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# Why Do Hunters Choose Not To Shoot?

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Hunting animals, like deer, is often important to keeping their population at a reasonable size. In areas where natural predators are few or nonexistent, the only way to control populations of certain species is through human hunting.

Human hunters behave differently from natural predators though. For instance, natural predators aren't interested in trophy hunting, so they don't target animals that would look good on their walls. Natural predators also aren't reluctant to kill the young, whereas human hunters tend to avoid this. And human hunters may make other decisions about what to kill based on factors we don't really understand.

To understand how these factors might influence prey populations, a group of researchers in Norway, Germany, and the Netherlands published a paper that tries to predict hunter behavior. The peculiarities of human hunting create a distinctive evolutionary pressure. Populations of animals that are hunted by humans are different from those that are hunted by natural predators. Features that are prized as trophies (like large antlers) disappear from the population quickly. And the population may continue growing, precisely because mothers with young are often left undisturbed.

So although hunting can play a role in maintaining ecosystems, we need to understand how human hunters behave. This makes it possible to predict their choices and how those choices will change the population of hunted animals. In turn, this makes it possible to direct conservation policy in a way that ensures the sustainability of the hunted population.

The researchers consider a hypothetical situation in which a hunter is confronted with a deer and has to choose whether to shoot that deer or wait for another one. Many factors are involved in that decision. Obviously, the hunter's perception of the quality of the animal plays a role. Where deer sightings are rare and the hunter knows they might not see another one, they might be more inclined to shoot a sure thing rather than wait for a better-quality animal. Depending on the region, there might be other constraints, like quotas, the time left in the hunting season, and the competition pressure from other hunters.

The researchers treat all of these factors as an economic problem and plug them into equations that predict how a hunter will respond to different situations. The model predicts that the more competition from other hunters, the fewer days left in the season, and the lower the probability of seeing an animal all increase the likelihood that a hunter will fire rather than wait.

So far, this matches up with common sense, but it's also entirely hypothetical. People often march cheerfully in a different direction from what models predict, so checking the predictions against real-world data is important. Luckily, hunters in Norway are required by law to report how many hunters

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went out in a group, how long they hunted, how many deer they saw, and how many they shot. Gathering this data from 256 locations over 10 years provided a solid data set for real-world testing.

The researchers used this data to calculate the probability of a male deer being shot by a hunter in various scenarios. As predicted by the theoretical model, the probability was higher when competition with other hunters was an issue, when days remaining in the season were few, and when there was a lower probability of seeing a deer in the first place.

This recent work doesn't tackle all questions about individual choices. This research looks at Norway, but other locations may have widely varying pressures—for instance, a region may have no quotas (unlike Norway), or a region may be full of hunters who are pressured to bring home food from a hunt. Hunters who come from different social groups behave differently, too: this data showed a difference between weekend and weekday behavior, suggesting that local hunters who hunt during the week behave differently from non-residents who come in on weekends. Figuring out how different social groups behave would help policymakers to make more accurate predictions.

Right now, models are used to estimate how hunting will affect the size of a population. Population size is an important factor for makers of conservation policy, but “there is increasing concern that hunting, and in particular strongly selective hunting, may have unexpected ecological and evolutionary consequences,” the researchers write.

An analysis like this could help to address the problem of high selectivity among hunters. For instance, by changing the duration of the hunting season or the number of competing hunters, it might be possible to influence the selectivity of the hunters. Just looking at the number of animals shot isn't enough to inform conservation, the researchers write: “To achieve sustainability, future wildlife management should account for the predictable manner by which social constraints and underlying intuitions shape the emerging selection pattern.”

Download the original paper: How constraints affect the hunter's decision to shoot a deer. Diekert F K, Richter A, Rivrud I M & Mysterud A. [www.pnas.org/cgi/doi/10.1073/pnas.1607685113](http://www.pnas.org/cgi/doi/10.1073/pnas.1607685113)