AGE AND WEIGHT ESTIMATION OF LEPORID PREY REMAINS FROM RAPTOR NESTS

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Introduction

The black-tailed jackrabbit (*Lepus californicus*) is a major prey species for several Great Basin raptors (Smith and Murphy 1979). Jackrabbit hindfeet are the most common prey remains recovered from Ferruginous Hawk (*Buteo regalis*) and Golden Eagle (*Aquila chrysaetos*) nests in our study area. Ages (up to 16 weeks) and weights of jackrabbit prey can be determined by comparing length of hindfeet with published values (Haskell and Reynolds 1947, Tiemeier and Plenert 1964 and Goodwin and Carrie 1965).

We routinely made such comparisons for Ferruginous Hawk prey remains during 1972–74 (Woffinden and Murphy 1977). Nests were visited frequently and prey remains collected and measured before they dried extensively. Frequent nest visits are not always practical, however. Since jackrabbit feet may grow as little as 1 mm per week (Haskell and Reynolds, 1947; Tiemeier and Plenert, 1964; Goodwin and Carrie 1965), shrinkage due to drying could result in serious underestimation of prey ages. Here we present a regression equation which allows for shrinkage compensation.

Study Area, Methods and Results

Our study area is in west-central Utah (40°00' N., 110°55'–112°35' W.) and includes portions of Utah and Cedar valleys. The habitat is typical Great Basin cold desert with sagebrush (*Artemesia tridentata*) and Utah junipers (*Juniperus osteosperma*) among the dominant plants.

We collected 10 hindfeet from 8 different fresh road-killed jackrabbits on 27 June 1980. Based on published data of moriphological characteristics, the rabbits varied in age from 8–32 weeks. Feet were secured to the east side of a building and were measured periodically over a period of 43 days as they dried.

Seventy percent of the shrinkage (6.1 mm or 6% of the mean total length) occurred within 14 days. Mean maximum shrinkage was 8.9 mm, which was equivalent to 7.2% of total length and occurred within 28 days.

Wet and dry lengths were linearly related ($t = 6.037$ $P = 0.05$). Thus we calculated a regression equation that allows for the estimation of lengths prior to drying ($\hat{y} = -3.578 + 1.113X$, 95% $C.I. \times 1.113 \pm 0.425$, Fig. 1).

Discussion

Jackrabbit hindfeet are commonly found as prey remains in many raptor nests. By comparing rabbit foot lengths with published values (see citations above) prey ages and corresponding weights can be determined up to a maximum of 16 weeks.

We frequently collected prey remains from Great Basin Ferruginous Hawk nests during a three year study (1972–74) during which time feet of 71 jackrabbits were collected and aged using the method described above. Nearly 90% of the rabbits taken as prey were less than 13 weeks of age (Woffinden and Murphy 1977).

In June, 1980 we found a Golden Eagle nest that was littered with jackrabbit remains. The young had previously fledged, but we estimated that at least 47 jackrabbits had been brought to the nest during their development. The jackrabbit feet were very dry, and we assumed some shrinkage had occurred.

To account for loss of length in drying we developed the regression equation presented in this paper (Fig. 1). We determined prey ages based on calculated wet lengths and found that unlike the prey of Ferruginous Hawks, 79% of the jackrabbits utilized by this pair of eagles were older than 12 weeks.

We feel that the shrinkage equation presented here will facilitate accurate age determination of dry leporid prey remains. The technique may also reduce the need for frequent nest visits resulting in a reduction of stress-related mortality.

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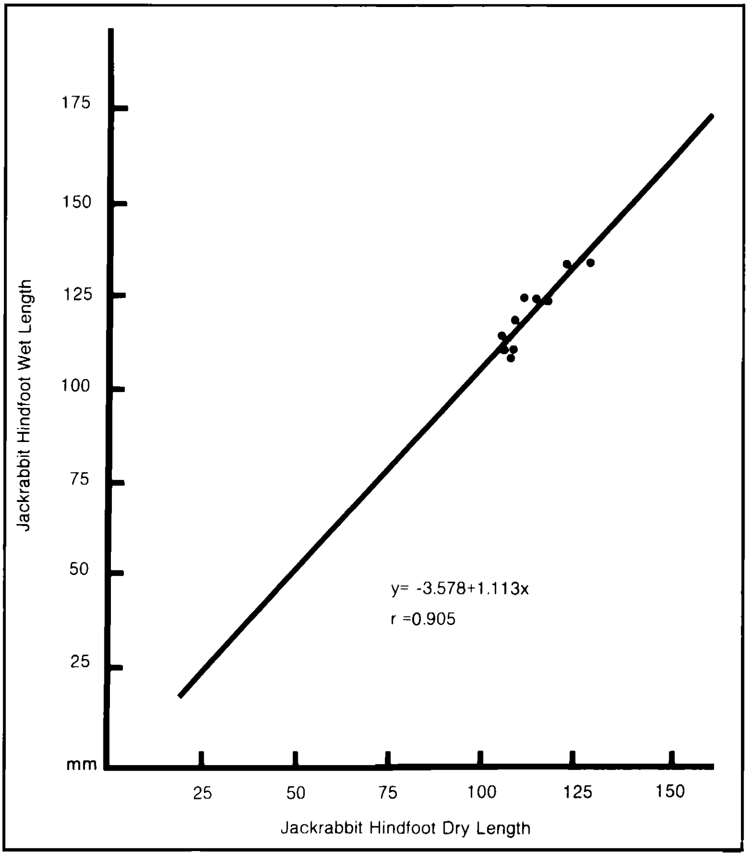

Figure 1.—Regression analysis of the relationship of jackrabbit hindfoot lengths before and after drying.

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ARE OWLS REGULAR?: AN ANALYSIS OF PELLET REGURGITATION TIMES OF SNOWY OWLS IN THE WILD

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Abstract

This study analyzes the temporal distribution of pellet regurgitation by wintering Snowy Owls (*Nyctea scandiaca*). Pellets were cast more frequently from 1400 to 1800 (MST) than during other daylight hours. The apparent regularity of this pattern of regurgitation and its relationship to the feeding time of the owls are considered.

Introduction

Research on the digestive process of owls has focused on the regulation of the meal to pellet interval (MPI). This interval appears to be important because owls do not possess crops and must empty their stomachs periodically in preparation for new food (Ziswiler and Farner 1972). Duke and Rhoades (1977) have shown in the laboratory that the quantity of food ingested, the time of day that feeding occurs, and the nutrient composition of prey affect the MPI of Great Horned Owls (*Bubo virginianus*). Fuller and Duke (1979) have demonstrated that multiple feedings, spaced over a period of time (2–3 hrs), increase the MPI of captive Great Horned Owls.

Very few field observations of the interval between feeding and pellet regurgitation have been published. This note describes the temporal pattern of pellet casting by Snowy Owls (*Nyctea scandiaca*) in the wild, and uses results from laboratory studies of the digestive physiology of strigiforms to suggest the significance of this pattern.

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