MONITORING WOODCOCK SINGING SITES THROUGH SONAGRAMS[1]

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ABSTRACT

The main objective of this project was to determine if sonagrams could be used to assess the number of different birds using a single woodcock singing ground. Earlier work showed that individual male woodcock could be distinguished by their peent call. Weather permitting, two singing sites near Morgantown, West Virginia, were monitored every other day from April 3-28, 1972. Birds using the sites were recorded and voice prints (sonagrams) were made of the peent call. "T" test comparisons of frequency and width of the peent sonagram showed only one bird using each site. However, one bird was mist-netted at the singing site on April 18 and no further calling occurred until April 26. Based on voice prints, this was a different male. Management implications and technical problems are discussed.

INTRODUCTION

Samuel (unpublished report) suggested that sonagrams (voice prints) might be used to census American woodcock (*Philohela minor*). Subsequently, Beightol and Samuel (1971) indicated that individual male woodcock could be identified by sonagrams of their "peent" call.

The primary objective of this project was to determine if sonagrams could be used to assess the number of male woodcock using a single singing site. Beightol (1972) stated that "sonagrams would aid in determining replacement of males on singing grounds without the behavioral stress and possible relocation provoked by trapping." Since trapping may cause woodcock movement (Sheldon 1967), "marking" birds via sonagrams of "peent" calls would allow biologists to gain new information on this species.

A secondary objective was to determine if sonagrams would allow study of male woodcock movements on singing grounds.

METHODS

Two singing sites one-fourth mile apart were monitored with recordings made every other night, weather permitting. The time period (April 3, 1972, to April 28, 1972) marked the peak through the end of the woodcock's courtship behavior. Birds were recorded from a blind at a distance of 20 feet. Personnel created minimal disturbance while recording (positioning established before the courtship performance and leaving quietly during an aerial flight).

"Peents" were recorded with Norelco '150' cassette tape recorders. Twenty-four inch parabolic reflectors with 6-inch focal lengths were used. Recordings were processed through a Kay Electric Company Sona-graph, Model 6061-B using the wide-band pass filter (300 Hz) and FL-1 circuit. Only quality recordings were processed into voice prints.

Sonagrams were prepared of five "peents" from each recording session — a total of 90 peents. Composite vellum tracings were made of the major energy

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band of each "peent" in the series (Williams 1971). Three parameters were measured: mid-range frequency of the sonagram, frequency range, and length of the call. T-tests were used to compare parameter means of "peents" recorded on different days.

RESULTS

Individual male woodcock can be identified by visual inspection of a series of "peent" sonagrams (Fig. 1). Visual comparison of nine different "peents" recorded on singing site "A" on different days indicated that only one bird used the area (Fig. 2). Students' T-tests performed on each parameter for five "peents" from each evening showed no significant differences ($p>0.05$). Recordings were made at site "A" from April 3-19, 1972. On April 21, 1972, no bird was present, but a bird singing about 200 yards away was recorded and proved to be both visually and statistically ($p>0.05$) the same. On April 28, 1972, the bird returned to sing on site "A."

Visual comparison of seven different "peents" recorded on singing site "B" from April 3 to April 17 indicates that only one bird called on the area (Fig. 3). Again, T-tests showed no significant difference in the three parameters between sessions ($p>0.05$). On April 18, the bird singing on site "B" was mist netted and banded. No birds sang on the area until April 26 and 18, when another woodcock — determined by both visual comparison and T-tests ($p<0.05$) — was recorded.

DISCUSSION

The immediate area used by a singing male woodcock is known as the singing site. Since a singing field may be composed of many sites, a number of males may be singing in the same area. Banding and telemetry have been the major methods used to study woodcock movements on singing sites. Both methods involve trapping, which may cause the birds to move (Sheldon 1967). In addition, the placement of a transmitter or band on an animal may modify behavior patterns so that the typical movements noted by Sheldon (1953) cannot be determined.

This pilot study showed that sonagrams provide an easy and relatively inexpensive method for studying woodcock movements during the breeding season. Bird "A" used a 20 by 20 foot site from Spril 3 to April 19, moved 200 yards away for one evening, and then returned. Bird "B" used a 20 by 20 foot site from April 3 to April 18 and left the area when mist netted. This small amount of movement around the site for both birds may have resulted from recording late in the season when the males had established individual breeding territories.

Future studies using this technique are encouraged. The effects of trapping on an individual's behavior (*i.e.*, abandonment of his singing ground) could be assessed by following a record-trap-record program. By suing three or four recorders on a small area, more may be learned about local movements and the role of "floating reserve" males as participants in a singing-ground activities. Using a slow and deliberate approach, one can record one bird every 15 minutes.

Recorders may cost as little as $50.00 each, but more expensive portable recorders will provide better quality sonagrams. Reflectors cost around $45.00.

