



# FORESTRY



## APPSC

ANDHRA PRADESH



## STATE FOREST SERVICE

## 2024 - 25

Detailed  
Syllabus Based  
study material

+

Linkage of  
Concepts with  
PYQs

+

Infused with  
Infographics &  
Maps

### Module – 6.1

◆ Animal management

◆ Animal's Dentition

◆ Animal's Nutrition

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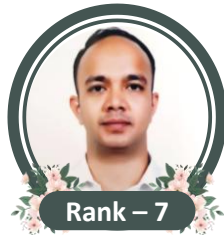
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# ANIMAL'S MANAGEMENT

## SYLLABUS

**Animal management** – animal ailments and treatments.

Role of nutrition in animal health and production.

Nutrition deficiencies and their management

### 1.1 WILDLIFE

The term 'Wildlife' is commonly referred to all forms of undomesticated animals, including mammals, birds, reptiles, amphibians, fish, and invertebrates, that exist and thrive in their natural habitats.

#### IMPORTANCE OF WILDLIFE / POSITIVE VALUES

- Ecological Value : play an important role in the food chain, biogeochemical cycles, and through positive and negative population regulation, maintains the delicate balance of an ecosystem. For example, illegal killing of snakes (for illegal skin trade or from fear or taboo) leads to the increase of the rodent population, which ultimately results in huge economic loss in terms of loss of a certain quantity of crop, as well as, increased cost towards pest management by using rodenticides.
- Economic value : Various products obtained from wildlife include timber, firewood, natural rubber, gums, resins, tannins, essential oils, honey, etc. Wild medicinal plants are the source of several medicines. Animal products like hides, horns, ivory, fur, etc., are good sources of income for many countries.
- Sports and Enjoyment : Wild animals are also a good source of game, fun, and recreation for people from all walks of life. In some countries, people spend a large amount of money on hunting, fishing, bullfighting, cockfighting, etc. 'Bird watching' and 'Wildlife photography' are two very popular and growing hobbies for many people.
- Scientific Value : Several life-saving drugs have been discovered from different species of flora and fauna. The efficacy of new medicine or any new surgical method is often tested first on

## Chapter Outline

- 1.1 Wildlife
- 1.2 Animal behaviour
  - Drive
  - Animal learning
  - Biological rhythms
- 1.3 Population Characteristics
- 1.4 Important terminology
- 1.5 Exercise

- **Trial-and-Error Learning (Skill Learning)** : Trial-and-error learning is a fundamental method of problem-solving. It is characterized by repeated, varied attempts that continue until success is achieved. For example, a cheetah cub learning to hunt may fail several times (errors) before finally managing to chase and hunt a deer successfully (success).

### IMPORTANT KEY-TERMS

- ✎ Behavioural changes that occur due to learning are **Relatively Permanent**.
- ✎ **Community Suckling** is when an adult female animal allows the offspring of another female to suckle. Primarily observed in **Dogs**.

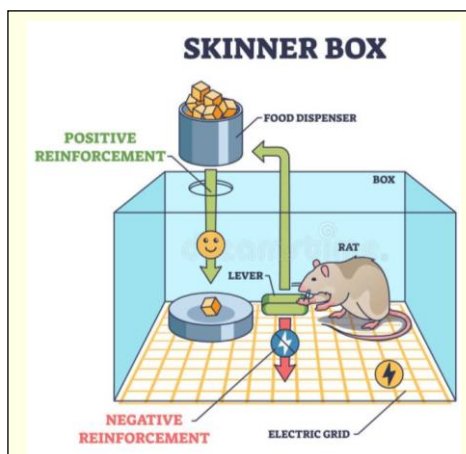
### METHODS OF STUDYING ANIMAL BEHAVIOR

- ▷ **Field Studies** : focus on observing animals in their natural habitats, allowing researchers to gather data on spontaneous behaviors without the influence of controlled environments. Common methods include :

- **Focal Animal Sampling** : An individual animal is selected from a group, and all its behaviours are recorded over a specified time period. During the specific period, all activities that the animal performs are recorded, while the activities of the other animals of the group are not recorded.

After the time period is over, the observer moves to another individual of the group to record its activities. This continues until all animals of the group have been observed for the specified time period.

- **Ad Libitum Sampling** (Latin means “at one’s pleasure) : A group of animals is selected and the observer remains with this group for a considerable period of time to observe all activities of the group. No constraints are placed as to what should be recorded and when. This method allows for a comprehensive understanding of social interactions among them, but may introduce bias based on what captures the observer's attention.
- **Instantaneous Sampling** : Observers record the behavior of an individual at *predetermined time intervals*. This method is useful for capturing behavioral states rather than events, which helps in understanding patterns over time.
- **Scan Sampling** : Similar to instantaneous sampling, this method involves observing and recording the behaviors of all individuals in a group at fixed intervals. This involves rapid scanning of the whole group of subjects at regular interval and behaviour of each individual is recorded.



