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Note on a wolverine (*Gulo gulo*) processing a dusky grouse (*Dendragapus obscurus*) kill.

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Notes on a wolverine (*Gulo gulo*) processing a dusky grouse (*Dendragapus obscurus*) kill.

Kenneth P. Hotopp¹

Fresh tracks in snow and other physical evidence showed that a wolverine (*Gulo gulo*) killed and ate a dusky grouse (*Dendragapus obscurus*) in a remote high-elevation area of Idaho. Field sign indicated a specific prey handling routine not previously reported for a wolverine, including decapitation, plucking, evisceration, and selective organ consumption.

Wolverines are mustelids, approximately 9-25 kg and 65-107 cm long as adults, dwelling in high-latitude and high elevation habitats of northern North America and Eurasia. They are wide-ranging, opportunistic scavengers and predators. In the Greater Yellowstone Ecosystem, where Idaho, Montana, and Wyoming converge, wolverines select against habitats below 2,150 m, and prefer habitats above 2,600 m (Inman et al., 2012). There, home ranges averaged 303 km² for adult females and 797 km² for adult males, and wolverine density above 2,150 m was 3.5/1,000 km². Throughout their global range, wolverines are facultative scavengers of ungulate carcasses, and consume a variety of prey, including various birds and eggs, neonatal ungulates, medium and small mammals, and even frogs and berries (Lofroth et al., 2007; Samelius et al., 2002; van Dijk et al., 2008). Various Tetraoninae are occasional prey across their range (Magoun, 1987; Lofroth et al., 2007; van Dijk et al., 2008; Mattisson et al., 2016).

During a recreational hike in the Boulder-White Cloud Wilderness in Idaho on the morning of Sept. 19, 2015, tracks in snow of an adult wolverine, sex unknown, were encountered in the vicinity of a small tarn, at an elevation of approximately 3,000 m (9,900'). Temperatures were above freezing, and it had snowed approximately 36 hours previously. The wolverine was tracked travelling northwest, upstream along a first-order stream on mostly open, rocky ground, partly snow-covered. No other animal tracks

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were noted in the area except a single set of bear (*Ursus cf americanus*) tracks that followed a linear route across the stream valley, intersecting with the wolverine tracks but not aligned with them.

After approximately 300 m the wolverine tracks led in a straight line over a small rock outcrop, approximately 1 m tall, to a streamside kill site approximately 5 meters beyond. Here were wolverine and grouse tracks, many dusky grouse feathers (Figure 1), some bird entrails (Figure 2) and a bird skull (Figure 3). There were a variety of feather types, including wing primary, tail, contour, and down feathers. Entrails included some intestines and reproductive organs but appeared to be missing at least the heart and liver – a more detailed assessment was not attempted. The skull was missing flesh and eyes but otherwise intact.

From this kill site, a single set of wolverine tracks led uphill away from the stream to the northeast, approximately 200 m, to the top of a talus slope headwall hundreds of meters above another small lake. Here, partly secluded among whitebark pine (*Pinus albicaulis*), grouse remains were found in three major parts comprising mostly larger bones and connective tissue (Figure 4). Leg bones and neck vertebrae were apparently missing. Snow around the remains had many wolverine tracks. No entrails were observed here, and only a very small amount of skin with down feathers was present on the carcass. No snow or debris were piled upon the remaining carcass. A single line of wolverine tracks led west from this feeding site into the talus field.

The physical evidence makes clear that the wolverine stalked and killed the grouse near the stream, perhaps using the small rock outcrop as cover. There the wolverine removed parts of the bird that it may have considered inedible or undesirable, such as the feathers and intestines. Feeding began at this kill site, as seen on the bird's skull and missing heart and liver, but was probably completed at the subsequent feeding site given the abundant tracks there. This, combined with the lack of feathers at the feeding site, suggests a temporal sequence, with carcass processing occurring prior to most feeding. The

wolverine apparently consumed primarily the birds' eyes, heart and liver, skin, fat, skeletal muscle, and perhaps some neck vertebrae and leg bones.

