IMPORTANCE OF ANIMAL BEHAVIOUR STUDIES
(LPM-609)

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Domestication of Farm Animals

- Why prehistoric men have chosen certain animal species for domestication out of thousand species available in wild?
- Even today, the primitive people capture many young wild animals and kept them as pets for short times, but never become truly domesticated.
- This scientific puzzle can be solved from studying the behaviour of farm and household animals.

- Considered as a group, domestic animals and birds are highly social and their wild relatives form elaborately organized groups under natural conditions.
- The general characteristic of domestic animals is their ability to adapt themselves to other conditions than those in which they naturally live.
- That is why, relatively few species have this capacity and a native aptitude for domestication.
- The aptitude of domestication includes both a high degree of sociability and general adaptability for general resemblance in behaviour of all domestic species.

History of Farm Animal Behaviour Studies

- The first published document to emphasize the importance of behavior in assessing animal welfare was authored by the Brambell Committee (1965).

- This committee was established by the British government after the public outcry following publication of Ruth Harrison's book in which she referred to as "factory farming" methods in *Animal Machines* (1964).

- After hearing testimony and reviewing farming practices in Europe, the members of the committee wrote:

"The scientific evidence bearing on the sensations and sufferings of animals is derived from anatomy and physiology on the one hand and from ethology, the science of human behavior, on the other … we have been impressed by the evidence to be derived from the study of the behavior of the animal. We consider that this is a field of scientific research in relation to animal husbandry which has not attracted the attention which it deserves and that opportunities should be sought to encourage its development".

- Brambell Committee (1965).

- The committee further concluded that animals had behavioral needs that could not be satisfied in barren, restrictive environments, and that not providing for those needs was likely to cause suffering, ideas that have proven to be very influential in shaping ethological research on animal welfare.

- Welfare is promoted when animals are able to perform the activities that most closely resemble the behavioral repertoire of their free-ranging con-specifics. **(Eminent zoologist W. H. Thorpe)**

- Limitations of Thorpe's idea for ensuring welfare with reference to 3 normal behaviors in swine:
  - The distress calls given by piglets when they are separated from their mothers.
  - Nest building by sows before parturition.
  - Wallowing, which is a thermoregulatory behavior shown only under hot conditions.
- A pig's natural behavioral repertoire consists of things that the pig really does not want to do (such as give distress calls), wants to do (such as build a nest), and wants to do but only when conditions require it (such as wallow).

- The 3 behaviors described above obviously have different implications for welfare.
- Providing a pregnant sow kept in a temperature-controlled environment with a wallow would do little to improve her welfare, whereas giving her nest-building material might improve her welfare a great deal.
- Piglets in a situation in which they give distress calls, however, would actually reduce their welfare.
- Thus, to assess the welfare significance of particular behaviors, it is important to have an understanding of what causes the behavior to occur in the first place.

Motivation and Welfare

- Many factors can motivate the performance of behaviors.
- One approach to studying motivation has been the attempt to determine the relative importance of internal and external factors in causing particular behaviors.
- Some behaviors are classified as being motivated primarily by factors external to the animal, exemplified by thermoregulatory behaviors like wallowing in pigs and antipredator behaviors in prey species.
- Other behaviors, like food searching when hungry, appear to be largely internally motivated. Yet other behaviors are elicited by complex interplay between both internal and external factors.

- Mating behavior is motivated by hormonal state, which may in turn depend on seasonal and other environmental factors as well as the accessibility and readiness of appropriate sexual partners.
- Cues from one partner to the other during courtship can further influence the hormonal states and behavior of the courting pair.
- Behavioral needs are generally conceptualized as those behaviors that the animal must perform regardless of environmental circumstances.
- Primarily internally motivated behaviors that may occur even in the absence of appropriate external stimulation.

- Hens kept in cages without litter material will still perform dustbathing behaviors, although the movements are somewhat abnormal and the dustbathing episode is short compared with a normal dustbathing episode.

- Behaviors of this type are called vacuum activities (because they occur “in a vacuum”).

- Another form these behaviors can take is to become stereotyped. Many oral stereotypies have been shown to be associated with the lack of opportunity to perform particular components of feeding behavior.

Why is Behavior so Important?

- Behavior is what animals do to interact with, respond to and control their environment.
- Behavior is generally the animal's “first line of defense” in response to environmental change.
- Careful observations of behavior can provide with a great deal of information about animals' requirements, preferences and dislikes, and internal states, provided that interpretation of those observations is firmly grounded in a knowledge of species-typical behavior patterns.

- An approach to management or housing design that focuses primarily on behavioral needs is too narrow and does not adequately consider the beneficial effects a behavior on welfare even when that behavior might not be defined typically as a need.

- Reconsideration of simple behavioral preferences and species-specific behaviors to identify the *consequences* for an animal performing particular behaviors.

- Elaborative studies on the association between potential welfare benefits and an animal's performance of certain behaviors is the requisite of the time.

Maintaining Physical Health or Physiological Normality

- The performance of certain behaviors can lead to improvements in physical health.
- The beneficial effects of exercise on animals given the opportunity to engage in species-typical patterns of locomotion.
- Dairy cows walked daily have fewer leg problems, including non-infectious leg and hoof disorders as well as lower incidence of mastitis, bloat and calving-related disorders than cows kept in tie stalls.
- Captive birds whose movement is restricted tend to develop osteoporosis.
- Providing the opportunity for perching behavior helps to reduce bone breakage.

- In early-weaned calves, the suckling reflex is stimulated when the calves are fed even small quantities of milk and that the reflex persists for 10 min after intake.
- If the calves are allowed to suck a non-nutritive (dry) teat after their milk meal, production of digestive hormones including CCK and insulin is increased.
- Suckling behavior itself, then, has beneficial effects on digestive physiology in calves.

