ONE EARTH

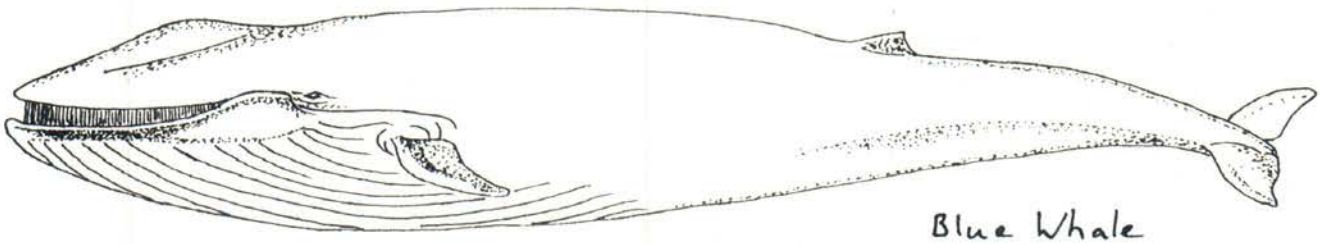
A TEACHERS' GUIDE TO CONSERVATION.

DJ Cox '89

Reproduced on recycled paper.

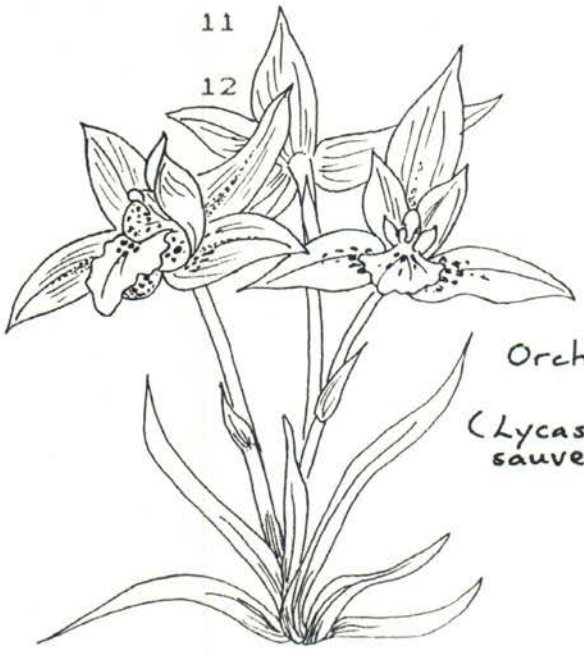
INTRODUCTION

This pack aims to aid teachers from junior to GCSE level, youth leaders and others concerned with global and regional environmental issues.



Blue Whale

Contents.



Orchid

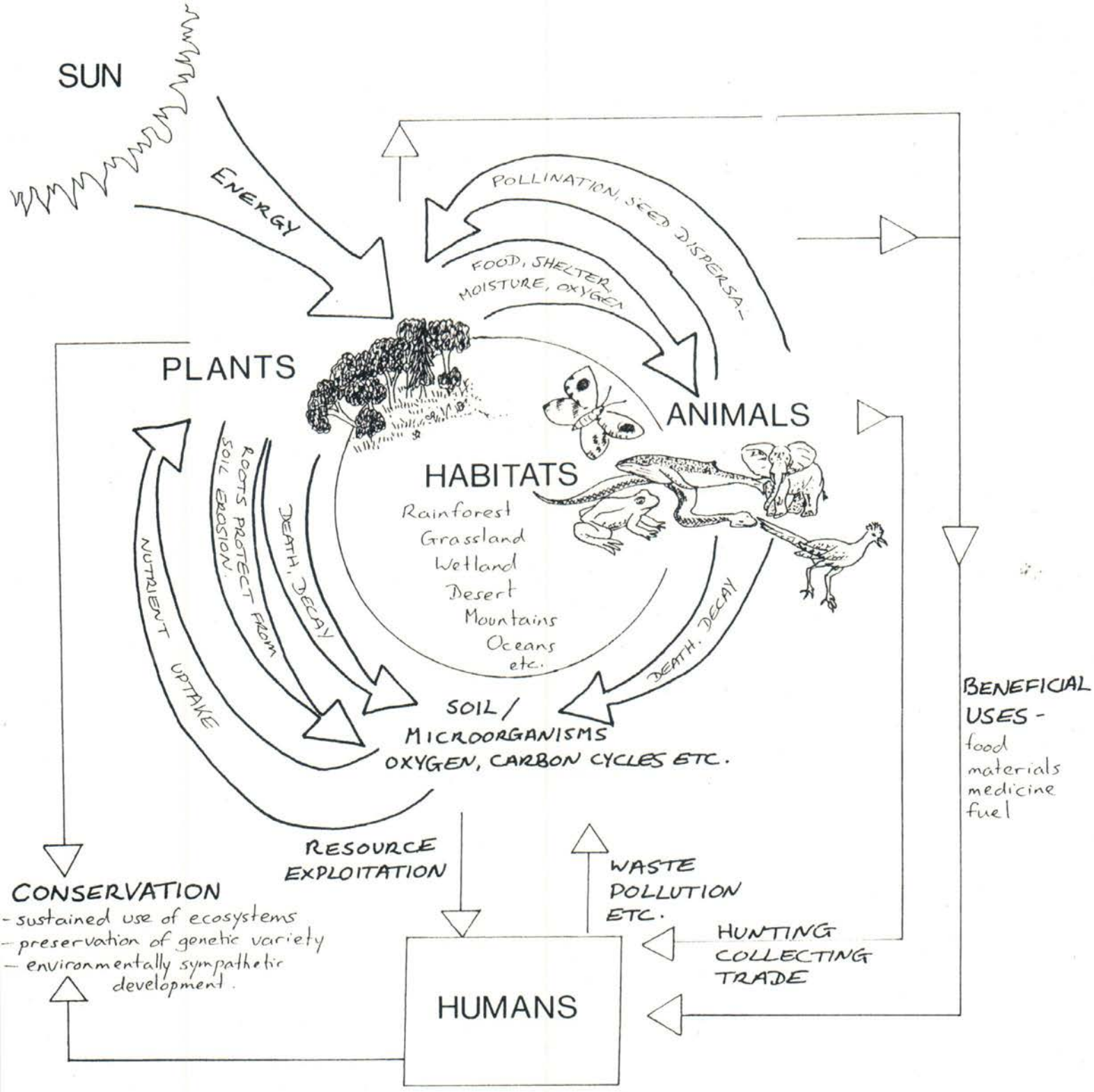
(Lycaste sauveolens)