**Skinner's Box**, also known as an **Operant Conditioning Chamber**, is a laboratory apparatus used to study animal behaviour. It allows researchers to isolate subjects, such as pigeons and rats, and expose them to carefully controlled stimuli in order to explore the effects of reinforcement on behaviour. This controlled environment allows researchers to investigate the principles of operant conditioning, a learning process in which behaviours are modified by their consequences.

3. Skinner's box is associated with which type of behaviour? [APPSC (RFO) General Forestry Paper – II 2018; UPTET 2018]
  - (a) Operant conditioning
  - (b) Trial and error learning
  - (c) Classical conditioning
  - (d) Habituation

**Survivorship Curve** : It is a graphical representation that shows the number or proportion of individuals in a population that survive to different ages. The pattern of mortality with age is best illustrated by survivorship curves which plot the numbers surviving to a particular age.

- ◆ **Type I (Highly Convex Curve)** : Characteristic of the species in which the population mortality rate is low until near the end of the life span. Thus, such species tend to live throughout their life span, with low mortality. Example – Man, Elephant (large Animals).

**Implication** : These species often exhibit significant parental care and ensuring the survival of their offspring.

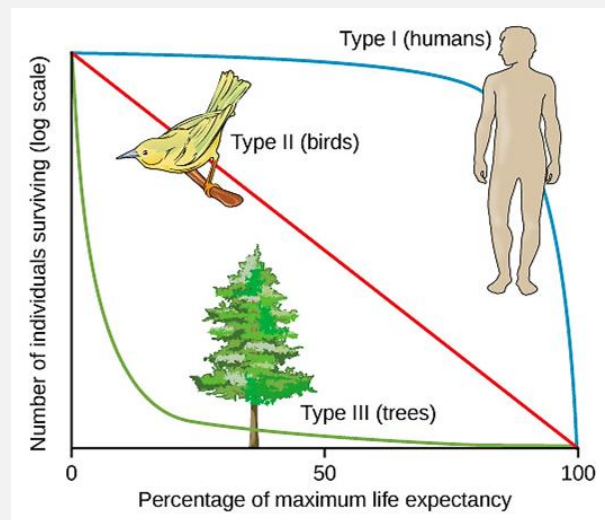
- ◆ **Type II (Diagonal Curve)** : This curve represents species with a nearly constant mortality rate across all age groups. The likelihood of dying remains uniform throughout the lifespan. Examples : Rodents, birds, and some reptiles.

Implication : This pattern suggests that these species face consistent survival challenges regardless of age.

- ◆ **Type III (Highly Concave Curve)** : For such species in which mortality rate is higher during the young stage.

Examples : Fish, amphibians, insects, and plants that produce large numbers of offspring.

Implication : These species rely on producing numerous offspring with minimal parental investment, compensating for the high early mortality.



**EXERCISE – 2**

- 7. The pattern of mortality with age is best illustrated by [APPSC (RFO) 2022 General Forestry – I]
  - (a) Survivorship Curve
  - (b) Survival Rate
  - (c) Potential Mortality
  - (d) Breeding Time
- 8. Large mammals exhibit which of the following survivorship curves? [APPSC (RFO) 2022 General Forestry – I]
  - (a) Highly concave curve
  - (b) Diagonal curve
  - (c) Highly convex curve
  - (d) Straight line

▷ **Life table** : A life table is a statistical tool used to combine information on natality (birth rates) and mortality (death rates) across different age groups and sexes within a population. By organizing this data, life tables provide a comprehensive view of the population's demographic structure.

Life tables play a crucial role in predict population trends and assess the impact of environmental or demographic changes.

- 8. Life table refers to one of the basic tools of \_\_\_\_ [APPSC Forest Section Officers 2019]
  - (a) None of the given options
  - (b) Wildlife census
  - (c) Demographic analysis
  - (d) Estimation of biodiversity

# ANIMAL'S DENTITION

## SYLLABUS

**Dentition** of some animals like human beings, wolves, jackals, lions, rabbits etc., based on incisors, canines (or cuspids), premolars, and molars.

## PYQs

- Which type of dentition is found in **animals** that have teeth of the same type and function throughout their mouth?

[APPSC (RFO) 2022, General Forestry – II]

- Heterodont dentition
- Homodont dentition
- Incisodont dentition
- Caninodont dentition

## 1.1 DENTITION

Dentition refers to the arrangement, structure, and development of teeth in the mouth, including the number, type, and kind of teeth. It also includes the crown and root portions of the teeth.

- Teeth are **Ecto-Meso-dermal** in origin.
- In humans, teeth are attached to the **Maxilla** and **Mandible** bones.

