colobus ( <i>Colobus guereza caudatus</i> )	LC	ESB	2
Fennec fox ( <i>Vulpes zerda</i> )	LC	ESB	2
Gelada baboon ( <i>Theropithecus gelada</i> )	LC	EEP	2
Geoffroy's marmoset ( <i>Callithrix geoffroyi</i> )	LC	EEP	2
Giant anteater ( <i>Myrmecophaga tridactyla</i> )	VU	EEP	2
Giraffe ( <i>Giraffa camelopardalis</i> )	VU	EEP	Not Listed
Golden lion tamarin ( <i>Leontopithecus rosalia</i> )	EN	EEP	2
Golden-headed lion tamarin ( <i>Leontopithecus chrysomelas</i> )	EN	EEP	2
Greater kudu ( <i>Tragelaphus strepsiceros</i> )	LC	ESB	Not Listed
Kirk's dik dik ( <i>Madoqua kirkii</i> )	LC	ESB	Not Listed



Species (Common name, Scientific name)	Status	Program	CITES Appendix listing
<b>Vertebrates</b>			
<b>Class: Mammals</b>			
L'hoest's monkey ( <i>Cercopithecus lhoesti</i> )	VU	EEP	2
Linne's two toed sloth ( <i>Choloepus didactylus</i> )	LC	ESB	Not Listed
Lion-tailed macaque ( <i>Macaca silenus</i> )	EN	EEP	2
Malayan sun bear ( <i>Helarctos malayanus</i> )	VU	ESB	1
Mandrill ( <i>Mandrillus sphinx</i> )	VU	EEP	1
Orang-utan ( <i>Pongo pygmaeus</i> )	CR	EEP	1
Patagonian sea lion ( <i>Otaria byronia</i> )	LC	ESB	Not Listed
Patas monkey ( <i>Erythrocebus patas</i> )	LC	ESB	2
Pied tamarin ( <i>Saguinus bicolor</i> )	EN	EEP	1
Pileated gibbon ( <i>Hylobates pileatus</i> )	EN	EEP	1
Pygmy hippopotamus ( <i>Hexaprotodon liberiensis</i> )	EN	EEP	2

Species (Common name, Scientific name)	Status	Program	CITES Appendix listing
<b>Vertebrates</b>			
<b>Class: Mammals</b>			
Red panda ( <i>Ailurus fulgens</i> )	EN	EEP	1
Red river hog ( <i>Potamochoerus porcus</i> )	LC	EEP	Not Listed
Red titi monkey ( <i>Callicebus cupreus</i> )	LC	EEP	2
Red-bellied lemur ( <i>Eulemur rubriventer</i> )	VU	EEP	1
Ring tailed lemur ( <i>Lemur catta</i> )	EN	ESB	1
Rock hyrax ( <i>Procavia capensis</i> )	LC	ESB	Not Listed
South African Cheetah ( <i>Acinonyx jubatus jubatus</i> )	VU	EEP	1
Southern tamandua ( <i>Tamandua tetradactyla</i> )	LC	ESB	Not Listed
Spotted hyena ( <i>Crocuta crocuta</i> )	LC	ESB	Not Listed
Visayan spotted deer ( <i>Rusa alfredi</i> )	EN	ESB	Not Listed
Visayan warty pig ( <i>Sus cebifrons negrinus</i> )	CR	EEP	Not Listed

Species (Common name, Scientific name)	Status	Program	CITES Appendix listing
<b>Vertebrates</b>			
<b>Class: Mammals</b>			
Warthog ( <i>Phacochoerus africanus</i> )	LC	ESB	Not Listed
White rhinoceros ( <i>Ceratotherium simum</i> )	NT	EEP	1
<b>Class: Birds</b>			
Andean condor ( <i>Vultur gryphus</i> )	NT	EEP	1
Blue crane ( <i>Anthropoides paradiseus</i> )	VU	ESB	2
Eurasian griffon vulture ( <i>Gyps fulvus</i> )	LC	ESB	2
Humboldt penguin ( <i>Spheniscus humboldti</i> )	VU	EEP	1
King vulture ( <i>Arcomphus papa</i> )	LC	ESB	2
Lesser rhea ( <i>Rhea pennata</i> )	LC	ESB	2
Moluccan cockatoo ( <i>Cacatua moluccensis</i> )	VU	EEP	1 & 2
Rhinoceros Hornbill ( <i>Buceros rhinoceros</i> )	NT	EEP	2



Species (Common name, Scientific name)	Status	Program	CITES Appendix listing
<b>Vertebrates</b>			
<b>Class: Birds</b>			
Ruppell's vulture ( <i>Gyps rueppellii</i> )	CR	EEP	2
Southern ground hornbill ( <i>Bucorvus leadbeateri</i> )	VU	ESB	Not Listed
Victoria crowned pigeon ( <i>Goura victoria</i> )	NT	ESB	2
<b>Class: Reptiles</b>			
African pancake tortoise ( <i>Malacochersus tornieri</i> )	VU	ESB	2
Cuban crocodile ( <i>Crocodylus rhombifer</i> )	CR	ESB	1
Giant Asian pond turtle ( <i>Heosemys grandis</i> )	VU	ESB	2
Komodo dragon ( <i>Varanus komodoensis</i> )	VU	EEP	1
Madagascan tree boa ( <i>Sanzinia madagascariensis</i> )	LC	ESB	1
Radiated tortoise ( <i>Geochelone radiata</i> )	CR	ESB	1
Rhinoceros iguana ( <i>Cyclura cornuta</i> )	VU	ESB	1