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1. We investigated the functional response of wolves (Canis lupus) to varying abundance of ungulate prey to test the hypothesis that switching from alternate prey to preferred prey results in regulation of a caribou (*Rangifer tarandus*) population at low densities.

2. We determined prey selection, kill rates, and prey abundance for four wolf packs during three 30-day periods in March 1989, March 1990 and November 1990, and created a simple discrete model to evaluate the potential for the expected numerical and observed functional responses of wolves to regulate caribou populations.

3. We observed a quickly decelerating type II functional response that, in the absence of a numerical response, implicates an anti-regulatory effect of wolf predation on barren-ground caribou dynamics.

4. There was little potential for regulation caused by the multiplicative effect of increasing functional and numerical responses because of the presence of alternative prey. This resulted in high wolf: caribou ratios at low prey densities which precluded the effects of an increasing functional response.

5. Inversely density-dependent predation by other predators, such as bears, reduces the potential for predators to regulate caribou populations at low densities, and small reductions in predation by one predator may have disproportionately large effects on the total predation rate.

Key words: wolves, caribou, predator-prey dynamics, functional response, numerical response.

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