ENDANGERED SPECIES RESOURCE PACK (KS3 & KS4)




This pack has been designed to assist educators in teaching students about endangered species, in particular, endangered wild cats. This resource pack includes activities and worksheets, that can be used to teach or reinforce concepts. Activities and worksheets can be used individually within lessons, however also complement one another. The activities in this resource pack are targeted at students in KS3 & KS4, however can be modified to be used for other age groups.

CONTENTS

GLOSSARY

WORD	DEFINITION
Endangered	A species at risk of going extinct.
Extinct	A species that has completely died out. There are no more living animals of this species in captivity or in the wild.
Threatened	Any species which are vulnerable to endangerment in the near future.
IUCN Red List of Threatened Species	The world's most comprehensive index of the global conservation status of plant and animal species
Global Warming	The process of our planet heating up.
Habitat Destruction	A natural habitat is altered so significantly it can no longer support the species that live there.
Deforestation	The clearance and removal of forest/ trees for non-forest use.
Habitat Fragmentation	Fragmentation is when parts of a habitat are destroyed, leaving behind smaller unconnected areas. This can occur naturally, as a result of fire or volcanic eruptions, but is normally due to human activity.
Poaching	The illegal hunting or capturing of wild animals, usually associated with land use rights.
Palm Oil	Most widely consumed vegetable oil on the planet, derived from the fruit of the oil palms.
Protected Area	A clearly defined geographical space, recognised, dedicated and managed, through legal or other effective means, to achieve the long term conservation of nature with associated ecosystem services and cultural values.
Sustainable	Able to be maintained at a certain rate or level.
Conservation	The act of protecting ecosystems and environments to protect the animals that live there.
Modern Zoos	Zoos have evolved to become centres for conservation, education, research and recreation. These roles make the modern zoo.
In Situ Conservation	In a species natural habitat e.g. conserving lions in Kenya.
Ex situ Conservation	Outside a species natural habitat e.g. a zoo.
EEP Breeding Programme	The European Endangered Species Breeding Programme is a managed breeding programme within Europe which aim to ensure a viable and sustainable captive population is maintained long term. It is the most intensive form of managed breeding and is conducted by an EEP coordinator, who is assisted by a species committee.
Melanism	The increased development of the dark coloured pigment, melanin, in the skin or hair.
Stimulation	The encouragement of something to make it develop or become more active.
Stereotypical Behaviour	Abnormal, repetitive behaviour that serves no obvious function or purpose for the animal exhibiting it. For example, common stereotypic behaviours in animals include head tossing, pacing and even over grooming and excessive chewing.

LEARN: Wild Cat Habitats

Cats have adapted to live on nearly every continent across the globe, illustrated on the map below. Use this as a guide to help students place wild cats in their natural habitats.

First ask students to place different habitat types around the globe. You may want to first label the continents on your map, and ask students to colour in the map to show hot and cold habitats. On the next page are some key habitat types for students to place on the print out map (page 6). You can use all the habitat types or select a few from the attached list, dependent on the age and ability of your group. The students can either cut out and stick each habitat type to the map, or write the habitat type on the map.

Once habitats have been placed on the map, ask students to put the wild cats in their correct habitat, as well as their correct location on the map. Students may have to think about where else around the world you might find the same habitat types to put each wild cat species in the correct location. Students may be able to easily place some of the animals, but struggle with some of the less known wild cats. Ask students to research and find out where each wild cat lives, with older students researching which countries each animal is found in. Fact files for all wild cats are available to download in the learning resources section of The Big Cat Sanctuary's website.

ACTIVITY: Wild Cat Habitats

HABITAT TYPES:

