

ANNUAL WOODCOCK REPORT

1983

Moosehorn National Wildlife Refuge

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Respectfully dedicated to

754-1

our only brood hen, who gave us
all a chance to see woodcock chicks,
and quite a hike into the woods.

"May all your birds be in clearcuts."

- Crew '83

Thanks Go To: Douglas Mullen (for giving us guidance when we
needed it, even though we might
not have cared)

Greg Sepik (for not firing Brian P. the night
he let a singing male go, before
the radio was put on, in front of a
National Geographic reporter)

Eric Derleth (for showing us that he was more
spastic than any one of us, and
that he could let birds go too)

Fred Kreutzer (for his many attempts to capture
broods- let's not forget Doc
either)

873-1 (for dropping its radio)

And to the

Wiley Woodcock of Moosehorn

Abstract

The American Woodcock (Scolopax minor) was studied from 23 May until 26 August 1983 by a summer crew of interns at the Moosehorn National Wildlife Refuge in Washington County, Maine. Radio telemetry of the birds was the focus of the study, with both diurnal and nocturnal locating performed daily. Four methods of capturing woodcock were used: bird dog, night-lighting, mist-netting and ground traps. A total of 82 woodcock were banded this summer, 35 of which were radio tagged. Vegetation plots done on areas used by radio-tagged birds provided information on woodcock habitat use.

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Introduction

The American Woodcock (scolopox minor) is among the most desirable and respected of upland game birds in the northeastern United States. Like many migratory birds, the woodcock winters in the southern atlantic coastal states and breeds in the northeastern states and maritime provinces. Because the woodcock is such a well-sought gamebird it requires specific considerations concerning habitat management. The Moosehorn National Wildlife Refuge, located in Baring, Maine, is situated in the center of the breeding range and is the only Wildlife Refuge concerned with the study of woodcock.

The goal of this research is to establish sound woodcock management techniques that can be used by private landowners and incorporated into current forest management practices. This study not only attempts to better the knowledge and understanding of the life history, behavior and population dynamics of the woodcock, but also provides improved habitat of other forest species.

The Moosehorn National Wildlife Refuge is divided into two sections, the Baring and Edmond units, totalling 9176 ha. The majority of the research concerning the woodcock is conducted on the northern, 6500 ha Baring unit.

Wildlife management practices, in the form of habitat management and manipulation, occur in several forms on the refuge, with the most prominent being uneven aged management in even aged blocks. The cutting is done with the help of the Youth Conservation Corps, and the Student Conservation Association. The refuge is split up into several areas and each area has a specific rotation age. The rotation times are determined by the type, condition and age of the cover type present in each area.

These management practices not only provide woodcock courting and roosting areas but also rejuvenate brood, nesting and diurnal cover. These

practices do not just enhance woodcock habitat but also prove beneficial to Ruffed Grouse (Bonasa umbellus), white-tailed deer (Odocoileus virginianus) and other early successional species.

Prescribed burning is another technique in use on the refuge. Burning is used to clear unwanted slash from the cuts. It also maintains low vegetation heights in certain fields, creates suitable roosting habitat and promotes stump sprouting.

The Refuge's wildlife biologist, Greg Sepik, and a wildlife biologist from Patuxent, Eric Dereleth, coordinated the woodcock research. The woodcock crew consisted of a total of eleven people. The crew consisted of Greg Sepik and Annette Macek, both from Moosehorn N.W.R., Eric Dereleth from Patuxent, Brian Benedict, Brian Peters and Michael Fitz, all from the University of Maine at Orono. Volunteers were Glenn Wiggin from Unity College, John Brundage and Trish Radford from Penn State University, Connie Adams from Cornell University and Nancy Phelps from Suffolk University.

The 1983 study season at the Moosehorn began 23 May. Spring activities included mistnetting of singing males, the annual singing ground survey, brood captures, trapping using modified shorebird traps and nightlighting. Brood captures were done with the assistance of Dan McCauley and his bird dog Whiskey, along with Fred Kreutzer and his dog Doc. This was the second summer with a radio telemetry project in progress. There were 35 radio tagged birds monitored throughout the summer.

Other activities during the summer were vegetation analysis of radioed birds habitat, transects for pellet counts to determine population estimates, destroying nuisance beaver dams, trapping and relocating problem beaver and on occasion assisting the black duck crew with rocket-netting waterfowl.

Singing Male Captures

Singing male woodcock were captured using mistnets from 7 April to 7 June 1983. The annual singing ground survey was also done, however this was prior to the arrival of the summer crew.

Nets were put down before sunset, and the birds were caught during their aerial courtship displays. Placement of the nets was determined by observing each male on nights prior to netting; their flights into the area, and landings were noted. Nets were placed around the singing ground in an attempt to capture the bird as it flew into the area.

This year's captures yielded 15 males, seven returns, and 8 new birds, all of which were dominant males. One female was also caught. Three dominant males were radio-marked. One was never found after the radio was put on. The other two moved to distant locations. This made tracking difficult.

Table 1. Singing Male Capture Data 1983

	<u>NEW</u>	<u>RETURN</u>	<u>TOTAL</u>
SY-M (Dominant)	6	1	7
SY-M (Subdominant)	0	0	0
ASY-M (dominant)	2	6	8
ASY-M (subdominant)	0	0	0
Subtotals	8	7	<u>15</u>
Females	<u>1</u>	<u>0</u>	<u>1</u>
Totals	9/6	14	16 -1

Only one brood was found this year, down considerably from last year's count of 17 broods totaling 56 chicks. A very wet spring limited attempts to capture broods. Fred Kreutzer's dog, Doc, was used to locate broods. Although the dog was run through areas known to have singing males, no broods were located until Dan McAuley and his English Setter, Whiskey Girl, were employed. The low success rate can be attributed to the inexperience of Kreutzer's dog, as well as the limited number of hours spent trying to capture broods (8 hours).

The one hen which was captured had four chicks, all of which were captured and banded, while the hen had been previously banded. This ASY hen was the first bird to be radio-marked this year. The brood was located in a convenient area at the junction of two roads, until she moved the brood to a less convenient location, 30 chains into the woods (almost a mile away from the original capture location).

When locating the brood, care had to be taken to approach without stepping on the chicks or the hen. An effort was made to locate as many of the four chicks as possible whenever the hen was found. A vegetation plot was done three-and-one-half weeks after capture. At this time the four chicks were still with the hen. Shortly afterwards (between three and four days), it was noted that the chicks were no longer with the hen. After several days of not being able to find the hen, she was found several miles from where she had last been located. After a few days in the new area, her radio was found, buried in muck; she had apparently been eaten.

We all felt the loss, as this was the bird that most of us learned the techniques of telemetry on, and for some, this was their first encounter with a woodcock.

Traplines

Modified shorebird traps were used to capture woodcock in their diurnal cover of woods and alder thickets. The traps consisted of 2.5 by 5.0 cm welded wire shaped into circular cells with one funnel-shaped opening. These cells were covered with a net; a length of chicken wire served as a "lead" to the trap entrance. The path along the lead was hoed to entice woodcock, probing for worms, into the cell opening. This path was re-hoed once during the summer to loosen compacted soil and remove encroaching vegetation.

