

Understanding Your Horse's Behavior

BASICS OF HORSE BEHAVIOR

Prey and Predator

Horses evolved from small mammals whose survival depended on their ability to flee from predators. This basic survival mechanism still is ingrained in the modern horse. Although we have removed most of the predators from the life of the domestic horse, its first instinct when frightened is to run away from the frightening stimulus. If running is not possible, the horse resorts to biting, kicking, and striking to protect itself. Many of the horse's natural behavior patterns, such as forming herds and performing the same activities as other horses in its herd, relate directly to its prey status.

Perceiving the World

As a prey species, the horse is well equipped to detect danger. It has large eyes set on the side of its head, giving it a wider visual field (almost a full 360 degrees) than humans. The horse cannot see directly under its head and behind its tail because these areas are blocked by the horse's body. Therefore, the horse cannot easily detect the difference between your finger and the treat you are trying to feed it, or it might be startled if you approach it directly from the rear and suddenly enter its visual field. Because of its eye placement, the horse's area of binocular vision (the two eyes working together to provide depth perception) is smaller than a human's. The horse's visual acuity may be less sharp than a human's, but horses seem particularly adept at detecting movement, an important attribute for a prey species. Because the horse's visual acuity and depth perception may be inferior, it is important to design fencing and facilities that are easily visible to the horse. The horse's night vision is superior to man's because horses have a layer of cells, the *tapedum lucidum*, behind the retina of the eye that reflects light back to the retina, enhancing night vision. Even so, managers should be careful to change fence lines or turn horses into new pastures during morning hours so horses have ample time to locate fence lines and other hazards in the daylight.

The horse's auditory (hearing) sense is quite good, and its hearing range is comparable to that of a human. Horsemen should pay close attention to the horse's ear position because it usually indicates where the horse's attention is focused and what its intentions are. The horse's olfactory (smell) sense is well developed, and it uses olfaction in investigating its surroundings and in identifying

other horses. It has an accessory olfactory organ, the vomeronasal organ, that assists in analyzing odors. Both male and female horses use this organ, but its use especially is prevalent in stallions during courtship. The flehmen (lip curl) behavior of horses, in which they raise their noses, extend their heads, roll up their upper lips, and pull air into their nostrils, concentrates odors in the vomeronasal organ for analysis. The horse's tactile (touch) sense has not been studied extensively, but it is obviously sensitive and is utilized considerably by man in riding and training the horse.

Safety in Numbers

Feral horses (formerly domestic horses living in a wild state) generally form small, relatively stable herds consisting of a stallion, several mares, and their offspring. The herd operates as a unit in detecting and escaping from danger. If one horse detects danger, its escape response (lifting its head, snorting, and running) immediately triggers the same behavior in the other herd members. Horses that do not quickly respond to the danger signal usually become a meal for the predator, so horses do not stop to question the validity of the perceived danger. They simply run with the rest of the herd. If the danger signal seems to be a false alarm, horses typically stop and wheel around to face the perceived danger. Then, they often walk back toward the danger to investigate the cause of the alarm. The herd also provides safety during high-risk activities, such as resting or drinking water, by taking turns serving as lookouts while the others are performing the activities.

Within feral herds, horses may form tighter bonds with some herd members than with others. Social grooming, when horses stand head to tail and scratch each others' withers or rump, can strengthen bonds between individuals. This activity occurs between adult, juvenile, and mare-foal pairs. Horses in herds form hierarchies in which the highest ranking horse bosses the other horses, the second highest ranking horse can boss all but the highest ranking individual, and so on, down to the lowest ranking horse in the herd. These rankings often are not straightforward linear orders but may contain triangular or circular ranking relationships. Hierarchies are formed through fighting. Once formed, the hierarchy suppresses outward signs of aggression and is maintained through subtle threats. However, horses continually look for opportunities to increase their ranks within the herd and must be vigilant to maintain the ranks they have. At first, newcomers attempting

to join the herd often are rejected aggressively by the herd members. If accepted by the herd, the newcomer will have aggressive interactions with the other herd members to determine its hierarchical position.

