BIRD-BANDING

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WOODCOCK BANDING ON THE CAPE MAY PENINSULA, NEW JERSEY

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The technique of capturing American Woodcock (*Philohela minor*) by the use of lights and long-handled nets is well known. Many woodcock have been banded in this manner on both their natal areas (Rieffenberger and Kletzly 1967) and wintering grounds (Glasgow 1958). However, little was known of the practicality of this method when dealing with migrants. Four years of fall banding in the Canaan Valley of West Virginia resulted in several hundred woodcock captures, which implied that the nightlighting technique should work well elsewhere.

An attempt to ascertain the success of this method on large numbers of migrating woodcock was made in the Cape May region of southern New Jersey during late November 1968. This was a cooperative effort of biologists from West Virginia, New Jersey, Maine, and the Bureau of Sport Fisheries and Wildlife.

METHODS

During the day fields were scouted, and those having the appearance of being suitable for woodcock were charted (Figure 1). Past experience has shown that low ground vegetation with scattered, taller cover was desirable. When these criteria were observed, landowners were contacted for permission to "check out" these areas at night.

After dark, a return trip was made to the chosen fields. Biologists, equipped with long-handled nets and spotlights powered by motorcycle batteries, then started a systematic search of the fields. A fast walk was maintained until such time as woodcock were observed on the ground or flushed, then, a slower pace and more thorough investigation was in order. Where cover or soil conditions were suited only to foot travel, and many woodcock were present, the entire field was covered. If the field contained large numbers of woodcock, had low ground cover, and firm soil conditions, it was left without further attempts to capture birds on foot. The land-

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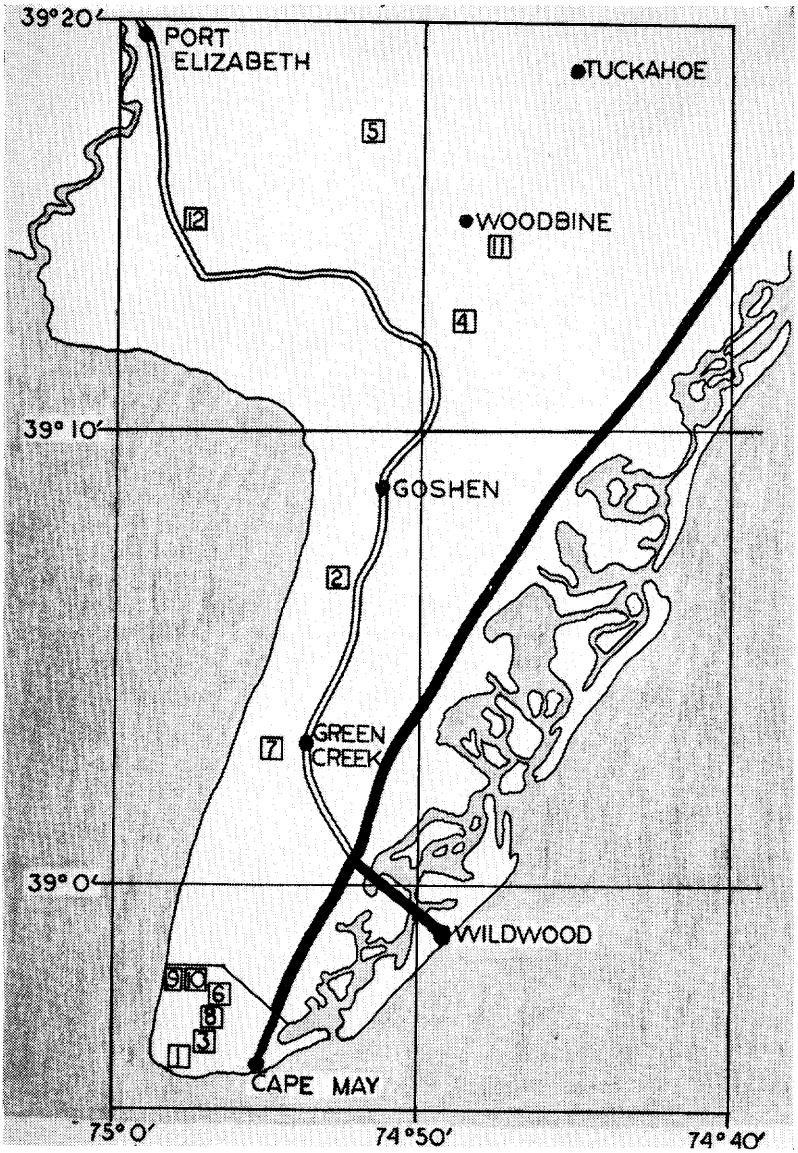

Figure 1. Location of fields searched for woodcock on the Cape May Peninsula, New Jersey (November 1968).

owner was then reapproached, and permission was requested to drive a pickup truck through the field.

