Report submitted to the

City of Boulder Open Space Department

Foraging Behavior of the Pygmy Nuthatch, *Sitta pygmaea*

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The purpose of the summer research was to obtain further data on the Pygmy Nuthatch, *Sitta pygmaea*. The data collected offers an opportunity to compare and contrast the foraging of the nuthatches during both the nonbreeding season (spring data) and the breeding season (summer data). The foraging data will allow a greater understanding of the resources needed and used by the Pygmy Nuthatches. This has important implications for management analysis of resources necessary and vital in protecting the well-being of the species in the future.

Method

The methods used are similar to those during spring data collection. The study area was Mount Sanitas in the Boulder Open Space Area west of Boulder, Colorado. All observations were in patchy forest areas of Ponderosa Pine. Observations were made between mid June 1995 until late August, 1995. Observations were made at a distance that solicited no response from the birds, thus assuring minimal disturbance. Observations were recorded regarding technique used while foraging, movements during foraging, and location of foraging.

Results

The results obtained for foraging technique are contrary to those found in the spring observations. Pecking was observed as being the technique utilized predominantly. (see Figure 1.) The data on movement during foraging was subdivided further adding movement among/between cone clusters. The highest number of observations were made with movement either away from the trunk or among/between the needle clusters. The least number of observations were recorded for stationary facing down. (see Figure 2.) The findings for stationary facing down were contrary to those found in the spring data when stationary facing down was the second highest in terms of prevalence. In the category of foraging substrate, the highest number of observations were made on needle and cone

stationary facing down was the second highest in terms of prevalence. In the category of foraging substrate, the highest number of observations were made on needle and cone clusters. The lowest number of observations were made foraging on the ground and on both the top and bottom of the branch. (see Figure 3.) This is not consistent with the findings in the spring data. The spring data shows the trunk being the most prevalent foraging substrate and the cone/needle clusters being the second-to-least frequent.

Discussion

The data obtained during the summer research period shows a marked difference in several areas from that of the spring. This suggests two possibilities. Firstly, the physiological and anatomical characteristics focused on in the discussion of the spring data may not be those that influence the overall foraging strategy of the nuthatches. Secondly, the data collected in the spring may not be representative of foraging strategies followed throughout different seasons. Nuthatches may utilize different strategies in response to their breeding status, or alternatively, in response to the season and its effects on the resources available.

These two studies in combination with other past studies (Bock,1968, McEllin,1979, Norris, 1958, Stallcup,1968) of Pygmy Nuthatch foraging provide increasing information on foraging habits, strategies, and seasonal variations. This information as well as future studies of Nuthatch foraging will offer valuable information for use in management strategies as well as understanding of the biology and behavior of Colorado birds.

References

Bock, C.E. 1968. Intra- vs. Interspecific Aggression in Pygmy Nuthatch Flocks. *Ecology* (50):903-905.

McEllin, S.M. 1979. Population Demographies, Spacing, and Foraging Behaviors of White-breasted and Pygmy Nuthatches in Ponderosa Pine Habitat. The Role of Insectivorous Birds in Forest Ecosystems. 301-329.

Norris, R.A. 1958. Comparative biosystematics and life history of nuthatches *Sitta pygmaea and Sitta pusilla.* University of California Publications in Zoology (56):119-300.

Stallcup, L. 1968. Spatio-temporal Relationships of Nuthatches and Woodpeckers in Ponderosa Pine Forests of Colorado. *Ecology* (49): 831-843.

Figure 1.

