

## DESIGN A CONSERVATION PROGRAMME – Student Briefing Pack

### What your pack contains:

1. Worksheet: Getting started
2. Worksheet: Doing research & generating ideas
3. Worksheet: Things to think about
4. 4 x Case studies
  - a. The Beekeepers of Pitcairn
  - b. Ecotourism
  - c. Benefiting from local resources
  - d. Getting creative
5. Planning sheets

## Design a Conservation Programme – Getting started

*The aim: Work in groups of 3 to design a conservation programme which will save an endangered species and also provide economic benefits for your region. Put together a proposal and present it back to class.*

### Introduction:

Human activity, climate change and increasing urbanisation are among the many issues which threaten the biodiversity of ecosystems around the world. One look at the ARKive website, which catalogues the world's most endangered species, and you can see the ever-growing numbers of plants, animals and other life forms getting closer to extinction every day. There are conservation efforts, taking place around the world, which aim to protect these species but it can be difficult to balance the need for species conservation with the need to develop industry and provide employment, food and housing for people.

But, it doesn't have to be one or the other! A healthy ecosystem provides many opportunities and resources. There are ways to drive conservation, while also making money!

### What you need to do:

Explore the biodiversity in your area (or in a chosen region) and pinpoint a species, group of species or habitat which you think is particularly important to conserve. Design a conservation programme which also has some economic benefit or creates new industry. (Make sure you read the four case studies provided to see the different ways that conservation and economic benefit can go hand in hand).

#### 1. Research and generating ideas

- a) Read and work through the worksheet: '**doing research & generating ideas**' to help you generate your research questions.
- b) Use ARKive ([www.arkive.org](http://www.arkive.org)), and any other information sources available to you, to explore the biodiversity and economic opportunities that exist in your area.
- c) Discuss your research findings and decide on the species/habitat you intend to conserve.

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- d) Map out initial ideas for conservation with economic benefits – and don't be afraid to think outside the box!

## 2. Developing your ideas

- a) Fill in the '**planning sheets**' provided to assess the suitability of your ideas.
- b) Use the worksheet: '**things to think about**' to help you.
- c) You might need to do some more research to develop your ideas.

## 3. Put together a proposal and presentation

- a) Work in groups to put your proposal together (see below for information on what the proposal should contain).
- b) Develop a presentation of your proposal. This might include PowerPoint slides, the creation of a poster and handouts, or a talk.

## 4. Presentations and discussions

- a) Present your proposals in class. (Be ready to answer questions about your proposal).
- b) Ask questions about other group's proposals. (Think back to the questions you asked yourself during research and planning).

### What your proposal should contain:

- Details about the species/habitat your programme would conserve, threats to survival and why it is so important
- Details about how your programme would work – how would it ensure conservation?
- Details about how your programme would generate income or help the economy of the region
- Evidence that you have considered the wider implications of your activity and weighed up the impacts (both positive and negative) on the biodiversity of the ecosystem as a whole.

## Design a Conservation Programme – Doing research & generating ideas

### Research tools

You should make use of a variety of research tools including the ARKive website and any other resources you have available e.g. the internet and the local interest section of your library.

Make sure you read the four case studies provided as these will provide you with inspiration about the different ways people have been able to couple conservation with economic benefits.

The ARKive website ([www.arkive.org](http://www.arkive.org)) is perhaps your most essential tool. It features videos, pictures and detailed information about the biology, threats, habitat and range of the world's endangered species. You can search for individual species or you can search by geography. This means that you can easily find out about all of the endangered species in your area and how they depend on one another.

### Doing research

In order to generate ideas, you will need to do some research to get an idea about the biodiversity and the species that live in your area.

The best way to generate initial ideas is to pose a series of questions. It might be helpful to allocate different questions to different members of the group.

Some questions to get you started:

#### Questions about biodiversity

- What species exist in your area? (including plants, mammals, insects, marine life etc.)
- What species are most threatened? (i.e. Endangered or Critically Endangered)
- How do the different species relate to one another? What do they eat? What eats them?
- What different kinds of habitats are there?