RAINFOREST/ JUNGLE

SAVANNAH

MOUNTAIN

OCEAN

WETLAND

FOREST/ WOODLAND

MANGROVE FORESTS

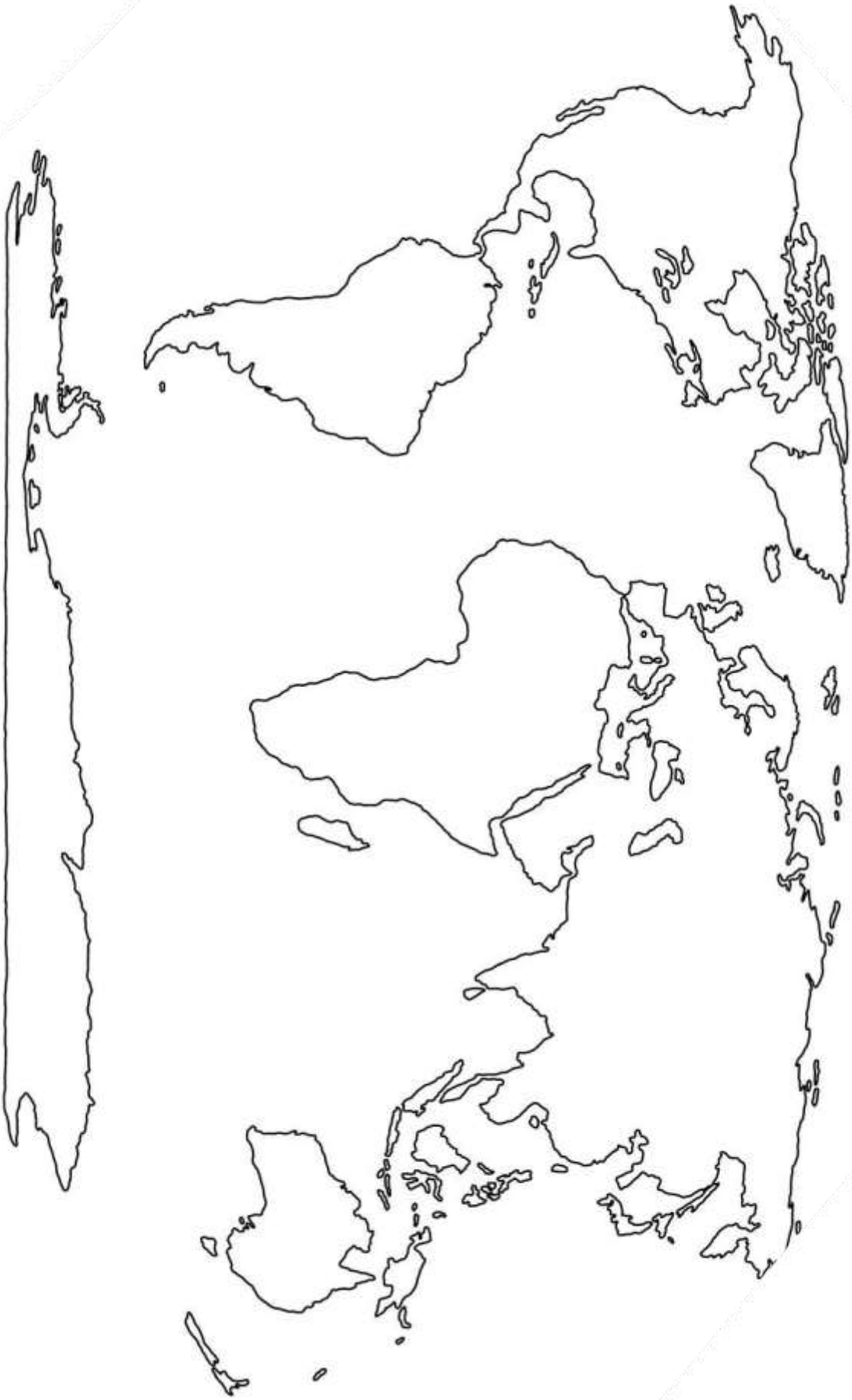
CITY

TUNDRA

WILD CAT SPECIES

SUMATRAN TIGER	LION	CHEETAH
AMUR LEOPARD	SNOW LEOPARD	PUMA
AMUR TIGER	JAGUAR	EURASIAN LYNX
SERVAL	PALLAS' CAT	RUSTY SPOTTED CAT
JUNGLE CAT	FISHING CAT	CARACAL

ACTIVITY: Wild Cat Habitats



WORLD MAP

LEARN: What is an endangered species?

An **endangered species** is a species which has been categorized as very likely to become extinct.

An **extinct** species is one that has completely died out. There are no more living animals of this species in captivity or in the wild.

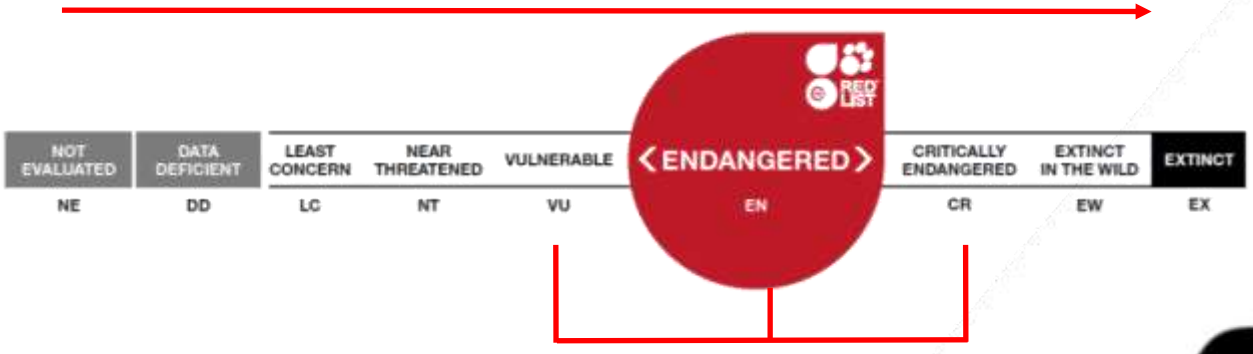
How do we know how endangered a species is?

Many species of plants and animals worldwide are endangered. It is difficult to know how endangered these species are, without proper records. The IUCN red list of threatened species is a list of plant and animal species and this list tells us how likely they are to become extinct, also know as their **conservation status.**

The IUCN (International Union for the Conservation of Nature) use their Red List criteria to see how likely a species is to become extinct. The species are then put into categories. There are nine categories in total, shown below. The conservation status of an animal is often showed on a scale, like the one at the bottom of the page.

CATEGORY	DEFINITION
NOT EVALUATED	This species has not been evaluated for an IUCN categorization yet.
DATA DEFICIENT	A lack of enough information to properly categorize into one of the groups below.
LEAST CONCERN	Species not presently facing any population or habitat declines e.g. Puma
NEAR THREATENED	A species is considered Near Threatened when it doesn't qualify as Critically Endangered, Endangered, or Vulnerable, but scientists believe it will reach one of those levels in the near future e.g. Jaguar
VULNERABLE	Species that meet at least 1of 5 Red List criteria. They're considered to be at high risk of human-caused extinction if conservationists don't intervene e.g. African Lion
ENDANGERED	Species at a very high risk of becoming extinct in the wild or extinct e.g.
CRITICALLY ENDANGERED	Species on the brink of becoming extinct or extinct in the wild e.g. Amur Leopard
EXTINCT IN THE WILD	Species that only survive in captivity, or outside their native range e.g. Spix's Macaw
EXTINCT	Extinct species no longer exist e.g. Tasmanian Tiger

INCREASING RISK OF EXTINCTION



THREATENED

ACTIVITY: How endangered are wild cats?

