

Topic: clouded leopard communication behaviour

Topic Summary

Communication is a complex behaviour in clouded leopards, and is likely composed of visual, olfactory, and acoustic signals, many of which are unknown or understudied. Communication is likely used to express information to other clouded leopards, or to assist the signaller in understanding and remembering things about their habitat and environment (Palomares et al., 2018; Peters, 2002). Some signals may be used together, however the evidence for this is lacking and the purpose of many signals is unknown. For example, scent-marking is potentially used for specific purposes such as marking home ranges or areas of optimal habitat (Palomares et al., 2018), however the use of acoustic signals is less established (Peters & Tonkin, 1999; Hast, 1988). Most of the data collected on their communication behaviour is from camera trap records of wild cats or observations of captive cats. Some audio recordings and sonograms for vocalizations exist as well. Captive studies exist, but have proven ineffective, with the cats being aggressive towards each other, which is likely unrepresentative of their interactions in the wild (Hunter, 2015). Comparative studies using other species of solitary have also proven useful (Allen et al., 2016; Palomares et al., 2018).

While camera trap studies have established new insights on their behaviours including the discovery of tail wrapping, a potential behaviour associated with scent marking (Allen et al., 2016), these studies are also difficult to use because clouded leopards are solitary felids that live primarily in dense forest habitats in understudied regions of Southeast Asia (Chiang, 2017; Rabinowitz et al., 1987). As such, most of their ecology and behaviour has yet to be studied. A study by Tanner et al. (2012) used captive clouded leopards to examine ways to enhance data collected at camera trap sites by prolonging site visitation to get better quality images. They studied several visual and scent attractants commonly used for other carnivore species, and found that the combination of turkey feathers and predator-survey scent disks resulted in the longest site stays. If tested successfully in the wild, this method could enhance the current knowledge of clouded leopards, including their behaviour (Tanner et al., 2012).

Given the solitary nature of clouded leopards, they likely exhibit behaviours similar to that of other solitary felids, especially members of *Panthera*, whom they share an evolutionary lineage with (Allen et al., 2016; Palomares et al., 2018). Previous studies of other felids have shown there are many similarities in behaviours of solitary cats, and as such, clouded leopards may exhibit these features (Allen et al., 2016; Palomares et al., 2018). This includes their sensory modalities towards communication, as this is essentially unstudied within clouded leopards, but may be similar to other felids. Phylogenetic analysis shows that within *Panthera*, they are most closely related to snow leopards, which is supported by both observational and morphological analysis of the larynx structure and acoustics (Hast, 1988; Peters & Tonkin, 1999). Clouded leopards also use scent marking behaviours similar to that of snow leopards (Allen et al., 2016).

Clouded leopards use similar close-range vocalizations to the three earliest members the *Panthera* genus, snow leopards, tigers, and jaguars, which differs from the other two members and the small cats, although the purpose of this form of communication remains unknown (Peters & Tonkin, 1999). They are not thought to use purring, a specialized form of communication found within all cat species except members of *Panthera* (Peters, 2002). Purring is likely a basal form of communication that

may be found in species of cat-like carnivores, although more evidence is needed to make accurate conclusions (Peters, 2002). Additionally, like many felids that live in dense forest habitats, clouded leopards have white ear spots, which are thought to potentially aid in enhancing ear movement signals for intraspecific communication, however, this is a new and greatly understudied idea (Galván, 2020).

Further examination of their ecology and interactions would be beneficial in determining the context of the behaviour. As well, while it is known that clouded leopards use different communication behaviours in association with scent marking (Allen et al., 2016), the purpose of these behaviors is unknown and future studies would lead to a better understanding of communication in clouded leopards and solitary felids given this is an understudied field.

References

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