STUDENT INFORMATION SHEET

For every species that is alive today, perhaps a thousand have lived previously and become extinct. Extinction is a natural part of the evolutionary process. Fossil records show that extinction is the norm and that individual species normally survive for about a million years before they are replaced or have evolved into another form (Wilson, 1992). Periodically however, major changes in the conditions on Earth have caused the collapse of living systems, and large percentages of species have become extinct. **These species will never return**. It takes millions of years for life forms to diversify again.

Some scientists suggest that there is a cycle of mass extinction, with a major die off every 26 million years or so. Although unsure of the total number, there is a general agreement over the existence of 6 major extinction events. According to scientists, one of the causes for the occurrence of mass extinction may have been due to asteroids crashing into the Earth, which would have resulted in a large amount of dust being scattered into the atmosphere, blocking out the sun. The collision may have even triggered volcanic activity. Another cause of mass extinction has been due to climatic changes and pressure of competition from other species.

Our present problem is quite pressing and this urgency is aptly noted by Primack (1993), who states that both scientists and the general public have realized that we are living in a time of unprecedented mass extinction. Around the globe biological communities that took million of years to develop are being devastated by human actions. Unless something is done to reverse this trend, the wonderful species that symbolize the essence of wildlife, such as elephants, tigers and grizzly bears will no longer be found in the wild. Thousands, possibly even millions, of less conspicuous plant and invertebrate species will join them in extinction unless their habitats and populations are protected - and their loss may prove even more devastating on the planet and its human inhabitants.

CATEGORIES

Listed below are the symbols and the categories that tell the present status of a particular species. This system was set up by the International Union for the Conservation of Nature (IUCN).

SYMBOL	STATUS
EX	Extinct. A species that no longer exists.
	Extirpated. The complete removal of a species from an area, usually a specified geographical area. **
EW	Extinct in the Wild. Species remain alive only in captivity or in other human controlled situations.
CR	Critically endangered. Species is facing an extremely high risk of extinction in the wild in the immediate future.
EN	Endangered. Species whose numbers are so low, or whose habitat has been so badly destroyed, that they will become extinct if nothing is done.
VU	Vulnerable. Species that are quite numerous, but are under great threat.
LR	Lower Risk. Species has been evaluated, but does not satisfy the criteria for any of the categories Critically Endangered, Endangered or Vulnerable.
DD	Data deficient. Species where there is inadequate information to make a direct, or indirect, assessment of its risk of extinction based on its distribution and/or population status.
NE	Not Evaluated. Species has not yet been assessed against the criteria.

** For example, the Black-footed ferret is a species that no longer exists in the wild in Canada, but occurs elsewhere.

ZOO ACTIVITIES 1, 2, 3 AND 4

GENERAL INFORMATION TO BE GATHERED DURING YOUR TRAVELS
(RECORD ALL DATA in the data record sheets.

1) You will need to identify animals that are threatened.

- Locate the symbol that identifies Vanishing Species and draw it in your journal.
- What are Vanishing species?
- Locate the symbol that identifies a species that has been selected for the Species Survival Plan (SSP) and draw it in your journal.
- What is the aim of the Species Survival Plan (SSP) and how is this aim achieved?

*** Record in Data Record Sheet 1**

2. Obtain information (see Data Sheet 2) on TWO species from EACH of the two geographical areas visited, which have been identified as Vanishing species.
Ensure that you and your colleagues DO NOT research the same species.

*** Record in Data Record Sheet 2**

3. Do these conservation procedures and strategies in practice actually help prevent the animal from becoming extinct? Some individuals think that these last-ditch attempts are futile since they cost money and labour and will certainly end in failure. Identify one species that you have encountered during you travels that represents a Conservation Success Story to prove to these individuals and the public that conservation in practice works.

- identify the species (give both the scientific and common name)
- list factors that contributed to its becoming endangered
- give at least two practices that resulted in its recovery.
- provide one additional piece of relevant information

*** Record in Data Sheet 3**

4. Before you can suggest conservation procedures that need to be put in place to assist in the recovery of a species, you must first identify the factors that contribute towards the endangerment or eventual extinction of the species. Locate at least 2 species and identify the causes for their threatened state. Ensure that your colleagues DO NOT list the same species as yourself; so all together as a research team you would have investigated at least 6 different species.