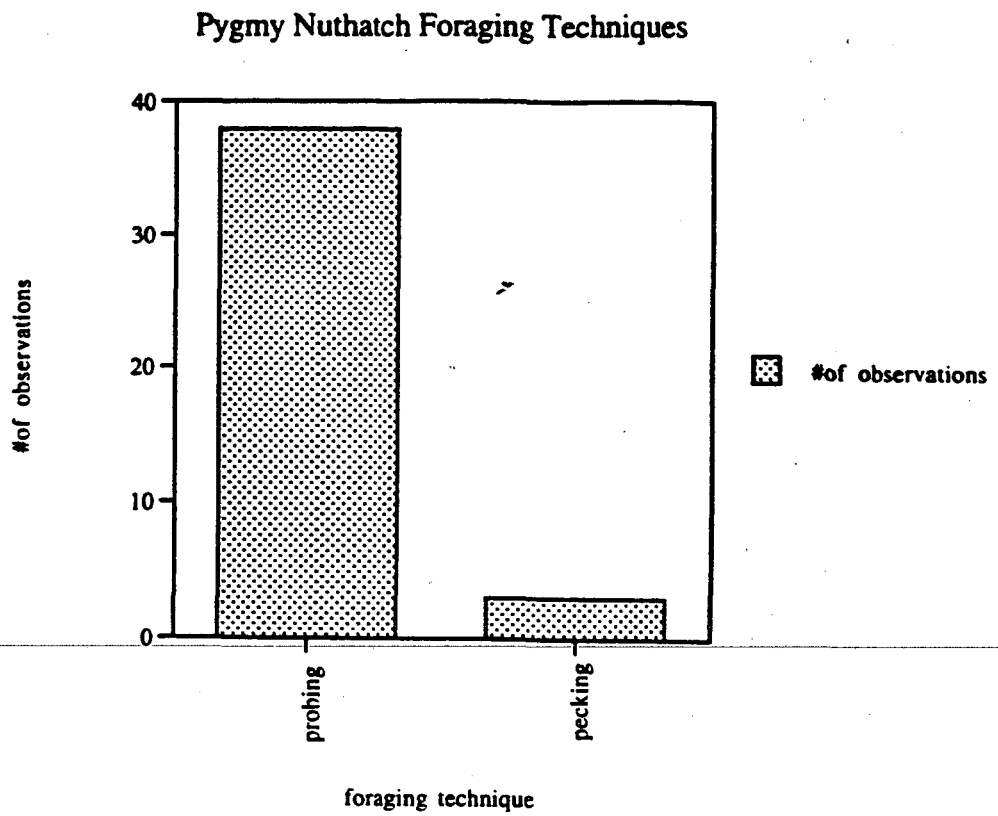

Pygmy Nuthatch Foraging Techniques
40
30
20
10
0
#of observations
#of observations
probing
pecking
foraging technique

Figure 2.

