Ten Years of Wolf-Ungulate Dynamics in the Madison-Firehole Drainage of Yellowstone National Park

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This study utilizes long-term research on a tractable and relatively unexploited wolf-elk-bison system in central Yellowstone, from 1996 to 2006, to investigate wolf recolonization dynamics, predation rates, and prey selection. Employing a combination of ground-based radio-telemetry and ground-tracking and monitoring methods, > 670 kills, 1400 locations, and 3200 km of tracking data were amassed from multiple wolf packs preying on a resident elk herd and a migratory bison herd. The ratio of wolves to ungulates is possibly the highest predator-prey ratio ever recorded, as wolf density, space use, and predation pressure in the study area increased dramatically before sharply dropping in the winter of 2006. Wolf use of the study area increased from a few itinerant wolves, to multiple established packs, before decreasing to primarily one pack. Elk comprised the preferred prey for wolves, and the ratio of preferred to alternative prey was predictably variable, both within and between winters, as bison migration

occurred. Considerable variation in wolf predation rates was also demonstrated, both within and across years and packs. Prey selection trends demonstrate that wolves are increasingly utilizing bison as prey, such that bison comprised the majority of wolf diets in winter 2006. The potential implications of this on future wolf-ungulate dynamics are addressed.