SBB 9403 ANIMAL BEHAVIOUR.

Introduction.

- In the rastness of human life, man has learnt to use animals for various purposes; ✓food sources
  ✓ Companions/pets.
  ✓ Entertainment (circuses, bull fighting)
  ✓ Ornaments
  ✓ Labour etc.

- The uses can be crucial, or trivial, some are justified while others are condemned, those that are of use and some of abusive.
- To effectively use animals, we require knowledge of their behavior at different conditions.

Behaviour - refers to some of all the activities of an animal in response to changes in its environment (both internal and external).

→ Anything an animal does such as moving, thinking, loving, planning etc.

- Animal behaviour has two distinct components.

a) Elements that we inherit from our parents - instinctive behaviour
b) Elements that we learn from experience - learned behaviour.

- Learning also alters instinctive behaviour. Therefor, all organisms exhibit simple instinctive behaviour but multicellular organisms exhibit both instinctive and learned behaviours.

Ethology and Behaviouralism

- It refers to the study of instinctive behaviour or the study of behaviour under natural surroundings.
- It brings behaviour as being governed by 4 components;

1. Sign stimuli - ques from e environment that cause certain behaviour.
   - These ques are recognized instinctively without previous experience.
2. Motor programmes - fixed actions/patterns that are unchangable and hard-wired into the nervous system
3. Drives - motivational states.
4. Imprinting - non-modifiable form of learning.

Behaviouralism

- This refers to the study of learned behaviour.
- They believe that behaviour is acquired as:
  i) Classical conditioning and
  ii) Operant conditioning.

Purpose of behaviour in animals:

- Behaviour enables an animal to survive in its ecological environment. It allows animals to:

a) Escape from predators
b) Seek out mates.
c) Gain dominance of other species
d) Respond to changes in the environment.

- However, it is not easy to identify the significance of a behaviour without careful study of the behaviou pattern and the impact it has on other organisms.
- The subscripton of human feelings, emotions and emotions to the behaviour of animals is called anthropomorphism.

The scientific study of animal behaviour and its ecological & evolutionary significance in its natural environment is called ethology and the scientists are known as ethologists.

- Behaviour in animals involves:
  i) Detection of a stimulus.
  ii) Transmission of impulses.
  iii) The ultimate response/activity.
- Therefore, the behaviour is influenced by:
  a) Effectors - respond.
  b) Control Centre.
  c) Receptors - detect stimulus.
- Behaviour is exhibited through muscle and glands.

Why study Animal Behaviour?

a) To cater for the welfare of animals during health, disease and suffering.
In Kenya, we have the Kenya Society for the prevention of cruelty of animals (KSPCA)
b) Knowledge of animal behaviour facilitates easy training of animals for various purposes eg research works, entertainment, labour etc.
c) Animal behaviour knowledge helps in counselling animal owners about cases of abnormal behaviour in husbandry.
d) Animal behaviour knowledge is important in improvement of resource use by animals eg mating sites etc.
e) It helps man in the development of behaviour through therapy such as the sick pet disease, Munchausen behaviour.
f) Helps in the control of certain pests e.g tsetse flies.
g) Conservation of threatened species. eg knowledge of their mating patterns.

Approaches to study of Animal Behaviour. 7/11/25

The study of animal behaviour is based on 3 behaviours; i) Forces of natural selection ii) Ability to learn iii) Power to transmit the learnt information.

1. Forces of Natural selection - traits that makes an animal to have sought of reproductive advantages usually favour the process termed as natural selection. (is a process where traits that confer the highest reproductive success on their bearers and which can be passed across a generation eg a giraffe's neck.)
2. Individual learning -
   - Animals in their course of life learn everything from food, shelter, predator to familiar relationships.
   - Individual learning can alter frequence of behaviour of others within the lifetime of an organism eg. mate selection in birds.

3. Cultural transmition / Ability to transmit.
   - Animals learn something by copying the behaviour of others through social learning.
   - It allows newly acquired traits to spread through populations at very quick rate, and also allows transmition of information across generations rapidly
   - It affects both within and between generation effects.

⇒ Individual learning

⇒ On the basis of the 3 foundation, there are 3 approaching to Animal Behaviour.

