

## **INTRODUCTION TO WILDLIFE MANAGEMENT**

### **Aim**

Develop a concept of how humans manage wildlife populations in different situations around the world.



### **WHAT IS WILDLIFE MANAGEMENT**

Similar to humans, animals in the wild have needs such as food, shelter, reproduction and movement. The area that a wild animal normally lives in is known as its habitat, which provides the animal's resources and environmental conditions. Wildlife management is the manipulation of wild animal populations and their habitats in the context of an ecosystem. Wildlife management includes activities such as:

- managing parks and reserves
- altering and rehabilitating wildlife habitats
- providing education and extension programs for special interest groups
- maintaining threatened populations and pests at a desirable level
- protecting human life and property and
- managing harvests of wildlife.

**Conserving or controlling populations of wildlife may take one of the following forms:**

1. Managing wildlife habitats
2. Managing people
3. Managing individuals in populations so that the population will either change or remain constant.

The techniques and types of wildlife management vary depending on your location, and as with any job, you will find that you will need to carry out research into the local methods and types of wildlife management. This course is designed to give students a broad-based introduction to the principles and practices of wildlife management common to many species around the globe.

## **Approaches to Wildlife Management**

### *Preservation*

Wildlife preservation is where wildlife managers try to leave a population or habitat in its natural state. Active management may be required to maintain or recreate naturally occurring populations of animals and plants. Basically, areas are protected from destruction and are left so that nature takes its course. When nature takes its course, it may not always be favourable for the wildlife involved as change is inevitable in natural systems. The survival of the American Whooping Crane is an example of Preservation. The population size of this species has grown from a critical level of 15 individuals to just under 300 species due to the preservation of key breeding sites such as Wood Buffalo National Park.

### *Conservation*

Conservation can have various meanings to different groups. In this course, conservation means that wildlife managers are actively managing a natural system to maintain and use natural resources in such a way as to preserve its biodiversity for future generations of humans and animals. For example, in Uganda, East Africa, statutes are in place to allow for the protection of wildlife whilst allowing managers to sustainably harvest resources such as timber.

### *Management*

Management is the focus of this course. It involves the manipulation of populations to achieve specific objectives for wildlife and humans. This manipulation may be in order to increase the size of the population, to “harvest” animals in a sustainable way or to reduce or stabilise a population. Management can be applied to both pest and desirable species. For example, across most of Australia, the red fox is a major pest species due to its success as a predator of native wildlife and livestock. Wildlife managers are attempting to control this population through a baiting program in conjunction with trapping and shooting.

## **Purpose of Wildlife Management**

There are many different reasons why we might want to manage wildlife and the relative importance of those reasons can vary from place to place, both within a country and around the world. This importance can also change from time to time.

Managing a particular species may be critical in one country, where for various reasons it has become a pest; while the same species may in a different country be controlled by nature with very little need for intervention by man. For example, wild rabbit populations in the UK are largely controlled by natural predators such as foxes. But in Australia, wild rabbits (an introduced species) have few to no natural predators and in some cases have reached pest proportions on a grand scale, threatening habitats and competing with native species for resources.

Reasons for managing wildlife may (amongst other things) include:

- The population of an animal may be increasing in excess of its available resources, which may then be impacting (or may impact) on other species (plant and animal).
- Inadvertent introduction of a non-indigenous species to an area may have changed the balance of nature.
- Climate change, abnormal events (eg. natural disaster) or development activity may have changed or caused instability in the balance of nature.
- Control of disease carried by animals (Diseases that affect domestic animals, livestock, other wildlife and even humans).
- Conserving threatened species.
- Studying different species.
- Sustainable harvesting of a resource (eg. fish populations in the oceans).
- Protecting individual animals from unnecessary or unethical harm. (eg. Control of elephant poaching in Africa).



## **Goals of Wildlife Management**

The goals of wildlife management vary considerably with the situation. Goals of wildlife management plans can include:

- to maintain a desirable population at a healthy level.
- to reduce the population of an undesirable species.
- to allow for sustainable removal of animals from a population – for example, harvesting wildlife for meat.
- to increase numbers of an endangered species.

