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THE 1972-1973 GOSHAWK INVASION IN ILLINOIS

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Abstract.--The distribution and magnitude of the 1972-1973 goshawk invasion in Illinois is reported. The greatest numbers of goshawks were recorded from northern Illinois, but some individuals ranged as far south as Pope and Union counties. Information is provided on the age composition of the invading individuals; 85% of the aged birds were considered to be in subadult or adult plumages. A brief review of a possible cause of periodic invasions is included.

During the fall and winter of 1972-1973, a historically unprecedented number of goshawks *(Accipiter gentilis)* ingressed into Illinois. Previous southern irruptions occurred in Illinois during the years 1870-1871 (Nelson, 1876), 1896-1897 (Dickensen, 1897), 1907-1908 (Deane, 1907), and 1916-1917 (Eifrig, 1917; Musselman, 1921) but in much smaller numbers than the 1972-1973 invasion.

Between 1921 and 1972, Christmas Bird Censuses of the Illinois Audubon Society reported goshawks occurring sporadically in the following northern counties: Bureau, Carroll, Cook, DuPage, Lake, Lee, McHenry, McLean, Mercer, Peoria, and Rock Island. In the 1949 *Audubon Field Notes (=American Birds)*, five goshawks were reported from Havana, but no details were submitted with the report. Mueller and Berger (1967) listed two recovered banded birds from Cook and Adams counties (originally banded at Cedar Grove Ornithological Station, Wisconsin which are the only band recoveries on record for Illinois), and Smith and Parmalee (1955) cited a record for Madison County that until now was the most southwestern Illinois record. A review of the records of the Fish and Wildlife Service's Bird Banding Laboratory from 1954 to 1971 revealed that of 1,050 goshawks banded in the United States during this period, none was trapped in Illinois.

This paper delineates the distribution of the 1972-1973 invading goshawks in Illinois and provides information on the magnitude of the invasion and on the age composition of the invading individuals.

To determine the abundance and distribution of goshawks in Illinois, data sheets were sent to museums and universities in Illinois and adjoining counties requesting information on specimens received between September 1972 and April 1973. Included on the data sheets were collecting information as outlined by Van Tyne (1952) and supplementary space for comments on behavior, unusual circumstances, and other pertinent remarks.

Additional data sheets, or letters requesting information on observations for trapped goshawks, were sent throughout the state to individuals known to have previously contributed information on other Illinois bird species. The data accumulated were considered reliable, although a few

records from different observers may represent reports of the same bird.

Museum specimens are deposited in the following institutions (abbreviations used in text): Davenport Museum (DP), Greenville College (GC), Illinois Natural History Survey (INHS) and Illinois State Museum (ISM).

DISTRIBUTION AND MAGNITUDE OF THE INVASION

A total of 243 goshawks was reported, including nine museum specimens (DP 1, GC 1, INHS 6, ISM 1), 68 trapped birds, and 166 observations. The earliest and latest dates recorded were 30 September 1972 and 8 April 1973. In contrast, Ford, et al. (1934) gave 28 October and 3 March as the earliest and latest dates for the Chicago region.

Goshawks were reported in greatest numbers in the northern one-fourth of the state but ranged as far south as Pope and Union counties (Fig. 1). Although the AOU Checklist (5th edition) states that the wintering range of the goshawk extends as far south in the central states as Tennessee, no records from southern Illinois have previously been known.

An examination of Illinois topographic maps discloses that in 1972-1973 goshawks were found predominantly in heavily wooded areas and forests marginal to open land. In forested areas such as the Max McGraw Wildlife Foundation, Sand Ridge State Forest, and state game farms, goshawks were seen regularly throughout the winter.