Can you match each wild cat from The Big Cat Sanctuary to its conservation status on the IUCN Red List? Draw a line to connect the pictures. Once you have matched up the wild cat with there conservation status research each species to see if you matched them up correctly! Remember that we have downloadable fact files available on our website in our educational resources section.

NOT EVALUATED
DATA DEFICIENT
LEAST CONCERN
NEAR THREATENED
VULNERABLE
ENDANGERED
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EXTINCT IN THE WILD
EXTINCT

CHEETAH

SNOW LEOPARD

TIGER

AFRICAN LION

PUMA

AMUR LEOPARD

JAGUAR

ACTIVITY: How endangered are wild cats?

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JUNGLE CAT

EURASIAN LYNX

PALLAS' CAT

FISHING CAT

SERVAL

CARACAL

RUSTY–SPOTTED CAT

LEARN: Why are wild cats endangered?

Globally, the main threats to wild cat populations are as a result of human activities. The percentage of wild cat populations, of which there are 41 globally, are in decline and 16 are considered vulnerable, endangered or critically endangered on the IUCN Red List of Threatened Species. The leading threats to wild cat populations are:

1. Habitat Loss

Wild cats are losing more of their habitat every day. Habitat is mainly disappearing due to human activity, and it is not only the loss of habitat that is an issue, but also the fragmentation of habitat into smaller areas. Deforestation is a leading threat to Tigers in India and Jaguars in the Amazon. Agricultural expansion is also a huge threat, including the explosion of palm oil plantations in Indonesia. Read more about habitat destruction on page 12.

2. Poaching

Many wild cat species are sought after for parts of their body, whether it be their skins, teeth or bones, as these body parts fetch a high price on the illegal wildlife market. Skins can be turned into fashion items, and bones ground down to be used in traditional medicine in the far east of Asia. We also see poaching of wild cats for bushmeat in some parts of the world, for example Jungle Cats in India. Sadly people across the world still also hunt many wild cat species in sport (for example Pumas in North America) or for trophy's (Lions in Africa).

3. Human– Wildlife Conflict

Big cats are opportunistic predators and will prey on livestock as an easy source of food, causing conflict issues between them and farmers who rely on their livestock as their primary source of income. Big cats are doing what comes naturally to them, and farmers are protecting their livelihoods, but this conflict is having a big impact on populations of big cats globally. Sadly this problem is worsening due to habitat loss and fragmentation, as big cats and farmers are being forced closer together and must often compete in an area for similar resources.

4. Global Warming

Sadly due to climate change, wild cats will need to adapt to changes in their habitat, in some cases these could be quite dramatic changes. Snow leopards are particularly vulnerable to global warming as increasing temperatures melts snow at higher altitudes, and it is expected that their percentage of suitable habitat will shrink dramatically in the next 20 years. Lions are affected by disease outbreaks which are worsened by droughts which will be increasingly common with global warming.

5. Prey Depletion

We do not only see the hunting of wild cats themselves, but also their main prey species. As human populations grow, resources are becoming more limited and both humans and wild cats compete for the same prey in some regions. Big cats in particular require a large amount of food to survive and as their prey declines, they must travel further to find food but also become more likely to hunt livestock.

ACTIVITY: 'Stop the illegal wildlife trade' Poster

The illegal wildlife trade is the sale of wild animals or plants that are protected by international trade law and is one of the leading threats to the future of wildlife. Across the world today there are over 35,000 species of wildlife protected by trade law. Despite this protection the illegal wildlife trade is now the fourth most profitable international crime after drugs, arms and human trafficking, worth an estimated $19 billion annually.

Below are some examples of the illegal wildlife trade:

- Wild animals being kept as pets
- Selling animal parts e.g. skins, ivory, horns, bones and teeth as trophy parts, fashion items or for the medicinal trade.
- Tropical timber harvesting– a significant amount is harvested illegally
- Over fishing– both unsustainable and illegal trade in many marine species is driving species such as Bluefin Tuna and South African Abalone towards extinction.

In this task we would like you to create a poster on the illegal wildlife trade. You will need to consider your target audience as well as where your poster is designed to be displayed (e.g. a school, airport, public arena or online) to ensure your message is correctly received. This task involves you doing your own research to find out the information for your poster. You may wish to focus your attention on a specific sector of the illegal wildlife trade or even an individual species to make your research easier. To help you get started with your research, look at www.traffic.org. You can choose to either:

- Create an educational poster to help make the general public more aware of the illegal wildlife trade.
- Create a poster with an aim to educate people who may contributing to the illegal wildlife trade.
- Create a poster for people who want to help stop the illegal wildlife trade but do not know how to do that.

In your poster you may ask people to:

- Be more aware of what is shared online– for example do not share videos encouraging wild animals as pets or support companies selling items made from threatened species.
- When abroad don't buy or bring back any animal or plant parts including shells & coral.
- Raise awareness of the illegal wildlife trade themselves.
- Report any UK wildlife crime or illegal wildlife trade to your local wildlife crime officer.

We would love to see some of your finished posters! If you want to show us your finished design, take a photo or scan your poster and send it to education@thebigcatsanctuary.org. GOOD LUCK!