*** Record in Data Sheet 4**

5. Choose one threatened species of special interest to you that is located in your area of research. Observe that animal quietly for a few minutes.

- Imagine that you are that animal; that you have experienced everything that that animal has been through.
- Imagine that for one day you were given the gift to communicate with humans.
- What would you say to us? What would you want us to know about you?
- Write these thoughts down.

*** Record in Sheet 5.** This information will be needed for your post activity

Data Record Sheet 1. Vanishing Species and the Species Survival Plan (SSP).

VANISHING SPECIES SYMBOL	INFORMATION GATHERED ON VANISHING SPECIES
SPECIES SURVIVAL PLAN SYMBOL	INFORMATION GATHERED ON THE SPECIES SURVIVAL PLAN (SSP)

Data Record Sheet 2.

Common name/ Scientific Name		
Geographical Area or range		
Habitat		
Diet		
Natural enemies		
Reasons for decline		
Procedures in place for recovery		
Suggestions for improving status of the species		

Data Record Sheet 3. Conservation Success Story

Species (Common/ Scientific Name)	
Factors that contributed to its becoming endangered	
Conservation practices that resulted in its recovery	

Data Record Sheet 4: Reasons for Endangerment.

Animal	Mandrill				
Status					
Causes of endangerment:					
1. Bush Meat	✓				
2.					
3.					
4. Habitat destruction	✓				
5.					
6.					
7. Use in labs					
8.					
9.					
10. Killed as Pest	✓				

Record Sheet 5

Your thoughts and observations:

Life as a ……

QUESTIONS ON SPECIFIC GEOGRAPHIC AREAS

ACTIVITY SHEET 1 – Africa

Role: Eminent National Geographic Explorers and Researchers.

Assignment: National Geographic has decided to dedicate an issue dealing entirely with the plight of endangered species on our planet. The issue will be entitled "Extinct is Forever". As Eminent National Geographic Conservation Biologists, two colleagues and yourself have been given the task to travel throughout various parts of the world (all expenses paid, of course!), to obtain and present information on threatened species; specifically on their present status and the steps being taken to remediate their situation. As experts in this area, your suggestions and insights with respect to improvements to existing conservation practices and strategies already in place will be much appreciated.

Since your assignment may put you in danger at times; encountering wild animals or even worse, poachers, it is important that you diligently record all your observations and suggestions in your scientific journal. Together with your two colleagues, you will visit one specified geographical areas (the African Rainforests) and one other, of your choice, for the collecting of your data to assist with your research.

IMPORTANT: Remember to keep your journal with you at all times and record ALL observations.

ITINERARY AND ASSIGNMENTS.

Your journey will take you to the African Continent and after conferring with colleagues, you will also decide on ONE other geographical area to visit.
Since most of the research material will be obtained in Africa, it is advisable that that be your last stop.
You will visit one of the following geographical areas:
i) Americas OR
ii) Australasia OR
iii) Indomalaya
AND you must visit:
i) the African Rainforest Pavilion (for extra information visit the Dja River Research Station in the Gorilla Rainforest pavilion)
ii) the African Savanna exhibits (if the weather permits venturing into the open savanna)

SPECIFIC research to be obtained during your travels to Africa

The Editors at National Geographic have mentioned that they are going to include an entire article in the "Extinct is Forever" issue dedicated to the Gorilla. Working with your two research colleagues, ensure that the following specific information on the Gorillas are compiled (and any other relevant data):

1. the 3 sub-species, their location and number in existence

2. reason for their endangerment

3. ways by which Gorilla populations in the wild can be improved.

4. The habitat of these endangered animals plays a tremendous role in the survival of the species. Concentrating on the rainforests, as you visit the two geographical areas, research and compile data using the following guidelines: Identify the four different types of rainforests (see Dja Research Station)

5. Identify at least two animals from each of the four types of rainforests that are endangered.

6. Why do rainforests have such a rich diversity of life?

7. Why is it necessary that we preserve our rainforests?

8. Suggest ways by which our rainforests can be protected.

(Share the information you have gathered with your colleagues in your group)

This was the last stop on your travels before you return with your research data to National Geographic headquarters.
Return to your base camp at the Dja Research Station to rest and to confer with your colleagues.

