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## Quantitative Analysis of Pika (*Ochotona princeps*) Hay Piles in Central Idaho

### Abstract

Eleven hay piles of a pika (*Ochotona princeps*) colony in central Idaho were quantitatively examined. Twenty-six plant species were identified: *Smilacina stellata*, *Apocynum androsaemifolium*, and *Fragaria virginiana* comprised 88 percent of the total weight of all hay piles.

### Introduction

The pika (*Ochotona princeps*) is a common inhabitant of talus slopes in the mountains of western North America (Cahalane, 1947). A characteristic habit of this mammal is the construction of hay piles to serve as a source of food in winter (Millar and Zwickel, 1972). Many authors have reported gross qualitative examinations of hay piles (Rausch, 1962; Johnson, 1967; Bates, 1969; Bunnell, 1970), but few quantitative examinations have been reported (Beidleman and Weber, 1958; Millar and Zwickel, 1972). The purpose of this study was to examine quantitatively the hay piles of a pika colony in central Idaho.

### Study Area and Methods

During the summer (May-August) of 1978, hay piles of a pika colony on the west slope of Hogback Ridge (elev. 1862 m), Payette National Forest, Valley County, Idaho, were examined. Individual hay piles were located and marked; plant species and stored material in each pile were identified, and in August all material was individually weighed to the nearest gram. The distance between hay piles and the distance of each pile from the edge of the talus was measured.

### Results

Eleven hay piles were located and examined. Twenty-six plant species were identified (Table 1). *Smilacina stellata* (Starry solomonplume), *Apocynum androsaemifolium* (spreading dogbane), and *Fragaria virginiana* (strawberry) were the most frequently encountered plant species in hay piles, and comprised 88 percent of the total weight of all hay piles.

### Discussion

Millar and Zwickel (1972) reported that small hay piles of pikas in Alberta were located between or under the edge of rocks—the larger piles were found under fallen trees and showed evidence of being placed on top of previous season's hay piles. This vegetation storage site preference was also exhibited by the Hogback Ridge colony. Small hay piles were found in the talus while those piles in excess of 300g (n=2)

were found on top of old hay piles under fallen trees. Observations of other down trees in the area revealed large caches of previous season's hay piles; no such large accumulations of new or old vegetation were observed in the talus.

TABLE 1. Items identified in hay piles of pika from central Idaho, 1978.

Item	Amt. Present	% Total Wgt.	% Freq.
<i>Smilacina stellata</i>	575g	70.5	100
<i>Apocynum androsaemifolium</i>	90	11.0	63
<i>Fragaria virginiana</i>	51	6.3	81
Marmot scat	48	5.8	18
<i>Angelica arguta</i>	10	1.2	9
<i>Vaccinium scoparium</i>	8	0.9	18
<i>Calamagrostis rubescens</i>	8	0.9	18
<i>Senecio pauciflorus</i>	5	0.5	9
<i>Erigeron speciosus</i>	4	0.4	36
<i>Rubus idaeus</i>	4	0.4	18
<i>Agropyron caninum</i>	3	0.3	36
<i>Carex microptera</i>	3	0.3	18
<i>Potentilla fruticosa</i>	2	0.2	54
<i>Achillea millefolium</i>	2	0.2	45
<i>Poa pratensis</i>	2	0.1	9
<i>Sedum stenopetalum</i>	1	0.1	18
<i>Cirsium utabense</i>	1	0.1	9
<i>Equisetum arvense</i>	1	0.1	9
<i>Astragalus alpinus</i>	1	0.1	9
<i>Arnica longifolia</i>	1	0.1	9
<i>Antennaria microphylla</i>	1	0.1	9
<i>Bromus tectorum</i>	1	0.1	9
<i>Galium aparine</i>	1	0.1	9
Trifolium spp.	1	0.1	9
<i>Epilobium angustifolium</i>	1	0.1	9
<i>Frasera speciosa</i>	1	0.1	9
<i>Gaultheria humifusa</i>	1	0.1	9
TOTAL	827	100.0	

Plant nomenclature according to Hitchcock and Cronquist (1973).

Broadbooks (1965) reported pikas in Washington prefer the borders of talus slides rather than the middle, and found that the average distance between hay piles on main slopes was 70 m. All main hay caches Broadbooks (1965) examined were within 9 m of the lower edge of the talus slope. The Hogback Ridge colony placed their stores within an average of 4.5 m of the meadow's edge and averaged 0.7 m between hay piles.

Marmot (*Marmota flaviventris*) scats were found in the larger hay piles (Table 1). Broadbooks (1965) observed "dozens" of marmot scat associated with hay piles and concluded that they had been deliberately stored for the winter. Pikas reingest their own fecal material (Haga, 1960), these pellets having been found to have high energy and protein values (Johnson, 1967). Marmot scats may thus be utilized as an auxillary source of protein in those areas coinhabited by pikas and marmots.

Total weights of hay piles in late August were extremely variable, ranging from about 5 g to over 300 g. Broadbooks (1965) noted that a large amount of hay material could be accumulated by pikas in a short time. Barash (1973) observed that there is a significant late seasonal increase in the frequency of haying trips; thus, it is possible that the number and total weight of hay piles on Hogback Ridge could have increased after the sampling period.

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