Approaches to the Study of Animal Behaviour.

1. The Convectional Ethological Approach.
- Explains an animal behaviour in terms of its adaptive value.
- It centres on the survival value of behaviour in animals
⇒ The approach explains an animal behaviour in terms of maximization of fitness.
It enhances the ability of an animal to adapt

2. Experiantal Approach.
- It is centered on behaviour that an animal experiences or learns
It highlights the role of memory the role of training and indulgence in modelling the behaviour pattern of animals.

3 Physiological Approach.
- It is concerned with the biological mediation and control animal behaviour.
It examines the role of nervous system, hormones in controlling animals.

* Behaviour and Selfish Gene Theory.
- The behaviour in animals works to promote survival of the animal whose ultimate goal in turn is consolidation (conserve) and protection of animals' genes
- The Selfish Gene Theory states that there is an inherent change among all animals to protect and care for themselves and their genes.
- In ensuring their own survival and survival of

their offspring, behaviour in animals has evolved to conform with the selfish Gene Theory.

* Animal Behaviour and Occams razor.

- Animal behaviour is one of the most difficult branches of Biology because it is dependant on several factors, some of which are extremely high to isolate and identify.
- Behaviour also depends on internal processes which cannot be observed eg Thinking, feelings and pain.

⇒ Therefore Ethologists have decided to explain behaviour in the simplest form possible

- Occams razor is an old principle logic and science which was coined in the 14th Century, that states, If several different explations to an observed act of behaviour are possible, the simplest is considered the most probable.
- Occams razor principle explain/ intepretes the activities of an animal in terms of the simplest mental, physiological or social process.

Types of Behaviours.

- There are basically 2 types of behaviour in animals.

1. Species-specific Behaviour.

- Behaviour which is shown by all members of the species.

Nomally this kind of behaviour is passed on from one generation to the other without training eg.

→ courtship behaviou in animals.
→ toilet behaviour in animals.

8. Individual Specific Behaviour.
- It varies from one individual to another individual within a species.
- Normally acquired through experience or learning and therefore easily modified. eg.
→ Hunting tricks in dogs.
→ Pulling carts in donkeys.

Adaptive Nature of Behaviour.
- All acts of behaviour in animals involve a set of purpose; mostly concerned with survival.
- Survival involve obtaining food, obtaining shelter, avoiding predators and fulfilling the purpose of reproduction.
- On the basis of the survival value, Behaviour is categorized into classes as follows;
a) Ingestive Behaviour - associated with feeding.
b) Eliminative Behaviour - defecation or urination.
c) Sexual Behaviour - procreation.
d) Care-giving Behaviour / Epimeletic Behaviour : provision of care and attention. Also called Nursing Behaviour.
e) Care Soliciting Behaviour / Etepimeletic signal for care and attention / seek for help.
f) Agnostic Behaviour - competing behaviour. conflicts fight
g) Allelomimetic Behaviour - behaviour that is co-ordinated where animals do the same thing at the same time.
h) Shelter-seeking Behaviour - enables an animal to escape from undesirable behaviour.
i) Exploratory behaviour - enable ana animal to sense the environment by an animal. Usually observed when an animal in a new environment.

j) Mal-adaptive Behaviours / Abnormal Behaviours e.g ostriches burying their heads in the sand. when they see their nocturnal enemies.

Categories of Behaviour.

1. Instinctive Behaviour - it is showed by all animals.
- Normally this kind of behaviour is passed on from one generation to another without training.
- They are automatic, pre-programmed and genetically determined.
- They are performed correctly in the first time without previous experience as long as the right stimulus is given.
- An organism can only respond to the stimulus they recognise, therefore different animals respond differently to a certain stimulus. eg blood hound can detect animals by their smell but humans cannot differentiate different orders.

Examples of species instinctive behaviour include, courtship in animal, mating behaviour, web spining in spiders.

2. Learned Behaviours.

This type of behaviour varies from one animal to another due to experience that is learned.
It is normally acquired through experience or learning and produces behaviour which are easily modified eg Hunting behaviour in dogs.

