DAILY RHYTHMS OF MIGRATING GOLDEN EAGLES AND BALD EAGLES IN AUTUMN AT BAKE OVEN KNOB, PENNSYLVANIA

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INTRODUCTION

In an earlier work (Heintzelman, 1975: 219-222), I examined Golden Eagle (*Aquila chrysaetos*) and Bald Eagle (*Haliaeetus leucocephalus*) data collected in autumn from 1961 through 1972 at Bake Oven Knob, Lehigh County, Pennsylvania, to determine if these species exhibit a clear daily rhythm in migratory behavior. Based upon the quantitative evaluation scales designed to rate hawk lookouts objectively (Heintzelman, 1979), Bake Oven Knob is rated excellent as an autumn hawk lookout and is known widely among hawk watchers and bird watchers generally for the many eagles observed there. Thus the site is ideal to use to study daily rhythms of migrating eagles.

In all, 1,288 days (7,914 hours) of observation were logged between 1961 and 1981 at Bake Oven Knob to gather the eagle data used in this report. Although a few eagles were seen without the times at which they appeared being recorded, times of observation were noted for 450 Golden Eagles and 326 Bald Eagles. This allowed the data to be organized in an hour by hour frequency distribution using eastern standard time as the basis for noting when each bird appeared. The size of the sample also should be adequately large to allow an accurate definition of daily rhythms of eagles migrating past Bake Oven Knob.

EARLIER ANALYSIS

In my earlier analysis (Heintzelman, 1975: 219-222), Golden Eagles tended to produce two peak activity periods—one in midmorning, and a somewhat greater activity period early in the afternoon. No large late afternoon activity period occurred as claimed by some hawk watchers at various Pennsylvania hawk lookouts.

Bald Eagles exhibited a peak activity period between eleven o'clock and noon which conflicted with the observations of Broun (1949: 164) who reported that significant late afternoon eagle flights frequently occurred at Hawk Mountain, Pennsylvania. Since Bake Oven Knob and Hawk Mountain are only about 16 miles apart on the Kittatinny Ridge, the time required for eagles to fly from the Knob to Hawk Mountain is about 30 minutes on many days. Thus distance between sites seemed not to be an especially important factor responsible for explaining the late flights at Hawk Mountain but lack of such flights at Bake Oven Knob. However, it is already known (Heintzelman, 1975: 271) that slightly more than one-half of the Bald Eagles seen at Bake Oven Knob are not observed downridge at Hawk Mountain suggesting that many more eagles migrate through the Bake Oven Knob-Hawk Mountain area than are seen at either location. Also remaining unknown when my earlier analysis was made of daily eagle rhythms was the importance (if any)

of the much larger number of eagles seen at Hawk Mountain during past years and the possible influence of that larger sample size on skewing results and conclusions at Hawk Mountain.

New Analysis

With the availability of an additional decade of eagle data from Bake Oven Knob, it again seems desirable to examine the daily rhythms of eagles observed migrating past the Knob using all available data from 1961 through 1981.

As shown in the figure, Bald Eagles reach a peak of migratory activity at Bake Oven Knob between noon and one o'clock in the afternoon or one hour later than was reported in my earlier analysis (Heintzelman, 1975: 219-222). However, the data still do not show any indication of a significant late afternoon Bald Eagle movement such as Broun (1949: 164) reported for Hawk Mountain, Pennsylvania. Nor is there any indication of a noon lull in Bald Eagle flights at the Knob. This conflicts with well documented noon lulls at this site for various other raptor species (Heintzelman, 1975: 212-234). It is clear, however, that hawk watchers wishing to see migrating Bald Eagles at Bake Oven Knob have the greatest possibility of seeing the birds between noon and one o'clock in the afternoon although generally the period between ten o'clock in the morning and three o'clock in the afternoon is only slightly less favorable.