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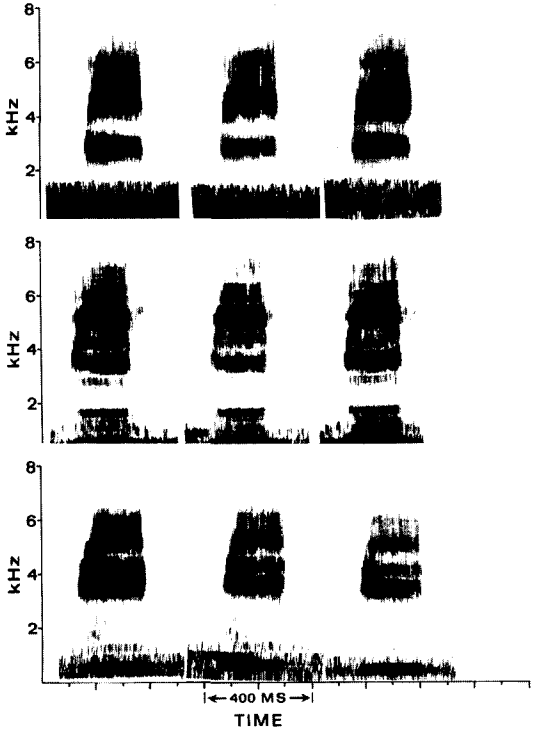

Figure 1. Three sonagram "peents" (across) from three different male woodcock (down). Sonagrams were processed at the wide-band (300 Hz) setting. Birds were randomly selected from recordings made near Morgantown, West Virginia, during the spring of 1972.

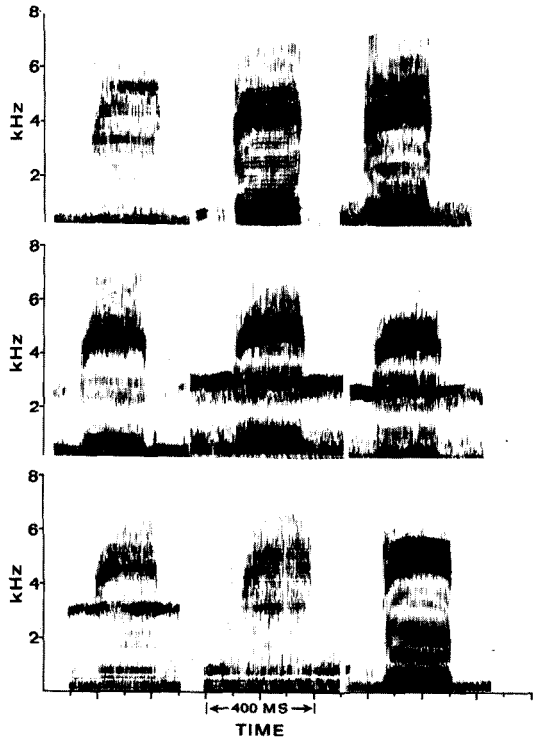

Figure 2. Representative sonagram "peents" of male woodcock recorded on singing site "A" from April 3, 1972, to April 28, 1972. Top - April 3, 8, 10; Middle - April 12, 14, 16; Bottom - April 19, 21, 28. Sonagrams were processed at the wide-band (300 Hz) setting.

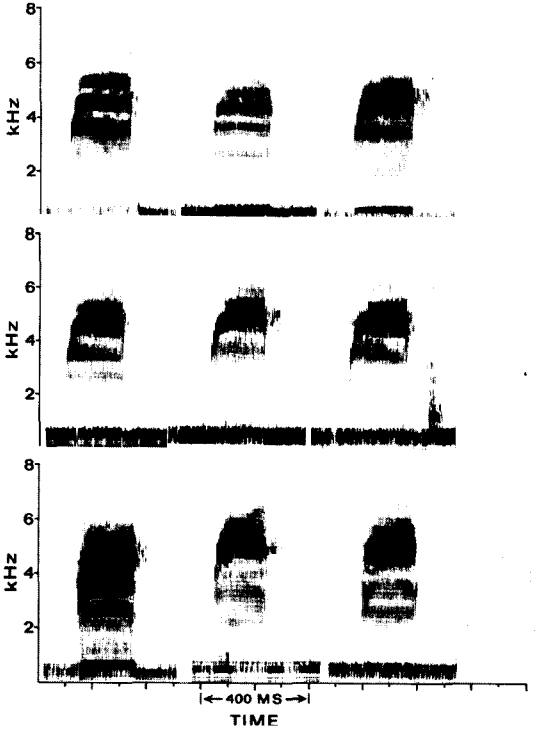

Figure 3. Representative sonagram "peents" of male woodcock recorded on singing site "B" from April 3, 1972, to April 28, 1972. Top - April 3, 5, 8; Middle - April 10, 12, 14; Bottom - April 17, 26, 28. The bird singing on site "B" was captured April 18. Note the difference in "peents" recorded on April 17 and April 26. Sonagrams were processed at the wide-band (300 Hz) setting.