LEARN: Habitat Destruction

Habitat destruction– a natural habitat is altered so significantly it can no longer support the species that live there.

Habitat destruction is a threat for all wild cat species, as well as many other species of animal and plant worldwide. There is some natural habitat loss, for example forest fires, however the percentage of habitat destruction we see worldwide today is because of humans.

Habitat fragmentation– when parts of a habitat are destroyed, leaving behind smaller unconnected areas.

Habitat fragmentation is a type of habitat destruction. Small unconnected areas of suitable habitat are left when parts of a habitat are destroyed it results in isolated populations of species. It may not always be the destruction of an area, sometimes we see habitat fragmentation caused by physical barriers, e.g. roads, dams and railway lines.

Deforestation- People cutting down trees in a large area.

Rainforests in particular have very high biodiversity (variety of species). Sadly in tropical rainforests we are seeing vast areas of rainforest chopped down, resulting in millions of animals losing their homes. Worldwide a football pitch size of forest is lost every 2 seconds.

There are four main reasons we see deforestation:

- Agriculture– clearing forest to make grazing pasture for livestock and grow crops
- Logging– illegal logging is particularly damaging to the environment
- Building of settlements, infrastructure and mines
- Climate change– can lead to the drying out of tropical forests, and more forest fires, having a huge impact on biodiversity in tropical forests particularly

LEARN: Palm Oil

What is Palm Oil?

Palm oil is an edible vegetable oil that comes from the fruits of oil palm trees, *Elaeis guineensis*. Oil palm trees are native to Africa, however were brought to South East Asia approximately 100 years ago as a ornamental tree crop. Two products can be produced from oil palm trees: crude palm oil (from the fleshy fruit) and palm kernel oil (made by crushing the kernel/stone in the centre of the fruit). 85% of all palm oil is grown in Indonesia and Malaysia, but in total it is estimated 44 countries globally produce palm oil.

What products contain Palm Oil?

Palm oil is in everything! Palm oil is a very cheap and versatile oil, with many different properties and functions, making it perfect to use in a variety of products. It is estimated to be in nearly 50% of all packaged products we find in our supermarkets. Some products which contain palm oil include toothpaste, chocolate, bread, crisps, deodorant, shampoo, make-up and dog food. It is also used in animal feed and as a biofuel across much of the world!

What is the problem with Palm Oil?

Because of the huge demand for palm oil, vast areas of rainforest are being cleared to make room for palm oil plantations. Such plantations are not able to support native wildlife, and as a result animal numbers in these areas are falling fast. 193 critically endangered, endangered and vulnerable species are impacted globally by the production of palm oil including the iconic Sumatran Tiger.

Why don't we just stop using Palm Oil?

The impacts of palm oil production present a huge conservation challenge, and the first instinct of many is to encourage a blanket boycott. It is however important to remember that there are some major benefits to using palm oil.

- Palm oil is extremely efficient and the highest-yielding vegetable crop, producing up to nine times more oil per crop than other types of edible vegetable oil. Palm oil supplies 35% of the world's vegetable oil on just 10% of the land allocated to oil crops. A switch to other crops will therefore result in the use of at least nine times as much land to produce the same yield as palm oil. A blanket boycott will shift environmental and social impacts of unsustainable palm oil to a different oil crop industry.

- A blanket boycott of palm oil will likely drive the price of palm oil down. We will likely then see an increase in demand, particularly in developing countries, where there is less interest in sustainability. The incentive to produce environmentally sustainable palm oil is then reduced.

- Millions of people work in the palm oil industry and it plays an important role in reducing poverty in producing countries. Stopping the production of palm oil would leave many people without jobs, and unable to support their families.

Sustainable Palm Oil & the RSPO

Sustainable palm oil is produced in a way which minimises negative environmental impacts, protecting habitats and species as well as benefiting local people. The most widely recognised certification scheme is the Roundtable on Sustainable Palm Oil (RSPO). Palm oil produced according to RSPO standards, as of 2018, is required to be deforestation-free. Manufacturers, retailers and traders all over the world have made bold commitments to removing deforestation from their supply chains. The RSPO have environmental standards, reducing the impacts palm oil has on the environment and biodiversity, and social standards, ensuring members are adhering to high standards of human rights. One example standard is producers of palm oil need to stop converting rainforest, peatland and other sensitive natural habitats to palm oil plantations. Yields should instead be increased on existing plantations, and expansion is limited to degraded land not classified as High Conservation Value or High Carbon Stock. Only 19% of palm oil produced is currently certified as sustainable by the RSPO.

ACTIVITY: Sustainable Shopping

Have a look at the logos below. You may recognise them as they are found on lots of items we buy from the shops every week! See if you have any of the items below at home. If you do look for one of the logos and if you find one, match the logo and item below with a line.

SOAP

ICE CREAM

BREAD

PENCILS

SMOOTHIES

BUTTER

TOILET ROLL

CHOCOLATE

TEA

COFFEE

CHOCOLATE SPREAD

BANANAS

ACTIVITY: Palm Oil Persuasions

The production of unsustainable palm oil is a leading threat for many species, including several wild cat species. The Sumatran Tigers leading threat is deforestation due to the production of palm oil, and sadly now less than 400 Sumatran Tigers remain in the wild. We need your help to stop the destruction of rainforest and encourage the use of sustainably sourced palm oil!