One exception to this typical woodcock trap was utilized on line 76. It consisted of a cell on either end, and a "double lead." The bottoms of the leads were raised about three inches off the ground, and were bent inward so that birds could enter, but not leave. The trap so described did capture assorted passerines, but no woodcock.

Traplines were open from 9 June until 12 August. There were seven traplines used, and of these, trapline 5 was the most productive (13 birds caught), and trapline 1 the least (4 birds caught). Traplines were checked every morning.

Nearly all woodcock found in the traps were fitted with radio-transmitters, and released near the trap in which they were caught. Data taken on captured woodcock included sex, age, weight, bill length, and presence or absence of a neck band. Also recorded were the species of all other animals trapped - frequently, these included grouse, thrushes, and ovenbirds, and occasionally flickers and catbirds; there even was the unique capture of a mammal (red squirrel), and an amphibian (bullfrog).

Overall, traplines were quite successful - 46% of all captured birds

this summer were obtained using this method.

Unfortunately, depredation or death from starvation or exposure, especially of grouse chicks, did occur. Out of 49 woodcock caught in the traps, there was one mortality, due to predation and two woodcock escaped before they were banded.

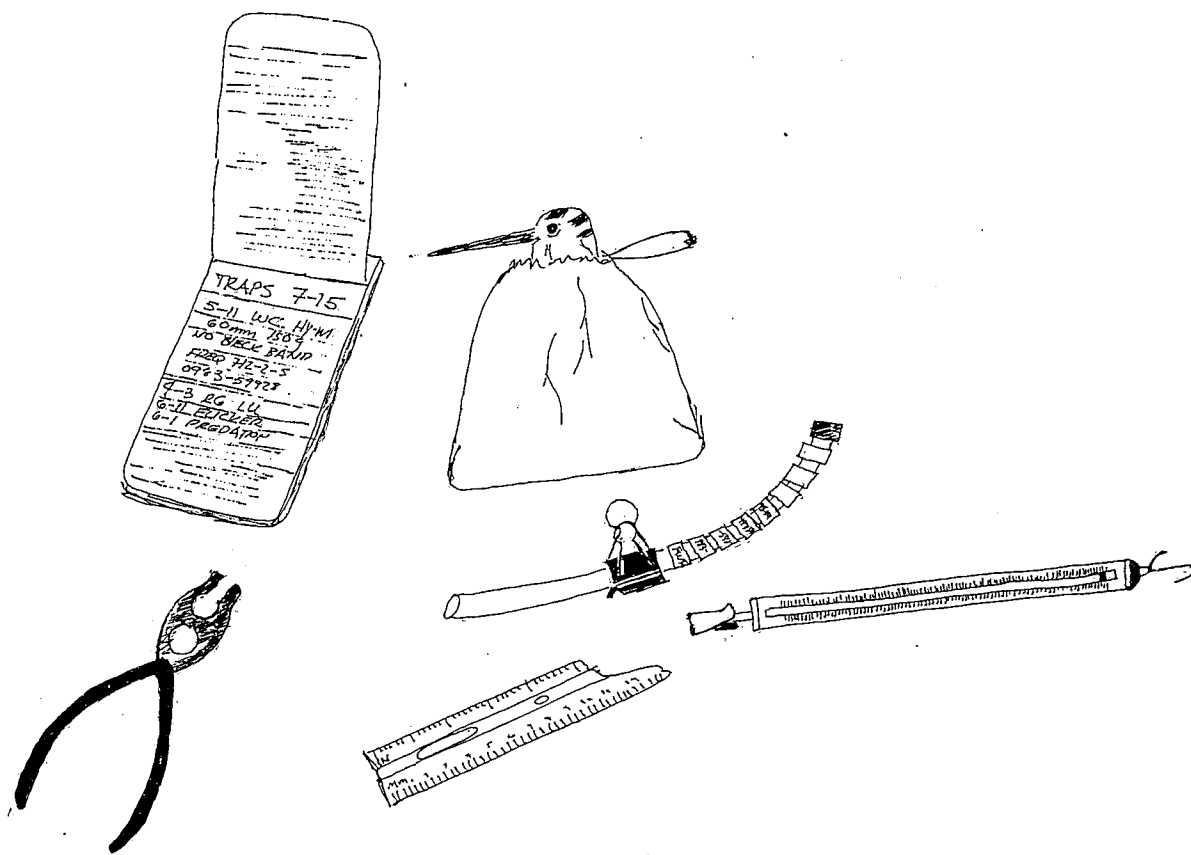


Table 2. Summary of Age and Sex of Birds Caught in Traps

<u>Trapline #</u>	<u>HY-M</u>	<u>HY-F</u>	<u>SY-M</u>	<u>SY-F</u>	<u>ASY-M</u>	<u>ASY-F</u>	<u>UU</u>	<u>LU</u>	<u>Total</u>
Line 1	3	-	-	-	-	-	-	-	3
Line 4	2	1	-	1	-	-	1	-	5
Line 5	7	2	-	1	-	-	1	-	11
Line 6	4	3	-	-	-	-	-	-	7
Line 11	6	2	-	-	-	-	1	-	9
Line 20	4	-	-	1	-	2	-	-	7
Line 76	3	4	-	-	-	-	-	-	7
Total	29	12	-	3	-	2	3	-	49

Table 3. Summary of 1983 trapline captures. Given in two week periods and by trapline and cell number. Figures are given as:

birds caught / $\frac{\text{# birds caught}}{\text{cell days}}$

Time Periods	I- June 9 - June 17
	II- June 18- July 1
	III- July 2 - July 15
	IV July 16 - July 29
	V July 30 - August 12

Table 3. Summary of 1983 trapline captures (cont'd)

Line 1

Trap #	Cells	Cell Days	I	II	III	IV	V	Total
1-01	2	28(18)	---	---	---	---	---	---
1-02	2	28(18)	---	---	---	---	---	---
1-03	2	28(18)	---	---	---	---	---	---
1-04	3	42(27)	---	---	---	---	---	---
1-05	3	42(27)	---	---	---	---	---	---
1-06	1	14(9)	---	---	---	---	---	---
1-09	3	42(27)	---	---	1/0.024	---	---	1/0.005
1-10	2	28(18)	1/0.056	---	1/0.036	---	---	2/0.015
1-11	2	28(18)	---	---	---	---	---	---
1-12	3	42(27)	---	---	---	---	---	---
1-13	2	28(18)	---	---	---	---	---	---
1-14	3	42(27)	---	---	---	---	1/0.024	1/0.005
1-15	2	28(18)	---	---	---	---	---	---
Total	30	420(270)	1/0.004	---	2/0.005	---	1/0.002	4/0.002

Table 3. Summary of 1983 trapline captures (cont'd)