On the return trip, usually the next night, one biologist would drive the truck slowly up and down the field, while another either

TABLE 1. WOODCOCK AGE AND SEX GROUPS BY DATE OF CAPTURE ON THE CAPE MAY PENINSULA, NEW JERSEY (NOVEMBER 1968)

November 1968	Age and Sex Categories												Total Woodcock Captured*	Immature per Adult Ratio
	HY Male		HY Female		HY Total		AHY Male		AHY Female		AHY Total			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%		
18	2	33	4	67	6	100	0	—	0	—	0	—	6	——
19	14	47	11	37	25	84	4	13	1	3	5	16	30	5.0
20	33	49	25	38	58	87	3	5	5	8	8	13	66	4.4
21	39	54	22	31	61	85	7	9	4	6	11	15	72	5.5
22	37	65	15	26	52	91	5	9	0	—	5	99	57	10.4
23	20	55	13	36	33	91	2	6	1	3	3	9	36	11.0
24	16	47	4	12	20	59	10	29	4	12	14	41	34	1.4
25	24	61	9	23	33	84	6	16	0	—	6	16	39	5.5
26	33	49	23	34	56	83	8	12	3	5	11	17	67	7.5
27	86	54	32	20	118	74	26	16	14	20	40	26	158	3.0
28	20	62	8	25	28	87	4	13	0	—	4	13	32	7.0
29	32	48	29	44	61	92	3	5	2	3	5	8	66	12.2
TOTAL	346	53	195	30	551	83	78	12	34	5	112	17	663	4.9

*Includes 19 repeats (see Table 2).

TABLE 2. NINETEEN WOODCOCK RECAPTURED IN THE SAME FIELD WHERE BANDED ON THE CAPE MAY PENINSULA, NEW JERSEY (NOVEMBER 1968)

Age and Sex	Number	Date Banded (November)	Date Repeated (November)
Hatching Year Male	1	19	20
	1	20	28
	1	20	29
	5	22	25
	1	22	27
	1	25	27
	1	26	29
Hatching Year Female	1	20	28
	1	21	27
	2	21	29
	1	22	29
	1	25	27
After Hatching Year Male	2	24	27

stood on a large tool chest in the rear or sat on the roof of the cab. From this vantage point a hand-held powerful spotlight (200,000 candlepower) was used to scan the ground directly in front and to one or both sides. The width of a swath was determined by density and type of ground cover and by how closely the second swath paralleled the first. When the observer spotted a woodcock, he tapped on the roof keeping his spotlight on the bird; the driver stopped the truck (leaving it in neutral), got out, grabbed a net, and put it over the bird. While the netter was retrieving his catch,

TABLE 3. MISCELLANEOUS FIELDS CHECKED ONLY ONCE FOR WOODCOCK UTILIZATION ON THE CAPE MAY PENINSULA, NEW JERSEY (NOVEMBER 1968)

Date (November)	Woodcock Found	Total Caught	Man Hours	Birds/Hour	
				Found	Caught
18	15	6	3	5.0	2.0
19	1	0	2	0.5	0.0
20	3	2	1	3.0	2.0
21	35	7	4	8.8	1.8
22	0	—	2	—	—
23	25	7	8	3.1	0.9
24	3	2	2	1.5	1.0
25	0	—	2	—	—
29	0	—	1	—	—
TOTAL	82	24*	25	3.3	0.9

* 29 percent of the woodcock found.

TABLE 4. FIELDS NIGHTLIGHTED ON FOOT TO CAPTURE WOODCOCK ON THE CAPE MAY PENINSULA, NEW JERSEY (NOVEMBER 1968)

Field Number	Dates Searched (November)	Woodcock Caught by Age and Sex					Woodcock Found	Percent Caught	Acres Searched per Night	Man Hours	Woodcock Caught per Man Hour	Woodcock Found per Man Hour	Woodcock Found per Acre	
		HY-M	HY-F	AHY-M	AHY-F	Total							Min.	Max.
1	19, 20, 28, 29	12	6	2	2	22	67	33	3.6	10	2.2	6.7	1.1	8.3
2	23, 25, 28	25	8	3	1	37	188	20	4.6	12	3.1	15.7	10.2	16.3
3	19, 20, 28, 29	8	5	2	1	16	47	34	1.8	6	2.7	7.8	2.8	11.1
5*	21	2	1	0	0	3	30	10	3.0	2	1.5	15.0	10	
7*	19	7	3	2	0	12	30	40	6.0	2	6.0	15.0	5	
10	20, 28	1	5	0	0	6	17	35	2.7	4	1.5	4.3	2.6	3.7
Summation for 7 nights		55	28	9	4	96	379	25	49.8	36	2.7	10.5	7.6 (Mean)	