We would like you to write a letter to a local supermarket, shop, café or restaurant persuading them to sell or use products which contain sustainable palm oil only, and stop the use of products which contain unsustainable palm oil. In your letter you will need to explain what palm oil is, which products it is in, the problem with using unsustainable palm oil, and what you want them to change. You will need to do some of your own research to ensure that you're letter contains correct and up to date information. Below is a suggested structure for your letter to help you out.

Section	Questions to answer
Introduction	What is palm oil? Why is it used? Which products is it used in?
The problem with using unsustainable palm oil	Explain the impacts unsustainable palm oil production has on threatened species. Find facts and figures to back up your argument.
Boycotting palm oil	Explain in your letter why you are asking the target company to use sustainable palm oil, rather than boycott it.
Sustainable palm oil	What is sustainable palm oil? Why should we use it? How do we know which products contain sustainable palm oil?
Conclusion	Summarise what you want your target company to do to help.

TEACHERS

As this is a complex topic, which is still disputed by many, it is good to begin this task with an open conversation about palm oil, its costs and benefits and using sustainable palm oil instead of boycotting palm oil entirely. You may find that students in your class are already aware of the problems surrounding palm oil as this is a very topical subject. Both the RSPO website and WWF website are good places to start when researching all things palm oil!

LEARN: The Role of A Modern Zoo

Wild animals have been kept in captivity for thousands of years, often as symbols of power or religious significance. What we now recognise as the modern zoo developed in the early part of the 19th century. ZSL London Zoo is the oldest zoo in the UK, and the third oldest in the world. It opened its gates in 1828 and still runs today. When zoos first opened they served to display animals, entertain people and, in some cases, for the study of zoology.

From the mid-20th century good zoos have been finding ways to help conserve wild animals and their habitats.

Modern zoos now aim to fulfil four main roles:

- **Research**
- **Education**
- **Recreation**
- **Conservation**

Worldwide, associations exist to encourage best practice within zoological collections, encouraging and assisting member organisations to meet the four main roles of a modern zoo. The Big Cat Sanctuary is a member of The British and Irish Association of Zoos and Aquariums (BIAZA), who are members of both the European and World Association of Zoos and Aquariums. As a BIAZA member we aim to demonstrate our dedication to conserving the natural world through research and conservation programmes and educate and inspire our visitors to do the same.

Research

More than 1,400 research projects are supported by BIAZA members. BIAZA members actively support more than 800 field conservation projects. The Big Cat Sanctuary supports in situ projects including: Jaguar data collection in Costa Rica, Fishing Cat research in Sri Lanka and GPS collar monitoring of Lions in Kenya. The Big Cat Sanctuary supports ex situ projects including: understanding how different species of cats respond to different enrichment/people and identifying how best to track leopards in the wild.

Education

BIAZA members deliver formal education sessions for more than 1 million children and students. The education aims of zoos worldwide include: motivating people to change their habits, inspiring people to get involved with conservation and encouraging people to donate to conservation programmes.

Recreation

Zoos are still meant to be a fund ay out! 30 million people visit a BIAZA collection every year. In 2017, 5 of the top 20 most visited attractions in the UK were zoos.

Conservation

Animals in zoos act as ambassadors to help raise awareness and funds for conservation efforts for their species out in the wild. Financial contributions to conservation by BIAZA collections equates to approximately £24 million! The Big Cat Sanctuary donates approximately £50,000 yearly many conservation charities and projects worldwide.

LEARN: Captive Breeding Programmes

Most conservations would agree that animals are best conserved in their natural habitat, however, the increasing number of threats from human encroachment means that there is often not enough habitat left to support them. As a result the breeding and care of animals within a zoo environment may be one of the only ways these species will be saved. The populations of these threatened species in captivity act as an insurance policy. If a decision to bring an animal under captive management is left until the species is nearly extinct, it is often too late to save the species. Captive breeding programmes aim to maintain a healthy population of threatened species in captivity, acting as a back up population if wild populations fall too low.

Within EAZA there are currently two main breeding programmes:

EEP (European Endangered Species Programme)

This is an EAZA controlled breeding programme. Each EEP has a specialist coordinator, assisted by a species committee. Coordinators produce a species studbook, monitor the population status in captivity and make species management plans for the future. Breeding across EAZA zoos is based upon recommendations, ensuring a healthy gene pool of species as well as captive population management.

ESB (European Studbook)

This is also an EAZA breeding programme, however is less intensive than EEP's. There are studbook keepers for each ESB who collect all the data on births, deaths, transfers, etc from all EAZA zoos that keep the species in question. Computer software analyses populations. The ESB can be used to monitor species status in captivity, advise on moves and propose more rigid management of species if necessary.

Within both programmes, each year an annual report is produced for each species. This report will include data on current population, demographics, births, deaths, moves as well as breeding recommendations for the following year. Below is an example of a status and development table, which is created for each species managed in EAZA breeding programmes.

Institution	Status (01.01.2017)			Births			Did Not Survive (DNS)			Transfer EAZA in			Transfer EAZA out			Transfer Non-EAZA in			Transfer Non-EAZA out			Deaths			Status (31.12.2017)		
	M	F	U	M	F	U	M	F	U	M	F	U	M	F	U	M	F	U	M	F	U	M	F	U	M	F	U
Amsterdam, Netherlands	1	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0
Antwerp Zoo, Belgium	0	1	0																								
Attica Zoo, Greece	1	2	0																								
Barcelona Zoo, Spain	1	0	0																								
Beauval, France	1	1	0																								
Berlin Zoo, Germany	1	0	0																								
Bojnice Zoo, Slovakia	0	1	0																								
Bratislava Zoo, Slovakia	1	1	0																								
Cabarceno, Spain	0	1	0																								
Chester Zoo, Uk	1	1	0																								
Dortmund Zoo, Germany	1	1	0																								
Faruk Yalcin Zoo, Turkey	1	1	0																								

There are approximately 400 different species breeding as part of the EEP or ESB in EAZA collections. Breeding for reintroduction is a common aim amongst zoo collections to help critically endangered species in the wild. Success stories from captive breeding and reintroduction include: American Bison, Black-footed ferret, California Condor and the Przewalski's Horse.

