

# **Elk Adopt An Anti-Predatory Strategy, Getting Closer To Hikers In Banff National Park**

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Human effects have been described on movements of single species (e.g. bears, wolves, elk), mostly focusing on roads. We tested whether a putatively low-impact activity (hiking) was affecting a predator-prey system involving elk, wolves and bears in Banff National Park (BNP), Canada. We used GPS data for 16 elk, 14 wolves, and 9 bears, in the region where the 3 species were sympatric in May-October, when human use variation was intense. We built a human use model that relied on trail counter data acquired every hour. Wildlife distances to trails were shown to vary across trails of orders-of-magnitude different use, across months, and land cover habitats. In high-use trails, in high-use months (June, July, August), during daily peaks in activity, elk were closer to trails than wolves. These relationships were stronger in open habitat, where mutual detection was possible. In periods of decreased use, wolves approached trails, while elk moved away. Thus, elk likely adopted an anti-predatory strategy, getting closer to human activity, while bears movements varied individually. Our findings indicate that high numbers of hikers may play a role in shaping prey-predator spatial relations; such effects on the ecosystem are of conservation concern and could be managed.