

Study says beavers use scent to detect when trespassers could be a threat

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North American beaver (*Castor canadensis*) Credit: Wikipedia.

For territorial animals, such as beavers, "owning" a territory ensures access to food, mates and nest sites. Defending that territory can involve fights which cause injury or death. How does an animal decide whether to take on an opponent or not? A new study by Helga Tinnesand and her colleagues from the Telemark University College in Norway has found that the anal gland secretions of beavers contain information about age and social status which helps other beavers gauge their level of response to the perceived threat. The study is published online today in Springer's journal *Behavioral Ecology and Sociobiology*.

[Beavers](#) are monogamous, highly territorial rodents with a territory usually consisting of a dominant pair in a long-term relationship and their offspring. Offspring usually leave to find their own mates and territories at the age of two and aggressive encounters are common at this time. Beavers use anal gland [secretions](#) to mark their territories and this has been found to contain a variety of information such as [animal species](#), [subspecies](#), gender, [individuality](#) and kinship.

The researchers hypothesized that information about social status and age or body size may also be contained in the anal gland secretions of male beavers. This would enable established territory owners to accurately assess the level of threat posed by an intruder.

To find out whether this might be the case, anal gland secretions samples were taken from a territory owner and one of his sons, with the son being either aged 2-7 or a yearling. The researchers placed the samples in other beavers' territories within sniffing distance of each other so the beaver could detect them both at a similar time. This allowed an accurate assessment of which anal gland secretions sample the resident beavers showed the most interest in.

Tinnesand and her colleagues found that resident beavers spent more time sniffing anal gland secretions from older sons and yearlings than

their fathers. They also showed a stronger physical response towards scent from older sons. The authors contend that this is because the older sons, who are sexually mature, would be more likely to get involved in a physical confrontation to obtain a territory. Yearlings are sexually immature, are usually still living in their family unit and would also be too small to constitute a real threat. Other territory owners are not seen as potential opponents, as they are already well established in their own dwellings.

The authors conclude that "resident territorial beavers showed the strongest territorial response towards older subordinate sons, suggesting that they are considered a bigger territorial threat. These results indicate that territory owners can be identified by scent."

More information: Tinnesand, H. et al. (2013) The smell of desperadoes? Beavers distinguish between dominant and subordinate intruders. *Behavioral Ecology and Sociobiology*.

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