

## Hormonal Havoc: Exploring the Musth Phenomenon in Male Elephants

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**M**usth is a periodic condition in Male elephants, characterized by highly aggressive behavior and accompanied by a significant rise in reproductive hormones. The term "musth" is derived from the Persian word "masta," meaning "intoxicated," which accurately describes the behavioral changes observed in elephants during this period. Musth can last from a few days to several months and occurs primarily in adult males, usually over the age of 20. Understanding musth is crucial for elephant management, especially in captivity, and for ensuring the safety of both humans and other animals.

### Physiological Changes

**Hormonal Surge:** Musth is associated with a surge in testosterone levels, which can be 20 to 60 times higher than in non-musth periods.

**Temporal Gland Secretion:** One of the most noticeable signs of musth is the secretion from the temporal glands, located on the sides of the head between the eyes and ears. This secretion is a thick, tar-like substance.

**Urine Dribbling:** Continuous dribbling of urine is another sign of musth. The urine often has a strong odor due to high testosterone levels and can leave a distinct trail.

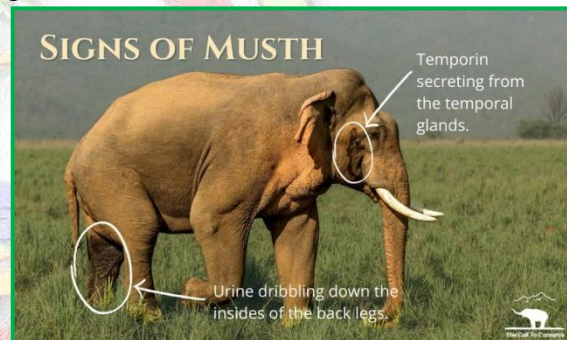


Figure 1. Signs of Musth

### Physical Appearance

Male elephants in musth may display swollen temporal glands, wet streaks on the face from the secretion, and damp hind legs from the urine dribbling.

### Behavioral Changes

**Increased Aggression:** Elephants in musth become highly aggressive and unpredictable. They are more likely to engage in fights with other male and can be dangerous to humans and other animals.

**Dominance and Mating:** Musth male are more dominant and often have higher success in mating due to their aggressive behavior and elevated hormone levels. They actively seek out females in estrus (fertile period).

**Roaming Behavior:** Male elephant in musth tend to roam more extensively in search of females, covering large distances and displaying restless behavior.

**Auditory and Olfactory Signals:** Musth male elephant communicate their condition through vocalizations and scent marking. The musth signal helps other elephants recognize the bull's status and either avoid confrontation or challenge the bull.

## Social Dynamics

**Hierarchy and Conflict:** In elephant societies, musth male often establish dominance over non-musth bulls. Conflicts between musth male can be severe and sometimes result in serious injuries or death.

**Female Elephants:** Female elephants may prefer mating with musth male due to their display of dominance and superior physical condition, which is indicative of good genes.

## Management in Captivity

**Safety Measures:** In captivity, managing musth male requires stringent safety measures due to their increased aggression. Handlers often need to isolate the male elephant or employ special facilities designed to manage aggressive behavior.

**Behavioral Observation:** Careful observation of behavioral and physical signs is essential for anticipating musth and implementing appropriate management strategies.

## Ecological and Evolutionary Significance

**Natural Selection:** Musth plays a crucial role in natural selection by ensuring that only the fittest and most dominant males have higher reproductive success, thereby passing on their genes.

**Population Dynamics:** The phenomenon of musth influences the social structure and population dynamics within elephant herds, affecting mating patterns and genetic diversity.

## Conclusion

Musth is a complex and fascinating phenomenon that significantly impacts the behavior, physiology, and social dynamics of male elephants. Recognizing and understanding the signs and implications of musth are crucial for effective elephant management and conservation. Continued research and improved management practices will contribute to the well-being of elephants both in the wild and in captivity, ensuring their survival and the maintenance of healthy populations.

