

# WOODCOCK NESTING HABITAT IN NORTHERN WISCONSIN

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**ABSTRACT.**—Of 32 woodcock nests studied in northern Wisconsin, 29 were in forest stands dominated by aspen, and 3 were in northern hardwoods. Well-drained, upland nest sites near the brushy edges of poorly stocked poletimber stands were apparently preferred. More than 30 woody plant species were found at the 32 nest sites. Hazel was the most important shrub species noted.—*Wisconsin Department of Natural Resources, P.O. Box 220, Park Falls, Wisconsin 54552,* and *Wisconsin Department of Natural Resources, 3911 Fish Hatchery Road, Madison, Wisconsin 53711.* Accepted 2 December 1975.

PUBLISHED information on American Woodcock (*Philohela minor*) nesting habitat is limited, possibly because nests are difficult to find. Mendall and Aldous (1943) recorded cover types for 128 Maine nests, and concluded that nesting woodcock preferred young, open, second-growth woodlands. Ammann (1970) stated that open, aspen (*Populus*)-birch (*Betula*) woods and the edges of upland openings were ideal nesting habitat. Liscinsky (1972) in Pennsylvania and Sheldon (1967) in Massachusetts both reported finding woodcock nests in a wide variety of vegetative types.

In northern Wisconsin we conducted nest and brood searches annually from 1969 through 1974 as part of a study of woodcock biology undertaken by the Wisconsin Department of Natural Resources. More than 80 nests were found, most with the aid of pointing dogs. During the first years of our study, a high proportion of woodcock females nested near the edges of forest stands dominated by aspen (*Populus* spp., mostly *P. tremuloides*). We undertook an analysis of the characteristics of woodcock nest sites in 1973 to document nesting cover preferences better.

## METHODS

Vegetation surrounding 32 woodcock nest sites found during 1973 and 1974 was analyzed. We located 27 nests during nest searches, 4 were found by Department of Natural Resources personnel during other fieldwork, and 1 was reported by a logger.

Nest searches were made mostly in places where large numbers of birds had been captured and banded during a previous summer. These habitats typically contained large amounts of aspen and alder (*Alnus* spp.). Fieldwork was in Sawyer, Price, and Lincoln counties where 75% of the land is classed as commercial forest. Of these forest lands, 37% are in an aspen type, 30% in northern hardwoods, 13% in other hardwoods, and 20% in conifers (Spencer and Thorne 1972). We made no attempt to search for nests in the various forest types in proportion to their abundance, but tried to sample all types.

At each nest we recorded the type, age, and stocking of surrounding forest; distance to the nearest forest opening; soil drainage; and nest location, including distances from other known nest sites and the position of the nest on level ground, sloping ground, or hummock. When measuring distance between a nest and a forest opening, we regarded any significant break in the forest canopy as an opening.

We sampled vegetation at the end of nesting from late May through late June. Herbaceous species recorded at nest sites appeared to depend primarily on the phenological stage at which sampling occurred, so herb sampling was discontinued. As the woodcock is an early spring nester and most females select their nest site at a time when only dead residual vegetation is present (Fig. 1), new plant growth did not appear to be a factor in site selection for first nests, although it may have influenced re-nest sites.

Concentrating nest searches along the borders of upland openings and along the edges of roadways and trails increased the likelihood of including nests close to an edge in the sample. The nest-searching crew usually consisted of two men and two dogs working in parallel on the same side of a road, which generally allowed coverage of a swath at least 150 feet wide. As more nests were found within the 30 feet of cover



Fig. 1. Woodcock hen on nest in dead residual cover from previous growing season, Langlade County, Wisconsin, 30 April 1969.

closest to an edge than in the outer 120 feet, use of edges for nesting is thus an expression of preference rather than a result of biased sampling.

Circular plots were used to sample woody vegetation. Shrubs and seedlings were sampled on five 1-milacre plots, one centered on the nest and one in each cardinal direction three paces from the nest. On the nest plot, all shrubs were recorded, but on the remaining four milacre plots only those shrubs more than 2 feet in height were tallied. Saplings (1–4 inches dbh) were sampled on a 1/100-acre plot and trees were tallied on a 1/20-acre plot.

## RESULTS

Most woodcock nests were found in forest stands dominated by aspen (Table 1). Only three nests were discovered in northern hardwoods and none in conifers. Woodcock nesting in aspen appeared to favor poletimber stands over younger stands. As poletimber stands now dominate Wisconsin's commercial forest land (Spencer and Thorne 1972), more nesting in stands of this age possibly reflected their greater availability. Density of trees in the vicinity of nests was somewhat variable, but young stands in which nests were found were generally better stocked than were older stands holding nesting woodcock (Fig. 2). Nests in older aspen stands were usually in open, brushy habitats, suggesting that fully stocked, mature aspen may not be preferred nesting cover.

Woodcock females generally selected nesting sites close to the edge of a forest stand (Table 1). Most woodcock encountered during nest searches (a sample consisting solely of adults, but presumably including birds of both sexes) were flushed close to an edge.