*A vehicle was used after the first night.

the spotter would cast about for other woodcock. It was not uncommon to see additional birds squatting quietly nearby. Three of these "eyewitnesses" were the most caught at one stop. Ground cover usually allowed for a visibility radius of about 23 feet or approximately one-twentieth of an acre. When multiple catches were made, the birds were put in a holding cage and not banded until all were caught. Singles were banded and released immediately. Birds held any length of time in cages suffered from bloodied scalps and feces-matted plumage. Age and sex determinations were made under the bright spotlights.

RESULTS

Six hundred and forty-four woodcock were banded in 12 nights (Table 1). Nineteen of these were recaptured at a later date in the same fields (Table 2). There were also nine mortalities. Most of the mortalities occurred on nights when the capture technique was being introduced to biologists unaccustomed to the procedure. Three Common Snipe (*Capella gallinago delicata*) were also captured and banded.

Twenty-four birds were caught while making an initial nightlighting trip through miscellaneous fields checked only once. These fields yielded woodcock captures at the rate of 0.9 per man hour. Eighty-two woodcock were found in 25 man hours or 3.3 per man hour (Table 3).

Ninety-six woodcock were banded while walking in fields searched on foot after being found to contain large numbers of birds. This method located 379 woodcock in 36 man hours or 10.5 per man hour. However, the catch was only 2.7 per man hour (25 percent). Woodcock observed per acre ranged from 1.1 to 16.3 with a mean of 7.6 found using each acre (Table 4).

Nightlighting from a vehicle was the most successful technique of capturing woodcock. Five hundred and forty-three of 1,186 woodcock observed (46 percent) were captured in 120 man hours. All 19 of the repeats and the three snipe were also taken in this manner. The capture rate ranged from 2.7 to 6.2 woodcock per man hour on a nightly basis, with the mean being 4.5 per hour (Table 5). This was well above the mean of 2.7 per hour caught in fields searched on foot. The best ratio of "birds caught" to "birds found" was also in fields nightlighted from a vehicle. The mean number of woodcock found per acre by a vehicle (1.9) is not comparable with the 7.6 woodcock observed per acre walking; local concentrations as high as four per one-twentieth of an acre were not uncommon.

DISCUSSION

Fields had a wide range of cover types. The region has many truck farms, and most of the fields were sown to rye as a winter cover crop. Fortunately, woodcock held this form of vegetation in low esteem as nocturnal habitat. Pasture lands were few and far between and usually heavily grazed, but all had a few woodcock

TABLE 5. FIELDS NIGHTLIGHTED FROM A VEHICLE TO CAPTURE WOODCOCK ON THE CAPE MAY PENINSULA, NEW JERSEY (NOVEMBER 1968)

Field Number	Dates Searched (November)	Woodcock Caught by Age and Sex					Woodcock Found	Percent Caught	Acres Searched per Night	Man Hours	Woodcock Caught per Man Hour	Woodcock Found per Man Hour	Woodcock Found per Acre	
		HY-M	HY-F	AHY-M	AHY-F	Total							Min.	Max.
4	20, 21, 25, 27, 28, 29	27	8	3	3	41	72	57	9.1	15	2.7	4.8	.0	2.7
5	24, 27	22	8	11	4	45	106	42	9.0	12	3.8	8.8	5.1	11.8
6	26, 29	14	12	3	0	29	70	41	9.1	6	4.8	11.7	2.7	4.9
7	20, 23, 25, 28	35	32	5	1	73	143	51	15.5	19	3.8	7.5	1.0	3.4
8	26, 29	16	15	4	2	37	69	54	8.2	6	6.2	11.5	1.8	6.6
9	26, 29	11	9	2	1	23	44	52	2.7	5	4.6	8.8	4.1	12.2
11	21, 22, 25, 27, 29	102	56	17	4	179	396	45	36.4	33	5.4	12.0	1.3	2.7
12	26, 29	62	20	21	13	116	286	41	126.5	24	4.8	11.9	0.3	1.9
Summation for 10 nights		289	160	66	28	543	1,186	46	609.6	120	4.5	9.9	1.9 (Mean)	

TABLE 6. WEATHER CONDITIONS AND THEIR EFFECTS ON WOODCOCK CAPTURES DURING NIGHTLIGHTING OPERATIONS ON THE CAPE MAY PENINSULA, NEW JERSEY (NOVEMBER 1968)