Giant Panda

OASIS IN SPACE

Life is precious. Earth is the only planet, as far as we know, capable of supporting life.
The Earth is a precious thing.

Energy from the Sun fuels Earths life forms, which are all interdependent on each other forming complex webs of life:

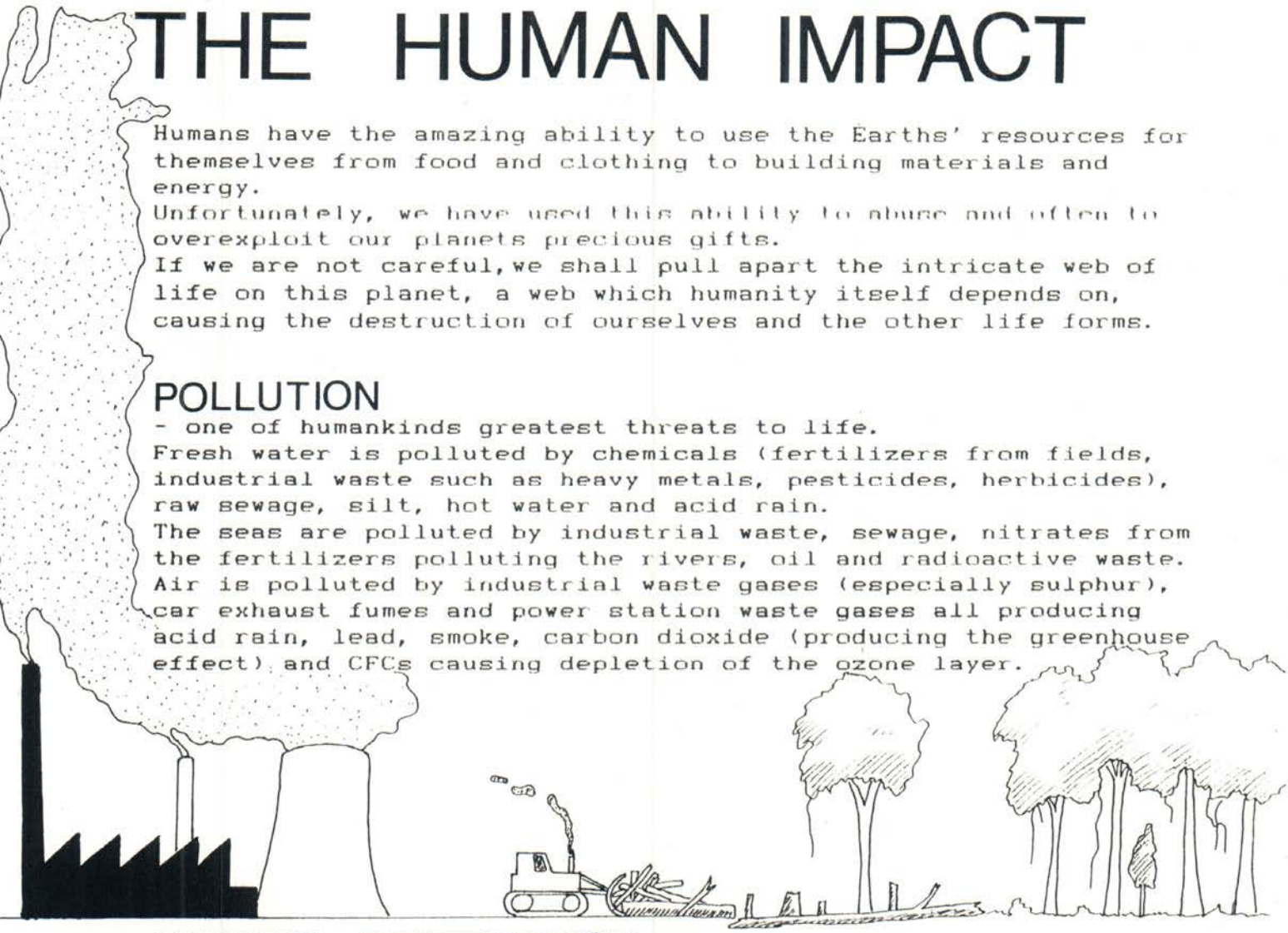


THE HUMAN IMPACT

Humans have the amazing ability to use the Earths' resources for themselves from food and clothing to building materials and energy.
Unfortunately, we have used this ability to abuse and often to overexploit our planets precious gifts.
If we are not careful, we shall pull apart the intricate web of life on this planet, a web which humanity itself depends on, causing the destruction of ourselves and the other life forms.

POLLUTION

- one of humankinds greatest threats to life.
Fresh water is polluted by chemicals (fertilizers from fields, industrial waste such as heavy metals, pesticides, herbicides), raw sewage, silt, hot water and acid rain.
The seas are polluted by industrial waste, sewage, nitrates from the fertilizers polluting the rivers, oil and radioactive waste.
Air is polluted by industrial waste gases (especially sulphur), car exhaust fumes and power station waste gases all producing acid rain, lead, smoke, carbon dioxide (producing the greenhouse effect) and CFCs causing depletion of the ozone layer.