Line 4

Trap #	Cells	Cell Days	I	II	III	IV	V	Total
4-11	2	28(18)	---	---	---	---	---	---
4-12	2	28(18)	---	---	---	---	---	---
4-13	3	42(27)	---	---	---	---	---	---
4-15	1	14(9)	---	---	---	---	---	---
4-22	2	28(18)	---	---	---	---	---	---
4-23	2	28(18)	---	---	---	1/0.036	---	1/0.008
4-25	3	42(27)	---	1/0.024	---	---	1/0.024	2/0.010
4-26	2	28(18)	---	---	---	---	---	---
4-27	3	42(27)	---	---	---	1/0.024	1/0.024	2/0.010
Total	20	280(180)	---	1/0.004	---	2/0.007	2/0.007	5/0.004

Table 3. Summary of 1983 trapline catches (con't)

Line 5

Trap #	Cells	Cell Days	I	II	III	IV	V	Total
5-1	4	56(36)	---	---	---	---	---	---
5-2	2	28(18)	---	---	---	---	---	---
5-2.5	2	28(18)	---	---	---	---	---	---
5-4.5	3	42(27)	---	---	---	---	---	---
5-5	4	56(36)	---	---	---	---	---	---
5-5.5	2	28(18)	---	---	---	---	---	---
5-6	4	56(36)	---	1/0.018	2/0.036	---	---	3/0.012
5-7	4	56(36)	---	---	---	---	---	---
5-8	3	42(27)	---	---	1/0.024	---	---	1/0.005
5-9	2	28(18)	---	---	---	---	---	---
5-10	4	56(36)	1/0.028	---	---	1/0.018	1/0.018	3/0.012
5-11	2	28(18)	---	1/0.036	3/0.107	1/0.036	---	5/0.038
5-12	5	70(45)	---	1/0.014	---	---	---	1/0.003
5-12.5	3	42(27)	---	---	---	---	---	---
5-13	4	56(36)	---	---	---	---	---	---
5-15	2	28(8)	---	---	---	---	---	---
5-16	2	28(8)	---	---	---	---	---	---
5-17	2	28(8)	---	---	---	---	---	---
5-18	2	28(8)	---	---	---	---	---	---
Total	56	784(464)	1/0.002	3/0.004	6/0.008	2/0.003	1/0.001	13/0.004

Table 3. Summary of 1983 trapline captures (con't)

<u>Line 6</u>								
Trap #	Cells	Cell Days	I	II	III	IV	V	Total
6-1	3	42(6)	not open	---	---	---	---	---
6-2	2	28(4)	"	---	---	---	---	---
6-3	2	28(4)	"	---	---	---	---	---
6-4	2	28(4)	"	---	---	---	---	---
6-5	2	28(4)	"	---	---	---	---	---
6-6	2	28(4)	"	---	---	---	---	---
6-7	2	28(4)	"	---	1/0.036	1/0.036	---	2/0.023
6-8	1	14(2)	"	---	---	---	---	---
6-9	2	28(4)	"	---	3/0.107	---	---	3/0.034
6-10	2	28(4)	"	---	---	---	---	---
6-11	2	28(4)	"	---	---	---	---	---
6-12	2	28(4)	"	---	---	---	---	---
6-13	2	28(4)	"	---	1/0.036	---	---	1/0.011
6-14	2	28(4)	"	---	---	---	---	---
6-15	2	28(4)	"	---	---	---	---	---
Total	30	420(60)	"	---	5/0.012	1/0.002	---	6/0.003

Table 3. Summary of 1983 trapline captures (con't)

Line 11

Trap #	Cells	Cell Days	I	II	III	IV	V	Total
11-1	2	28(18)	---	---	---	---	---	---
11-2	2	28(18)	---	---	---	1/0.036	---	1/0.008
11-3	2	28(18)	---	2/0.071	---	---	---	2/0.015
11-4	2	28(18)	---	---	---	---	---	---
11-5	2	28(18)	---	---	1/0.036	---	---	1/0.008
11-6	2	28(18)	1/0.056	1/0.036	---	---	---	2/0.015
11-13	2	28(18)	---	---	---	---	---	---
11-14	2	28(18)	1/0.056	---	---	---	---	1/0.008
11-15	2	28(18)	---	1/0.036	---	---	---	1/0.008
11-17	2	28(18)	---	---	---	---	---	---
11-18	1	14(9)	---	---	---	---	---	---
Total	21	294(189)	2/0.011	4/0.014	1/0.003	1/0.003	---	8/0.006

Table 3. Summary of 1983 trapline captures (con't)

Line 20

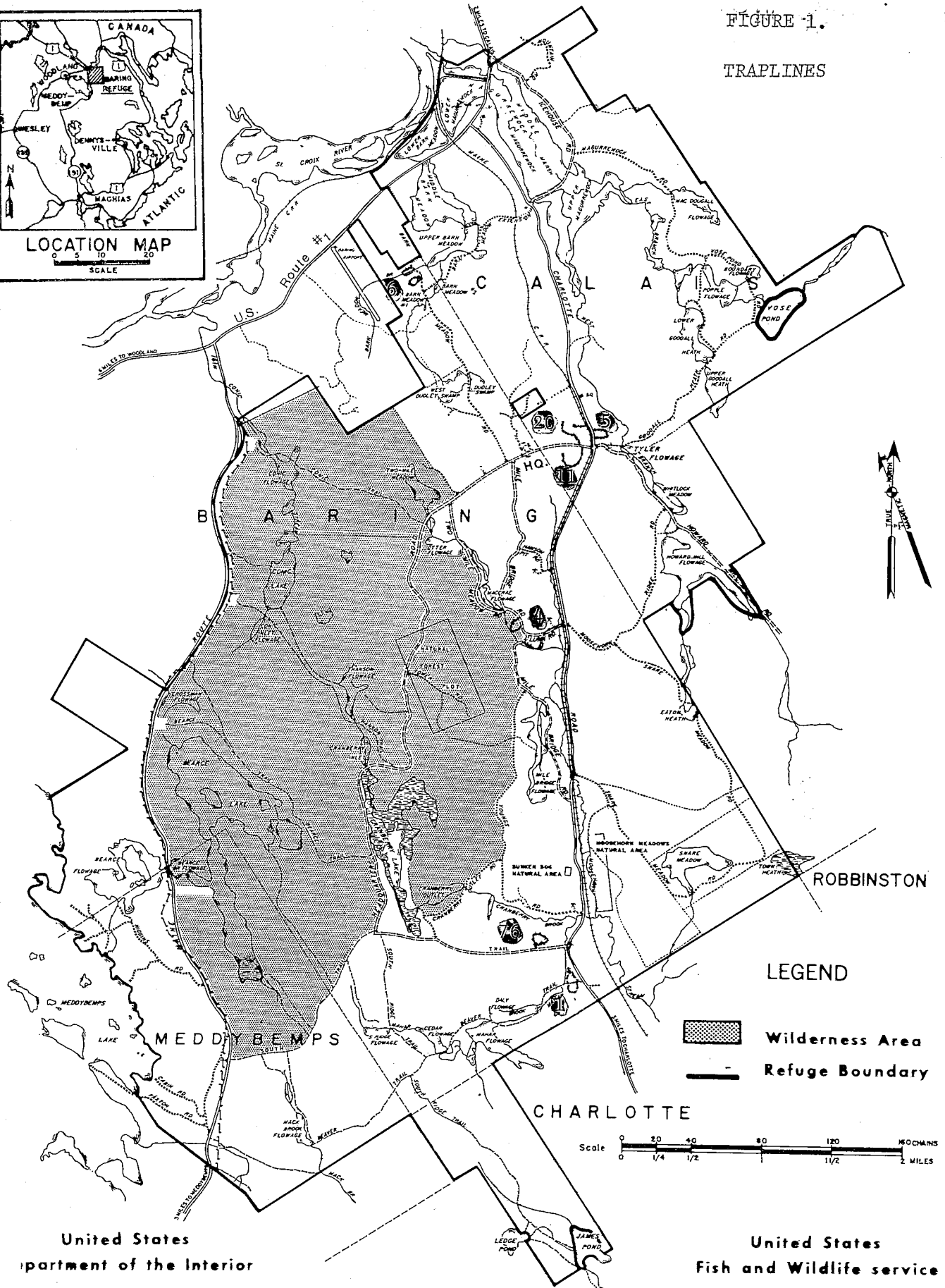
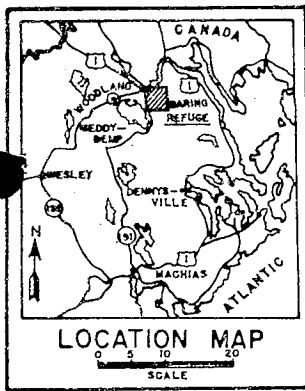
Trap#	Cells	Cell Days	I	II	III	IV	V	Total
20-1	2	28(2)	---	2/0.071	---	---	---	2/0.015
20-2	2	28(2)	---	1/0.036	---	1/0.036	---	2/0.015
20-3	2	28(2)	---	---	---	---	---	---
20-4	2	28(2)	---	---	---	---	---	---
20-5	2	28(2)	---	---	---	---	---	---
20-6	2	28(2)	---	---	---	---	---	---
20-7	2	28(2)	---	---	---	---	---	---
20-8	2	28(2)	---	---	---	---	---	---
20-9	2	28(2)	---	---	---	---	---	---
20-10	2	28(2)	1/0.056	---	---	1/0.036	---	2/0.015
20-11	2	28(8)	---	---	---	---	---	---
20-12	2	28(8)	---	---	---	---	---	---
20-13	2	28(8)	---	---	---	---	---	---
20-14	2	28(8)	---	---	---	---	---	---
Total	28	392(52)	1/0.004	3/0.008	---	2/0.005	---	6/0.003