- What habitats are in trouble and which species are threatened with loss of habitat?
- What are the major threats to conservation/local species?  
What existing conservation programmes can you tap into?

### Questions about economy

- What are your major exports? What is produced in your area?
- What is the main industry in your area?
- What do you import? What is missing?
- What local resources does your area have?
- What is your area famous for?
- What other industry/commercial produce/tourism exists that you could build on?

### Generating ideas

Once you have gathered your initial research, discuss your findings with your group. You now need to use that research to come up with some ideas for a conservation programme which could have economic benefits.

Using a large sheet of paper and coloured pens, write down any ideas that spring to mind.

Once you have come up with an idea, use the worksheet 'things to think about' and the planning sheets provided, to help you conduct more research and develop your ideas.

## Design a Conservation Programme – Things to think about

Explore the impacts of your ideas for conservation, on the ecosystem as a whole.

Remember that your species/ habitat has a role to play in the wider biodiversity of the region, and that conservation efforts themselves raise issues.

### If you conserve this species, how will that effect other species?

- Is your species a predator? How will a rise (or decline) in their numbers impact its prey?
- Is your species prey for another species? How will a rise (or decline) in their numbers impact their predators?
- Does your species have any competitors for habitat/food supply? How will a rise (or decline) in their numbers impact their competitors?
- Is the food supply of your species endangered?
- Are there other threats to your species i.e. if you go ahead with one form of conservation, will it still decline in number?
- Does your species have any positive or negative impact on the habitat in which it lives?
- Does your method of conservation help to preserve more than one type of species?

### What are the costs of conservation?

- What is the environmental cost of building infrastructure e.g. if you build an office to work from, will there be loss of habitat for species on that site?
- What else might you need? If you are exporting goods, will you need an airport? Is there one existing or do you need to build one?
- Where is the best place to work from? (If you are building a nature reserve where is the best place to build it? Can you build it near existing transport links?)
- Is your species worth conserving? Is it the most vulnerable? Why is it

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important?

- If your conservation programme involves tourism – what will be the impact of increased footfall from tourists?

### **What are the social and cultural impacts?**

- Does this species have any cultural importance? Is it the national emblem, a big draw for tourists or important in providing other ecosystem services such as pollination?
- Does it have a negative press? e.g. great white sharks are considered dangerous. If so will you need to run an educational/awareness raising campaign to gain support for your conservation programme?
- Will it lead to employment opportunities?
- Is the programme sustainable?
- Will it put your region on the map?

## Design a Conservation Programme – Case Studies

### Case Study 1 – The beekeepers of Pitcairn



Some conservation initiatives can have the dual advantage of protecting an endangered species and also creating a profitable new industry which benefits the economy of a region.

Bees are globally important creatures, responsible for the pollination of (and therefore survival of) many of the plants we rely upon for food, medicine and more. There is considerable concern about the decline of bee populations worldwide, due to disease and weather. But, in Pitcairn you will find one of the most disease free populations in the world. Bees are a driving force of the economy of Pitcairn, producing the island's major export – exceptionally high quality honey products.

However, this was not always the case. By 1978 Pitcairn's bee population had all but died out and pollination of essential vegetable crops had to be done by hand. To improve the situation an Italian strain of bees (*Apis mellifera ligustica*) were introduced to Pitcairn in 1978 and again in 1992.

#### An apiculture programme for Pitcairn

Pitcairn now exports honey to Europe, New Zealand, Australia, East Asia, North America and beyond. Its exports to the UK are favoured by prominent members of the Royal Family. But, this valuable industry owes its thanks to a conservation initiative.

Pitcairn's economy was previously reliant on heavy subsidies by the UK Government but in 1998, 'The Department for International Development' funded an apiculture programme for Pitcairn. Apiculture is the name given to the maintenance of bee populations, who are kept in apiaries to provide honey and crop pollination. The programme involved training for Pitcairn Islanders in the ancient art of beekeeping and honey production. It also involved a detailed analysis of the disease status of Pitcairn bees and honey.