HABITAT DESTRUCTION

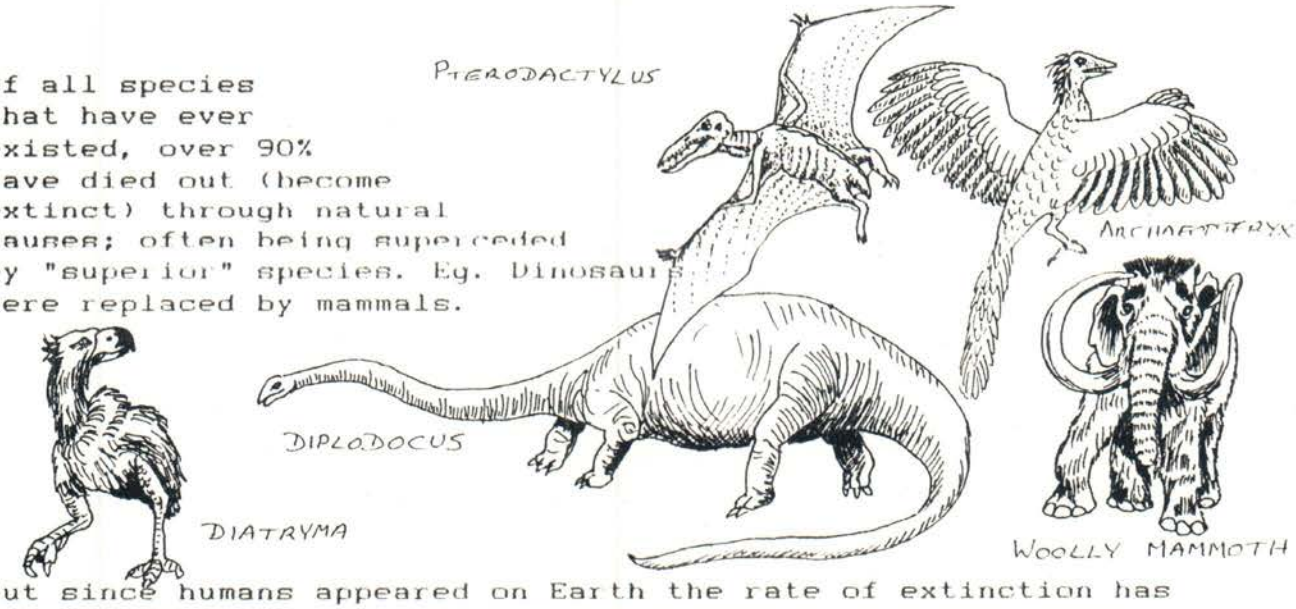
Tropical rainforests are felled for agriculture, timber, fuel, buildings, roads etc. at 20 million ha/year (or 35 football pitches per minute).
An area of forest the size of Britain is felled each year to provide paper alone.
Wetlands are destroyed by drainage and channeling, reclamation for agriculture, building, industry and by water stortage (dams).
Coral reefs are threatened by destruction for building materials, overfishing and collection for aquaria.
Grasslands are threatened by overgrazing.
Coniferous forests are threatened by acid rain.

GENETIC EROSION and destruction of diversity.

By creating large crops of just one variety of plant we have lost the genetics of other related species which may prove of great importance to disease reistance.
Egs. 1840's Irish Potato Blight - 2 million people died.
1942 Rice crops destroyed - millions of Bengalis died.
1946 U.S. oat crop devastated by fungus epidemic.
1970 Maize fungus threatened 80% of U.S. corn hectarage.
All of these happened simply because all the plants where genetically identical, with no resistance to a certain disease.