Dry or moist level sites in aspen apparently were preferred for nesting. The few nests found in wet lowland sites were usually on top of a hummock. The amount of nest concealment varied. Although most nests had some vegetative cover directly overhead, a few were unconcealed. The scattered small coniferous trees occasionally



Fig. 2. Woodcock nest site in aspen, Price County, Wisconsin, spring 1974.

found in the aspen forest type frequently provided concealment for a nest, despite the fact that stands dominated by conifers were not used for nesting (Fig. 3). Mendall and Aldous (1943) also noted that woodcock nests were often at the base of small conifers.

More than 30 woody plant species were identified on the 32 nest sites where vegetation was sampled. Hazel, predominantly beaked hazel (*Corylus cornuta*), was the most important plant among the shrub group, accounting for 53% of the stems counted in the shrub and seedling class (Table 2). Aspen sprouts ranked behind hazel in abundance among the smallest size class, accounting for 16% of the stem count. In the larger size classes, aspen was the most abundant species, accounting for 70% and

TABLE 1  
CHARACTERISTICS OF 32 NORTHERN WISCONSIN WOODCOCK NEST SITES

Characteristics	No. of nests	Characteristics	No. of nests
Forest type		Surrounding tree density	
Aspen	29	Poorly stocked	21
Northern hardwood	3	Medium stocking	8
Surrounding forest age		Well stocked	3
Seedling	2	Nest concealment	
Sapling	4	Under conifer bough	9
Poetimber	22	In shrub clump	9
Mixed	4	In residual herbaceous cover	2
Soil moisture and slope		At base of deciduous tree	2
Dry-level	13	No overhead cover	10
Dry-slope	5	Distance from forest edge	
Moist-level	11	0-30 feet into opening	4
Moist-slope	2	0-30 feet into forest	20
Wet-level	1	30-60 feet into forest	4
		60-90 feet into forest	2
		90-150 feet into forest	2



Fig. 3. Woodcock nest site in mixed aspen-fir stand, Price County, Wisconsin, spring 1973.

56% of the stems tallied in the sapling and tree size classes, respectively. Aspen of one age or another was present on 30 of the 32 sampled sites.

#### DISCUSSION

In the northeastern states, Mendall and Aldous (1943) noted that northern hardwoods were rarely used for nesting and indicated that a lack of earthworms in

TABLE 2  
COMMONEST WOODY PLANTS AT 32 NORTHERN WISCONSIN WOODCOCK NEST SITES

Size class	Species	Percent of stem count <sup>1</sup>	Percent occurrence <sup>2</sup>
Shrubs and seedlings	Hazel ( <i>Corylus</i> spp.)	53	81
	Quaking aspen ( <i>Populus tremuloides</i> )	16	72
	Blackberry/raspberry ( <i>Rubus</i> spp.)	9	31
	Willow ( <i>Salix</i> spp.)	5	44
	Juneberry ( <i>Amelanchier</i> spp.)	2	34
	Cherry ( <i>Prunus</i> spp.)	2	34
Saplings	Quaking aspen	70	63
	Red maple ( <i>Acer rubrum</i> )	10	22
	Alder ( <i>Alnus</i> spp.)	7	9
	Balsam fir ( <i>Abies balsamea</i> )	4	9
	White birch ( <i>Betula papyrifera</i> )	3	13
	Willow	2	9
	Cherry	2	9
Trees	Quaking aspen	56	75
	White birch	9	31
	Sugar maple ( <i>Acer saccharum</i> )	9	9
	Balsam fir	7	31
	Red maple	7	16
	Basswood ( <i>Tilia americana</i> )	3	6
	Rock elm ( <i>Ulmus thomasi</i> )	3	3
	White spruce ( <i>Picea glauca</i> )	2	9

<sup>1</sup> Includes only species that made up 2% or more in a size class.

<sup>2</sup> Percent of sites at which a species in each size class was found.

habitats of this type was probably responsible. In our study, evidence of feeding, such as probe marks and splashings, was consistently absent in a radius of at least 35 feet around active nests, indicating that woodcock females did most of their feeding away from the nest site. The presence of earthworms, therefore, would be unimportant until after hatching. Furthermore, woodcock chicks are highly mobile at an early age so the female can move her brood to a more favorable feeding ground if necessary. The characteristics of the understory cover thus appears to be more important than the number of earthworms in the selection of nesting sites by woodcock.

Forests of the aspen type provide the brushy aspect and large amount of edge that nesting woodcock seem to prefer. Whereas shrubby cover in both northern hardwood and conifer forest types is usually sparse, aspen stands are characterized by the presence of a shrub understory (Hansen and Kurmis 1972). That the aspen type is a preferred habitat of white-tailed deer (*Odocoileus virginiana*) (McCaffery and Creed 1969) and Ruffed Grouse (*Bonasa umbellus*) (Gullion and Svoboda 1972) has been well established. Forest management plans designed to benefit deer, including maintenance of the aspen type, upland brush, and openings, will also be beneficial to woodcock.

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