Like feral horses, domestic horses instinctively want to be in a herd and readily form herds if maintained on pasture. The desire for contact with other horses can result in a horse running back and forth along the fence line or running through the fence if left alone in a field or paddock. The herd instinct of domestic horses causes common problems including misbehavior when the handler attempts to take an individual horse away from the herd or barn and vocalizations and excited, inattentive behavior when ridden alone. Stalled horses may exhibit similar behaviors when they do not have visual contact with other horses or are left alone in the barn while their immediate neighbors are out of the barn. A horse's separation anxiety may also cause repetitive, habitual behaviors, such as weaving (exaggerated shifting of the horse's weight between the forelegs), head tossing (moving the head in a vertical or vertical to horizontal plane often with considerable force), and stall walking (traversing a set area in a specific pattern).

Mares and their foals usually form tight bonds that require special handling from the manager. When moving mares, it is important to ensure that their foals, especially younger ones, are awake and following their dams before the move. A young foal that suddenly finds itself alone is prone to run through fences in its haste to find its dam. Likewise, weaning time can be stressful to both mare and foal and may result in injuries if not handled carefully.

Domestic horses react to perceived danger in the same way as feral horses. An alarm reaction from one horse in a riding group often results in other horses in the group bolting. Similarly, if the horses in a riding group are halted when one horse bolts, the bolting horse usually is controlled more easily. Horses that run from the handler to avoid being caught can cause the whole herd to begin this behavior. If horses are running, handlers should either wait until they stop running to attempt to catch them or pen them in a smaller area so they can be caught more easily.

Like feral horses, domestic horses readily form hierarchies. These hierarchies can be influenced momentarily by human handlers, but the individual relationships between horses cannot be changed permanently by humans. For example, a handler can prevent aggression toward a horse as he leads it through a herd or past another horse's stall, but when the handler is no longer present, the horses involved will have the same hierarchical relationship they had before the human interference. Because of the hierarchy and the closed nature of the herd, adding new horses to an established group can result in turmoil and injuries. Managers should attempt to group compatible horses during turnout and avoid constantly changing the composition of a group of horses.

Strategies to use when adding a new horse to an established herd include the following:

- Gradually introduce the new horse to the herd by putting it in a paddock or field adjacent to the herd. This requires a safe fence.
- Allow the new horse to ally with a low-ranking member of the established group in a separate paddock before turning it in with the group.
- Make sure that the turnout area is large enough for the newcomer to escape from the herd if needed.

Sometimes two horses are not compatible regardless of the amount of time and effort the manager devotes to the task. The easiest solution is to separate the horses. You may instinctively want to remove the aggressive horse and leave the more subordinate one with the herd. However, if the subordinate horse is the horse most recently added to the herd, it may be better to remove it from the herd instead. If the bully previously was getting along with the other herd members and is adamant about rejecting the newcomer, removing the bully may result in the second most dominant herd member taking over the harassment of the new horse.

Food Facts

Feral horses spend the majority of their time eating, which usually involves much walking between patches of food. While most of their food consists of grasses, the forage species consumed by feral horses varies daily and seasonally. The horse is well adapted to this type of food consumption. It has a small stomach built to handle continuous, small amounts of food, not large meals. Ingested food spends little time in the horse's stomach and small intestine and is rapidly moved to the horse's large hindgut for fermentation. The hindgut ferments fibrous feeds such as grasses into usable nutrients. Feral horses generally would not encounter large amounts of feeds high in soluble carbohydrates (found in grains and sugars), which can lead to digestive upset if they reach the hindgut. The horse's digestive tract works strictly in one direction. Horses cannot vomit or belch, so the continuous movement of the horse helps keep food and gases moving through the digestive tract.

Domestic horses kept in a pasture exhibit the same eating habits as feral horses. However, because the pasture is a confined area, domestic horses will have particular areas of the pasture that they overgraze. These areas are called lawns and consist of short grass that is usually of fairly high quality because it grows rapidly. Horses typically defecate in specific areas in the pasture that they usually do not graze (latrine behavior). These areas contain taller, more mature plants and often are referred to as "roughs." Normal adult horses will not consume horse feces, but foals do consume fresh feces from mares. This may be a normal way for foals to introduce microbes into the hindgut. Horses also have "lounging" areas in the pasture that they occupy when they are not eating. Lounging areas are typically near a gate, water trough, or shade and usually contain bare soil with little vegetative cover. The horses' grazing habits can greatly reduce the amount of usable pasture on a farm. Pasture management procedures such as pasture rotation, harrowing, and

regular mowing can encourage horses to graze larger areas in the pasture and to waste less grazing space.