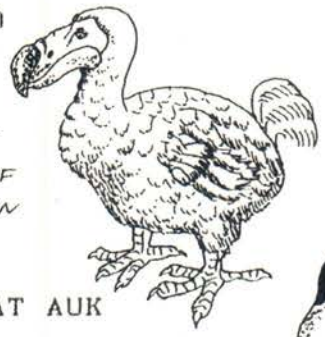
EXTINCTION

Of all species that have ever existed, over 90% have died out (become extinct) through natural causes; often being superceded by "superior" species. Eg. Dinosaurs were replaced by mammals.



But since humans appeared on Earth the rate of extinction has started to soar. This century one species a year has become extinct through the actions of humankind.

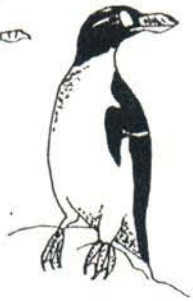
DODO



FLIGHTLESS RELATIVE OF THE PIGEON

Discovered in 1599. Extinct c.1680. Slaughtered by sailors for food and sport, killed by introduced dogs, cats and rats to its island home. When the Dodo disappeared, at least one tree species reliant on the Dodo to help its seeds germinate, slid into extinction.

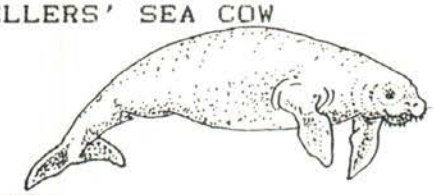
GREAT AUK



EUROPEAN, FLIGHTLESS SEA BIRD. RELATED TO PUFFINS.

Extinct c. 1844. Another flightless bird - killed for its flesh, eggs and feathers. The last birds were killed on Eldey Island.

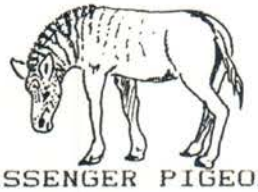
STELLERS' SEA COW



ONCE FOUND IN THE BERING SEA. SLAUGHTERED TO EXTINCTION ONLY 27 YEARS AFTER BEING DISCOVERED.

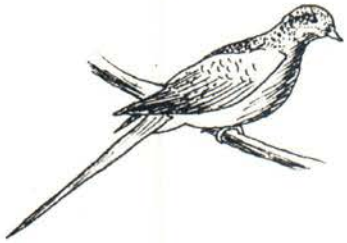
Extinct c. 1767, killed for food and fuel (oil).

QUAGGA



Extinct c. 1883. A type of zebra - hunted for food & hides, their small range led towards their extinction. Last known Quagga died in Amsterdam Zoo in 1883.

PASSENGER PIGEON



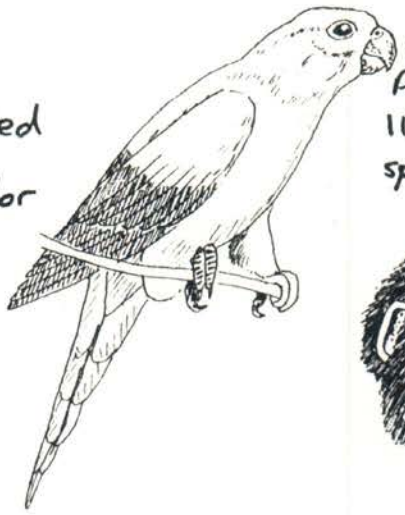
Once lived in massive flocks of millions in N. America. Killed by settlers for food & sport. Last known pigeon, Martha, died in 1914 at Cincinnati Zoo.

ENDANGERED ANIMALS

Today more animals than ever are on the brink of extinction, mostly due to the activities of humans.
There are up to 10 million species of animal on this planet, we know about 1 million of them, but many will die out without ever being discovered or studied to see if they have any potential use to mankind.
We need animals for: food, materials (egs. wool, silk), a source of medicines, crop pollinators, predators of crop pests.
Plants need animals for : pollination (Bees, butterflies, flies, moths, birds, bats), seed dispersal, fertilizers (waste products)

PARROTS

Many are endangered due to habitat destruction and/or collection for the pet trade.

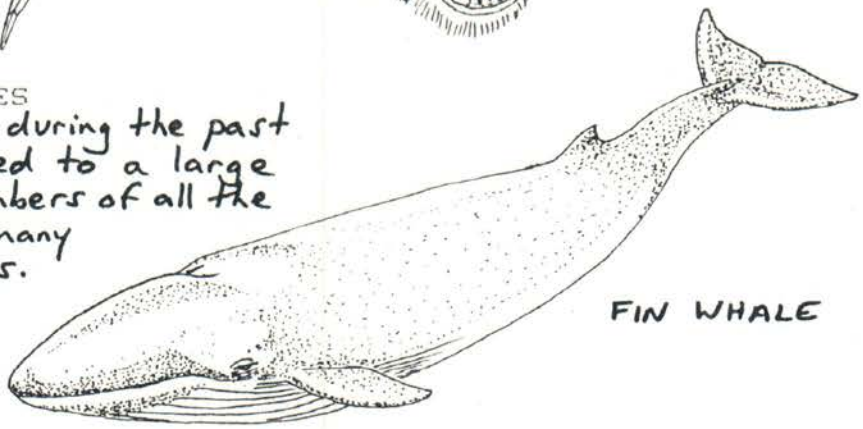


CHIMPANZEES

Are listed as vulnerable in the IUCN categories of threatened species. They are likely to become more endangered as more and more of their forest home is destroyed for agriculture.