AGE COMPOSITION

The age composition of the invading goshawks was determined by summarizing the data obtained from the trapped birds and specimens. Seventy-five goshawks were aged, 66 by trappers at their stations (Fig. 1), and nine through examination of museum specimens. The majority of adults trapped had two generations of feathers in their plumage, permitting their placement into three age classes (based on differences in color and pattern). Eleven were juveniles (less than one year old), 25 were subadults (birds exhibiting first adult plumage, slightly more than one year old) and 39 were adults (birds exhibiting their second or subsequent adult plumage, two or more years old). These age classes follow those outlined by Mueller and Berger (1967). Eighty-five percent of the goshawks represented the subadult and adult plumages.

The proposal that goshawk populations increase as prey populations increase, resulting in an overabundance of goshawks when the prey species decline, has been suggested by Spiers (1939), Keith (1960) and Mueller and Berger (1967). With a decline in prey populations and an increase in agonistic encounters among a given population of goshawks, the production of young decreases (Mueller and Berger 1967). The invasion in 1962-1963 reported by Mueller and Berger contained few juveniles and first-year adults, thus supporting the above hypothesis.

Of the 75 goshawks aged in the 1972-1973 invasion, only 15% were juveniles, reflecting a low reproductive success in 1972 and adding further support to the aforementioned hypothesis.

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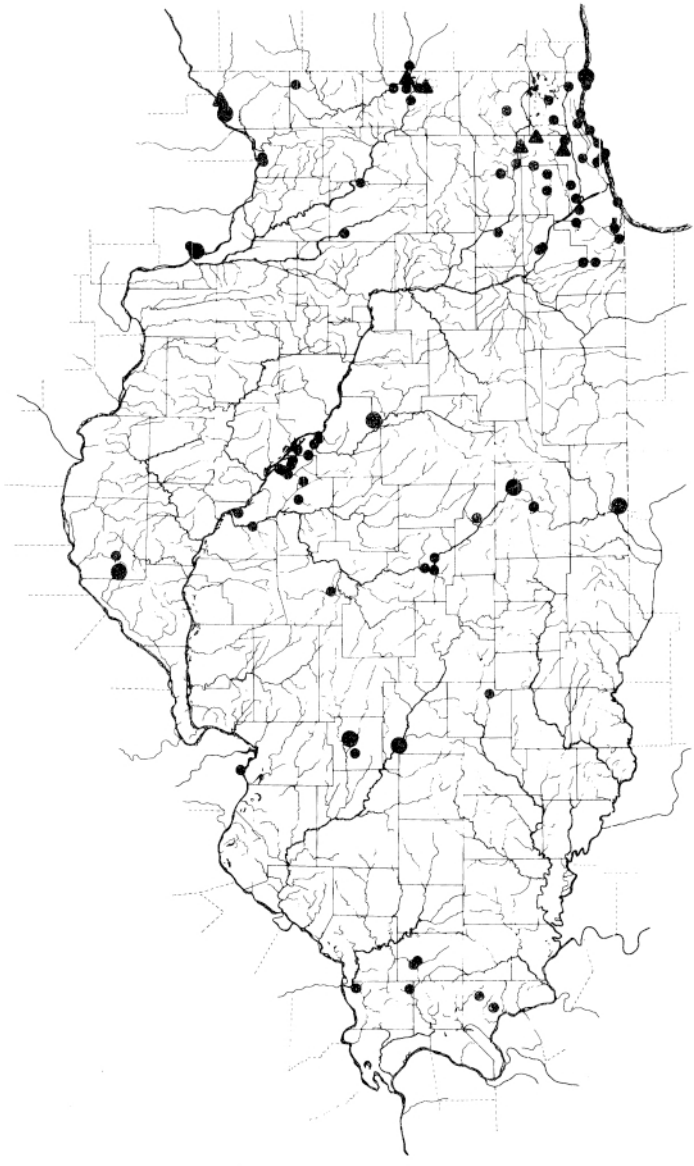

Figure 1. Distribution of *A. gentilis*. Large dots indicate localities represented by museum-acquired specimens; small dots indicate localities represented by sight records; triangles indicate trapping station localities. The number of localities does not accurately reflect the total number of birds reported.