

# **300801 Animal Science Study Notes**

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# Behaviour - Lecture 1

## Importance of animal behaviour

Animal behaviour is the bridge between the molecular and physiological aspects of biology and the ecological. Behaviour is the link between organisms and environment and between the nervous system, and the ecosystem. Behaviour is one of the most important properties of animal life. Behaviour plays a critical role in biological adaptations. The behaviour of an animal can tell observers about the animals current health, welfare, age, stress levels, reproductive status etc.

## Methods of animal behaviour

Chemical Signals - pheromones, allomones

Airborne and waterborne chemicals received at a distance from their source are detected by olfactory reception, other chemicals require contact reception, direct contact of the receiver with the source of the pheromone.

Eg. Queen bee - sex pheromone

Bee strings - alarm pheromones (Isopentyl acetate)

Ants and Snakes - trail pheromones

## Visual Signals

A performance, signal or display by assuming a body posture. These postures communicate what the animal is reacting to like a predator, a mate or a companion. Visual signs are not receiver specific, that is any animal can witness and react from another animals visual signals. Eg Peacocks feather flair, rabbit stomping, elephant ear flapping, a dogs wagging tail, raised shackles on a cat.

## Representational Information

Most displays reveal information about the signaller, whether it be fitness, disposition, or location. Representational information imparts information about the environment external to the sender. Eg a foraging animal can communicate to the herd where a food source is.

## Acoustic Signals

Acoustic signals are energetically costly, but can travel great distances, degrading with increasing distance. Many animals produce sounds to impart information like alarm calls that represent a type of threat. Other examples include a lion roaring to display dominance, a sheep bleating for its lamb, a cat meowing during heat.

## Tactile Signals

Physical contact is limited in its ability to communicate because it is extremely short-range. Many invertebrates use antennae as the first line of contact with objects and organisms. The most common use of tactile communication occurs during copulation. Tactile stimulation by males will often let a female know when to adopt a sexually receptive posture. In primates, grooming is an extremely important social activity. It functions to remove parasites, but also to secure social bonds.

## Electrical Signals

Sharks and some fish have electroreceptors that are used to detect objects and to socially communicate. Electrolocation is a form of auto communication; signallers send and receive their

Ethology  
Pheromones  
Allomones  
Molecular  
Physiological  
Visual  
Representational  
Acoustic  
Tactile  
Electrical  
Innate behaviour  
Learned behaviour  
Social structure  
Instinct  
Flight or Fight  
Circadian rhythms  
Maternal  
Paternal

own signals. The difference between the emitted and received signals yield information about the environment through which the signal has passed. Species that use electrical signals for social communication are nocturnal or inhabit murky waters where visual communication is limited. Electrical signals are useful because they are extremely precise; they are limited to use in aquatic environments, though, because air is ineffective as an electrical insulator or conductor.

### Innate and learned behaviour

Innate behaviour is instinctive behaviour determined by the “hard-wiring” of the nervous system. It is usually inflexible, a given stimulus triggering a given response.

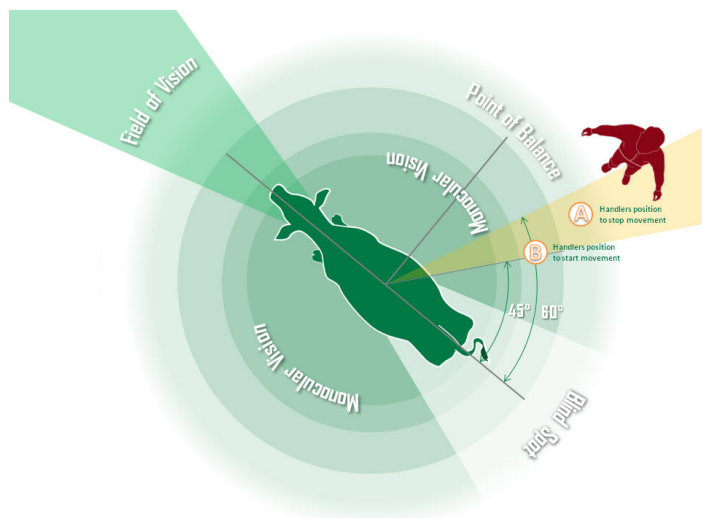
Learned behaviour is a change in behaviour or an adaption to a new environment, habitat, diet due to an experience. Behaviour that is more or less permanently altered as a result of the experience of the individual organism.