WHALES

Overhunting, mainly during the past few decades has led to a large reduction in the numbers of all the larger whales, and many of the smaller species.



FIN WHALE

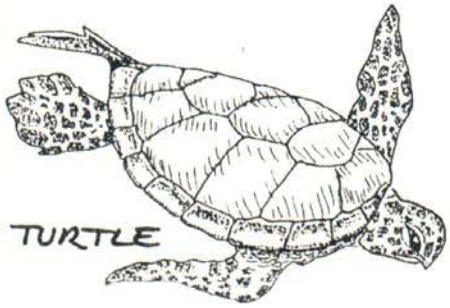
SPOTTED CATS

CLOUDED LEOPARD

Many are endangered, some to the verge of extinction, by hunting for their skins to make coats etc. for affluent people.
Habitat destruction is also contributing to decline in numbers.

SEA TURTLES

Endangered due to overhunting and over-collection of eggs from breeding beeches.



GREEN TURTLE

MORE ENDANGERED ANIMALS

RODRIGUEZ FRUIT BAT

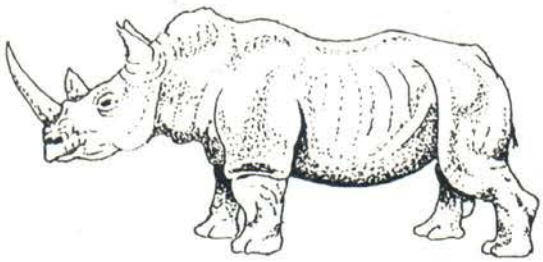
Deforestation of Rodrigues Island in the Indian Ocean has led to a fall in the population to only a few hundred; and with the addition of cyclones frequently hitting the island, these bats are seriously threatened.

GORILLA

All species are vulnerable due to habitat loss. The mountain gorilla especially so - its wild population is now less than 400.

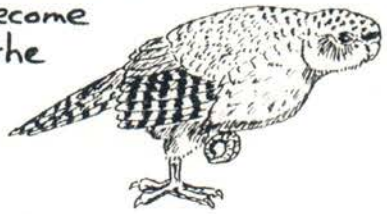
RHINOCEROS

Of the 5 rhino species two are vulnerable and three are endangered. Many Asian countries prize rhino horn as an aphrodisiac and a medicinal agent (but there are no pharmacological basis for these uses), and in N. Yemen the horns are used to make dagger handles as a status symbol.



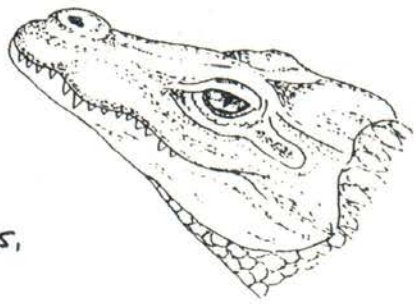
KAKAPO

This flightless New Zealand parrot has become rare due to the introduction of rats and stoats to its island home.



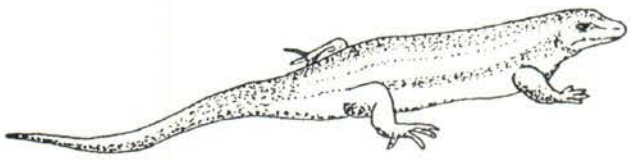
BLACK CAIMAN

As with most other crocodilians, their numbers have declined drastically in the wild due to hunting for its skin to make shoes, bags, etc.



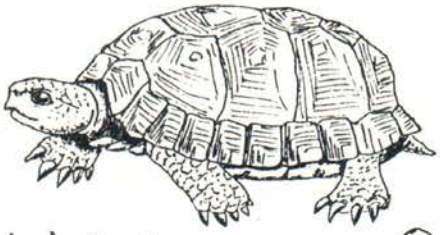
ROUND ISLAND SKINK

Endemic to Round Island in the Indian Ocean. Face extinction due to the introduction of goats and cats which have extensively damaged its island home.



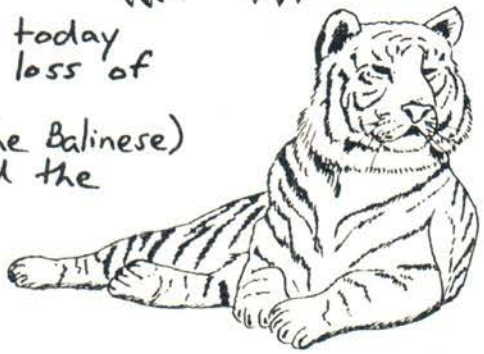
MEDITERRANEAN SPUR-THIGHED TORTOISE

Have become increasingly rare due to collection for the pet trade.



TIGER

Endangered due to hunting for its skin, but today the main reason for declining numbers is loss of habitat for agricultural purposes.
Of the eight subspecies of tiger one (the Balinese) is extinct and two (the Chinese and the Caspian) are beleived to be extinct also.