The wolverine may have removed the grouse carcass from the kill site on its own initiative, or was perhaps motivated by the presence of the bear. However, the wolverine and bear may not have been present concurrently, and there was no evidence that the bear's path deviated toward the wolverine track or kill site. Most of the grouse skeleton was left at the feeding site (wolverines do sometimes eat large mammal bones, e.g. Magoun, 1987), and there was no apparent effort to cache these remaining parts. There was no sign of other scavengers visiting either site, though some sign may have been overlooked or an avian scavenger might have landed without leaving a trace.

Grouse, ptarmigan, and other birds are not reported as a major part of wolverine diets, perhaps because of difficult pursuit, relatively greater handling time, or lower caloric content. In southern Norway wolverines consumed less reindeer and small prey, including birds, when wolves were present, because wolves increased large mammal carcass availability (van Dijk et al., 2008). No detailed behavioral accounts of wolverine predation or consumption of birds were found in the recent literature. In northern Canada wolverines killed geese at a nesting colony and cached goose eggs and carcasses (Samelius et al., 2002), but processing of the carcasses was not reported.

This unique report of apparent feather plucking, removal of entrails and head, consumption of specific organs, followed by thorough removal of the bird's flesh from the skeleton, suggests a systematic and fastidious prey handling behavior in contrast to the wolverines' popular reputation as a "glutton." Removal of the carcass from the kill site to a more secluded feeding site may have also been a part of this protocol. In the future it will be interesting to learn whether such wolverine feeding behavior is universal with grouse or other bird prey.

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Literature Cited

- Inman, R.M., M.L. Packila, K.H. Inman, A.J. McCue, G.C. White, J. Persson, B.C. Aber, M.L. Orme, K.L. Alt, S.L. Cain, J.A. Frederick, B.J. Oakleaf, S.S. Sartorius. 2012. Spatial Ecology of Wolverines at the Southern Periphery of Distribution. *Journal of Wildlife Management* 76(4):778-792.
- Lofroth, E.C., Krebs, J.A., Harrower, W.L. and Lewis, D. 2007. Food habits of wolverine *Gulo gulo* in montane ecosystems of British Columbia, Canada. *Wildlife Biology* 13 (Supl. 2): 31-37.
- Magoun, A.J. 1987. Summer and winter diets of wolverines, *Gulo gulo*, in arctic Alaska. *Canadian Field Naturalist* 101:392–397.
- Mattisson, J., G.R. Rauset, J. Odden, H. Andrén, J.D.C. Linnell, and J. Persson. 2016. Predation or scavenging? Prey body condition influences decision- making in a facultative predator, the wolverine. *Ecosphere* 7(8):1-14.
- Samelius, G., R.T. Alisauskas, S. Larivière, C. Bergman, C.J. Hendrickson, K. Phipps, and C. Wood. 2002. Foraging behaviors of wolverines at a large arctic goose colony. *Arctic* 55(2):148-150.
- Van Dijk, J., L. Gustavsen, A. Mysterud, R. May, Ø. Flagstad, H. Brøseth, R. Andersen, R. Andersen, H. Steen, and A. Landa. 2008. Diet shift of a facultative scavenger, the wolverine, following recolonization of wolves. *Journal of Animal Ecology* 77: 1183–1190.



Figure 1. A variety of dusky grouse feathers at a wolverine kill site in the Boulder-White Cloud Wilderness. One tail and two primary feathers were placed in the shot from <1 m away, while the remainder are *in situ*.



Figure 2. Bird entrails comprising mostly digestive and reproductive tracts from a dusky grouse at the kill site.



Figure 3. Dusky grouse skull near the kill site. The skull was placed on the rock from <1 m away.



Figure 4. Carcass remains of a dusky grouse at a wolverine feeding site, with the bird's pelvis and a section of ribs on the left, and sternum, major wing bones and clavicle on the right.

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