Table 3. Summary of 1983 trapline captures (con't)

Line 76

Trap#	Cells	Cell Days	I	II	III	IV	V	Total
76-1	2	28(18)	---	---	---	---	---	---
76-2	2	28(18)	---	---	---	---	---	---
76-3	3	42(27)	---	---	---	---	---	---
76-4	2	28(18)	---	1/0.036	---	1/0.036	---	2/0.015
76-5	2	28(18)	---	---	---	---	---	---
76-6	2	28(18)	---	---	---	---	2/0.071	2/0.015
76-8	2	28(18)	---	---	---	---	1/0.036	1/0.008
76-9	2	28(18)	---	---	1/0.036	---	---	1/0.008
76-10	2	28(18)	---	---	1/0.036	---	---	1/0.008
Total	19	266(171)	---	1/0.004	2/0.008	1/0.004	3/0.011	7/0.006

TRAPLINES



Moosehorn National Wildlife Refuge

Washington County Maine

Mist Netting

As a method of capturing woodcock, mist-netting can be very effective. This method utilized fine black mesh nets ten feet high by sixty feet long. These were placed in meadows, blueberry fields, and clearcuts one-half hour before sunset in order to catch incoming woodcock attempting to roost. When a woodcock was caught it was banded and weighed, and its bill length, age and sex were determined. Mist-netting began on 14 June and ended 15 August.

Clearcuts were the most productive areas in numbers of birds caught. In terms of birds per man hour, this method was slightly less efficient than night-lighting, although it is almost useless to compare the two, due to the fact that mist-netting was used twice as much.

If birds were observed entering the fields but avoiding the nets, the placement of the nets was modified to improve capture chance. Mist nets are not species specific, and therefore many passerines were also caught, and gawked at by tenderfoot interns like so many side-show freaks.

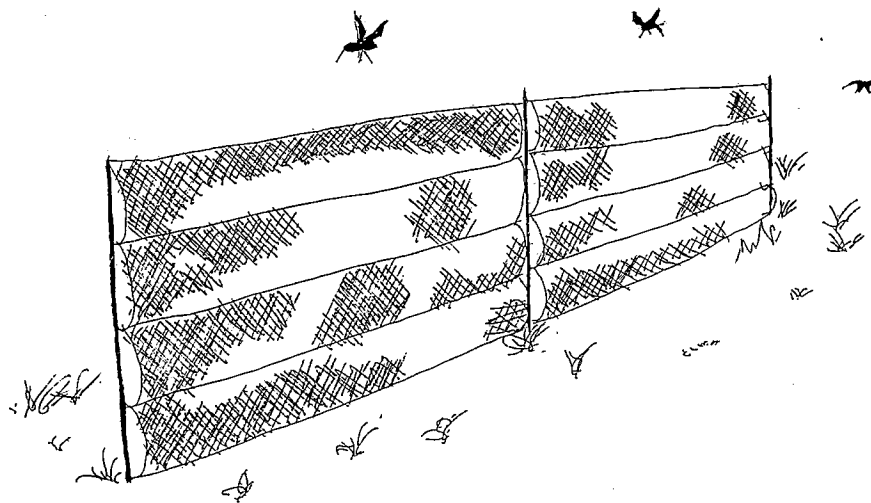
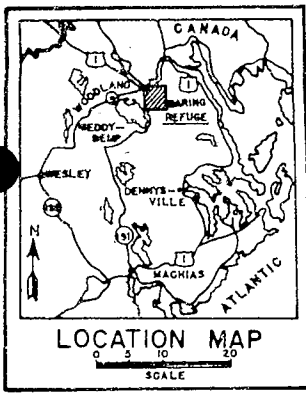