#### Building the economy

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The results were even better than they could have hoped for. The islanders quickly built up their hives and the bee population flourished. There are now around 80 hives with plans to increase output further. The honey produced by Pitcairn's bees is said to be deliciously fruity, which is attributed to the fact that the island is so cut off from anywhere else. This means that bees gather all of their nectar from the organic mango, passion flower, guava and roseapple flowers found on Pitcairn. The apiculture scientist running the analysis observed that Pitcairn bees were very placid, meaning that the beekeepers were able to wear minimal clothing and could gather honey with relative ease. This suggests that another potential revenue stream for Pitcairn Islanders could be the export of live queen bees to other regions. Bees and honey have now become so associated with Pitcairn that postage stamps have been developed with images of the bees on – these stamps are a further revenue stream for Pitcairn, since stamps of this kind are often highly collectable.

### Case Study 2 - Ecotourism

The negative impacts of tourism on biodiversity are well known but carefully planned tourist opportunities can mean that tourism and conservation go hand in hand.

#### Pay to release a baby turtle



For decades turtles were hunted. Their meat was a delicacy and their skin was used to make handbags. The persecution of turtles has led to a great decline in their numbers. But, like many other large reptiles and marine mammals, turtles are seen as 'watchable wildlife', capturing the imagination of tourists.

This interest has been used to the advantage of the Turtle Islands National Park in Sabah, East Malaysia. They are able to preserve and foster the increase of turtle populations while at the same time generating revenue from tourists. The Park is famous for its Endangered green turtles and Critically Endangered hawksbill turtles which lay their eggs on the beaches of the islands. Paying visitors observe turtles laying their eggs, although their presence is highly restricted so as to ensure the protection of the turtles. Park

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rangers collect the eggs and transfer them to safe hatcheries, which protect the eggs from natural predators. However, in order to conserve the balance of the ecosystem on the islands, some eggs are left in their nests to hatch naturally – thereby providing opportunities for predators, such as the monitor lizard, who need the turtles for their survival. Once the eggs have hatched, tourists are each given a baby turtle which they then release into the sea.

### The Turks & Caicos Nature Reserves



Nature reserves are specified areas where an ecosystem is managed in order to ensure the sustainability of the landscape and wildlife in the area. Nature reserves allow a country to generate revenue from tourism, (through the purchase of entry tickets and branded souvenirs) and to provide employment for local people, as conservation managers and tour guides. The ability to earn is essential for any family, but the development of new industry often destroys the habitat. For example, forests are often cleared to make way for agriculture. Nature reserves on the other hand rely on the beauty and the preservation of the natural biodiversity of a landscape to generate income.

The Turks & Caicos Islands in the Caribbean have set aside 33 protected areas, in the form of nature reserves, sanctuaries and historical sites. Twelve small cays are protected for breeding grounds for resident and migratory birds. One of reserves, The Grand Turks Cays Park, is home to a variety of birds, flamingos, iguanas and tortoises. Tourists from all over the world flock to the reserve to observe the flora and fauna in their natural habitat.

### Case Study 3 – Benefiting from local resources

We use natural resources in a number of ways, during our daily lives. Some conservation efforts are successful in encouraging the use of local resources and through generating income through the very need to preserve.

#### Fishing licenses



Overfishing is a major threat to many marine species, both through targeted fishing and through bycatch (where other creatures are accidentally caught by fisheries targeting other species). It is important to restrict fishing, in order to maintain the marine ecosystem. However, a ban on fishing altogether would be disastrous for many. People around the world make their livelihood as fishermen and many more rely on fish to feed their families.

South Georgia, in the South Atlantic, makes the most of its natural resource – the opportunity to fish in the surrounding waters – but they restrict fishing by selling licenses to fish for Patagonian toothfish, cod icefish and krill. Fishing licenses bring in millions of pounds a year, boosting the country's economy. Much of this is spent on fishery protection and research, thereby ensuring the continued conservation of the marine environment.

#### Using local vegetation instead of introduced species



Introducing new species to a region can often be disastrous to an ecosystem. Introduced plants often flourish at the cost of native plants, which cannot compete for essential nutrients and habitat. This often impacts on the rest of the ecosystem (e.g. animals that rely on those plants lose their preferred habitat and food supply).

