An_Hand_Ep010_200107

Hearing, Touch, and Behavior

Our topics for this week are:

- Hearing
- Vocal communications
- Touch
- Body heat

HEARING

Sounds are an important communication method and stimuli that warn animals of potential danger. Animals are able to differentiate each member of their group's voices. Similarly, they know each of their handlers' voices. They are able to recognize and associate sounds that occur with feeding, distress, and breeding, among others.

There are three aspects to hearing sounds: intensity, frequency, and directional ability. Intensity (amplitude) is measured on a logarithmic scale in units called decibels. Frequency is the number of vibrations per second. Measurement units are Hertz (Hz).

Animals, particularly prey animals, are distressed by suspicious or loud noises. Small animals should be spoken to in a low-pitch, calm voice. Livestock should only be exposed to calm and relatively quiet noise when being handled or moved. Handling facilities require regular maintenance to reduce unnecessary noises. Rubber bumpers should be attached to metal gates. In addition, hinges, fans, and other moving equipment should be lubricated.

Intensity

Low-toned soft sounds are soothing to animals. High-pitched sounds are associated with distress signals and are stressful to prey animals. Conversely, predators (dog, cats) may become more aggressive if exposed to loud noises. Yelling with a high-pitched voice causes prey animals (horses, cattle) to panic and attempt to flee. Soothing background music can calm animals and is often used in kennels, milking parlors, and horse stables. On the other hand, raucous music is not beneficial to animal handling. To reduce fear in livestock, it helps to attach rubber bumpers to metal gates and lubricate hinges, fans, and other moving equipment to control high-pitched noises during handling.

Yelling and waving arms should not be used to move animals, especially if they are in confinement. Cattle can be moved more efficiently and quietly by avoiding yelling and instead using canes, whips, or paddles as visual extensions of the handler's body without contacting the animal's body.

Birds have excellent hearing and pitch discrimination which allows them to analyze sound. Their ears are funnel-shaped to concentrate sound waves, and are located behind and below their eyes, covered by soft feathers.

Frequency

All domestic mammalian animals can hear higher frequency sounds than humans. The auditory range of humans is approximately 20 to 20,000 Hz, while dogs have a range to around 45,000 Hz, and cats can hear up to 75,000 Hz. Horses and livestock have upper ranges of 35,000 to 40,000 Hz. Rodents have higher upper range of 75,000 to 80,000 Hz similar to that of their chief predator, the domestic cat. Birds range of hearing is similar to humans. Lizards react best to lower frequency sounds below 5,000 Hz. Geckos are the most vocal lizards, using distress calls if threatened.

Snakes have internal ears which detect sounds only if the sound causes low frequency vibrations. They feel the vibrations with their jaw from the surface that they are laying on. The vibrations are then transmitted to their internal ears. Snake charmers with a flute rely on the visual movement of the flute, not the sound of music to mesmerize snakes.

Direction

The ability to hear can be enhanced by moving external ear position in the direction of the sound source. Ear position is an indication of expected behavior. Horses and cats turn their external ears in the direction of their current point of attention. Horses ears moved toward a handler indicates that the handler has their attention. Laid back ears can be an indication of aggressiveness in horses, cats, and llamas. However, horses will lay their ears back when highly focused on any task, including working with great intensity, such as running hard or being intensely serious about wanting to eat grain. Laid back ears in dogs or cats can be an indication of fear.

Erect external ears are best at detecting sound direction and amplifying sound to the ear drum. Dog breeds with erect ears are the most often used as sentry animals to guard property. Some breed standards expect ears to be trimmed so that they can be made erect to assist hearing. Although both have highly movable external ears, predators can locate the direction of sound more accurately than large prey animals.

Auditory Communications

All domestic animals use sound as one means of communication, although not much is known about vocal communications among animals. Most that is known involves the communications among dogs, cats, and horses.

