

FOOD HABITS

METHODS

Analysis of stomach contents was used to investigate the food habits of redback voles, tundra voles, and lemmings. Entire stomachs were collected from redback voles and tundra voles trapped in forest, tundra, and shrub dominated study plots. Lemming stomachs were collected only in tundra plots. Samples were collected between August 1 and August 30, 1988.

For each species, in each habitat type, a composite sample was formed and 200 microscopic views taken (25 views x 8 slides). The morphological structures in plant epidermal tissue and other was used to identify contents. Samples were prepared and identified by the Habitat Lab, Dept of Natural Resources, Washington State University, WA. The percentage that each forage class comprised of the total surface area for all recorded species was determined. Results were expressed as % diet composition. No adjustments were made for differential digestibility of forage items.

Table 1. Number of stomach samples from three small mammal species by habitat in the Noatak River drainage, AK.

Species	Number of Stomachs		
	Forest	Tundra	Shrub
Redback Vole	50	60	16
Tundra Vole	60	60	35
Lemming	-	60	-

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RESULTS

The major forage classes selected by small mammals are listed in Table 2. Redback voles and tundra voles varied their diet when in different habitat types but not in a similar manner. In tundra habitat, tundra voles consumed sedge and rushes (61.7%) while redback voles appeared to have a more varied diet comprised of blueberries (23%), lichens (15%), mushrooms (14%), and insects (13%). In the forested plots the main food item in tundra voles diet was equisetum (55%) with other forbs being the next most important food class (22%). In contrast redback voles were found consuming lichens (42%), followed blueberries (13%), seeds (19%) and forbs other than equisetum (8.2%). The most striking difference in forest diets between the two voles is the importance of equisetum to tundra voles and its absence in the stomach contents of redback voles.

Comparisons between habitats was not possible for lemmings because they were not present in shrub and forested habitats. In the tundra habitat where they were found sedges and rushes dominated their diet (74.9%). Lemming diets were the least diverse of the three species sampled.

DISCUSSION

- Presence of equisetum in tundra voles may be in part due to incidental take combined with poor digestibility and slow passage time. However amount suggested it might have been selected.

- Importance of blueberries for redback voles was most likely a seasonal phenomenon however still illustrates a difference in diet selection between redback voles and other dominant microtines.

- Redbacks were the only species that was found to utilize insects (spiders)

- Specialization of lemmings on sedges/rushes related to limited distribution of species (competitive exclusion... other reasons exist)

- microhabitat considerations

Plants	grid	grid	grid	grid	grid	grid	grid	grid
Blueberry	22.9	3.1	1.4	35.4	8.5	13.0	-	-
Other Shrub leaf	1.9	3.6	.2	2.6	10.5	2.2	2.1	2.1
Other Shrub stem	.5	1.5	.1	.5	.5	.1	.1	.1
Total Shrub	25.3	8.2	1.7	38.5	20.3	15.3	2.2	2.2
Equisetum	-	-	.1	-	.5	.6	55.0	22.4
Other Forbs	5.0	17.1	-	3.1	15.1	8.2	22.4	22.4
Total Forbs	5.0	17.1	.1	3.1	15.6	8.8	77.4	77.4
Grass	.3	5.0	2.1	.2	7.3	1.8	7.2	7.2
Sedge/Rush	1.0	61.7	74.9	4.9	47.4	.1	7.0	7.0
Sedge/Rush flwr	-	-	-	-	2.1	-	-	-
Total Graminoid	1.3	66.7	77.0	5.1	56.8	1.9	14.2	14.2
Lichen	15.5	2.7	4.8	17.6	.9	41.9	2.5	2.5
Mushroom	14.0	3.0	1.1	16.4	2.9	4.4	.2	.2
Spore	.1	-	-	-	-	.7	.6	.6
Lichen/Mushroom								

Plants	Redback voles Tundra grid	Tundra voles Tundra grid	Lemmings Tundra grid	Redback voles Shrub grid	Tundra voles Shrub grid	Redback voles Forest grid	Tundra voles Forest grid
Blueberry	22.9	3.1	1.4	35.4	8.5	13.0	-
Other Shrub leaf	1.9	3.6	.2	2.6	10.5	2.2	2.1
Other Shrub stem	.5	1.5	.1	.5	1.3	.1	.1
Total Shrub	25.3	8.2	1.7	38.5	20.3	15.3	2.2
Equisetum	-	-	.1	-	.5	.6	55.0
Other Forbs	5.0	17.1	-	3.1	15.1	8.2	22.4
Total Forbs	5.0	17.1	.1	3.1	15.6	8.8	77.4
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Sedge/Rush flwr	-	-	-	-	2.1	-	-
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Lichen	15.5	2.7	4.8	17.6	.9	41.9	2.5
Mushroom	14.0	3.0	1.1	16.4	2.9	4.4	.2
Spore	.1	-	-	-	-	.7	.6
Lichen/Mushroom	1.0	-	5.7	-	-	.2	1.4
Moss	1.4	.1	7.5	1.0	.6	.7	.8
Fern	.1	-	-	.1	-	2.1	-
Flower	1.9	.1	.3	.2	-	-	-
Seed	10.8	1.1	.9	7.5	2.1	1.3	-
Pit of seed	6.8	.2	-	8.0	.4	19.1	-
Rodent hair	.3	.1	.8	.4	.4	.1	.3
Insect	12.7	.4	-	2.0	-	3.1	-
Unknown possibly insect	-	-	-	-	-	.4	-
Starch	.5	-	-	-	-	-	-
Fruit ball or possibly starch	3.3	.3	.1	.1	-	-	.4