## **DECISION MAKING IN WILDLIFE MANAGEMENT**

Three decisions need to be made to effectively manage wildlife.

- What is the desired goal?
- Which management option is appropriate based on the goal? and
- By which action is the management option best achieved?

The first decision requires a value judgment. The other two require technical judgments.

### **Who are the Decision Makers**

Decisions in wildlife management should be made in consultation with a range of stakeholders that may be affected by or have an interest in the decision being made. Decisions are not the sole right or responsibility of the wildlife manager. Stakeholders in wildlife management may include landholders, local residents, environmental groups, hunters and pet owners.

It is up to the wildlife manager, as part of their role, to appreciate that these people need to be involved in and have an influence upon any decision made in regards to the management of wildlife. Once a decision has been made, and goals have been set, it is the wildlife manager's responsibility to implement these decisions.

### **Making the Right Decision**

Decisions regarding wildlife populations can be far reaching and have a significant impact upon the environment. In order to determine whether a specific goal is the correct one, one needs to consider the impact of reaching the correct decision, and the impact of making the wrong one.

Value judgments can neither be considered to be right or wrong, but do have a big influence in the decision making process. For example, some people would argue for the elimination of a species based on an intrinsic dislike of an animal (for example, snakes), whereas other people would provide ethical reasons for why this species should be allowed to survive. Technical reasons for a view (such as the fact that snakes can pose a risk to human health) are possibly more valid in decision making, but need to be combined with value judgments in order to make the best decision taking into account the needs of both humans and wildlife.

## **IMPORTANT CONCEPTS AND CONSIDERATIONS**

### *Needs of wildlife*

All animals require three basic factors for survival

- Food
- Water
- Habitat (shelter and sufficient space)

### *What is good wildlife habitat?*

A good habitat is any environment where animal species can occur, survive and reproduce.

There are five main types of habitat:

- Large trees (both living and dead)
- Understorey habitats (eg. trees and shrubs of varying sizes)

- Dry ground habitats (eg. rocks, logs, groundcover plants and grasslands)
- Wet ground habitats (eg. beaches, mangroves and wetlands)
- Aquatic habitats (eg. marine, estuaries and lakes)

### Limiting Factor

A limiting factor is any factor that restricts the wildlife population from growing by causing mortality or affecting birth rates. Essentially this will be the habitat requirement that is in short supply, such as food, water or shelter. For example, the presence and distribution of tree hollows for raising young can be a limiting factor to the success of certain parrot populations.

### Carrying Capacity

Carrying capacity relates to the ability of the habitat to support certain species. The carrying capacity can be maintained or increased by managing a limiting factor. Carrying capacity is particularly evident in island populations. This concept is addressed in greater detail in Lesson 5.

### Succession

This concept refers to the replacement of an existing biological community with another. This usually occurs in an orderly change to the composition or structure of a community. Several stages of succession can significantly increase wildlife diversity. However, wildlife managers need to be mindful of the effect of succession on vulnerable wildlife when planning for their management. Whilst some species may thrive with changes to a biological community, it may produce deteriorating conditions for others. For example, the threatened bobwhite quail (*Colinus virginianus*) of Central America and Ontario shows a clear preference for early successional vegetation created by disturbances such as fire. Therefore, to manage habitat for the bobwhite's survival, succession needs to be halted through active management.

### Landscape Fragmentation

Fragmented landscapes are those which become smaller and more isolated over a period of time. Fragmentation factors which effect wildlife include habitat patch size, distribution, edge length and corridors.



Habitat patch size and distribution can have significant impacts on the distribution, social structure and the inevitable survival of wildlife populations. With the clearing of land worldwide for cultivation and human occupancy, wildlife habitats are being broken up into smaller and more isolated patches. This fragmentation can isolate populations from one another, stopping genetic flow and therefore weakening the genetic diversity of species. This can cause reduced fitness of a population (inbreeding depression) and can make the population more susceptible to the effects of disease and other external factors. An example of this is evident in a small isolated population of African lions in Tanzania. Due to inbreeding depression, the males of this population produced abnormal sperm which then led to their declined reproductive success.