⇒ Animals generate their behaviour through instincts or learning.
- Most animals have a high level of instinctive behaviour and less of the learned behaviour.
However, some like birds and mammals show a great deal of learned behaviour (because of high brain capacity)

Examples of Instinctive Behaviours.

- It is common in animals with short life cycles, short nervous system and have little parental care.
- They have proved to be useful to the individual species, however there are some instances where the appropriate behaviour can be generated by unusual stimuli eg.

⇒ Many insects use the sun, moon and stars for litigation however, the invention of artificial light has led to the generation of inappropriate behaviour eg when there is light the insects.

⇒ A certain species of goose have a behaviour of rolling back of eggs into the nest that could have rolled out of the nest during the exit of eggs.

- It is adaptive as it prevents the eggs from exposure that can kill the embryo
- However, if an egg is taken from a goose during incubation, the goose will continue its rolling ~~until it gets~~ back into the nest even if there is no egg to be rolled.

⇒ Inability of spiders to repair defective webs.

- They are unable to adapt which is as a result of instinctive Behaviour.

Examples of Learned Behaviours

- It is more significant in more lived animals that care for their young ones because these animals are likely to benefit from a previously experienced situation and modify accordingly.

As young ones grow, the imitate from parents and develop behaviours that are local to the environment.

⇒ These behaviours are adaptables.

For learning to occur the animal should have a large brain to store information for learning.

In humans, nearly all behaviours are learned.

Comparison between Instinctive & Learned Behaviour.

Instinctive	Learned
1. Animal is born with the behaviour	One is not hereditary.
2. It is hereditary	
3. Behaviour is perfect the first time	Requires practice.
4. No experience is required	Performance improves with experience
5. Behaviour cannot be changed	Behaviour can be changed
6. Memory is not important.	Memory is important.
7. Typical in animals that have short lives & have no contact with parent.	Typical in animals that have long lives & extensive contact with parents.

Hints

- Behaviours that are instinctive but can be modified into learning.

Learning and Memory.

- An animal which has memory has the ability to learn.
- Memory is the ability to form long-lasting impressions of situation or events on the basis of past experience.

Types of memory; ✓ Short-term
✓ Long-term memory

i) Short-term memory.

- It is used to store information soon after an event has occured. Such information is easily lost after interferance.

ii) Long-term memory.

- It is relatively permanent and it follows short term memory.
- Generally animals have the ability to learn between and within species.
- Intelligent animals learn faster eg mammals are most intelligent and passes the most learning potential followed by birds.
- This is because they have a large brain capacity.

Categories of Learning.

1. Habituation.

⇒ This is a change of behaviour in which an animal ignores a stimulus after repeated exposure. eg

> Domestic animals learn to ignore human beings after frequent exposure to them.
> Loud noises startle humans & animals alike, however, constant exposure to those sounds results to individuals ignoring those sounds.

2. Association.

⇒ It occurs when an animal makes a connection between a stimulus and an outcome.

- There are different kinds of associations in animal learning ie.

Eron Pablor

i) Classical Conditioning :- by Eron Pablor.

ii) Operant / Instrumental Conditioning :- giving reward to promote a particular behaviour or a punishment.

- It involves association between two different stimuli.
- The animal learns to repeat acts that bring good results and avoid those that bring bad results, due to rewarding and punishing.

The reward / punishment is received after an animal has engaged in a particular behaviour.

A reward that encourages good behaviour is called positive reinforcement and a punishment that discourages negative behaviour is called negative reinforcement.

- The training of many kinds of animals involve this kind of conditioning.

iii) Observational learning / Imitation.

- It is a form of associative learning that occurs when an animal watches another animal that is being rewarded for performing a particular behaviour, and performs the same behaviour itself. e.g

> Many kinds of birds/mamals follow their parents and mimmick the behaviour they see in their parents.

- In this case the animal is not receiving the reward/punishment itself but is seeing the fruits of the acts, and immitates.

Examples of Associative learning in the natural environment in animals:

> Many pets anticipate their meal times because their owner go through a certain set of behaviours.

> If certain kind of fruits or insects have an unpleasant taste, animals will learn to associate the bad taste with the colours and shapes of the objects and avoid them in future.