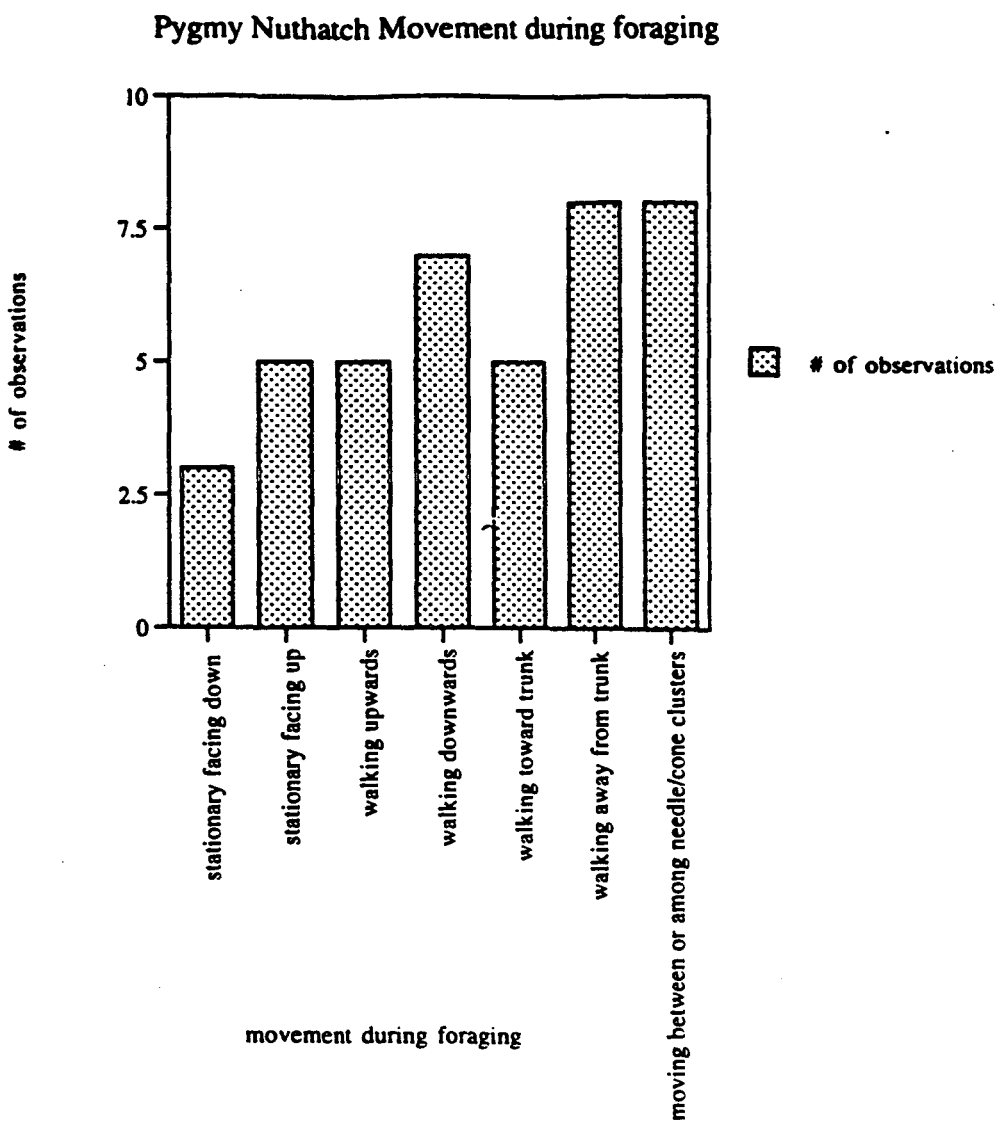
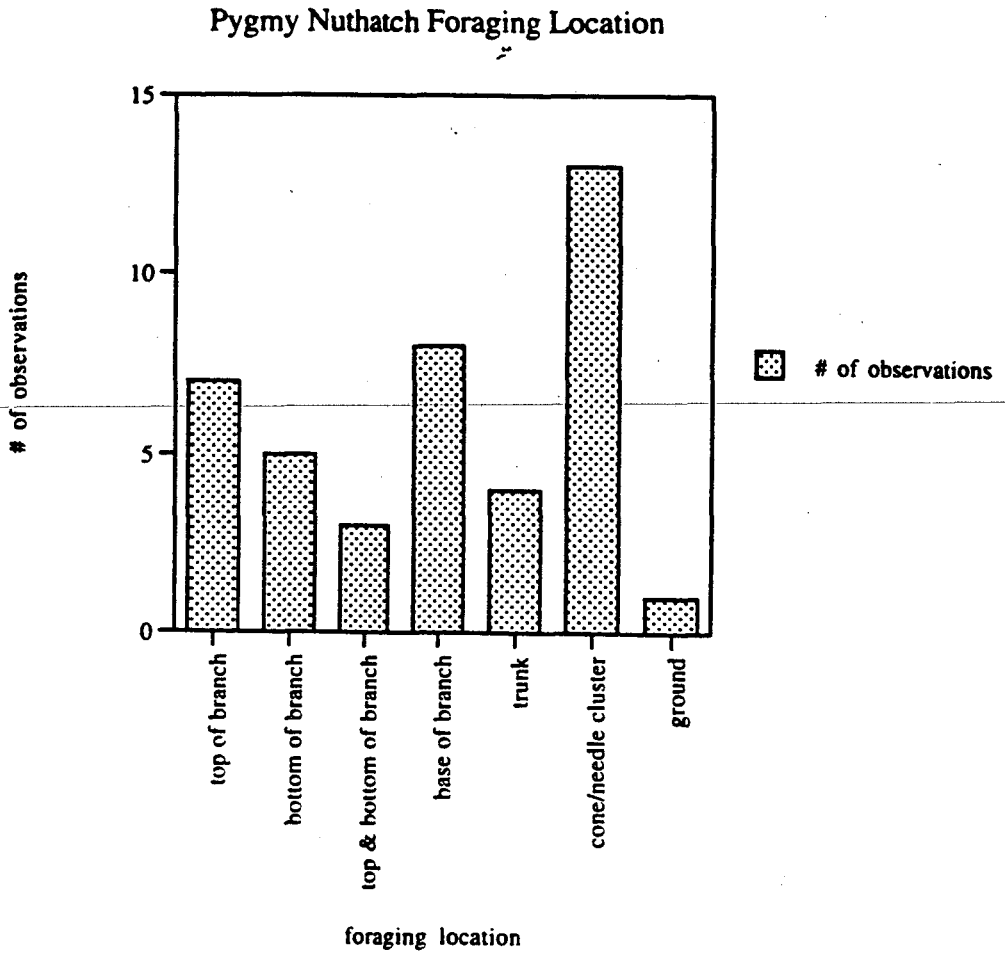

Pygmy Nuthatch Movement during foraging
10
7.5
5
2.5
0
# of observations
stationary facing down
stationary facing up
walking upwards
walking downwards
walking toward trunk
walking away from trunk
moving between or among needle/cone clusters
movement during foraging
# of observations

Figure 3.


Pygmy Nuthatch Foraging Location
15
10
5
0
# of observations
top of branch
bottom of branch
top & bottom of branch
base of branch
trunk
cone/needle cluster
ground
foraging location
# of observations