Reduction in habitat size also leads to the increased length of habitat edges. These are the zones between two or more plant communities. Many wildlife species make use of edges. This is known as the 'edge effect'. This edge can be beneficial for some species when it provides access to two different habitats in a small area as there are greater resources available per unit of area. These edges can also have a negative impact on some species, particularly when there is a large edge bordering disturbed land. Forest fires, higher rates of predation and infestation by pioneer plant species are more likely to occur along the edges of habitat.

Corridors merge or connect other areas of habitat. They help wildlife move between isolated areas. Larger corridors provide more vegetation and a greater area for wildlife movement. Corridors work very well for certain migratory species such as larger herbivores and carnivores, and can be home to many

smaller species of mammals and insects. However, these corridors can also have negative impacts on wildlife with some species facing increased susceptibility to predation, increased spread of diseases, weeds and pests and increased competition from other species.

### **Habitat Diversity**

Habitat diversity includes both species and structural diversity. Species diversity refers to the mixture of plants in a habitat of varying family, genus and age. Structural diversity incorporates the vertical, horizontal and unique elements of the habitat. The loss of habitat diversity can have disastrous effects on wildlife, such as in Ireland, where it is estimated that 29 bird species and 120 flowering plants are in serious decline as a result of loss of diversity.

### **Arrangement**

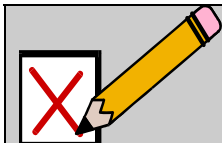
Arrangement is the provision and distribution of food, shelter and water within an animal's habitat. This arrangement will effect they way an animal uses its habitat. The Australian koala is particular about how it uses habitat depending on the arrangement of trees. In the absence of continuous forested areas, a population is more likely to be successful if the habitat is arranged in a mosaic pattern rather than in linear corridors.

### **Biological Control**

Biological Control is defined as the reduction of pest populations by natural enemies and typically involves an active human role. Natural enemies of insect pests, also known as biological control agents, include predators, parasitoids and pathogens.

### **Integrated Pest Management**

Integrated Pest Management is a pest control strategy that uses an array of complementary methods: natural predators and parasites, pest-resistant varieties, cultural practices, biological controls, various physical techniques, and pesticides as a last resort. It is an ecological approach that can significantly reduce or eliminate the use of pesticides.



#### **SELF ASSESSMENT**

Perform the self assessment test titled ' test 1.1'  
If you answer incorrectly, review the notes and try the test again.

## SET TASK

1. Contact (either in person, email or by telephone) an organisation involved in wildlife management such as a national park, wildlife reserve, zoo, etc. Ask about one of their wildlife management programs. You may include some of the following in your questions:

- Investigate the reasons for the particular program – is the population at risk? Is it due to an introduced species? Is it due to human interference?
- Try to determine the goals of the program – are they aiming to increase or reduce the population or just maintain the population of animals?
- What strategies have been implemented to achieve these goals? Are there any problems associated with implementing these strategies?
- Does the facility have the resources available to implement these strategies? Resources might include:
  - a. Land
  - b. Resources – food, shelter, mates
  - c. Finances
  - d. Staffing
  - e. Community and government support ie volunteers, finances, resources

2. In your locality, investigate one pest species of wildlife (e.g. mice, introduced insects, feral cats) and one endangered or threatened species (e.g. mammals, birds, fish, frogs) of native wildlife. Research what happened to make these animals pests or endangered.

For example you might do some of the following;

- Contact a government department or organisation in your country or region that regulates the management of wildlife and detail their policies on this species.
- Ask questions that provide you with the social, political and economic contexts surrounding the animal in its present situation.
- Identify the natural environment that the species would naturally occupy.
- What is a sustainable population level for this species?
- What management strategies need to be implemented to reach and maintain this level?
- What implications are there for the animal if it encroaches on or enters a human use area?



### ASSIGNMENT

Download and do the assignment called 'Lesson 1 Assignment'.