The Big Cat Sanctuary is part of EEP's and has successfully bred a number of threatened species, including critically endangered Amur Leopards and Sumatran Tigers.

ACTIVITY: Jaguar Genetics

Here at The Big Cat Sanctuary we have a beautiful Jaguar breeding pair, who we are hoping will one day successfully breed. Our male Jaguar is black, but our female Jaguar is rosetted. Can you help the team work out how likely their cub is to be a black Jaguar?

There are two colour forms in Jaguars – yellow with black rosette spots (rosetted), and black with black rosette spots (melanistic).

The melanistic trait is the result of a dominant mutation.

Black phenotype = Homozygous dominant (BB) OR Heterozygous (Bb)

Spotted phenotype = Homozygous recessive (bb)

Recap of Keywords

Genes - Short sections of protein coding DNA

Mutations - Changes to DNA base pairs

Alleles - Different forms of the same gene

Dominant allele - Displays phenotype in heterozygous individuals

Recessive allele - Only expresses phenotype in homozygous recessive individuals

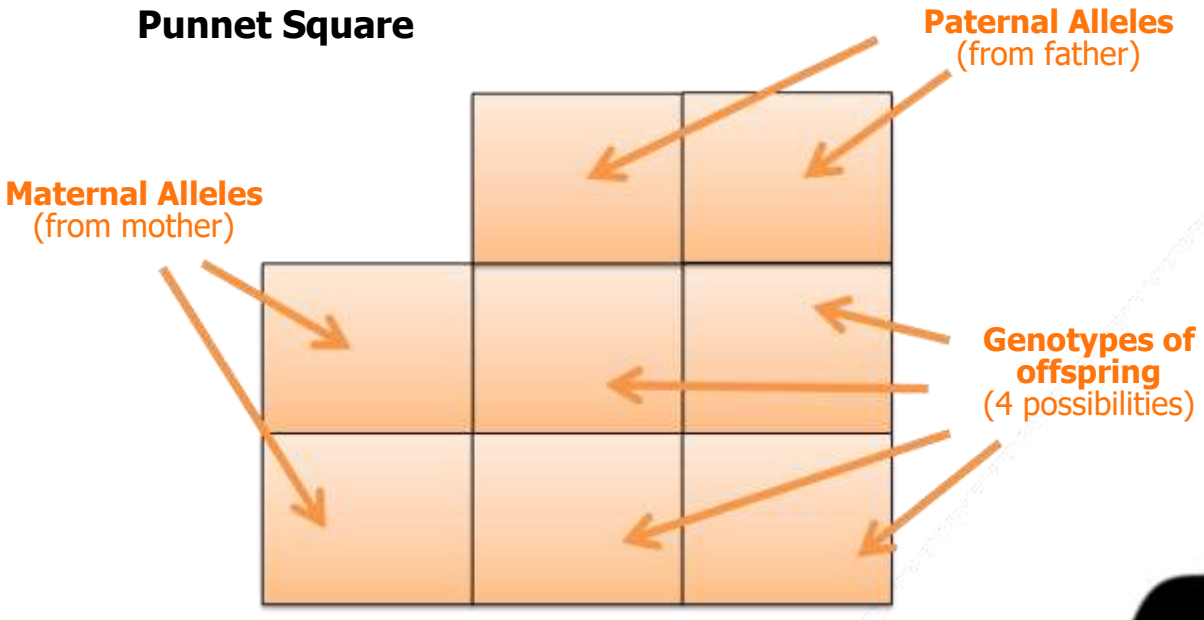
Homozygous - Two identical forms of a gene; one inherited from each parent

Heterozygous - Two different forms of a gene; one inherited from each parent

Genotype - The genetic makeup of an individual

Phenotype - The physical expression of the gene (e.g. coat colour)