	Cloud Cover			Air Movement			Temperature			Moon				
Date (November)	Overcast	Partly Cloudy	Clear	Very Windy	Windy	Breeze	Calm	Cold	Warm	Light	After Moonset	Number of Woodcock Caught*	Woodcock Caught per Man Hour	Percent of Woodcock Caught
18	X						X		X		X	6	2.0	40
19			X		SW			X			X	30	3.0	37
20			X	WNW				X			X	66	3.0	56
21	X				W			X			X	72	5.1	38
22			X	SW				X			X	57	5.7	57
23			X				X	X			X	36	2.2	29
24	X			SW					X		X	34	4.2	54
25			X		NW			X		X		39	3.2	31
26		X			SW			X		X	1st. Qtr.	67	5.6	42
27	X					W			X	X		158	4.8	39
28		X		S					X	X		32	2.7	27
29		X			W			X		X		66	2.2	44

*Includes 19 repeats

utilizing them. Abandoned lands, or fields from which a crop had been removed in early summer and remained untilled, were the most common type checked. Hayfields, except those with very dense growths of alfalfa, all yielded woodcock (see Appendix).

Weather conditions prevailing during nightlighting operations are provided in Table 6. The highest ratios of woodcock captured (to those found) occurred on very windy, dark nights when woodcock were more reluctant to fly and the sound of an approaching biologist was masked by the wind's noise.

Moonlight reduced the catch much less when a vehicle was used than when afoot.

Fields with heavy stands of dead weed stalks interfered with visibility and stealth when woodcock were nightlighted on foot. When nightlighting operations were conducted from a truck, it was not necessary to approach a bird as cautiously because the sound of the idling engine muffled movements.

Fields that contained grasses as the dominant types of ground cover ranked at the bottom on a catch per man hour basis when nightlighted from a truck.

Alfalfa fields produced the best catches and the highest number of birds found. The ratio of birds caught (to those found) tended to be highest in fields with invading grasses. The larger the openings between stools of alfalfa, the easier it was to spot woodcock before they flushed, and there were no dry stalks to snap underfoot at a critical moment.

SUMMARY

Large numbers of woodcock migrating toward their winter range can be captured and banded by nightlighting. Working from a slowly moving vehicle and using its engine as a power source was more successful than walking with battery-powered lights. Woodcock did not flush as readily with the approach of a truck as from a man walking; the brighter light, higher vantage point, and muffled engine noise made woodcock easier to sight and approach.

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APPENDIX

Acreage and vegetative cover of fields utilized by woodcock at night on the Cape May Peninsula, New Jersey, November 1968. See Figure 1 for location of fields.

A. Abandoned Cropland:

Dominant species in these fields were ragweed (*Ambrosia* spp.) and goldenrod (*Solidago* spp.). Their dead stalks formed an overstory 1-1/2 to 2 feet high. Much of the ground was covered by a mat of chickweed (*Stellaria* spp.).

Field 1 (3.6 acres)—Minor species: Crabgrass (*Digitaria* sp.), mints (*Labiatae* spp.), dock (*Rumex* sp.), panic grass (*Panicum* sp.), and primrose (*Primula* sp.).

Field 2 (4.6 acres)—Minor species: Little bluestem (*Andropogon scuparius*) and clover (*Trifolium* spp.).

B. Abandoned Land (clipped annually):

Field 3 (1.8 acres)—Dominant species: Orchard grass (*Dactylis glomerata*) and bluegrass (*Poa* sp.). Minor species: Chickweed, mullein (*Verbacium thapsus*), plantain (*Plantago* spp.), crabgrass, and panic grass.

Field 4 (9.1 acres)—Dominant species: Clover, orchard grass, crabgrass, and chickweed. Minor species: Plantain and panic grass.

Field 5 (9.0 acres)—Dominant species: Crabgrass and sorrel (*Rumex acetosella*). Minor species: Ragweed and little bluestem.

C. Alfalfa Meadow:

Dominant species: Alfalfa (*Medicago sativa*). This had grown to a height of 6 to 8 inches since last harvested. There was no closed overstory. Chickweed formed a mat over much of the open space between stools.

Field 6 (9.1 acres)—Minor species: Bluegrass and mint.

Field 7 (15.5 acres)—Minor species: Plantain, mint, and pepper grass (*Lepidium* sp.).

Field 8 (8.2 acres)—Minor species: Plantain, panic grass, mullein, bluegrass, and orchard grass.

Field 9 (2.7 acres)—Minor species: Plantain, panic grass, and mullein.

Field 10 (2.7 acres)—Minor species: Plantain and bluegrass.

Field 11 (36.4 acres)—Minor species: Dock and clover.

Field 12 (126.5 acres)—Minor species: Dock and clover.