### Importance of animal behaviour for production animals

Understanding the behaviour of production animals such as cows, sheep, chickens and pigs allows humans to work with these animals natural instincts. In turn humans modify their responses not the animals which makes handling easier. Many production animals are a part of a herd or flock which means natural instincts will develop. For example limiting resources for sick or weak herd members.

### Importance social structures in animal behaviour

Groups of animals will have a hierarchy system. Many troops, prides, herds etc are made up of females with only a few males or one dominant male. There is safety in numbers and protection from a dominant male or female in matriarchal groups. Social structure are also important in breeding especially captive breeding. A normal instinctive social structure keeps animals level, anything that is out of the norm would stress and confuse an animal.



### Types of animal behaviour

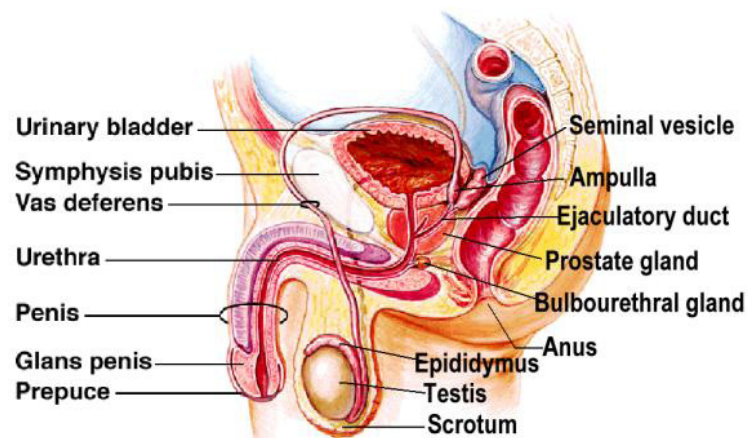
- Innate - instinctive
- Learned - adapted
- Exploration - unfamiliarity (sensory system)
- Fear - flight or fight
- Social - hierarchy
- Sexual - reproduction, heat
- Self Maintenance - cleaning
- Stereotypical - anxiety or frustration eg pacing
- Sleep - nocturnal, circadian rhythms
- Ingestive - foraging, hunting
- Parental - maternal or paternal

## Reproductive System - Lecture 2

Accessory Glands	FSH	Oxytocin	Testosterone
Activin	GnRH	Parturition	Urethra
Altricial	Hyaluronidase	Penis	Uterus
Ampulla	Hypothalamus	Perimetrium	Vagina
Androgen	Infundibulum	PGF	Vas Deferens
Bulbourethral	Inhibin	Pineal Gland	Vitelline Membrane
Capacitation	Internal	Pituitary Gland	Vulva
Cervix	Fertilization	Placenta	Zona Pellucida
Chorioallantopic	Isthmus	Plasma Membrane	Zygote
Choriovitelline	LH	Precocial	
Cilia	Meiosis	Pro-Oestrus	
Cleavage	Metatheria	Progesterone	
Cumulus Oophorus	Metestrus	Prolactin	
Diestrus	Mitosis	Prostate	
Dystocia	Morula	Prototheria	
Embryo	Myometrium	Relaxin	
Endometrium	Oestrogen	Scrotum	
Epididymis	Oestrus	Seminal Vesicles	
Estradiol	Oocyte	Seminiferous	
Eutheria	Oocytogenesis	Sertoli Cells	
External	Ootidogenesis	Spermatocyte	
Fertilization	Ovary	Spermatogenesis	
Fetus	Oviduct	Spermatogonia	
Folliculogenesis	Ovulation	Testis	

### Function of the reproductive system

To produce young for the future of the species



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the genitals

Penis - male sex organ, inserts into female sex organ (vagina) where sperm is ejaculated

Accessory gland - prostate, secretes alkaline that neutralises the acidity of the vagina. Seminal vesicles, secretes fluid that ultimately becomes semen. Bulbourethral, produces “pre-ejaculation” lubricates the urethra and neutralises traces of acidic urine

### Function and structure of the male reproductive system

Scrotum - sack containing testicles

Testis - location of the production of sperm

Epididymis - tightly coiled tube connected to the testes where sperm matures and travels to the vas deferens

Seminiferous - location of meiosis, creation of cells, located in the testicles

Vas Deferens - also called ductus deferens, transports from the epididymis

Urethra - connects the urinary bladder to