## STRUCTURE OF TOOTH

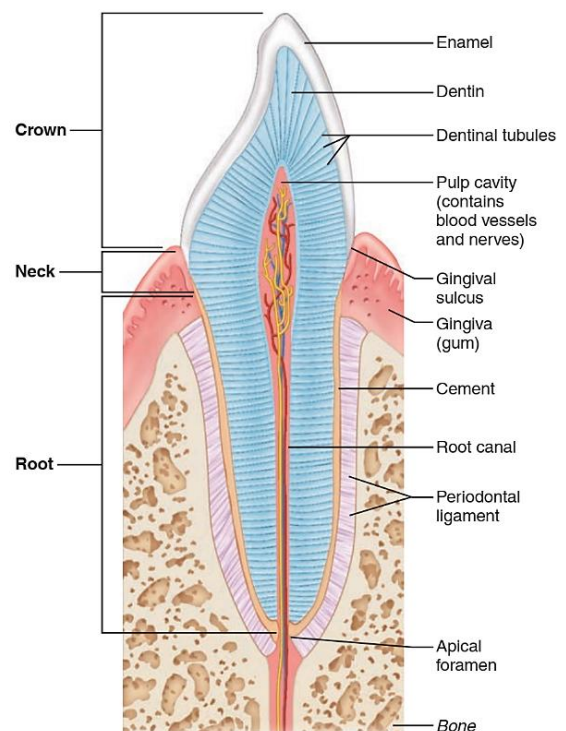
The tooth is differentiated into three parts

- Apex** or **Crown** : It is the outer part of the tooth, exposed **outside gums**.
- Neck** : It is the internal part of the tooth which is embedded **inside the gums**.
- Root** : It is the part of the tooth that is inserted inside the socket of the jaw bone.

The crown part of the tooth is covered with a very hard substance called the **Enamel**. It is the hardest material in all animals of the animal kingdom [**Ameloblast** = Enamel-secreting cells].

## Chapter Outline

- Forest
- Forest Classification
- Forestry
- Silviculture
- Role of Forest
- Forestry development through ages
- Important terminology
  -  Silvology
  -  Sacred Groves
  -  Precision Silviculture
- Exercise





**Rickets** : In *young animals*

**Osteoporosis** : In adults  
(Osteo = Bone + Porosis = pores)

**Big Head** in horses

9. Which of the following non-infectious diseases is caused by malnutrition and vitamin deficiency in wildlife? [APPSC (RFO) 2022 General Forestry – II]
- (a) Tetanus
  - (b) Rickets
  - (c) Tularaemia
  - (d) Lyme disease

10. Which of the following non-infectious diseases affects the musculoskeletal system of wildlife? [APPSC (RFO) 2022 General Forestry – II]
- (a) Foot-and-mouth disease
  - (b) Osteoporosis
  - (c) Newcastle disease
  - (d) Brucellosis

2.	Phosphorus	<ul style="list-style-type: none"> <li>• Demineralisation of bone</li> <li>• Poor appetite (<b>Bone Chewing</b>)</li> <li>• Engraving at inanimate objects known as '<b>Pica</b>' [Pica refers to an eating disorder where a person compulsively eats things that aren't food and don't have any nutritional value or purpose].</li> </ul>
3.	Magnesium (Mg)	<ul style="list-style-type: none"> <li>• <b>Grass Tetany</b>, also referred to as <b>Hypomagnesemia</b>, frequently develops in animals grazing on lush green pastures or cereal crops (Low Mg). Adult lactating animals are particularly susceptible because they lose magnesium through their milk, reducing their overall magnesium levels. Early signs of this disorder often include nervousness, muscle tension, and an excessive startle response to loud noises.</li> </ul>
4.	Iodine	<ul style="list-style-type: none"> <li>• <b>Goitre</b> (swelling of the neck from enlargement of thyroid gland).</li> </ul>
5.	Selenium (Se)	<ul style="list-style-type: none"> <li>• <b>White Muscle Disease</b> : Affects heart and skeletal muscles, causing weakness, stiffness, and even sudden death.</li> <li>• <b>Nutritional muscular dystrophy</b></li> </ul>
6.	Iron (Fe)	<ul style="list-style-type: none"> <li>• <b>Anaemia</b></li> </ul>
7.	Copper	<ul style="list-style-type: none"> <li>• copper is necessary for the formation of Haemoglobin, the deficiency of it causes <b>Anaemia</b>.</li> </ul>



**Goitre** (swelling of the neck)

Bone Chewing

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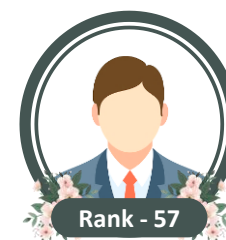
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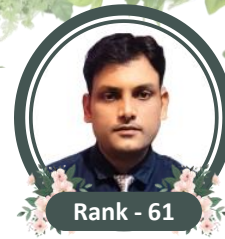
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