- **Ensure data compiled is shared and your field journal and that of your colleagues are fully updated.**
- **Ensure that all of information needed for the issue has been obtained.**

ACTIVITY SHEET 2 - The Americas

Role: Field Ecologists involved in making a wildlife film

Assignment: As a recognised Field Ecologist you and two other colleagues have been invited to accompany Sir David Attenborough and his crew to obtain research material necessary for the making of a documentary film tentatively entitled: "Conservation in Action". This documentary is to deal with the situation facing species today concerning the possibility of extinction.

You must visit the Americas:
i) the Americas Pavilion
ii) the Americas Outdoor Exhibits (if the weather permits venturing into the open country)
and ONE of the following geographical areas:
i) Africa OR
ii) Australasia OR
iii) IndoMalayas

SPECIFIC research to be obtained during your travels to the Americas

The producers of the documentary are interested in dedicating a segment sub-titled: "The Black Footed Ferret- A Success Story?" that delves into the history and present status of the black-footed ferret.
Research the status of the black-footed ferret

1. Where were the black-footed ferrets originally found?

2. What term describes the extinction of the black-footed ferret in Canada?

3. What were the two reasons for the black-footed ferret becoming threatened?

4. What conservation procedures were put in place to prevent the extinction of the black-footed ferret?

5. What factor/s must be considered before the black-footed ferret can be re-introduced to the wild?

6. Would you consider this to be a Conservation Success Story? Give reasons to support your answer.

ACTIVITY SHEET 3 - The IndoMalayas

Role: International Anti-Poaching Patrol Team

Assignment: You are the head of an International Anti-Poaching Patrol Team working with the IFAW (International Fund for Animal Welfare). You have been asked to investigate the illegal poaching of animals. You will travel with two of your colleagues to obtain information on this situation and make recommendations for improvement of the situation. Since your assignment is a dangerous one, it is essential that you record ALL observations, findings and recommendations in your journal. Always keep together and be careful!

You must visit Indo Malaya
i) the Indo Malayan Pavilion
ii) the Malayan Woods Pavilion (if the weather permits venturing into the jungle) and ONE of the following geographical areas:
i) Africa OR
ii) Australasia OR
iii) Americas

SPECIFIC research to be obtained during your travels to the Indo Malaya

The rhinoceros species in Indo Malaya are identified as endangered.

1. Name the three species of rhinoceros found in this area?

2. Which have you found to be the most endangered of them all and why?

3. What have you found were the causes for the rhinoceros becoming in danger of becoming extinct?

4. What are some of the conservation strategies already in place?

5. What other strategies can you and your colleagues suggest that would assist in the recovery program?

ACTIVITY SHEET 4 – Australasia

Role: Conservation Biologists conducting research for CITES (Convention on the International Trade on Endangered Species)

Assignment: As leading scientists in your field of conservation biology, you and two other colleagues have been requested by CITES to investigate the effect of the illegal trade of certain species, which has resulted in a drastic decline in their population.

Together with two other conservation biologists you are to investigate the species that are being exploited, reasons as to why they are being exploited and suggestions as to how these illegal practices can be curtailed.

It is important that you keep your scientific journal with you at all times and record all observations. The information you have gathered will be necessary for a presentation you will be required to make at an international conference on the illegal trading of endangered species.

You must visit Australasia:
i) the Australasia Pavilion and ONE of the following geographical areas:
i) Africa OR
ii) the IndoMalayas OR
iii) the Americas

SPECIFIC research to be obtained during your travels to the Indomalaya

One of the main subjects to be dealt with at the Conference is the problem of the illegal pet trade. This has resulted in a drastic decline in the populations of certain species. It will be necessary for you to gather as much information as possible on species that are being affected by the illegal pet trade.

You will investigate the sea horse as a case study.

1. What is the present status of the sea horse?

2. What were the contributing factors that resulted in the sea horse reaching this status?

3. What strategies have been put in place to encourage the recovery of these animals?

4. List two other animals that you know of that have become threatened due to the high demand for them as pets. Suggest additional strategies that can be put in place to assist in the recovery of these animals.