The practice of confining domestic horses in stalls and feeding them one or two large meals daily, which are often high in soluble carbohydrates and low in fiber, does not agree with their digestive physiologies. Horses fed under these conditions may be more prone to digestive problems such as ulcers and colic or behavioral problems such as weaving or cribbing (pressing the upper incisors against a solid object and rocking backward with the body while emitting an audible grunt). Increasing the amount of hay or pasture fed, dividing the ration into smaller meals spread throughout the day, increasing exercise time, and providing diversions such as toys or mirrors in the stall are examples of management practices that may help reduce problems caused by confinement and eating large meals.

Horses should be fed as individuals whenever possible. This is often hard to accomplish with horses maintained in a group. Because of the hierarchy, it is easy for the dominant horse to obtain more feed than it needs and for the most submissive horse to consistently receive less than it needs. When feeding horses in a group situation, be sure to provide an extra feed tub or bucket for every four to five horses in the group. For example, provide ten feed tubs for an eight-horse group. This allows submissive horses to move to another feed tub if a dominant horse chases them away from its feed tub. Feed tubs should be scattered so the dominant horses cannot control several tubs through threats, and feed should be distributed rapidly so all horses begin eating at about the same time. Distributing the feed into the tubs in the same order each day reduces aggression in the herd and increases the safety of the handler. When horses know the usual feed distribution routine, many will stand by "their" feed tubs and wait for feed rather than milling around the handler as he distributes the feed.

Investigating the World

Although the horse's usual first response to unfamiliar things is flight, its second response is usually curiosity. Horses use all their senses to investigate their world, and during investigation, they tend to be very alert, excitable, and ready to flee at any hint of danger. After all, there could be a predator hiding in the investigated object.

Curiosity is part of the horse's natural behavior, and managers must take steps to reduce accidents resulting from curiosity. Pastures should be kept clear of farm equipment, trash, and junk piles, and pasture fences should be well maintained and constructed of the safest material available. Installing electrical tape inside existing fences is a good safety feature because it teaches curious horses to stay away from the fences. Keep gates, feed rooms, and stall doors securely fastened, and remove halters when horses are stalled or turned out. When a curious horse does get in a potentially dangerous situation, calm, methodical handling will reduce the horse's tendency to panic and flee.

Between Mares and Stallions

Feral horse herds are called harem groups because they usually consist of one stallion and several mares. While feral stallions can herd, or drive, and mate with the mares in their harem, the stallion is not always the dominant individual in the harem. This is also true with domestic horses when stallions are pastured with mares or when geldings and mares are pastured together.

Sexual behavior in horses has both innate and learned components. Initially, young mares or maiden mares often are frightened by a stallion's sexual advances but may increase signs of sexual receptivity with experience. Similarly, many geldings will tease and mount mares in estrus because they have learned the behavior and continue it. Many managers prefer to pasture mares and geldings separately to lessen the chances of a gelding keeping the mares agitated or geldings fighting over mares. However, with stable groups of horses, agitation and fighting usually diminish once the hierarchy is firmly established.

In domestic horses, controlled hand matings or artificial insemination techniques often result in significantly lower conception rates than mating in pastures or in feral horse herds. Poor estrus detection by humans often plays a large part in these poor conception rates in the domestic horse. It is particularly challenging to detect estrus in mares that are afraid of the stallion, protective of their foals, or prevented from teasing because of aggressive behavior from a more dominant mare. Breeding managers must be diligent in detecting estrus in these mares. Signs of estrus in the mare include interest in and toleration of the presence of the stallion or gelding, holding the tail up and to the side, frequent urination, and presenting the hindquarters to the stallion and flexing one or both hind legs so that only the toe is in contact with the ground.

Mares in diestrus, the time when the mare is not in heat, reject the stallion with aggressive behavior. Sexual behavior in the stallion consists of approaching the mare in a slow and animated trot step with the neck arched while nickering (and sometimes squealing, sniffing, nuzzling, and nipping the mare), flehmen, erection, and mounting behavior. Very young colts often show sexual behavior toward their mother or other foals in the herd.