ENDANGERED PLANTS

It's not just animals that are threatened with extinction, some 25,000 species of plants (10% of all flowering plants) are in serious trouble.
Plants are essential to us, and other animals. We need them for -

FOOD - they take the Suns' energy, and through photosynthesis create protiens, fats and carbohydrates. Plants are the Earths primary food source.

MEDICINE - we have discovered, and still are discovering, life - saving medicines made by plants including curare, diosgenin (from the Mexican Yam, and used in contraceptive pills), vincristine and vinblastine (from the Rosy Periwinkle, used in treating leukemia), strychnine (from the Snakewood tree, used to treat heart disorder until the last century), quinine (from the family of Cinchona evergreen shrubs, an important anti-malaria drug, stropanthin (used in some cardiac and ciculatory disorders).

TIMBER - for building materials, to make paper and furniture.

FUEL - including fuelwood, charcoal, alcohol and methane.

MATERIALS- egs. rattan, cotton, jute, kapok and bamboo.

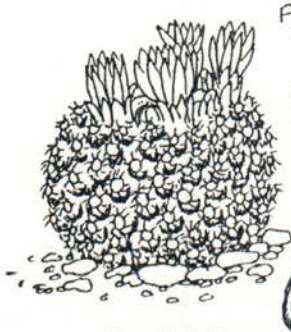
OILS - for cooking and fuel, for perfumes, flavourings and colourings, gums and resins.

Animals need plants for :

Oxygen, food, shelter, moisture (especially desert dwelling species) and concealment.

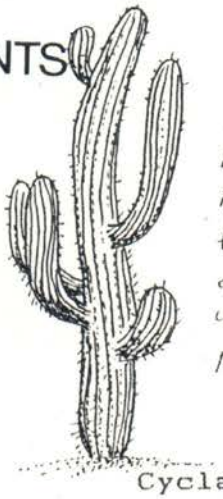
SOME ENDANGERED PLANTS

Many Cacti



Pediocactus bradyi.

Collected illegally from the wild.



Saguaro cactus. Endangered through increase of wood rats feeding on them, collecting and abuse by people using them for target practice.

Orchids

Not just tropical orchids, even British species are threatened by habitat loss and illegal collection from the wild.

Lady's Slipper Orchid

Cyclamen

Illegally collected from the wild.

ZOOS & CONSERVATION

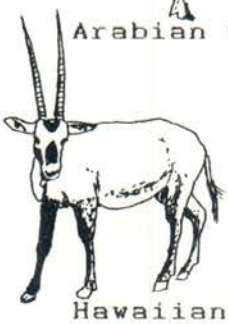
Good zoos play an important role in the conservation of animal species through :
Captive breeding,
Education and
Research.

CAPTIVE BREEDING has "saved" some species from extinction and will probably save more in the future. Let us hope that one day there will be no need for zoos to save animals from extinction.

Pere Davids' Deer.

Wiped out in their native China, when the last herd belonging to the Emperor was slaughtered for food by the starving people during the revolution. Captive herds in Europe formed the only surviving members, which have bred successfully thus ensuring the survival of this deer.

Arabian Oryx.



Hunted to extinction in their native desert countries eg. Yemen and Saudi Arabia by Western workers and Arabs for sport. From small captive herds around America and Europe larger herds were built up, eventually enabling a small herd to be carefully reintroduced to the Jordan Wildlife Reserve.

Hawaiian Goose.

Down to less then 50 wild geese in the 1950s, a small group was taken to the Wildfowl Trust in Slimbridge,Gloucester where a captive breeding programme began. This led to many more geese and reintroduction to Hawaii. Today there are more than 2,000 in their natural habitat.

Golden Lion Tamarin.

Less than 300 left in the wild today. An international captive breeding programme has led to over 500 in European and North American zoos, and to the reintroduction of family groups to a wildlife reserve near Rio de Janiero, Brazil.

EDUCATION - as zoos are the places where most people have the opportunity to encounter wild animals from other countries, they are an excellent educational resource. Zoos offer high standards of education to all age groups and abilities and a wide range of interpretive programmes for all visitors.

RESEARCH - improves our knowledge of animals so that we can improve the standards of their husbandry, captive breeding and vetinary care.

DO YOU CARE ?

There are over 4.7 billion people living on this planet. We all need somewhere to live and food to eat, yet our increasing demands are pushing our planets' resources towards its limits.

Resource consumption is not spread evenly worldwide; 25% of humans (those living in developed countries) consume 67% of its resources, and over 450 million people are starving or malnourished.

So if you care about the future of people, you have to care about the future of the whole planet because we are all in this together.

There are many problems to be sorted out. Here are a few problems you may like to discuss, debate on, write about or report on.

ENERGY - where does it come from?
Plants, sea, wind, sun electricity, fossil fuels nuclear power.

WASTE - where does it come from? What can we do with it? How can we minimise it?

SOILS - how do we destroy fertile soil?
Look at overgrazing, irrigation, bad farming practices, deforestation, building, hedge removal etc

POLLUTION - how do we pollute the Earth?
Water pollution, fresh and sea. Air pollution. Noise pollution. Radioactive pollution. Look at issues such as acid rain, the greenhouse effect, the ozone layer, oil spillages, litter, chemicals, sewagw etc.