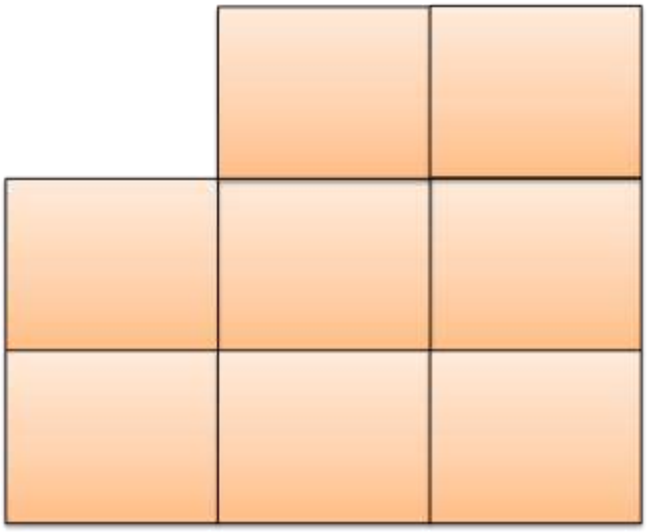
Punnet Square



ACTIVITY: Jaguar Genetics

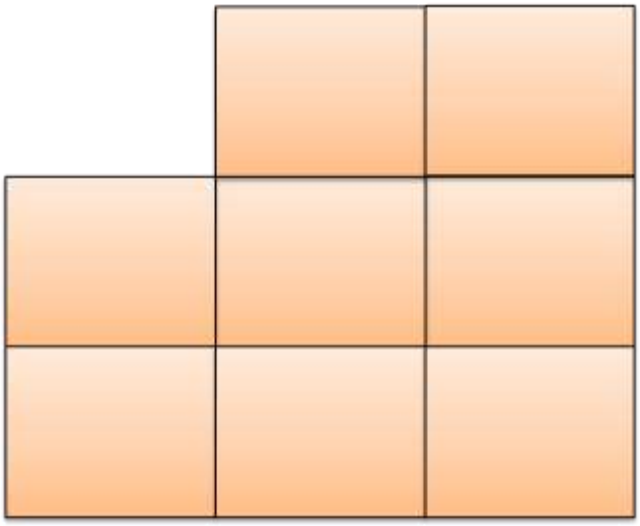
Using the punnet squares below, can you work out the probability that Neron and Keira's cub will be black. The answer will be different dependent on whether Neron is heterozygous or homozygous.

If Neron is heterozygous.



Probability the cub born is black: _____%

If Neron is homozygous.



Probability the cub born is black: _____%

Extension Activities

1) What causes melanism in Jaguars and Leopards?

2) Do we see the same mutation in both Jaguars and Leopards?

3) Do black Jaguars and Leopards survive in the wild? Why?

4) Has melanism been recorded in any other wild cat species?

5) Investigate leucism, the mutation which leads to white tigers and lions. Explain why we do not see these colourations in the wild (except for very small numbers of white lions) like with black jaguars and why they may not be considered for breeding programmes.

GROUP ACTIVITY: Zoo Debate

Debating is a fantastic way to understand the different opinions surrounding a controversial topic. By considering different opinions, individuals are in a better position to make an informed decision on the topic in question. The keeping of animals in captivity has been a topic of debate for generations. Zoos used to keep animals in captivity mainly for recreational purposes, however the modern zoo has many roles to fulfil including education, research and conservation. We want you to debate the following question:

'Zoos are necessary in conserving the worlds threatened species.'

There will be two sides to this debate: For and against. Team one will be arguing for the above statement, and team two will be against the statement.

Teachers

1. Split your class in two and nominate one group as for and one as against. You can split the class into smaller groups and hold smaller debates, rather than one large class debate.
2. Allow your class to research the topic gathering information, facts and figures in support of their position (see useful resources below).
3. Hold your debate– first asking team one (the pro side) to present their arguments for the statement. Next ask team two (the con side) to present their arguments against the statement.
4. Hold a five minute discussion period to allow groups to prepare responses to the initial arguments presented.
5. In the next section of the debate each team gets the opportunity to respond to the opposing teams arguments. First ask team two to rebuttal the arguments for the statement. Next ask team one to rebuttal the arguments against the statement.
6. The success behind using debates is not in winning and losing but rather how well teams prepared for and delivered their arguments and responded to the opposite point-of view.

7. Extension– ask your students to write an essay, discussing the above statement. Students can use pro and con arguments discussed in the debate, and should come to a conclusion of their own as to what extent they agree with the statement.

Useful Resources

When researching this topic, it is likely that you will find more information against this statement. To help you find information in support of the above statement we have included some links below. As a animal conservation charity, we believe good zoos are necessary in conserving the worlds threatened species, and work hard to ensure the public are aware of the work of good zoos.

ZSL (zoological society of London– conservation charity)- www.zsl.org/blogs/zsl-london-zoo/the-importance-of-zoos

BIAZA (The British and Irish Association of Zoos and Aquariums)- www.biaza.org.uk/conserve

Conservation scientist, James Borrell on why zoos are important- www.jamesborrell.com/8-reasons-that-zoos-are-critically-important-for-conservation/

LEARN: Enrichment

Environmental enrichment provides species appropriate challenges, opportunities and stimulation. This can be through dynamic environments, cognitive challenges and social opportunities. An enriched environment promotes a variety of natural behaviours, which animals find rewarding. There are three main ways enrichment helps captive animals:

- **Choice–** enrichment is about providing choices for animals so they are more in control of their environment.
- **Change**- some enrichment requires regular changes but some – such as simply providing a species-appropriate environment– can stay the same. A variety is very important to prevent negative behaviours.
- **Create–** enrichment increases the complexity of the environment in a way that is meaningful to the animal's needs and addresses species-specific needs.

Providing environmental enrichment leads to a more stimulated animal, and can help in reducing stereotypical behaviours, which are sometimes seen in captive animals. Stereotypical behaviours are abnormal, repetitive behaviour that serves no obvious function or purpose for the animal exhibiting it.

There are 5 main enrichment categories. With knowledge of enrichment types, and some imagination, there are thousands of ways in which the daily lives of captive animals can be improved! Each category is not mutually exclusive and some enrichment types may fall under multiple categories.