> Pigeons in cities have learnt to associate food with people in national parks. They can even identify

individuals who regularly feed them.
- Many birds in urban areas have associated vehicle with food and are seeing picking smashed insects from grills and numbers of cars.. When a car drives through it is examined for food by them.
- Associative learning is common in humans eg: we associate smells with certain foods types, sirens with emergency vehicles and word with their meaning.

The ability to form an association between two events is extremely valuable to animals because;
i) It leads to learning on how to get more food.
ii) Makes an animal to learn on how to avoid predators.
iii) Makes an animal to learn on how to avoid poisons.
iv) Enables an animal to learn on how to protect its young ones effectively.

iii) Imprinting.
- This is a kind of irreversible learning in which a very young animal is genetically primed to learn a specific behaviour in a very short period during a specific time in its life.
- A process in which a young animal forms an association and learns to identify with another animal/object.

Importance of Imprinting;
- In the development and growth of an animal.
- Imprinting only occurs during a certain period of life and the time during the learning is called critical period.

Examples of Imprinting learning behaviours;
i) Ducklings will only follow objects they were originally imprinted on and under normal conditions, the first large noisy moving object they see is their mother.

- Imprinting ensures the immature birds will follow her and learn appropriate feeding, defensive tactics and other behaviours by example.
- If animals imprints the wrong things, they are not likely to survive.

(ii) The way sparrows learn their song appears to be a kind of imprinting.
- The young bird must hear the song correctly during a specific part of their youth, otherwise they will never be able to perform the song correctly as adults.
- The period of time when they learn the song is prior to the time they begin singing.
- The correct song is important for finding mates, informing females that the male has a mating space to itself and that the male of the same species.

(iii) Mother sheep and other kinds of mammals they imprint the smell of their offspring and are able to identify their offspring from a group of lambs and will only allow their offspring to suck milk.
- Shepherds normally get sheep mothers who have lost their lambs to accept an orphan lamb if they dress the skin of the dead lamb over them.

(iv) Male fish seem to imprint their riders in the water eg the salmon fish are famous for their ability to return to the fresh water streams that they were hatched in.

(v) Bonding between mother and infants is thought to occur through imprinting.

(vi) Language development in children are learnt when the child grows up. If multiple languages are spoken, they will learn them all and easily unlike adults who are unable to unlearn previous languages and therefore end up speaking new languages with accents.

characteristics
- It is pregrammed and > what has been learnt cannot be unlearnt.
- Learning that occurs at a specific time in life(critical period)

Types of Imprinting.
1. Filral
2. Sexual Imprinting.

1. Filral Imprinting.
- It involves forming a parental association with a real object or unreal object.

2. Sexual Imprinting.
- It involves forming a sexual attachment to an irrelevant individual. eg In zoos some female animals develop sexual imprinting and when on heat, they run to male attendant and run away from their male counterparts.

#3. Insight/Role playing of learning
It is a special kind in which past experiences are re-organised and then used to solve problems when faced with a new problem. to locate those that apply.
- Humans, especially pride themselves in learning and often come up with new solution by relying on past information that are stored in their big brains to provide clues to solve new problems (heuristics methods)
- Play behaviour is common in mammals and birds. In this animals, play behaviour involves several behaviour such as chasing or being chased, mock fights, climbing objects, mounting or wrestling.
- Play is performed by one ones and is important as it helps the young one to do the following;

i) Practising the roles that adults performs. eg courtship, mounting etc
ii) It makes the young animal to acquire knowledge of the environment. eg in parks baboon can differentiate

Importance of Learning as a Behaviour:

1. It enables an animal to escape from unfavourable environments and enemies.
2. Learning helps in the treatment of problematic behaviour.
3. Learning helps in the perfection of certain acts e.g. courtship, mating, catching prey etc
4. It helps in avoiding bodily harm and injury e.g through diffency diseases. This is known as taste eversion a habit that is used to avoid or prade unpleasant food once it is eaten and found to be.
5. It helps in training and conditioning of animals for various purposes e.g labour.
   - Once they are trained animals become easier to hand e.g cow going to milk shed whenever they see milkingman.