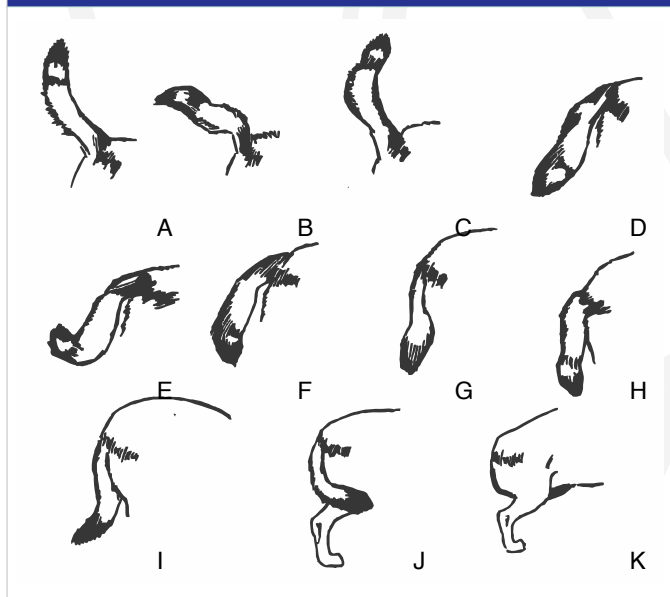


ÚLFAMÁLIGR: WOLF COMMUNICATION

Wolves typically live in packs with complex social connections and interactions, and they use various methods of communication with one another, as well as with other animals. This information sheet summarizes wolves' main communication means, namely as they relate to **tail position**, **facial expressions**, **expressive characteristics**, **olfactory signals**, **tactile communication**, **howling and other sounds**, and **behavioral patterns**. The information sheet is meant to help understand wolf behavior, minimize human conflicts, and thus, protect the animals.

TAIL POSITION

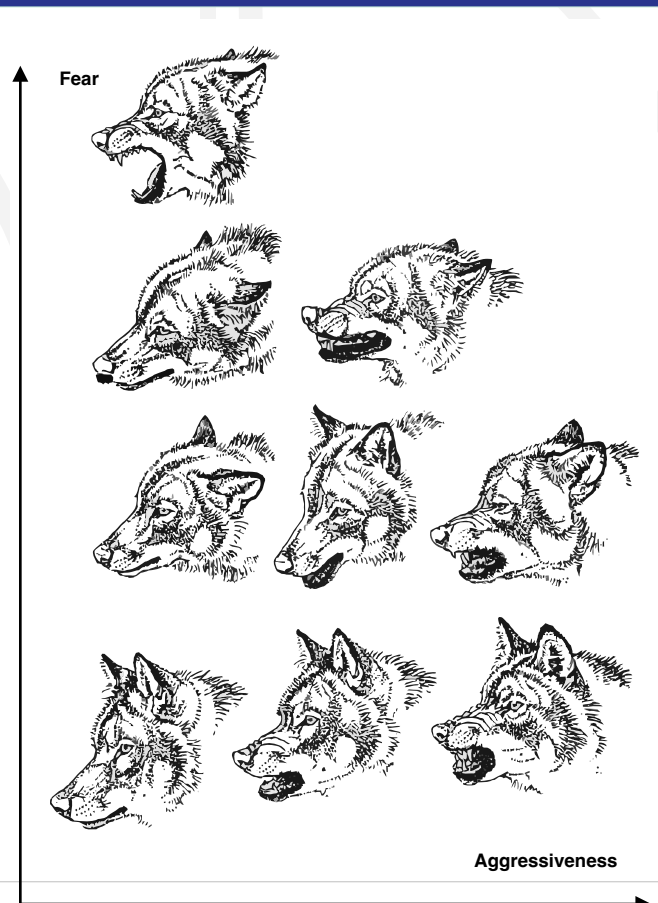


(A) Self-assertion during social interactions (B) Assertive threat (C) (With lateral wagging) intimidation (D) Normal position during conditions without social tensions (E) Not-quite-certain threat (F) Normal position (similar to D), especially while eating or watching others (G) Depressed mood (H) Between threat and defense (I) (With lateral wagging) active submission (J) Strong inhibition (K) Stronger inhibition

EXPRESSIVE CHARACTERISTICS

FEATURE	AGGRESSIVE	← →	FEARFUL
Eyes	Direct stare		Looking away
	Open wide		Closed to slits
Ears	Erect and forward		Flattened and turned down to side
Lips	Horizontal contraction (agonistic pucker)		Horizontal retraction (submissive grin)
Mouth	Open		Close
Teeth	Canines bared		Canines covered
Tongue	Retracted		Extended (Lick extension)
Nose	Shortened (Skin folded)		Lengthened (skin smoothed)
Forehead	Contracted (Bulging over eyes)		Stretched (Smoothed)
Head	Held high		Lowered
Neck	Arched		Extended
Hair	Erect (Bristled)		Sleeked
Body	Erect/tall		Crouched/low
Tail	Held high		Tucked under body
	Quivering		Wagging

FACIAL EXPRESSIONS



OLFACTORY SIGNALS

Skin Glands: Chemical communication. **Feet Glands:** Scent marking function through scratching. **Back and Tail Glands:** Raise the hairs during arousal. **Ears:** Sebaceous secretions May be related to gender. **Anal Sacs Glands:** Inside the wolf's anus, surrounded by a muscle layer that is under voluntary control. Scent marking function, primarily in breeding males. **Preputial Glands:** Information on gender. **Vagina:** secretions communicating reproductive state. **Saliva:** Information on gender or reproductive state. **Feces:** With or without anal sac secretion, used for territory marking. **Urine:** Spacing function. Visual clue. Dominant male lifts leg to urinate. Other non-dominant males stand.