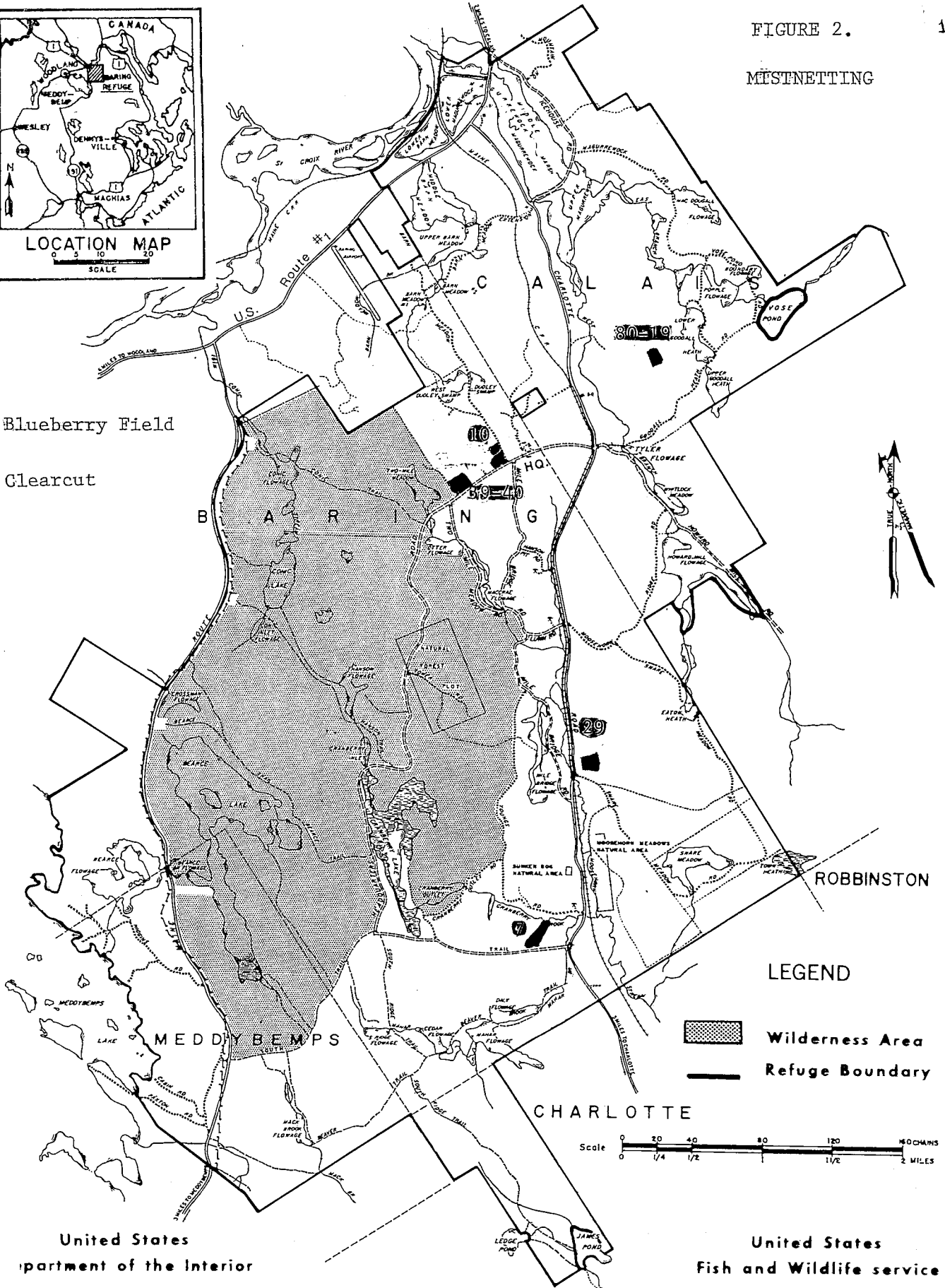
Table 4. Summary of Mist Netting results for the Field Season 1983

Field	Date	#Nets	#Birds	#HY	#HY/Net	#SY	#SY/Net	#ASY	#ASY/Net	#Birds/Net	#Males	#Males/Net	#Females	#Females/Net
7	6/14	16	2	2	0.13	0	0.00	0	0.00	0.13	2	0.13	0	0
	6/29	16	0	0	0.00	0	0.00	0	0.00	0.00	0	0.00	0	0
10	7/14	22	0	0	0.00	0	0.00	0	0.00	0.00	0.00	0.00	0	0
	8/1	27	4	4	0.15	0	0.00	0	0.00	0.15	1	0.04	3	0.07
29	6/23	16	1	0	0.00	0	0.00	1	0.06	0.06	1	0.06	0	0.00
39/40	6/22	18	4	4	0.22	0	0.00	0	0.00	0.22	4	0.22	0	0.00
	7/11	18	2	2	0.11	0	0.00	0	0.00	0.11	2	0.11	0	0.00
80/19	6/14	22	5	0	0.00	3	0.14	2	0.09	0.23	4	0.18	1	0.05
	6/30	22	1	1	0.05	0	0.00	0	0.00	0.05	0	0.00	1	0.05

MISTNETTING



-  Blueberry Field
-  Clearcut



Moosehorn National Wildlife Refuge
Washington County Maine

Nightlighting

Nightlighting was used as a method of capture on 4 nights from 2 July to 1 August. Three major field types were nightlighted, clearcuts, blueberry fields and meadows.

In clearcuts, where slash and rough terrain were present, nightlighting was done by walking the area in an evenly spaced line. The line was arranged so that a lighter would have 2 netters on each side. The lighters were armed with high powered quartz spot lights, powered by motorcycle batteries harnessed to their back with modified pack frames, and a small hand net. Netters were equipped with long handled nets ranging in length from 10 to 15 feet.

Once equipped and organized the line slowly combed the field for the elusive woodcock. When a bird was flushed the closest lighter aimed his beam on the bird while the other shut his light off. Upon being spotlighted the bird reacted in one of two ways. In most cases it took a small flight and then landed. When this happened the lighter and a netter would approach the landing site with the netter swiftly covering the bird. Once captured the birds were aged, sexed, weighed, bill length measured, banded, and a select few were radioed. The more cooperative woodcock followed the light's beam, hovered before the lighter, and in most cases were easily netted.

In pastures, strips were mowed to enable a truck to drive the area. When this technique was used only 3 people were needed; 1 to drive and 2 others who rode on the hood with nets and a quartz spot light. When the bird was flushed it was captured the same way as when walking.

Nightlighting proved to be the most effective means of capturing woodcock, however, it was limited to nights when there was a heavy cloud cover, no fog and a steady rain.

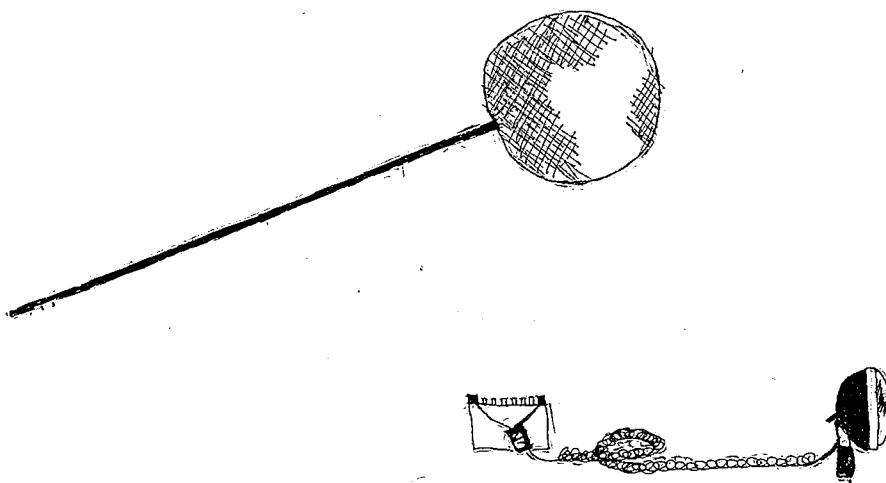


Table 5. Summary of Night-Lighting captures for 1983 by field number

Field 1

<u>Date</u>	<u>#Birds Caught</u>	<u># Observers</u>	<u>#Hours In Field</u>	<u># Man-Hrs.</u>	<u># Flushes</u>	<u>Total# Birds in Field</u>	<u>Total# Birds/Man-Hr.</u>
7/2	3	4	1.5	6	8	11	2
7/21	3	4	1.2	4.8	4	7	1.5