In comparison, Golden Eagles migrating past Bake Oven Knob exhibit a peak in their migratory behavior between one and two o'clock in the afternoon—an hour later than the peak Bald Eagle activity period—but anytime between ten o'clock in the morning and four o'clock in the afternoon can be rewarding for hawk watchers wishing to see Golden Eagles at this site. Again, however, the frequently made statement by some hawk watchers that the "four o'clock eagle" might be coming is not supported by data presented in the figure. Indeed, there is relatively limited opportunity for seeing migrating Golden Eagles at Bake Oven Knob after four o'clock in the afternoon and certainly there is no evidence supporting the suggestion that there is a late afternoon movement of eagles at this site. However, the data presented here do demonstrate that Golden Eagles reach a peak in their migratory activity one hour later than was shown in my earlier analysis (Heintzelman, 1975: 222), although a slight lull in the flights still occurs between eleven o'clock and noon as previously reported.

Acknowledgments

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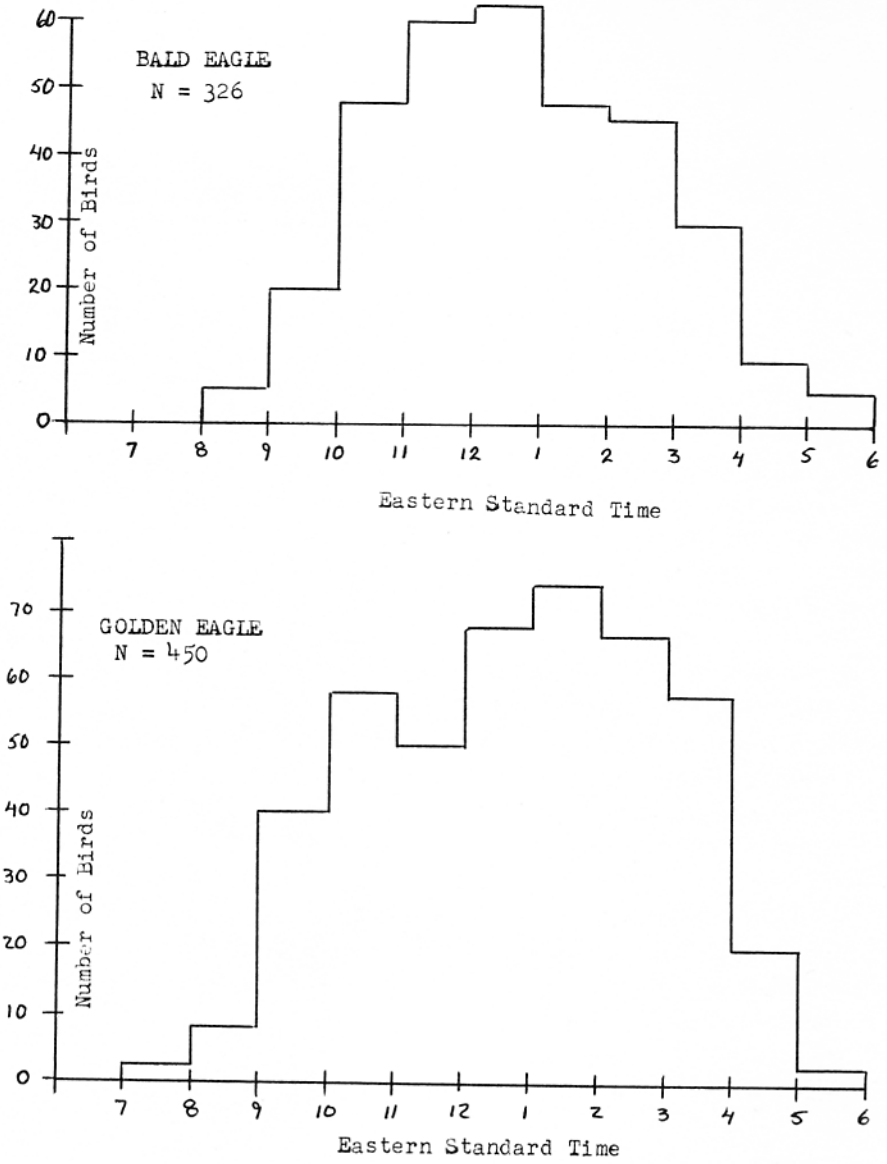

FIGURE 1.
Daily rhythms of Golden Eagles and Bald Eagles migrating past Bake Oven Knob, Lehigh County, Pennsylvania, in autumn between 1961 and 1981.

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