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## **Cognition, emotion, personality and the conservation and management of wild ungulates**

Commentary on [Marino & Merskin](#) on *Sheep Complexity*

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**Abstract:** Increasing public understanding of the complexity of wild ungulates can improve animal welfare and advance global conservation efforts of these keystone species. Unfortunately, shaping public opinion on wild species is challenging because personal experience with wildlife is declining, popular education is still biased towards the predator instead of the prey, and scientific research is more difficult to conduct on wild ungulates compared to those on farms, in zoos, or otherwise in captivity. Nevertheless, studies of cognition, individuality, and intelligence of wild ungulates are increasing. I briefly highlight some major results from my own work on complexity in wild elk, illustrating how such studies can help management and conservation, in addition to improve our understanding of how ungulates are more similar to humans than previously thought. I argue that ultimately the greatest challenge may not be in expanding our academic knowledge of complexity in wild and captive ungulates, but in using that knowledge to inform those best positioned to take meaningful action to improve animal welfare and implement wildlife conservation strategies.

[Rob Found](#) uses behavioural ecology to promote human-wildlife co-existence by mitigating conflict. He has studied elk personality and its implications for habituation and the loss of migratory behaviour. He has also studied wolves, coyotes, deer, beavers and magpies, and currently works for [Parks Canada](#), where he focuses on the management and conservation of bison. [Website](#)



The comprehensive review of cognition, emotion, and personality in sheep conducted by Marino & Merskin (2019) is welcome. Increasing our understanding of other species' complexity can increase empathy, and with that advance animal welfare. Unfortunately, increased awareness of the complexity of non-wild animals will not necessarily translate into the increased valuation of wild species. Educating the general public specifically on the complexity of wildlife is needed not only to further help increase the ethical treatment of wild species, but also to contribute to global wildlife conservation efforts (Bruskotter et al., 2017). Public support for habitat protection and restoration is likely to be stronger when people value wild animals more highly (Metrick & Weitzman, 1996). Because wild ungulates tend to be keystone species, conservation efforts that benefit them may also yield wider ecosystem benefits (Walpole & Leader-Williams, 2002).

There are two main ways people's perceptions of animal complexity are shaped: personal experience and knowledge (Batt, 2009). Just as the human connection to farmed animals is being lost through shifts away from family farming towards factory farming, personal experiences with wild animals are being lost through shifts to urban lifestyles (Birch & Wachter, 2011), the declining popularity of hunting in North America and elsewhere (US Fish & Wildlife Service, 2016), and decreasing biodiversity that may reduce opportunistic wildlife sightings in general. In contrast, when personal experiences with wildlife are closer and longer in duration, they may only be with habituated wildlife. Such encounters can be interpreted as negative because the animal is "not really wild", and they can escalate into the growing number of human-wildlife conflict situations (Treves, 2008).

Education is the other major influence on how people view and value animals. Nature films have expanded many people's appreciation for wildlife, but they have often done so at the expense of ungulates by trading on the hierarchical species evaluations highlighted by Marino & Merskin. We admire or are taught to admire, for example, the tiger's strength and the cheetah's speed, rather than the bison's strength and the gazelle's speed. Television gives us a "Shark Week", but no similar week for the shark's prey. Maybe the killers are simply more interesting to learn about than those being killed, but unfortunately, this imbalance in interest and representation leads to an imbalance in valuation of predator above prey.

Scientific research can be a way to provide unbiased information about species. Unfortunately, the body of research on complexity in wild ungulates remains sparse compared to that of captive species (Vonk, 2016). Studying intelligence, complexity, and individuality in wild ungulates can be difficult because of a lack of controls, environmental variation, and the distances and scales within wild ungulate habitat; but it is being done with increasing frequency in several studies of wild elk (*Cervus Canadensis*). One of the first comprehensive descriptions of personality types in any wild ungulate (Found & St. Clair, 2016) quantified a suite of 7 correlated behavioural traits: Elk with different personalities respond differently to aversive conditioning (Found & St. Clair, 2018). The proclivity to habituate to humans is predicted by personality type (Found, 2018). There is consistent individual variation in the plasticity of responses to benign or aversive approaches from humans (Found & St. Clair, 2017).

Unfortunately, no matter how much evidence we acquire that sheep, or elk, or any other ungulates are similar to humans, if the general public does not realize it, they will not change their perceptions of these animals. Human views of other animals are significantly influenced by past attitudes and past experience (Batt, 2009), so we are not just trying to provide new information; we are trying to replace the existing information that created those biases. For example, I once submitted a magazine article I wrote on elk personality, which was aimed at a very general audience. The editor of the very highly regarded wildlife magazine rejected the article with the single explanation that it was "unlikely that people will accept that ungulates have personality". I was told, not helpfully, that I should write about personality in "primates, or even wolves", instead. Our greatest challenge may be that people outside academia – those who might have the greatest influence on animal welfare or wildlife conservation and management – are the ones least likely to be *or want to be* adequately informed by the scientific literature.

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