Infantile sounds used in dogs and cats include meows (cats) and whimpering (dogs). Warning sounds are growl or bark in dogs and hissing in cats. Eliciting or calling sounds in cats are meowing and howling. Withdrawal sounds of dogs are yelps, and in cats, the sounds are screaming or chattering. Sounds of pleasure are moans and grunts in dogs. In cats, sounds associated with pleasure are purring and chirrup.

Horses neigh to acknowledge the location of other horses. Whinnies are louder and more questioning of location. A nicker is a welcoming sound. At feeding time a nicker means hurry up and do not forget about me. A snort is an alert to all around of a possible danger. A blow is a strong exhale signaling a building of excitement. Squeals are intended to startle. Mares often squeal to tell another horse to back off. Grunts are an exclamation of extra effort. Screams mean extreme pain. A roar is a warning sign of an agitated stallion.

Cattle moo to convey their location. Grunts are used by new mothers as part of the bonding stage in the first days after giving birth. They use a louder call, a bellow, to locate their calf when separated, warn of possible danger, or express other reasons for distress. Snorting is a sign of agitation and may signal an attack from an angry nursing mother or from an irritated bull.

Camelids communicate vocally. Dams hum to their cria (babies). A clicking sound is made to warn of potential danger. A grumbling sound is made if irritated. They will scream if in extreme danger or pain.

Hogs grunt frequently. When excited, the grunts are short in duration. Long grunts are used when content or calling to establish location of other hogs. They squeal when disturbed and scream when hurt or frightened. Dominant hogs will bark at a subordinate to make them move, establishing or re-establishing their superior social rank.

Chickens have extensive vocal communications. Turkey hens bark when in an unfamiliar area to keep the flock together. A wheat-sounding alert is added if a threat may be near. Male (tom) turkeys make the gurgling gobble sound to make their presence known to the hens, and if intending to attack, toms will make a purring sound.

TACTILE (Touch)

Animals communicate with each other with a range of touches. Soothing or grooming touches reinforce the bonding within a group. Quick metered blows or bites are to reinforce early visual or vocal warnings of needed behavior change of another member of the group.

Excessively light touching by handlers may be perceived as fear by horses and cattle. Moderately firm stroking conveys a better impression of confident leadership of a good handler. Light to moderate slapping will first be perceived by horses as aggression, but they should be gradually desensitized to pats and gentle slaps for the safety of a handler who may slap horseflies to protect himself or the horse or might unintentionally bump a horse.

Animals can feel vibrations of the ground through their feet, which is useful when herd members try to intimidate one another, initiate play activities, or signal the need to escape from danger. Snakes feel vibrations in the range of 150 to 450 Hz. Surface vibrations are transmitted via their jaw to their inner ear enabling a auditory sensation.

Whiskers (vibrissae) are large, long, well-innervated hairs surrounded by a vascular sinus. Most species have vibrissae on the upper (maxillary) lips. Dogs also have supraorbital (above the eyes), genial (cheeks), and interramal (between the angles of the mandible). Cats also have carpal vibrissae. The function of vibrissae is to feel spatial limits, air movements, and movement of captured prey. Vibrissae on the muzzle of horses is trimmed for some show events. This can alter normal spatial sensations causing some horses to temporarily quit eating or drinking.

BODY HEAT

Some snakes (pit vipers, pythons, and some boa constrictors) have infrared receptors for tracking warm-blooded mammals. The receptors may be between the nostrils and eyes, as with pit vipers or just below the nostrils, which is the case in pythons. This special organ can detect temperature changes of 0.002 to 0.003 degrees centigrade. The snake's brain is believed to form images from

infrared rays in a way similar to visual images from the eyes.

Now, let's recap the key points to remember from today's episode:

- How
- Knowledge
- Animal

More information on animal handling is available in my book, *Animal Handling and Physical Restraint* published by CRC Press. It is also available on Amazon and from many other fine book supply sources.

Additional information is available at www.betteranimalhandling.com

Don't forget serious injury or death can result from handling and restraining some animals. Safe and effective handling and restraint requires experience and continual practice. Acquisition of the needed skills should be under the supervision of an experienced animal handler.