Total #caught/Man-Hr

.625

<u>#M</u>	<u>#F</u>	<u>#HY-F</u>	<u>#HY-M</u>	<u>#SY-F</u>	<u>#SY-M</u>	<u>#ASY-F</u>	<u>#ASY-M</u>
4	2	1	4	0	0	1	0

Table 5. Summary of Night-Lighting captures for 1983 by field number (cont'd)

Field 7

<u>Date</u>	<u>#Birds Caught</u>	<u># Observers</u>	<u>#Hours In Field</u>	<u># Man-Hrs.</u>	<u># Flushes</u>	<u>Total# Birds in Field</u>	<u>Total# Birds/Man-Hr.</u>			
7/7	0	7	.33	2.31	0	0	0			
<u>Total# caught/Man-Hr</u>			<u>#M</u>	<u>#F</u>	<u>#HY-F</u>	<u>#HY-M</u>	<u>#SY-F</u>	<u>#SY-M</u>	<u>#ASY-F</u>	<u>#ASY-M</u>
.605			0	0	0	0	0	0	0	0

Table 5. Summary of Night-Lighting cases for 1983 by field number (cont'd)

Field 10

<u>Date</u>	<u>#Birds Caught</u>	<u># Observers</u>	<u>#Hours In Field</u>	<u># Man-Hrs.</u>	<u># Flushes</u>	<u>Total# Birds in Field</u>	<u>Total# Birds/Man-Hr.</u>
7/6	5	4	1.25	5	9	14	2.8

<u>Total# caught/Man-Hr.</u>	<u>#M</u>	<u>#F</u>	<u>#HY-F</u>	<u>#HY-M</u>	<u>#SY-F</u>	<u>#SY-M</u>	<u>#ASY-F</u>	<u>#ASY-M</u>
1	3	2	1	3	1	0	0	0

Table 5. Summary of Night-Lighting captures for 1983 by field number (cont'd)

Field 11

<u>Date</u>	<u>#Birds Caught</u>	<u># Observers</u>	<u>#Hours In Field</u>	<u># Man-Hrs.</u>	<u># Flushes</u>	<u>Total# Birds in Field</u>	<u>Total# Birds/Man-Hr.</u>			
7/21	3	Truck	1.00	1.00	4	7	7			
8/1	4	Truck	1.58	1.58	7	11	11.39			
<u>Total # caught/Man-Hr.</u>			<u>#M</u>	<u>#F</u>	<u>#HY-F</u>	<u>#HY-M</u>	<u>#SY-F</u>	<u>#SY-M</u>	<u>#ASY-F</u>	<u>#ASY-M</u>
7/21		3.00	2	5	3	2	1	0	1	0
8/1		2.53								

Table 5. Summary of Night Lighting captures for 1983 by field number (cont'd)

Field 20

<u>Date</u>	<u>#Birds Caught</u>	<u># Observers</u>	<u># Hours In Field</u>	<u># Man-Hrs.</u>	<u># Flushes</u>	<u>Total # Birds in Field</u>	<u>Total # Birds/Man-Hr.</u>
8/01	0	Truck	0.17	0.17	1	1	5.88

Total # Caught/Man-Hr.

0.00

<u>#M</u>	<u>#F</u>	<u>#HY-M</u>	<u>#HY-F</u>	<u>#SM-M</u>	<u>#SY-F</u>	<u>#ASY-M</u>	<u>#ASY-F</u>
0	0	0	0	0	0	0	0

Table 5. Summary of Night Lighting captures for 1983 by field number (cont'd)

Field 41

<u>Date</u>	<u>#Birds Caught</u>	<u># Observers</u>	<u># Hours In Field</u>	<u># Man-Hrs.</u>	<u># Flushes</u>	<u>Total # Birds in Field</u>	<u>Total # Birds/Man-Hr.</u>
7/21	2	Truck	1.25	1.25	5	7	5.60
8/01	0	Truck	0.83	0.83	2	2	2.40

Total #
Caught/Man-Hr.

1.6

0.0

<u>#M</u>	<u>#F</u>	<u>#HY-M</u>	<u>#HY-F</u>	<u>#SY-M</u>	<u>#SY-F</u>	<u>#ASY-M</u>	<u>#ASY-F</u>
2	0	2	0	0	0	0	0

Table 5. Summary of Night Lighting captures for 1983 by field number (cont'd)

Field 80-50

<u>Date</u>	<u>#Birds Caught</u>	<u># Observers</u>	<u># Hours In Field</u>	<u># Man-Hrs.</u>	<u># Flushes</u>	<u>Total # Birds in Field</u>	<u>Total # Birds/Man-Hr.</u>
7/06	1	7	0.92	6.44	2	3	0.47

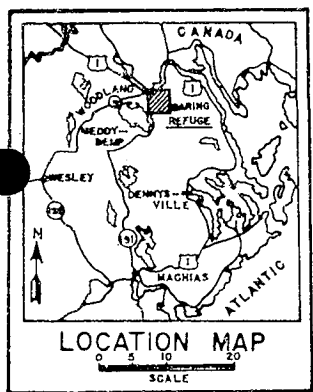
Total #
Caught/Man-Hr.