1. **Social**– the most obvious form of social enrichment is housing a species with other conspecifics, or other species they would naturally associate with in the wild. Social enrichment also includes social interactions with keepers and visitors, for example training sessions or experiences with the general public. Mirrors, toys and look-alikes can also act as social enrichment.
2. **Cognitive**– this is used to enhance an animal's mental stimulation. It may include new, novel objects, food items or strange scents introduced to the animals environment. Animals in captivity can also be mentally stimulated by puzzle feeders and training sessions.
3. **Physical Habitat**– the habitat of an animal, plays an important role in its welfare. The habitat must meet their physical requirements whilst also providing them with a positive environment to live in. Many factors can be considered when look at a captive animals physical habitat including: climbing structures, perches, different substrates, dens and nests, refuges and climate gradients.
4. **Sensory–** sensory enrichment aims to encompass any of the five scents: sight, sound, touch, smell and taste. Tactile enrichment may include different substrates or textured surfaces. Olfactory and taste enrichment includes the use of herbs, spices, perfumes, bedding, dung and scented food items. Animal vocalisations, novel sounds and noisemaking objects can be used for auditory enrichment. Finally visual enrichment includes the use of mirrors and moving objects.
5. **Food–** this is the most widely used type of enrichment, as animals require food to survive and are more likely to interact on this basis. Food enrichment often involves the presentation of an animals food in a different way, whether that be using a puzzle feeder, a scatter feed, or a pole feed. Food enrichment does also include the use of novel food items, for example giving pumpkins to tigers, or blood ice pops to lions.

ACTIVITY: What type of enrichment is this?

We provide our cats at The Big Cat Sanctuary with lots of different types of enrichment. In the images below can you identify what the enrichment in the enclosure is and what enrichment category it fits into?

Enrichment in image:_____

_____

_____

Enrichment type: _____

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Enrichment in image:_____

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Enrichment type: _____

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Enrichment in image:_____

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Enrichment type: _____

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ACTIVITY: What type of enrichment is this?

Enrichment in image:_____

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Enrichment type: _____

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Enrichment in image:_____

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Enrichment type: _____

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Enrichment in image:_____

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Enrichment type: _____

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ACTIVITY: Species Signs

Education is one of the main aims of a modern zoo. When building a new enclosure it is important to remember that the design and theming can be a important tool in educating the public about the species. One of the easiest way to educate visitors at a new enclosure is through signage. This is simply an information board, designed in a way that it grabs visitors attention, whilst providing them with information on a topic of your choice. Around The Big Cat Sanctuary we have lots of species signs, which educate visitors on the species in that enclosure. Below is an example of one of our Jaguar species sign.

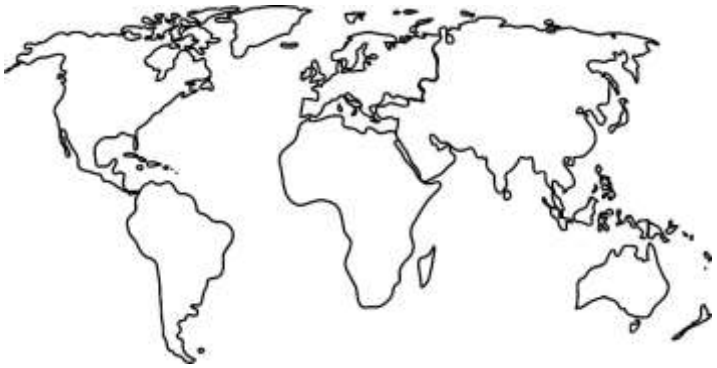
On the next page is a blank species sign template to help you design a sign of your own! Select your species and research its scientific name, geographical range, your favourite key facts and the main threats. You can then either draw a picture of your chosen species, or print and stick in an image of your choice. On the map shade in where your species is found. You will see a IUCN red list scale on the template. Research what this is and which category your species fits in to and circle.

If you have chosen a wild cat species for your sign and are struggling to find information when researching, remember that we have downloadable fact files available on our website in our educational resources section.

Species Name: _____

Scientific Name: _____

GEOGRAPHIC RANGE



PICTURE:

KEY FACTS:

MAIN THREATS:

IUCN RED LIST STATUS:

NOT EVALUATED	DATA DEFICIENT	LEAST CONCERN	NEAR THREATENED	VULNERABLE	ENDANGERED	CRITICALLY ENDANGERED	EXTINCT IN THE WILD	EXTINCT
NE	DD	LC	NT	VU	EN	CR	EW	EX

DESIGN A WILD CAT ENCLOSURE!

In the box on the next page we want you to design a brand new enclosure for a wild cat species of your choice. There is no set budget for this project, so be as creative as you can! You can use colour and labels to bring your designs to life and explain individual features. We can't wait to see your designs, GOOD LUCK!

We like to make sure all of our enclosures at The Big Cat Sanctuary are species specific, meaning they are tailored to each individual wild cat and have features that replicate that species' natural habitat in the wild. All the needs of your wild cat must be considered when designing your enclosure such as their behaviour, natural habitat, feeding and activity. Consider what shelter you will provide, as well as extra features and materials you will include e.g. water, rocks and climbing features. It is very important that your animal remains mentally stimulated, so you could also include enrichment items in the enclosure to encourage natural behaviours e.g. feed poles.

Remember this is a zoo enclosure so another thing we must consider is our visitors! You need to think how you will provide your wild cats with enough privacy, whilst also providing your visitors with fantastic opportunities to view them, whether that be using large windows or small, hidden, viewing areas for more secretive species. Another very important part of enclosure design is making sure the animal doesn't escape both for their own safety and that of your visitors! Let us know in the section below how you will make sure you're animal can't escape.

DESCRIBE IN MORE DETAIL YOUR FAVOURITE FEATURES IN THE ENCLOSURE: _____

_____

_____

_____

_____

_____

_____

EXPLAIN HOW YOU WILL KEEP YOUR VISITORS SAFE: _____

_____

DRAW YOUR WILD CAT ENCLOSURE HERE: