

**Appendix 1.** Supplemental dietary data.

We also calculated the Absolute Frequency of Occurrence and percent wet biomass of each prey type. Absolute frequency of occurrence shows the percent of pellets containing each prey type. Given that American Kestrels typically expel one pellet every 21 hours (Balgooyen 1971), Short-eared Owls expel about one pellet per meal (Duke et al. 1976), and Long-eared Owls expel about 1.4 pellets per day (Marti 1973), this metric can help to examine the daily diet of raptors and owls when pellets are collected frequently. The wet biomass of each prey type consumed reflects how much energy the raptor or owl gained from eating that prey item. We used prey biomasses as presented in Buers et al. (2019) and Ormrod et al. (2021).

**Table A1.1.** Diet of the Northern Harrier as measured by Absolute Frequency of Occurrence and % biomass. In 2017, we had 30 pellets with 46 prey, as published in Ormrod et al. 2021. In 2016, we had 5 pellets with 15 prey. In 2018 we had 8 pellets with 13 prey, in 2019 we had 8 pellets with 14 prey, and in 2020 we had 35 pellets with 72 prey. Absolute frequency of occurrence is the percent of pellets containing each prey type. Biomass represents the percent of diet that species represents by wet weight.

	<b>2016</b>		<b>2018</b>		<b>2019</b>		<b>2020</b>	
	Absolute Frequency of Occurrence	% biomass	Absolute Frequency of Occurrence	% biomass	Absolute Frequency of Occurrence	% biomass	Absolute Frequency of Occurrence	% biomass
<b>mammals</b>								
Meadow Vole	-	-	-	-	-	-	11.4	7.1
Montane Vole	-	-	-	-	12.5	8.6	-	-
Long-tailed Vole	-	-	-	-	-	-	8.6	6.7
Deermouse	-	-	-	-	25.0	17.8	14.3	7.8
<i>Microtus</i> spp.	60.0	48.1	100.0	93.8	75.0	60.5	31.4	26.4
<i>Sorex</i> spp.	-	-	-	-	-	-	2.9	0.2
small mammal	40.0	29.1	-	-	-	-	48.6	30.7
<b>birds</b>								
passerine	40.0	20.9	12.5	6.1	25.0	13.1	48.6	20.8

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<b>insects</b>								
<i>Meloe spp.</i>	60.0	0.2	25.0	0.1	25.0	0.1	11.4	0.04
<i>Orthoptera</i>	80.0	1.7	-	-	-	-	5.7	0.2

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**Table A1.2.** Diet of American Kestrels. Absolute frequency of occurrence (AFO) is the percentage of pellets containing each prey type, and the wet biomass of each prey type is shown as a percentage of the total diet. In 2016, we had 5 pellets with 52 prey: 2 small mammals and 50 grasshoppers of 8 different species, but we have not shown these data in the table because of low pellet numbers. In 2017, we had 54 pellets with 101 prey, with results published in Buers et al. (2019). In 2018, we had 47 pellets with 597 prey. In 2019, we had 13 pellets and 39 prey. In 2020, we had 18 pellets and 35 prey.

	<b>2018</b>		<b>2019</b>		<b>2020</b>	
	AFO	% biomass	AFO	% biomass	AFO	% biomass
<b>mammals</b>						
small mammal <sup>a</sup>	14.9	29.2	38.5	64.7	11.1	22.8
Long-tailed Vole	-	-	-	-	5.6	14.9
Meadow Vole	-	-	-	-	5.6	11.9
<i>Microtus spp.</i>	-	-	15.4	28.5	-	-
Deermouse	-	-	-	-	22.2	29.5
<i>Sorex spp.</i>	-	-	-	-	5.6	1.4
<b>birds</b>						
passerine	-	-	-	-	5.6	8.2
<b>insects</b>						
<i>Pseudochorthippus curtipennis</i>	85.1	4.6	7.7	0.1	11.1	0.5
<i>Conozoa sulcifrons</i>	74.5	8.8	7.7	0.2	22.2	1.2
<i>Anabrus longipes</i>	51.5	23.9	-	-	11.1	2.6
<i>Melanoplus bivitattus</i>	44.7	6.5	15.4	2.1	5.6	0.4
<i>Melanoplus sanguinipes</i>	-	-	7.7	0.1	-	-

<i>Bruneri brunnea</i>	12.8	0.3	-	-	-	-
<i>Anabrus simplex</i>	23.4	8.4	7.7	1.5	16.7	5.1
<i>Arphia pseudonietana</i>	2.1	0.1	30.8	2.4	-	-
<i>Camnula pellucida</i>	2.1	0.1	7.7	0.2	-	-
<i>Melanoplus spp.</i> <sup>b</sup>	19.1	0.8	-	-	-	-
<i>Anabrus spp.</i> <sup>c</sup>	34.0	11.7	-	-	5.6	1.3
Grass-eating grasshopper <sup>d</sup>	21.3	0.6	-	-	-	-
<i>Orthoptera</i>	53.1	4.1	-	-	5.6	0.4
<i>Meloe spp.</i>	93.6	1.0	23.1	0.2	11.1	0.1

a. These pellets had fur but no diagnostic bones.

b. *Melanoplus bivittatus* or *M. sanguinipes*, but these mandibles were too degraded to identify to species.

c. *Anabrus longipes* or *A. simplex*, but these mandibles were too degraded to identify to species.

d. Mandibles were identified as “grass-eating grasshopper spp.” when mandibles of the following species were too degraded to identify: *Arphia pseudonietana*, *Bruneri brunnea*, or *Pseudochorthippus curtipennis*.

**Table A1.3.** Diet of the Short-eared Owl. Absolute frequency of occurrence (AFO) is the percentage of pellets containing each prey type, and the wet biomass of each prey type is shown as a percentage of the total diet. In 2017, we had 90 pellets with 194 prey, as published in Ormrod et al. (2021). In 2018, we had 11 pellets with 34 prey, in 2019 we had 24 pellets with 47 prey, and in 2020 we had 11 pellets with 25 prey.

	<b>2018</b>		<b>2019</b>		<b>2020</b>	
	AFO	% biomass	AFO	% biomass	AFO	% biomass
<b>mammals</b>						
Meadow Vole	27.3	8.6	0	0	18.2	9.1
Montane Vole	54.5	20.7	37.5	30.3	18.2	8.2
Long-tailed Vole	64.6	32.3	12.5	9.7	45.5	28.5
Deermouse	9.1	1.8	50.0	20.8	54.5	31.1
<i>Microtus</i> spp.	54.4	36.3	50.0	35.4	18.2	14.4
<i>Sorex</i> spp.	9.1	0.3	4.2	0.3	-	-
small mammal <sup>a</sup>	-	-	-	-	9.1	8.7
<b>birds</b>						
passerine	0	-	8.3	3.5	-	-
<b>insects</b>						
<i>Meloe</i> spp.	0	-	8.3	0.03	-	-
<i>Orthoptera</i>	0	-	0	0	-	-

a. Remains labeled small mammal consisted of bones too degraded to identify to a specific genes or species.

**Table A1.4.** Diet of the Long-eared Owl in 2020. In 2017, we had 46 pellets with 72 prey, as published in Ormrod et al. (2021). In 2020, we had 324 pellets with 566 prey.

	AFO	% biomass
<b>mammals</b>		
Meadow Vole	20.1	14.0
Montane Vole	17.9	11.9
Long-tailed Vole	12.3	13.5
Deermouse	35.5	21.7
<i>Microtus</i> spp.	17.0	13.1
<i>Sorex</i> spp.	2.8	0.3
small mammal <sup>a</sup>	29.3	25.1
<b>birds</b>		
passerine	0.9	0.4
<b>insects</b>		
<i>Meloe</i> spp.	0.9	0.003

a. These remains had fur or undiagnostic mammalian bones.

### **Literature cited**

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