0.16

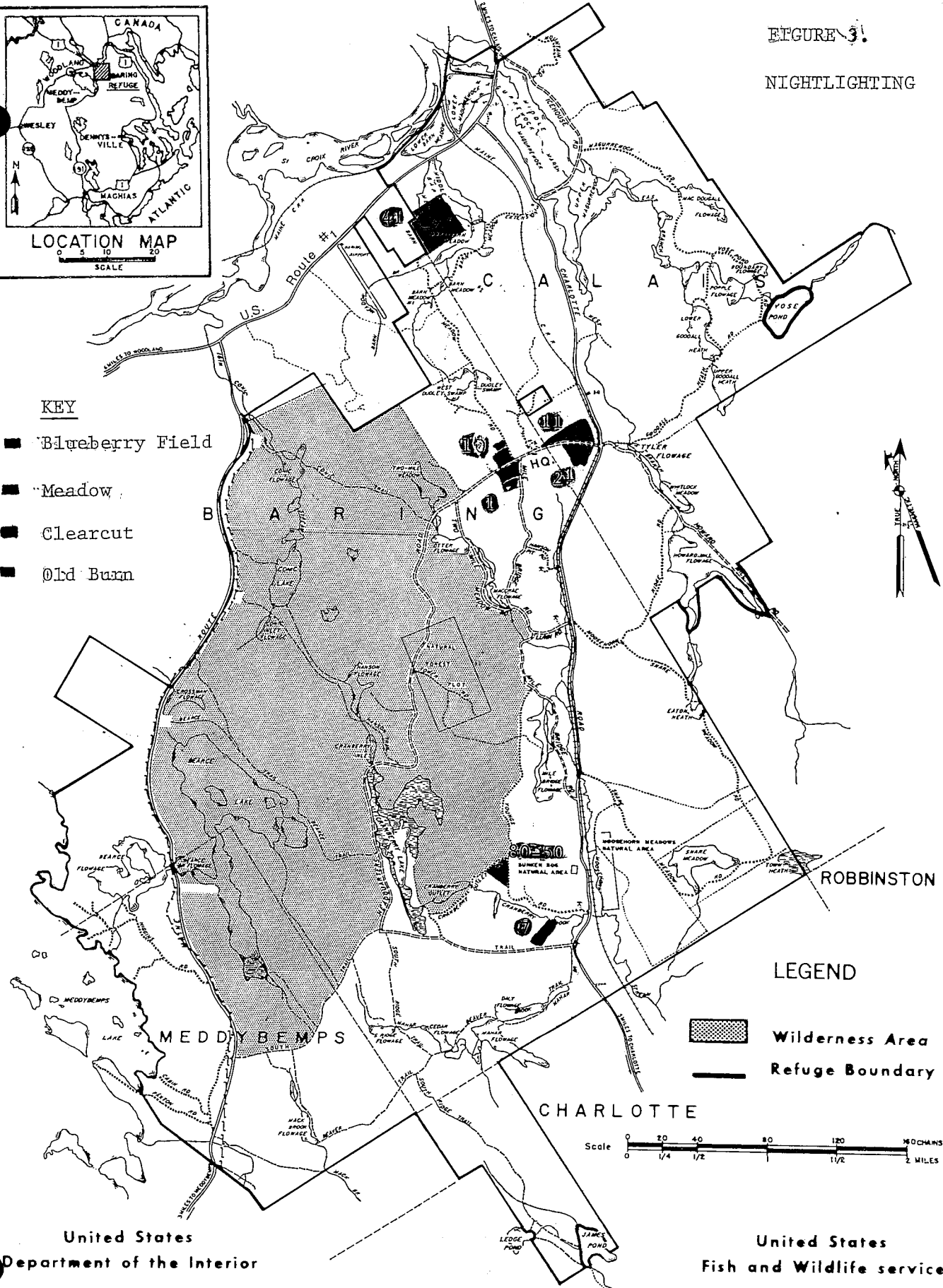
<u>#M</u>	<u>#F</u>	<u>#HY-M</u>	<u>#HY-F</u>	<u>#SY-M</u>	<u>#SY-F</u>	<u>#ASY-M</u>	<u>#ASY-F</u>
0	1	0	1	0	0	0	0

FIGURE 3.

NIGHTLIGHTING

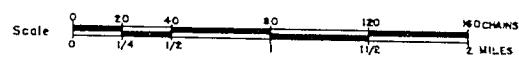


- KEY**
- Blueberry Field
 - Meadow
 - Clearcut
 - Old Burn



LEGEND

- Wilderness Area
- Refuge Boundary



United States
Department of the Interior

United States
Fish and Wildlife Service

Moosehorn National Wildlife Refuge
Washington County Maine

Table G. Comparison of average weights of woodcock (in grams) by method of capture for each week of the 1983 season.

Hatch-Year Males							
Time Period	<u>Traps</u>		<u>Mistnetting</u>		<u>Nightlighting</u>		Total aver. wt. (grams)
	sample size	aver. wt. (grams)	sample size	aver. wt. (grams)	sample size	aver. wt. (grams)	
6/04-6/10	1	135.0	-	-	-	-	135.0
6/11-6/17	4	130.0	2	152.5	-	-	141.3
6/18-6/24	3	138.0	4	148.8	-	-	143.4
6/25-7/01	3	147.0	-	-	-	-	147.0
7/02-7/08	4	135.0	-	-	5	149.6	142.3
7/09-7/15	4	150.0	2	163.0	-	-	156.5
7/16-7/22	2	139.5	-	-	4	149.0	144.0
7/23-7/29	1	150.0	-	-	-	-	150.0
7/30-8/05	-	-	1	163.0	2	159.0	161.0
8/06-8/12	3	140.7	-	-	-	-	140.7
Total aver. wt.	25	140.6	9	156.8	11	152.5	

Table 6. Comparison of average weights of woodcock (in grams) by method of capture for each week of the 1983 season.

HATCH-YEAR FEMALES

Time period	<u>Traps</u>		<u>Mistnetting</u>		<u>Night-lighting</u>		Total aver. wt.
	sample size	aver. wt.	sample size	aver. wt.	sample size	aver. wt.	
6/04 - 6/10	-	-	-	-	-	-	-
6/11 - 6/17	-	-	-	-	-	-	-
6/18 - 6/24	2	166.0	-	-	-	-	166.0
6/25 - 7/01	-	-	1	170.0	-	-	170.0
7/02 - 7/08	3	159.0	-	-	2	180.0	169.5
7/09 - 7/15	2	158.0	-	-	-	-	158.0
7/16 - 7/22	1	168.0	-	-	3	181.3	175.0
7/23 - 7/29	2	170.0	-	-	-	-	170.0
7/30 - 8/05	1	150.0	3	175.0	1	184.0	169.7
8/06 - 8/12	1	170.0	-	-	-	-	170.0
Total aver. wt.	12	163.0	4	172.5	6	181.8	

Table G. Comparison of average weights of woodcock (in grams) by method of capture for each week of the 1983 season.

After Hatch-Year Males

Time Period	<u>Traps</u>		<u>Mistnetting</u>		<u>Nightlighting</u>		Total aver. wt. (grams)
	sample size	aver. wt. (grams)	sample size	aver. wt. (grams)	sample size	aver. wt. (grams)	
6/04-6/10	-	-	-	-	-	-	-
6/11-6/17	-	-	4	161.5	-	-	161.5
6/18-6/24	-	-	1	163.0	-	-	163.0
6/25-7/01	-	-	-	-	-	-	-
7/02-7/08	-	-	-	-	-	-	-
7/09-7/15	-	-	-	-	-	-	-
7/16-7/22	-	-	-	-	1	205.0	205.0
7/23-7/29	-	-	-	-	-	-	-
7/30-8/05	-	-	-	-	-	-	-
8/06-8/12	-	-	-	-	-	-	-
Total aver. wt.	-	-	5	162.3	1	205.0	

able 6. Comparison of average weights of woodcock (in grams) by method of capture for each week of the 1983 season.

