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COMMENTARY

Bad dog: feral and free-roaming dogs as agents of conflictJ. K. Young¹, D. L. Bergman² & M. Ono³

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Domestic dogs are ubiquitous where humans reside. While typically considered a companion animal, their ability to thrive as feral and free-roaming animals often results in conflict with wildlife and is an impediment to conservation goals (Gompper, 2013). Home, Bhatnagar & Vanak (2018) provides evidence for this in India, illustrating the role of feral and free-roaming dogs as an invasive species with negative impacts on endemic wildlife, including threatened and endangered species. The authors found that the majority of wildlife attacks by dogs happen when dogs are not with people. It seems that this is the true canine conundrum: humans value dogs as companions, but the consequences are high for endemic wildlife when dogs do not have human companions.

While the study used data from India, the impacts of feral and free-roaming dogs are found globally (Young *et al.*, 2011; Hughes & MacDonald, 2013). Indeed, conflicts between wildlife and free-roaming feral dogs happen even when government ordinances and laws exist that forbid owners from allowing dogs to be free roaming. For example, in Arizona, where these types of laws exist, during 2017, USDA-APHIS-Wildlife Services (WS) reported the removal or transfer of custody for 125 feral and free-roaming dogs in response to human conflicts. This was more than double the next most common species reported: the coyote (*Canis latrans*). With the existence of similar laws, the WS program in California has assisted county-level governments with feral and free-roaming dogs preying on livestock that were suspect releases from illegal marijuana grows along California's north coast. Dogs, which many agency employees suspect to have crossed the California–Mexico border, have also been removed to protect threatened avian species, especially those nesting on beaches. These incidents are not rare or new. Fowler (1979) showed the impacts of dogs on beaches where green sea turtles (*Chelonia mydas*) nested which have since been reported globally for nearly all species of sea turtles. In WS data, reported in the past 10 years (2008–2017), these types of conflicts have resulted in the removal or

transfer of custody for 340 feral and free-roaming dogs in California. In the USA, WS is often tasked with responding to conflicts with feral and free-roaming dogs that are reported, but local animal control agencies may also respond, so these data likely represent the minimum amount of dog conflict in these two states with more laws and ordinances regarding dogs than many other states.

Home *et al.* (2018) show that the respondents would opt for trap-neuter release (TNR) or euthanasia to mitigate conflict, but the percentage of respondents even in these top two categories was low. The authors already note the lack of success with TNR programs. Euthanasia may more effectively remove the dogs causing conflicts, but negative perceptions by the public often surround euthanasia because of human associations with dogs as companion animals. Thus, the solution likely circles back to the conundrum – educating people about the importance of human companionship to dogs to reduce the number of dogs without human companions in the landscape.

Survey participants in the study believed that the problem has grown in recent years. With burgeoning human populations, this is undoubtedly true throughout the range of domestic dogs, which is most of the planet's human-inhabited landmasses. Studies like this highlight the problems but also begin to build the foundation for how to resolve them. The challenge is to ensure solutions are employed when the species put at risk are still able to recover.

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