STANDARD OF LIVING - what is it?
Is it the same in Wales, Africa, India, Soviet Union, U.S.A. etc.
Find out about lifestyles of different people around the world. Investigate their attitudes to animal and plant life.

Pretend you are a government of a" third world" country - devise a plan to develope your country. What resources do you have, how can you utilize them?
Divide your class into different groups - industrialists (eg. timber merchants, miners, dam builders), local (native) people, conservationists and government. Put forward each groups ideas and debate the best solution for the development of the country.

Develope a conservation strategy for your school, home etc. Take into account animals, plants, energy, pollution (eg litter), food and so on.

Think of arguments for and against vegetarianism.

LIVING WITH LIFE

We have an enourmous responsibility to protect and care for all life on earth, and we can do it on various levels international, national and locally.

A World conservation Strategy (W.C.S.) was launched in 1980 to try to lessen or solve some of the worlds problems. Organised by leading environmental agencies, its priorities are :

1. to maintain Earths ability to sustain life,

2. to preserve genetic diversity, by preventing the extinction of species,

3. to use resources carefully and sustainably.

In Britain we have the power to persuede government to change or enforce laws protecting our wild plants, animals and habitats (eg. Wildlife and Countryside Act). We can raise money for environmental societies who can then purchase land important to the survival of wildlife, and so protect it (as a National Park or Nature Reserve) for the benefit of all.

Individually you can create wildlife gardens, keep your school grounds/garden/street/etc clear of litter, use unleaded petrol in cars, recycle paper/glass/metal, save energy by insulating buildings (this not only saves money, but cuts down on pollution caused by power stations), use "ozone friendly" aerosol sprays, etc.

We can also join conservation societies and become involved in their efforts to ensure the survival of this amazing planet.

