

Direct competition for resources is especially fierce among predators, leading to disproportionately strong effects on fitness and functional roles. These competitive effects are exacerbated in complex predator guilds with dominance hierarchies that have clear winners and losers. The direct costs of losing these competitions are well understood, but the drivers of such interactions, and their indirect effects on prey, are not. We evaluated the drivers of interference competition for cougars, and how such competition affects cougar-prey dynamics, by leveraging 23 years of cougar predation data from northern Yellowstone National Park, USA. We show that the effect of prey size was context dependent, positively affecting how often cougars killed ungulate prey but negatively affecting how often wolves/bears found and stole cougar kills. Further, cougars increasingly killed smaller, alternative prey as larger, primary prey density decreased. Handling time was less for smaller prey, and thus kleptoparasitic interference competition by wolves and bears was less when primary prey density was lower. Our study counters theory suggesting that interference competition should increase at kills when prey density declines, interspecific competitor density increases, or kill rates increase. We demonstrate that predator, competitor, and prey traits drive the strength of and even dampen interference competition, possibly increasing coexistence in complex communities.

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**Jack Rabe (he/him/his)**  
**PhD Candidate - Wildlife Ecology and Management**  
**Conservation Sciences Graduate Program**  
**University of Minnesota**  
**Yellowstone Wolf, Cougar, and Elk Projects**  
**email: [rabe0092@umn.edu](mailto:rabe0092@umn.edu)**