

The Domestic Horse: the evolution, development and management of its behaviour - D. Mills & S. McDonnell (2005)

B. Relationships and communication in socially natural horse herds, Claudia Feh.

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C. Feh

Social communication

Vocal

Horses are open grassland animals, and they almost never lose visual contact with other band or herd members. This may be one reason why their acoustic communication repertoire is remarkably poor for an animal with such an elaborate social system. Typically, the highest and longest vocalization, the whinny, is used when horses lose visual contact with their band members, a stressful and dangerous situation for a horse in the wild. Acoustic signals may be averted in order to avoid attracting predators. Kiley (1972) identified five discrete vocal categories: the whinny, the nicker, the squeal, the sigh and the roar.

The nicker is a low tonality call. The mouth is closed and only the nostrils can be seen moving. It is used between familiar animals only, for example from mother to her foal or stallion to his own mare, and was interpreted as having a greeting function. The squeal is a high-pitched sound used in situations of social excitement and tension, whether during stallion contests, mare fights or stallion-mare interactions. Only sub-adult or adult horses communicate in this way. With the help of play-back experiments, Rubenstein and Hack (1992) have shown that squeals provide direct information about status during stallion encounters. Squeals by dominant animals are longer than that of subordinates, and they have a higher pitch at the onset of the vocalization. Regardless of their dominance status, stallions were more likely to respond to the sound of a low-ranking male. Therefore, stallions seem to be able to communicate their fighting abilities, which may reduce the intensity of the physical confrontation. The sigh much resembles a human sigh, and is often used in a resting, immobile position. Free-living horses often sigh after a rest, before starting to graze again. When startled, horses 'freeze', direct their attention to the source of fright and snort, by rapidly exhaling air through the nostrils. Many antelopes respond in a similar way when they locate a predator.

Olfactory

There are few detailed studies on olfactory communication of horses. Horses spend a great amount of time sniffing objects or herdmates, but little is known about the information they gather or transmit. As other ungulates and carnivores, horses exhibit 'flehmen',

retracting their nostrils while inhaling and exhaling, moving material into their vomeronasal organ which is packed with secondary olfactory nerve cells. This behaviour is present in foals a few hours old when suddenly they are confronted with a pungent scent, and is specially developed in stallions when they sniff the urine or faeces of mares at the onset of oestrus.

Stallions urinate over the defecations or urine of their own mares as well as the mares they are in the course of 'courting', and deposit small amounts of faeces on the dung of other stallions, whether or not the stallions are present. Kimura's (2001) study showed that by urinating over the faeces of oestrus mares, stallions are possibly covering the scent identifying oestrus.

Visual and tactile

Tactile and visual signals are by far the most elaborate gestures in horses. The retraction of a nostril, the twitch of an ear all appear to have meanings to their social partner, and from the point of their nose to the tip of their tails, horses seem to communicate continuously.

When trying to evaluate a social group, equal attention should be paid to the many different forms of social interaction that are obvious to the observer. Below are listed a range of important expressions. Observations are based on the following breeds and studies: mustangs (Feist & McCullough, 1976; Berger, 1986), Camargue (Wells & von Goldschmidt, 1979; Feh, 1987; Monard, 1992; Feh & de Mazières, 1993), Przewalski's horses (Tatin, 1995; C. Feh, unpub. data). Other ethograms of the horse include those of Waring (2003) and McDonnell (2003).

Staying close

Actions: Maintaining close proximity (frequency of being 'nearest neighbour'), approach or follow the other horse.

These are the basic expressions between preferred partners, regardless of their age or sex. Typically, preferred partners rest together, whereas they are less selective when grazing. Relationships are not always symmetrical. Mothers maintain close distance with their young foals, and yearlings maintain close distance with their mothers. The function appears to be individual bonding and group cohesion.

Social investigation

Actions: Nose–nose contact, nose–body contact. Often, there is no direct skin contact, but the nostrils, which can be seen moving, are at a distance of 1–2 cm from the skin of the other horse.

Nose–nose sniffing takes place during greeting between two individuals, whether or not they are familiar with one another. Nose–elbow and nose–flank contact are typical for stallion encounters and courtship. These regions of the horse's body are tightly packed with sweat glands. Nose–genital contacts occur during courtship and stallion encounters. The function of these interactions certainly is olfactory information and transmission, but little is known about what information horses gather or transmit.

Comfort behaviour and reduction of social tension

Actions: Rubbing. The flat side or the under part of the head is rubbed against any other body part of another horse.

Allo-grooming. Two horses rhythmically (c. 2/s) scratch each other with their incisors (Figure 5.1), for up to 3 min or more.

Foals start to rub and allo-groom other horses from the first days after birth. Horses rub each other when something irritates their skin, for example to get rid of insects or to shed the winter haircoat in spring. Grooming is typically exchanged between preferred partners, such as mothers and foals, foals and siblings, fathers and foals, peer groups at all ages, including adult mares and adult stallions when alliance partners. High-ranking individuals groom more and initiate more grooming. Horses groom each other at different places of the body, but the preferred site lies at the base of the neck (Figure 5.1). Experimental imitation of grooming at this site produced a reduction in the heart rate of the recipient, whereas grooming on a non-preferred area did not. This preferred site lies close to a major ganglion of the autonomic nervous system and is used in acupuncture by veterinarians to calm nervous horses.

Dominance behaviour

Actions: Threat to bite (Figure 5.2) and bites, threat to kick and kicks, attacks, chases. During all these interactions, the ears of the horse

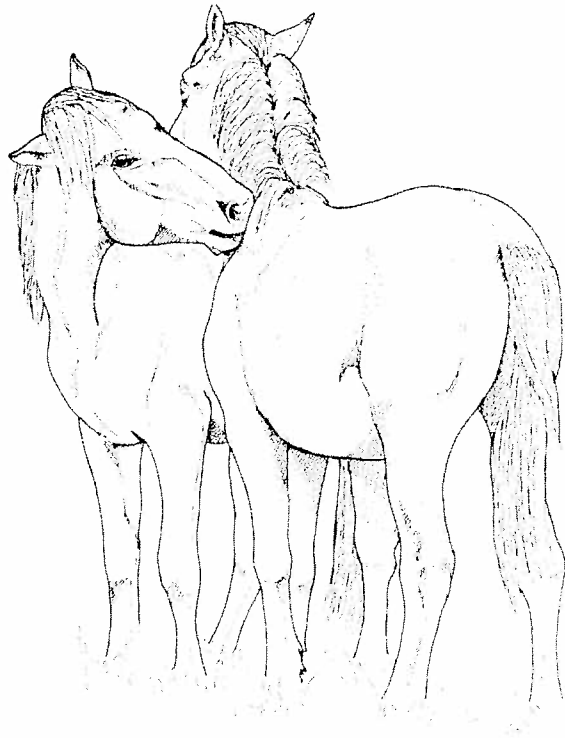


Figure 5.1. Allo-grooming.

are laid flat against the neck. The head (in threat to bite) or the rump (in threat to kick) is turned towards the other horse. Attacks often follow unsuccessful bites or kicks.

Foals start to flatten their ears towards herd mates when they are a few days old, regardless of the recipient's age or sex. Only later do they appear to discriminate. The rank position often changes in young horses, but reaches stability once the individuals are adult and integrated in their own reproductive unit. Rarely will a mare challenge the rank position of another mare. Fights, mostly exchanging kicks, can go on for months before the issue appears settled. The function of dominance hierarchies are priority and organization of access to limited resources, such as water, food, shelters against wind, heat or insects, or a social partner. Dominance hierarchies are thought to have evolved in order to reduce incessant physical contests.