Module # 3 – Component # 2

Managing Wildlife

Introduction

The social behaviour of animals is of crucial importance in determining the density of various animal species in a specific habitat.

The following factors are important in determining animal densities:

- Habitat
- Sociality
- Game monitoring
- Genetic conservation

Reading microchip information on a young Sable Antelope
Habitat

The habitat is that area in which an animal occurs naturally. Many factors combine to form the specific habitat suited to a species. The presence or availability of water and food plays a key role in habitat preferences, as well as the physical structure of the habitat.

The species composition and structure are the two components of the vegetation that form an important part of the habitat. Generally, the size of the social unit in which animals occur is directly related to the structure of the habitat.

Under dense conditions, either because of tall grass and shrubs or trees, animals are usually found alone, in pairs or in small family groups. As the habitat becomes more open, in grassland for example, the size of the social unit increases.

Giraffe: Giraffa camelopardalis – Kruger National Park
Social Systems Among Wild Animals

**There are primarily three social systems according to which the relationship among individuals of the same species are defined:**

- A **loose grouping of animals** without clearly defined associations among each other.
- A **dominance hierarchy** according to which the animals in the same herd act according to an order of rank.
- A **territorial system** according to which fixed areas are marked and defended against any intrusion by other individuals of the same species. In most species with this system it is only the males that display these tendencies.

In animal species without a strongly developed social structure there is a loose relationship between animals in a herd. There is a strong bond between a cow and her calf, but little social interaction between adults. Buffalo and eland are good examples of such game. Among antelope a dominance hierarchy generally occurs. Individuals in a herd hold a specific position in the order of rank, often with separate hierarchies for males and females.

**The dominance hierarchy among male and female animals fulfills two important ecological functions:**

- Among male animals it ensures that only the strongest take part in reproduction.
- In breeding herds, it contributes to the stability of the herd. Exchange of individuals between herds is inhibited since newcomers can only establish their position in the hierarchy by antagonistic interactions with the established members of the herd.

It is important to take the social structures of animal populations into account when making management decisions.
Monitoring of Game

Animals should be monitored on a regular basis throughout the year for a variety of reasons. Depending on the size of the reserve or ranch, monitoring should be conducted as often as possible. Relevant observations should be recorded on a field form, using a map overlaid with a grid for location references.

Animal observations that should be recorded include:

- The game species
- Number of individuals
- Age
- Sex
- Location

With some practice the age of antelope can be determined quite accurately by observing the horn structure.

Other records should include:

- The species, sex and approximate age of carcasses found
- Sick or injured animals seen
- Signs of poor body condition
- Births
- Fights
- Unusual behaviour
- Attempts to escape
- Drying up of water points
- Finding of snares
- Damage to the fence

Whenever animals are taken off, whether for trophy, venison or live sale, the species, age, sex and body or carcass weight and trophy size where applicable must be recorded.
Establishing Condition

It is important to establish the condition of the animals for management guidelines on a reserve or ranch. The appearance of an animal’s hindquarters generally gives a good indication of its condition.

- The outline of the tail (a) becomes more angular
- The exterior line of the ischium (b) and the lumbar vertebrae (d) become more prominent and protrude.
- The indicated area of the buttock (c) loses its roundness and becomes angular.
- The ribs (e) become more visible

The appearance of an animal’s hindquarters to illustrate good and poor condition

Annual game counts are very important in establishing trends in animal populations. This will be discussed in detail in Module # 4 – component # 5.
Genetic Conservation

Inbreeding becomes a concern on game ranches or nature reserves which stock only a limited number of individuals of one species, as loss of genetic variability due to inbreeding can occur in small populations. Adverse effects have been demonstrated in wildlife, which include a reduced ability to adapt to environmental changes, higher juvenile mortalities, reduced fertility, increased sperm abnormalities, and a high incidence of jaw deformities that can lead to abnormal tooth wear and premature loss of teeth. Each species is affected differently.

The adverse effects of inbreeding are usually not as dramatic in wildlife as in domesticated animals. Domestic animals have for many centuries been sheltered from environmental selection pressures, but instead have been selected for a variety of traits, mostly aimed at production characteristics. The result is that there is a great diversity of genetic material within each species of domesticated animals, as each farmer applies different management practices and selects animals subjectively. Wild animals, on the other hand, have constantly been selected for survival of the fittest. This selection pressure is similar for all individuals within a population, and wild animals are thus selected for uniformity.

Subspecies have evolved as adaptations to different environmental conditions and represent differences in genetic structure. Sub speciation within a species is a function of the mobility and habitat specialization of that species. Species that are highly specialized in their habitat requirements and therefore don’t move over large areas often become isolated and are generally represented by several subspecies, for example lechwe. On the other hand, species such as elephant and buffalo, which occupy a wide variety of habitat and are highly mobile, have no or few subspecies over the entire continent. Geographic and vegetation boundaries often restrict the movements of animals and can also lead to isolation of populations and the evolving of subspecies. It is important that these subspecies not be mixed by relocation.

The following considerations should be considered to minimize the loss of genetic diversity and inbreeding:

- **When reintroducing** animals into an area, **consider the donor populations**: animals acquired from large populations are preferable to those from small populations.
- In gregarious species, females and their **offspring should be acquired as an intact family unit**. This greatly eases adaptation and is a major factor why **elephants** are mostly relocated as whole family units.
- **Acquire males from as many different sources as possible.**
At a sex ratio of 1:1 populations of 50 breeding animals or more have an inbreeding coefficient of less than 1%, which is considered safe.

A group of three breeding males and five breeding females is the absolute minimum requirement for an introduction.

On many ranches or reserves it will not be possible to achieve the genetically safe population sizes for all species present. Introduction of new stock into small populations consisting of less than 50 breeding animals is recommended to overcome loss of genetic diversity. The smaller the population the higher the need to introduce new stock. It is recommended that, for game which are commercially utilized, the percentage of males which are removed annually or biannually are replaced by the same number of males from strange herds.

Game will produce hybrids on a reserve or ranch where the area is too small, and the minimum herd size is not maintained. An individual of any type of animal which occurs on a reserve or ranch, for example one tsessebe bull where 100 blesbok occur, must be removed, so that it does not offer a recipe for hybridization, especially where the single animal is a bull of an anatomically stronger species.

**Blesbok:** *Damaliscus pygargus phillipsi*
Hybrid Game

The following are known possible hybrids between game animals:

**Fertile hybrids**
- Bontebok x blesbok
- Blue wildebeest x black wildebeest
- Wild cat x domestic cat

**Infertile hybrids**
- Tsessebe x blesbok
- Red hartebeest x blesbok
- Roan antelope x sable antelope
- Eland x kudu
- Hartmann’s mountain zebra x donkey

Golden Wildebeest: Right