Worksheet 3.8: DIY protected area

Some historical context

Many protected areas or nature reserves were set up in the past on land that no-one else wanted. It may have been on poor agricultural land, land not near areas of high human population density or land that was degraded in some way. The haphazard nature of this meant that early reserves may not have been large enough or may have been inappropriate to the needs of the species they were aiming to protect.

UNESCO’s Man and the Biosphere programme (MAB) started in 1970, creating a world network of international reserves now with 480 reserves in over 100 countries. The Millennium Development Goals (MDGs), sustainability and conservation are their main aims.

When conservationists are planning a new protected area, these are the questions they ask themselves.

* How large should it be to protect the species? Are there species that need protection in the middle of a large reserve?
* Is it better to have one larger or many smaller reserves (SLOSS)? What about the edge effects?
* How many individuals of an endangered species must be protected?
* What is the best shape?
* If there are several reserves, how close should they be to each other?

Should they be joined by corridors or be separate?

Activity

You live in a country on the equator. The natural ecosystem is rainforest. Your government wants to clear rainforest for agriculture. You have been told that you will be left with 10% of the available land for a reserve to conserve native species.

You need to design an effective protected area; that is, a nature reserve which achieves the following things:

* conserves a wide range of different habitats (*Hint*: *Why is this a good idea?)*
* conserves endangered species
* attracts revenue (cash) for future conservation ventures

is unlikely to be disturbed in the future.

Use the notes on pages 177–78 of the textbook to find out about what factors make species prone to extinction – how would you avoid these problems in the design of your reserve?

Draw a diagram of your design, and annotate it to explain your ideas.

Things to think about…

**a)** Size

The reserve you need to create contains several endangered animals that live in very different habitats. There are also species that range widely.

What does SLOSS stand for? What is the advantage of each method (*SL or SS*)?

single large or several small.

Your forest contains several large mammals, including forest elephants. How would you ensure a viable breeding population?

Separating them and allocating them resources necessary to grow.

There is a large town near the reserve area and logging happening in adjacent forest. What measures could you take to protect your area? (*Hint: Buffer zone)*

Buffer zones to block off and protect the reserve to limit disturbances.

**b)** Edge effects

The area you are protecting is dense rainforest. Around the reserve will be cleared areas of land. What problems will this cause in your reserve? (*Hint: What are edge effects? Will the conditions at the edge of the forest be the same as the interior? Will the same species be in both places?*)

Immigration, speciation, different abiotic factors, attracts species on the edge or outside the reserve, reduction of diversity.

What shape do you need to minimize edge effects? (Hint: How would you reduce the amount of edge? Think about issues you may know about concerning surface area/volume ratios in biology).

Circle

**c)** Corridors

Will your protected area exist in isolation?

What problems would be caused if your reserve was not connected to other protected areas?

Harder to transport necessary resources or receive aid from others, more distrubances.

What are the disadvantages of corridors? (*Hint: What width do they need to be?*)

Possibility of producing outside, invasive species, poachers, may be barriers

Your reserve contains several rare bird species which need habitats that cannot be found in your reserve. What do you do about this?

Create an extension and make necessary changes or send them to another reserve that can take care of them.

As well as size and shape, what other factors will you need to take into account to make a successful conservation area? (*Hint: Have a good educational programme*)

Good facilities, resources, people who can help, research team that is always looking to make it better.

* When you have finished, read pages 195–96 of the textbook. Does your reserve design match those recommended?

yes

Find a local example of a successful conservation area and write an A4 factsheet about it.

Arabian Oryx History

Historically, the Arabian Oryx was found in two major subgroups that roamed freely in the northern region of the Arabian Peninsula and the Empty Quarter. The distribution of the animal in the UAE was in the Western Region areas of Abu Dhabi - mainly Al Dhafra and Liwa up to the Empty Quarter. They lived in large numbers in rocky desert, sand dunes and dry habitats across the Arabian Peninsula until the early 20th Century when poaching and destruction of their natural habitat caused their extinction. By the 1960s, the animal scattered into small groups in southern parts of the Arabian Peninsula and became extinct in the wild in 1972.

Early Conservation Efforts by the Late Sheikh Zayed

The late Sheikh Zayed bin Sultan Al Nahyan, Founder of the UAE, who took a personal interest in the Arabian Oryx, was one of the first conservationists to notice its decreasing number at an alarming rate. In 1968, he launched a successful conservation programme of Arabian oryx in Al Ain. In 1978, four heads (2 males: 2 females) were transferred from Al Ain to Sir Bani Yas Island for breeding. Today, Sir Bani Yas Island accommodates some 731 Arabian oryx.

Thanks to the huge success of Sheikh Zayed’s conservation and captive breeding efforts, the UAE is today home to the largest population of Arabian Oryx in the world, with more than 6200 individuals.

Reintroduction into the Wild

Following the footsteps of his father, The Sheikh Mohammed bin Zayed Arabian Oryx Reintroduction Programme started in 2007.

The five-years plan (2007-2012) to reintroduce the Arabian Oryx into areas of its natural habitat in the UAE involved 500 heads to be released over the five-year period with 100 heads each year. The programme, overseen by the Environment Agency-Abu Dhabi (EAD), aims to reintroduce the Arabian Oryx into large sanctuaries within the areas they lived in the past and create a self-contained population that can roam freely in their natural habitat with effective and long-term management.

Al Ain Zoo played an effective role in this programme across all its stages by donating a significant number of animals and providing veterinary supervision. Each animal was given an identification number and genetic samples were collected to help study the animal’s genetic status.

Arabian Oryx Protected Area

The Arabian Oryx Protected Area in Umm Zumool stretches over an estimated area of 5974 square kilometres area, which has over 500 heads of Arabian Oryx. The protected area started with 98 captive-breeding Arabian Oryx, which were reintroduced to the area after 40 years of absence.

The reintroduction sites are selected according to the nature of the area, suitability of the habitat, vegetation, human activity, availability of food, water resources and shade and hiding places. The protected area also provides safe refuge to other animals living in the area as deer, foxes, desert rats, hares, reptiles and birds.