Among feral and pasture bred horses, stallions spend most of the time with an estrous mare in courtship activities and a small amount of time in actual breeding activities. However, they do breed as often as every 1 to 2 hours over a period of 2 to 3 days, which is more frequently than what is typically allowed in controlled breeding situations.

In controlled (hand) breeding situations, the courtship time is considerably shorter. A normal stallion is expected to obtain an erection within 2 to 3 minutes of being exposed to an estrous mare and to ejaculate after only one to two mounts. Feral and domestic stallions and some geldings also spend a considerable time masturbating (spontaneous erection and penile movement). Masturbation occurs at the same rate (one 3-minute episode every 90 minutes) in both feral and domestic horses. It occurs in all

ages, breeds, and management situations and is considered a normal behavior. Masturbation does not affect fertility. However, commonly used prevention devices, such as stallion rings and belly brushes, are detrimental to the stallion's well-being and can lead to infertility.

In feral herds, stallions generally are tolerant of their own offspring. However, stallions have been known to kill young foals from another herd or newborn foals in a recently acquired herd of mares. Domestic stallions and geldings vary greatly in their tolerance of foals, so it is always wise to separate foaling mares from geldings or stallions. Occasionally, mares also are aggressive to other mares' foals, but rejection of their own foal, with or without savage aggression, is a more common problem. This generally occurs in maiden mares that are either afraid of the foal or refuse to let the foal nurse because of a tender udder, or in mares with physiological problems, such as a pituitary or ovarian tumor. If the mare is not savagely rejecting her foal, these situations usually can be solved through mildly restraining the mare for several nursing bouts or tranquilizing the mare for a day or two until she accepts the foal.

Another common problem is a mare that steals another mare's foal. This usually involves an older mare stealing the newborn foal of a maiden mare. Many managers prevent this problem by separating maiden mares from the herd from a few days before foaling until a few days after.

In addition to normal estrus behavior, mares may exhibit temperament changes. Reports from mare owners range from estrus corresponding with increased excitability and inattentiveness to estrus corresponding with the mare's most cooperative behavior. Behavioral problems during estrus are handled easily by suppressing estrus with progestogens.

Summary

Domestic horses are very similar to feral horses in their behavior and activities. Horses naturally want to be with and perform the same activities as other horses because this increases their chances of survival in the wild. Established herds have a relatively stable hierarchy. This hierarchy is formed through fighting but reduces outward signs of aggression in the herd. The feral horse spends most of its time grazing, and its digestive system is adapted to the continuous intake of small amounts of fibrous foods rather than to large meals high in soluble carbohydrates. Sexual behavior in horses has both learned and innate components and is exhibited by mares, stallions, and geldings.

Management Tips Related to Behavior

- Design horse housing so that horses can see one another.
 - Feed horses individually to reduce aggression and to allow slow eaters to get their full rations.
 - Whenever possible, feed horses a diet high in forage to reduce digestive and behavioral problems.
 - To reduce boredom and digestive problems, feed stalled horses small, frequent meals rather than several large meals.
- If horses are fed in groups, provide more feeders than the number of horses in the group, and distribute the feed rapidly so all horses can begin eating at approximately the same time.
 - Practice good pasture management to encourage horses to graze the majority of the available forage.
 - Make fences and other barriers easily visible to the horses.
 - When putting horses in a new area, give them plenty of daylight hours in which to locate new fencing and pasture hazards.
 - Closely monitor new horses when introducing them into an established herd, and be ready to separate horses if they become too aggressive.
 - Monitor for signs of unwanted contagious behaviors, such as alarm reactions and running, and do not allow these behaviors to become the horses' normal reactions to management procedures.
 - Note the horses' hierarchy, and watch for signs of aggression when working in a group of horses.
 - Keep feed rooms and gates securely fastened, and fence horses away from dangerous areas.
 - Separate foaling mares from geldings and stallions.
 - When moving mares with foals, make sure the foals are awake and alert before moving the mares.
 - Use caution when separating horses that are accustomed to being housed together.
 - Give stalled horses opportunities for free exercise and socialization.
 - Use safe, sturdy fencing between groups of horses.
 - Remove halters when horses are stalled or turned out. If halters cannot be removed, use a breakaway safety halter.

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ANR-1305

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Web Only, **New Nov 2006**, ANR-1305