After Hatch-Year Females

Time Period	<u>Traps</u>		<u>Mistnetting</u>		<u>Nightlighting</u>		Total aver. wt. (grams)
	sample size	aver. wt. (grams)	sample size	aver. wt. (grams)	sample size	aver. wt. (grams)	
6/04-6/10	-	-	-	-	-	-	-
6/11-6/17	-	-	1	249.0	-	-	249.0
6/18-6/24	2	196.0	-	-	-	-	196.0
6/25-7/01	1	208.0	-	-	-	-	208.0
7/02-7/08	-	-	-	-	2	192.5	192.5
7/09-7/15	-	-	-	-	-	-	-
7/16-7/22	1	171.0	-	-	1	205	188.0
7/23-7/29	-	-	-	-	-	-	-
7/30-8/05	-	-	-	-	1	183	183.0
8/06-8/12	1	145.0	-	-	-	-	145.0
Total aver. wt.	5	180.0	1	249.0	4	193.5	

Table 7. 1983 Banding Results

	<u>New</u>	<u>Returns</u>	<u>Repeat</u>
HY-M	41	-	-
HY-F	22	-	-
LU	4	-	-
LF	-	-	-
LM	-	-	-
SY-M	8	2	-
SY-F	4	2	-
ASY-M	1	5	2
ASY-F	1	4	-
UM	-	-	-
AHY-M	1	-	-
AHY-F	-	-	-
Total	82	13	11

Table 8. Yearly Capture Summary (1964 - 1983)

<u>Year</u>	<u>New</u>	<u>Returns</u>	<u>Repeats</u>	<u>Totals</u>
1964	221	17	110	348
1965	151	25	129	305
1966	249	20	135	404
1967	270	22	99	391
1968	191	24	116	324
1969	297	13	123	433
1970	175	31	86	292
1971	221	23	142	386
1972	335	23	173	531
1973	319	16	197	432
1974	381	30	184	595
1975	280	17	92	390
1976	294	20	122	436
1977	423	44	265	732
1978	474	53	257	784
1979	325	55	152	532
1980	344	57	102	502
1981	232	29	51	312
1982	229	25	92	346
1983	82	13	11	106

New - A bird not previously banded

Return - A previously banded bird, captured for the 1st time that year.

Repeat - The capture of a bird previously caught that year.

The monitoring of radio-marked woodcock began on 27 May. Select birds were captured in either mistnets(13), ground traps (18) or during night-lighting operations (3). A hen and her brood were captured using a bird dog.

Each bird was equipped with a four to five gram MPB-1220-HD radio transmitter. Manufactured by Wildlife Materials Inc., of Carbondale, IL., these 164 MHz radios were divided among three categories of pulse rates. A slow pulse rate ranged from 34 to 40 pulses per minute, a medium rate ranged from 60 to 75 pulses per minute and a fast pulse rate ranged from 110 to 120 pulses per minute. The life of these radios were estimated by the manufacturer to be between 120 and 200 days depending on the pulse rate.

Upon initial capture, each bird was banded. Its weight, bill length, age and sex were recorded. The radio was attached using fatigue resistant, single-loop metal wire and cattle tag cement. It was initially secured using cement to the birds dorsal surface, behind the wings, to one side of the spine. The wire, already wound several times around the radio casing was threaded under the wings and tied at the ventral surface. Wing mobility was assessed before the bird was released at the site of capture. Condition of the bird upon release was also noted.

Each bird was located twice a day, once diurnally and once nocturnally (one hour after sunset). One seven element, 164 MHz antenna was attached to a jeep and one to a pick-up truck. With these vehicles, the refuge was monitored using multichannel programmable receivers. With the programmable, the operator could scan for as many frequencies as desired at an interval of one frequency every 3.7 seconds.

Once a radio-marked bird was located, the operator used a hand held, three element antenna to ascertain the bird's exact position. Using a compass, the location was determined as the number of chains (1 chain=66 feet) paced perpendicular to the nearest road. Pacing to a landmark and correlation with maps gave the most accurate positioning.

Diurnal locations most often found the woodcock in wooded areas, usually near alder thickets. However, there were always exceptions. One bird was found in a drawn down flowage. Nocturnal locations were more varied. Woodcock could be found in either field or forest. To determine which of these two areas the bird was in could be quite a challenge.

Once a week, a vegetational plot was done at the site of each bird's diurnal position. The bird's exact position was determined and it was flushed deliberately. Fresh splashings were used to determine the center of the plot. Earthworm biomass, soil moisture (gravimetric and soil suction), canopy cover (% cover), ground cover (% bare ground), splashings, probes, condition of bird, degree of defoliation, relationship to management area, shrub species, stems per area and basal area were determined.

Vegetation plots not only provided habitat data but served as a means to assess each bird's condition. At least six of the ~~eleven~~ radios found were recovered when doing these plots.

Over the course of the summer, a total of twentyfive different radio frequencies were used. Nine radios were reused a second time and one radio was used a total of three times. Six radios were found dropped, ~~four~~ radioed woodcock were found predated (radios with remains found buried) and one bird was found predated in a ground trap. The highest number of birds radio tracked in one day was twentytwo. The longest retention time for a radio as of 12 August was sixty six days, the shortest was seven days.

With over 2,000 records entered into the computer, data analysis will not be available for some time and is beyond the scope of this report.



Discussion

The 1983 field season yielded a total of 95 birds, 82 new birds and 13 returns. Eleven birds were recaptured. This is one quarter of the birds captured last year and the lowest number of captures in over 20 years. However, it should be noted that the amount of effort put into capturing birds was also considerably reduced this year.

In previous years almost every evening was spent mistnetting or nightlighting. This year, mistnetting was done, on the average, one night per week. Nightlighting crews worked only 4 nights. mistnetting and nightlighting was not done in fields where radio-marked birds were roosting so as not to disrupt their pattern of movement.

The focus of this year's work was on telemetry and habitat use. The 4 methods of capture discussed in this report were used primarily to capture birds to be fitted with radios. Cutting operations have resulted in more favorable diurnal and nocturnal woodcock habitat and thus more dispersion of woodcock.

Telemetry locations have yielded some interesting results, including woodcock located in atypical habitat, predated woodcock in hawk nests, and buried radios. However, the telemetry study has another year to go and analysis of the data will be forthcoming.

CRITIQUE

It is the general feeling of the 1983 woodcock crew that the summer went fairly well. The telemetry project allowed us to see some very interesting portions of the refuge during both day and night. Although the telemetry went well there are some things that might aid next years crew. Effort needs to be taken to keep equipment in good shape, however, things do break, especially antenna cables. Each person should be trained how to repair antennas. Persons locating should work together; neither person should be 'done' until all birds have been located. This would also be helpful if persons get vehicles stuck and/or need assistance. A general training session on how to fill out the location sheets would be helpful. This year there were some questions on the classifications of management areas as well as nocturnal location type classification. Familiarize the crew with likely nocturnal roosting sites.

Skid trails leading to and going through many of the clearcuts off of McConvey highway could be brushed out and flagged for easier access. Many birds used the lower cuts as nocturnal roosting sites, these were either impossible, or very dangerous to walk through.

To aid the following day's locators, it would be easy enough for the previous day's crew to fill out a sheet of locations (diurnal and nocturnal) either as they were done with the bird or when they returned to the office. This would save considerable time the next morning.

Other suggestions are as follows:

- A training session of how to do plots should be conducted (with all members of the crew present) to insure continuity.
- Putting band numbers on telemetry location sheets would speed input.
- A pre-made schedual for the week works well and should be continued, however, too much time was spent in the office waiting for something to do.
- Having another crew responsible for traplines over the weekend would help. Doing traplines, as well as locating over the weekend makes for long days.
- Another vehicle, preferably a truck, would be very helpful with this size crew. Transportation was often needed to set-up mist-nets, hoe traplines, etc.....