Penscynor Wildlife Park Handy Plan

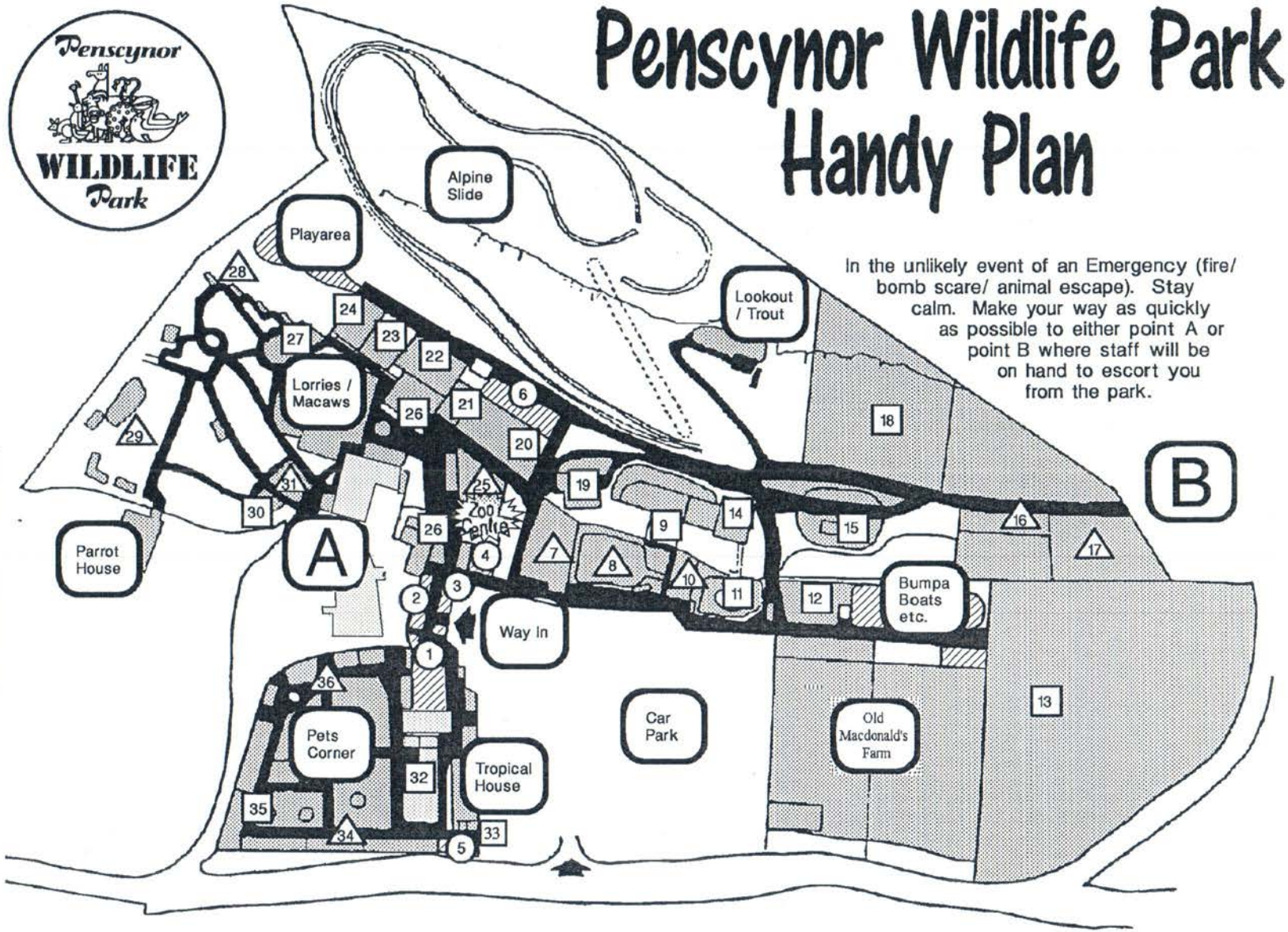
Useful Locations

The Zoo Centre is located next to Penguin Pool (7), between Burger Bar (4) and Waterfowl aviary (25)

1. Main Office
   First Aid Point
   Gift shop
   Copper Kettle Coffee Shop
2. Toilets
3. Toy Shop
   Ice-Creams
4. Burger Bar
5. Book shop / Sweet shop
6. Picnic Area

Enclosure key

□ - Mammals △ - Birds



In the unlikely event of an Emergency (fire/ bomb scare/ animal escape). Stay calm. Make your way as quickly as possible to either point A or point B where staff will be on hand to escort you from the park.

7. Penguins
   Pelican
8. Waterfowl
   Trout
   Squirrel Monkeys
9. Chimpanzees
10. Scarlet Ibis
    White Fronted Wood-Duck
11. Empty At Present
12. Meerkats
13. Shetland Pony
    Guanaco
    Deer
14. Black & White Ruffed Lemurs
15. Emperor Tamarin Island
    Trout
16. Rheas
17. African Crowned Crane
18. Wallabys
    Muntjac
19. Marmoset House
20. Prairie Dogs
21. Pygmy Goats
22. Empty at present.
23. Lar Gibbons
24. Ring-Tailed Lemurs
25. Sacred Ibis
    Night Herons
    Silver Gulls
    Demoiselle Cranes
26. Sooty Mangabeys
27. Asian Short-Clawed Otters
28. Hillside Parrot Aviaries
29. Flamingos
30. Porcupines
    Mongooses
31. African Fish-Eagle
32. Eastern Black and White Colobus
33. Dourocouli Monkeys
34. Mixed Aviaries
35. Farm Animals
    Rabbits
    Guinea Pigs
    Polecats
36. Mixed Aviaries

USEFUL INFORMATION

BOOKS.

ALLEN R. (1980) How To Save The World. Kogan Page.
BRADLEY MARTIN (1982) Run Rhino Run. Chatto & Windus
CAMPBELL S. (1978) Lifeboats To Ararat. Weindenfeld & Nicolson.
CHERFAS J. (1984) Zoo 2000. BBC.
DAY D. (1981) The Domesday Book Of Animals. Ebury.
DURRELL G. (1976) The Stationary Ark. Collins.
EARTHLIFE. (1986) Paradise Lost?
EHRLICH P. & EHRLICH A. (1982) Extinction. Gollancz.
EXLEY H. (1985) Cry For Our Beautiful World. Exley.
KIDMANCOX R. (1980) Understanding Zoo Animals. Usborne.
MOUNTFORT G. (1978) Back From The Brink. Hutchinson.
MYERS N. (1985) The Gaia Atlas Of Planet Management.

SOCIETIES - as with all charities please enclose an sae if you require a reply.

ARK TRUST, London, W9 3BR.
CONSERVATION TRUST, c/o George Palmer School, Northumberland Ave. Reading, Berks.
EARTHLIFE, 10 Belgrave Square, London, SW1X 8PH.
FAUNA & FLORA PRESERVATION SOCIETY, 78-83 North St. Brighton, East Sussex, BN1 1ZA.
INTERNATIONAL CENTRE FOR CONSERVATION EDUCATION, Greenfield House Guiting Power. Glos. GL54 5TZ.
NATURE CONSERVANCY COUNCIL, Dept. NC, NCC, Attingham Park, Shrewsbury, SY4 4TW.
OXFAM, Education Officer, 274 Banbury Road, Oxford, OX2 7DZ.
ROYAL SOCIETY FOR NATURE CONSERVATION, The Green, Nettleham, Lincoln, LN2 2NR. Junior membership - WATCH.
ROYAL SOCIETY FOR THE PROTECTION OF BIRDS, Education Dept. RSPB, The Lodge, Sandy, Beds. SG19 2DL.
WORLD WIDE FUND FOR NATURE UK. 11-13 Ockford Road, Godalming, Surrey, GU7 1QU.

PENSCYNOR EDUCATION DEPARTMENT

Offers - full time Education Officer

- free prelimianry visits for teachers, lecturers & youth group leaders.
- talks, tours and events graded to ability on topics of your choice (arranged previously).
- zoo centre , facilities include 60 seat lecture hall, slide projector, video, "hands-on" exhibits, animals, and exhibitions.
- a range of literature:
  Teachers Packs - teacher based manuals with information, ideas, and activities - 20p each + p&p.
  Animal Information Sheets - 5p each
  Zoo Guide - 50p each.