TACTILE COMMUNICATION

Tactile communication is very important in wolves. It starts with pups that are able to nurse and huddle despite being deaf and blind. Many tactile contexts in pups, such as huddling, nursing, defecating, urinating, and eating, further leads to a reduction in stress.

In adults, body contact most often occurs in friendly contexts, particularly during group ceremonies. Males also lick the genitals of females during courtship, and wolves lick one another wounds. Agonistic activity also involves much body contact, from pushing against the flank of a rival to pinning another's muzzle to the ground. Tactile communication have two possible roles. First, it may strengthens social bonds through reduction of stress. Second, it plays a role in assessing a rival during aggressive behavior. Information gained through physical contact may indicate the strength or skills of an opponent.

HOWLING

The structure of a howl varies greatly within and among individuals and social contexts, and as a result, is used for wolves to identify one another. Howls are also influenced by changing levels of aggressiveness. Howling is used for various functions, including reunion, social bonding, spacing, and mating. Solo Howling: 0 to 14 seconds (average 3 and 7 seconds) per howl. Howling may last up to 9 minutes. Peaks during breeding period, and most common during morning and evening. Chorus Howling: 30 to 120 seconds (longer during breeding season). Discordant when wolves are closer to each other, harmonious when wolves are separated.

OTHER SOUNDS

CONTEXT	Yelp	Whimper	Whine	Whine-moan	Moan	Growl-moan	Growl	Snarl	Woof	Bark
Pain, fear	■									
Greeting		■	■	■						
Frustration, Anxiousness	←	←	↕	↕	←	↕	↕			
Submission, Appeasement		■	↕	↕	←	↕	↕			
Dominance				↕	→	↕	↕	→	→	
Threat, attack				↕	→	↕	↕	→	→	→
Warning, defense				↕	→	↕	↕	→	↕	↕
Play		■	←	←	→	→	→			
Sexual arousal										

BEHAVIOR PATTERNS DURING SOCIAL INTERACTIONS

Anal presentation	Raising of tail to expose anal region by sexually receptive female upon approach (and inspection) by courting male(s).
Muzzle nuzzling	Head to head contact between a courting pair involving sniffing, rubbing, pushing, and seizing the other's muzzle.
Riding up	The female places her forelegs on the back of the male. Males other than the highest-ranking male may reject this behavior while growling.

Group ceremony	A group activity characterized by localized but active movement and by mutual muzzle nuzzling, body rubbing, and whimpering/whining vocalizations. Often precedes other group pack activities, such as chorus howling or movement away from the current site.
Play invitation	One wolf approaches another with forequarters lowered (play bow) and hindquarters and tail raised and often wagging.
Standing over	One wolf stands over the forequarters of one that is laying down. The lying individual may lick the genital area of the other.

During less intense dominance/submission interactions

Active submission	Subordinate wolf approaches more dominant individual with lowered or crouched body posture, often directing licking or licking intention to mouth of dominant. From a distance this pattern may be reduced to a nose push.
Anal presentation	Raising of tail by dominant wolf to expose anal region upon approach by other individual of similar or lower rank.
Anal withdrawal	Submissive wolf tucks tail, lowers and moves away hindquarters in response to approach to hindquarters by more dominant individual.
Fixed stare	A dominant wolf directs its gaze toward a rival.
Passive submission	Submissive wolf rolls onto side or back in response to approach by dominant individual. Rear leg may be raised and urine may be expressed upon closer inspection by dominant individual.
Riding up	Among adult males, a dominant wolf will mount the back of a rival, directing threat bites toward the other's neck. Both may growl. A third individual may also be ridden on by one male as he directs a threat across its back to another male on the other side.

During more intense dominance/submission interactions

Ambush threat	A dominant wolf assumes a low, stalking posture, preparatory to a pounce and sometimes from cover, oriented toward its subordinate rival.
Bile threat	Dominant wolf stares at rival, teeth bared, forehead and nose wrinkled, ears erect, body tense, and hair raised.
Anal withdrawal	Submissive wolf tucks tail, lowers and moves away hindquarters in response to approach to hindquarters by more dominant individual.
Defensive snapping	An empty, snapping movement, often accompanied by barking, by a wolf under threat of attack. The relative motion of these biting motions to the rival may vary.

WARNING: HUNTING OR TRAPPING WOLVES, OR AS IN OTHERWISE REMOVING MOST PREDATORS, RESULTS IN CATASTROPHIC CASCADING EFFECTS ON THE ECOSYSTEM. DO NOT HUNT OR TRAP WOLVES.