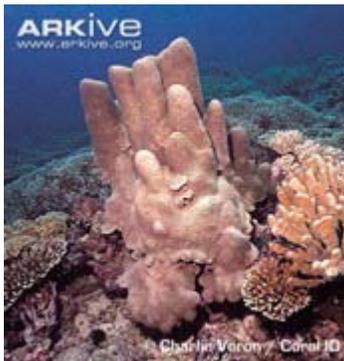
We use plants in a number of different ways. Hedgerows for example are planted to landscape our gardens and to mark important boundaries on agricultural land. Hedgerows themselves become important micro-ecosystems supporting a variety of small mammals and insects. The Montserrat National Trust, in collaboration with the Royal Botanic Gardens, Kew has chosen to target the shrub 'pribby' (*Rondeletia buxifolia*) for conservation. The Royal Botanic Garden in Montserrat has planted a demonstration hedge of the plant, to assess its potential as a native hedging plant (to be used in place of introduced exotic species).

Monetary rewards could be reaped if people choose to purchase these plants (and their seeds) for their hedging. An increase in demand and cultivation of the shrub would also help the population to grow and thrive, thereby using a commercial idea (with economic benefits) to drive conservation.

#### Case Study 4 – Getting creative

Sometimes it just takes a little creativity to find ways to tap into new commercial markets, or to explore opportunities that, though not immediately profitable, benefit the economy in the long run.

#### Thinking outside the box



Sinking a shipwreck, or old war tank, is a great way to create an artificial reef, providing essential habitat for reef fish and opportunities for coral and algae to grow. This is especially important considering the devastation of the coral reefs in recent years. Conservation efforts of this kind can be costly, but the people at Eternal Reefs Inc, in the USA, have discovered a way to make money from artificial reefs. They offer the opportunity for people to create a unique memorial for their sadly deceased loved ones, replacing burial and ash-scattering with a permanent legacy which benefits the environment. Eternal Reefs Inc. design artificial reefs, from environmentally safe cast concrete, which provide surfaces and crevices to serve as new habitat for small fish and sea creatures. Families pay for the cremated remains of their loved ones to be incorporated into the environmentally safe cement mixture. They can also customise their reef, which is then dropped into an approved location in the ocean.

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## Thinking ahead



Some conservation programmes do not have an immediate economic impact but the preservation of a species which helps to maintain the ecosystem can have impacts on other more profitable areas. Bats, for instance, get a bad press. People hear stories about vampires and disease and see bats as pests to be eradicated. The truth is that bats are key pollinators, vital for the survival of important economic industries, such as agriculture and pharmaceuticals. Bats are also essential for maintaining the health of an ecosystem - they prey on pests that endanger the tropical trees which provide some of the world's most popular fruits and drinks e.g. bananas.

A number of international organisations, (including The United Nations Environment Programme, the Convention on the Conservation of Migratory Species and EUROBATs), have joined together to run a global campaign: 'Year of the Bat (2011-2012)'. The campaign involves a series of celebrations to educate the public about the importance of bat conservation. Education and awareness campaigns of this kind are key to the conservation of a species in order to rally support for new conservation programmes. They are also essential to deter people from destroying species they consider as pests, not realising the economic impacts of the services that creature provides to the ecosystem.

# PLANNING SHEET – WEIGHING UP YOUR IDEA

CONSERVATION

ECONOMY

WHAT IS YOUR IDEA FOR A CONSERVATION PROGRAMME?

**IS IT NECESSARY?** (what problem does it solve?)

**IS IT VIABLE?** (will it cost more to create than it will ever generate? A solid gold reef is not a sound investment!)

**HOW WILL IT WORK?** (how will it help conservation?)

**WHAT ARE THE ECONOMIC BENEFITS?** (how will it generate income? Will it generate employment?)

**WHAT ARE THE BENEFITS TO THE ECOSYSTEM?**

**WHAT ARE THE NEGATIVE IMPACTS ON THE ECOSYSTEM?**