Preventing/Reducing Illness, Fear, Stress & Pain

- Behaviors can also be important in reducing illness, pain, fear, stress or tension.
- If possible, animals will remove themselves from a fear-producing stimulus by fleeing or seeking cover.
- Sick animals show a number of behavioral changes, including anorexia, sleepiness, depression and a reduction in grooming activity, which help to conserve energy and thus facilitate healing.

Providing Pleasure, Comfort or Satisfaction

- Most animal welfare research has focused on identifying and minimizing causes of suffering.
- However, behaviors that contribute to animals' pleasure, comfort, or satisfaction have received comparatively little research attention, although they are widely recognized as important components of human well-being.
- A number of elements that contribute to life satisfaction include a sense of control, meaningful social relationships, challenge and active engagement.

Behavior as an Indicator

- Behavior of an animal provides information to human caretakers about the welfare of the animal.
- Thorough observation and a sound knowledge of species-typical, and often individual-specific, behavioral patterns are required to interpret this information.
- Behaviors are widely used as indicators of pain or illness in laboratory animals.
- Well-designed experimental studies can provide information about which behaviors are valid indicators of pain or distress, and even the degree of pain or distress experienced by the animal.

Designing housing environments based on behavior

- Animal behavior is rarely given a great deal of consideration in the design of housing systems and equipments.
- Behaviorally inappropriate design can lead to injury and other welfare problems.
- Using static and kinematic studies of sow feeding behavior, some feeders are simply not designed to properly accommodate a sow's head shape, space needs and movement patterns during feeding.

- The design changes require to better accommodate normal behaviors.
- Orienting the front bars of laying hen cages horizontally than vertically, allows the hens to change feeding location more easily and decreases the likelihood to be trapped between the cage bars.
- An understanding of behavior is also critical to effective environmental enrichment programs.
- Animals are unable to use enrichment devices and enriched environments unless those devices and environments are behaviorally relevant to them.
- Effective enrichment often requires a detailed analysis of both patterns of behavior and causes of abnormal behaviors.

Principles of farm animal behaviour

- Livestock behave in various ways depending on circumstances and species.
- A basic understanding of animal behaviour in typical circumstances from the farm to the market/slaughterhouse will help handlers in the management of livestock to prevent undue stress and injury.
- Animals raised in extensive systems are unaccustomed to frequent contact with humans and will not allow people to approach them easily.

- These animals will require more elaborate loading ramps, pens and handling than tame ones.
- People loading extensively raised animals need to understand the psychology of the animal in order to prevent injury to either the animal or themselves.
- Animals raised intensively or dipped regularly (for tick control) and animals living in close contact with humans are generally more tame and easy to handle.

Relation of animal vision, hearing and smell to stress and injury

- Ruminant animals can discriminate between different colours.
- The ruminant eye is most sensitive to yellow-green and blue light.
- Livestock (cattle, pigs, ostriches) are very sensitive to light contrast.
- This causes them to hesitate at and shy away from drains, gates, and changes from wet to dry or concrete to metal floors.
- Lighting should be even and diffuse and harsh contrasts of light and dark should be avoided.
- Ultraviolet or diffuse light has a calming effect on poultry.

- cattle and ostriches have a wide angle of vision and to prevent them from becoming afraid of distractions outside confinement, the holding pens and gates should have solid sides.

- Animals also shy at moving things, darkness and may refuse to enter a dark place.

- Animals have a tendency to move from a darker to a lighter place.
- Extra, indirect lighting may help in moving animals in pens.

- Adding a light to illuminate a race entrance or removing a lamp to eliminate a sparkling reflection will often improve animal movement.

- All species of animals may hesitate and refuse to move when they see things that scare them.
- Such as sparkling reflections, dangling chains, moving people or equipment, shadows or water dripping.
- A calm animal will stop and look right at the distraction that scares it.
- If animals hesitate, the distraction that causes this should be removed instead of increasing the force used to move them.
- Rapidly moving objects scare animals.
- Forcing them to quickly approach a vehicle, pen or building may cause them to panic.

- Cattle, sheep and ostriches have very sensitive hearing, particularly to high frequency sound.
- Sounds that do not bother people, may hurt animals' ears.
- Reducing noise from equipment and people will improve animal movement, reduce stress and the risk of injury. People should not yell, whistle or make loud noises.
- Clanging and banging of equipment will unsettle animals and can be reduced by installing rubber stops.
- Hissing air is one of the worst noises but also easy to eliminate.

- In many rural circumstances, where cattle live in close proximity to humans and are confined/chained every night and regularly dipped, some of these noises can be useful aids to droving.
- For example in rural areas, where cattle are accustomed to yelling and loud noise, it encourages movement.
- Generally, noise increases physiological stress levels.
- Slaughter in a small, quiet abattoir produces less stress hormones in animals compared to a large, noisy commercial plant.

- Emitted odours and strange smells cause animals to become unsettled and excited.
- This is noticeable in animals, which are strangers to each other or to surrounding conditions.
- Pre-mixing of these animals, or smearing pigs with litter from a single source will reduce tension and fighting amongst strangers.
- Cattle will hesitate and refuse to enter a stunning box or restrainer if the ventilation system blows blood smells into their faces.
- An exhaust fan to suck away smells will facilitate entry into a stunning box.

- If an animal becomes agitated and frenzied during slaughter handling, subsequent animals often become agitated as well and an entire slaughter day can turn into a continuous chain reaction of excited animals.
- The next day, after the surrounds and equipment have been washed, the animals will be calm.
- A stress pheromone in the blood of severely stressed animals can be smelt by others and cause excitement.
- In cattle and pigs, stress hormones are secreted in the saliva and urine, and tend to avoid objects or places contaminated with urine from a stressed animal.

THANKS