MEREDOSIA NATIONAL WILDLIFE REFUGE

Meredosia, Illinois

ANNUAL NARRATIVE REPORT
Calendar Year 1979

NATIONAL WILDLIFE REFUGE SYSTEM
FISH AND WILDLIFE SERVICE
U. S. DEPARTMENT OF THE INTERIOR

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TABLE OF CONTENTS

Personnel

Thomas S. Sanford	Refuge Manager, GS-11	PFT
Kevin P. Kenow	Refuge Manager, GS-5 EOD 3/26/79	PFT
Charles W. "Bill" Watts	Maintenance Worker, WG-8	PFT
Alice L. Clanin	Clerk-Stenographer, GS-4	PPT
Timothy J. Howe	Biological Aid, GS-4 6/4/79 - 8/24/79 8/27/79 - 9/27/79	TFT TPT

YACC

Mary Towery	Enrollee	1/1/79	-	3/23/79
Dave Deckard	Enrollee	1/1/79	-	5/15/79
Otis Jenkins	Enrollee	1/1/79	-	8/10/79
John Handel	Enrollee	1/1/79	-	7/13/79

REVIEWS AND APPROVALS

Thomas S. Sanford 6/18/80
Submitted by Date

Area Office 7/10/80
Date

Meredosia National Wildlife Refuge
Refuge

R. Wayne Stein 9/30/80
Regional Office Date

I. GENERAL

A. Introduction

The early history of this area is sketchy until about 1900. There is some evidence that it was a favorite camping and hunting area for Indians. In 1824, there was a group of Indians living on the island. They stayed until the large flood of 1844. From 1844 until the turn of the century, white families inhabited the island on an intermittent basis. They made their living primarily from catching and selling fish and supplemented this by hunting. Clearing of the timber was limited to fields for garden plots. After 1900, several families moved onto the island permanently. They continued to hunt and fish and started to clear fields for agricultural use.

It was during the early 1900's, through the depression years, that most of the island was purchased by duck hunting clubs. The various duck hunting clubs on the island were made up of wealthy members. They were willing to spend several thousand dollars to manage the area for ducks so that they might hunt a few days each year. In recent years, much of the activity of the clubs has declined as the members have become old and younger members have not replaced them. Finally, the Anderson family bought the Chicago-Meredosia Gun Club.

Although all of the clubs on the island manage to attract ducks, the most intensive work was done by the Anderson Gun Club and the Chicago-Meredosia Club. This management consisted of manipulating water for moist soil plants and limited acres of cultivated crops. Their cultivated crops were located on high-risk flood ground and losses were generally charged off to duck hunting. Water was manipulated by the rise and fall of the Illinois River and a network of low water pumps.

The area is located in the Illinois River Valley, historically known for its wildlife. This valuable river bottom habitat over the years has been decimated by Man's efforts to control the river and very little original habitat remains. The primary purpose of establishing this area is to preserve a portion of this relatively undisturbed river bottom habitat for wildlife.

The Meredosia National Wildlife Refuge was established by the donation to the U. S. Fish and Wildlife Service through the estate of Mr. James Anderson on May 9, 1973. The land was first placed under the guardianship of the Illinois Chapter of the Nature Conservancy. The refuge is not protected by any drainage district and is subject to erratic fluctuation of water levels of the Illinois River. The river forms the west boundary, Meredosia Lake forms the east boundary and the south and north boundaries are private lands. The area consists of 1,850 acres of river bottomlands containing wooded ponds, 156 acres of water, 150 acres of moist soil development and 300 acres of cropland.

B. Climatic and Habitat Conditions

Climatological records are maintained at the LaGrange Lock operated by the Corps of Engineers. Annual precipitation totaled 36.83 inches compared to 34.18 last year. July was the wettest with 7.65 inches of rain followed by April and March with 5.38 and 4.42 inches respectively.

Precipitation

January	2.97	May	1.49	September	1.05
February	1.77	June	1.61	October	1.92
March	4.42	July	7.65	November	2.82
April	5.38	August	3.28	December	2.47
		Total	36.83		

The year 1979 set new records in snowfall and cold temperatures. High water levels almost set records during the spring flood. January became the coldest and snowiest since the Weather Bureau started keeping records in 1865. Ice on the Illinois River reached a thickness of twenty inches, setting a record. Rain during the first week of March and thawing conditions resulted in rising river levels. River stages at the LaGrange Lock increased 13.6 feet during the month of March. The Illinois River continued to rise another 1.5 feet to 446.3 on April 19. This elevation was 8.3 feet over the peak river stage during the 1978 spring flood.

The river level continued to lower to 422.5 on June 30. Moist soil units and pool continued to dewater and the production of moist soil plants started except for Alice's Pond. This unit was left flooded and resulted in a solid stand of rice cutgrass. This is one of the moist soil plants which we would like to see replace the non-seed bearing marsh smartweed. Heavy rains up to five inches fell in the upper portions of the Illinois Valley during late August resulting in higher than normal river levels.

Flooded storage building located on the highest ground.
(R-926, P-9, CWW) (4-3-79)

Interior of storage building with 24 inches of water partially flooding the heavy equipment.
(R-926, P-13, CWW) (4-3-79)

By August 29 the River stage rose 5.7 feet to 428.2. The south dike was closed and protected the 150 acre moist soil unit, resulting in an excellent production of moist plants. A detailed report on moist soil production is attached to the narrative see-APPENDIX I.

Gauge Readings - Illinois River

Meredosia/LaGrange (Lower)

January	425.8/427.0	July	423.6/424.8
February	431.5/424.9	August	427.3/429.0
March	443.7/444.8	September	427.4/428.8
April	445.1/446.3	October	421.0/421.9
May	441.0/442.0	November	421.8/422.4
June	429.4/430.5	December	425.7/429.9

Meredosia Bay

High/Low

January	426.4	July	424.2/422.2
February	431.5/424.9	August	428.1/420.6
March	442.5/430.2	September	428.1/420.2
April	445.7/441.6	October	421.4/419.8
May	441.5/430.5	November	422.1/419.9
June	429.9/422.4	December	427.8/424.5

C. Land Acquisition

1. Fee Title

Nothing to repcrt.

2. Easements

Nothing to report.

3. Other

Nothing to report.

D. System Status

1. Objectives

The Meredosia National Wildlife Refuge was established primarily for providing food for waterfowl during the spring and fall migrations, plus the production of wood ducks. This refuge is located on a major mallard and Canada goose flight corridor and can be expected to accommodate over 2,000,000 waterfowl use days each year. The production of wood ducks is a high priority with an objective of 550 wood ducks.

The ex-caretaker's residence with flood water 3 feet above the floor. It is used as a temporary residence after the land was deeded to USFWS. Van and Dorothy went through several floods requiring the removal of their furniture by boat, twice during one spring period.
(R-926, P-18, CWW) (4-3-79)

Secondary objectives are to 1) provide food, water, and protection to wintering waterfowl, 2) to maintain balanced populations of all resident wildlife species and 3) maintain river bottom habitat in its natural state. The wildlands of the Illinois river bottom are rapidly disappearing because of agricultural and industrial development. Lands of this type that are in public ownership are scarce and those that do exist are primarily for camping and fishing.

2. Funding

Funding for the Meredosia National Wildlife Refuge is under the funding of Chautauqua National Wildlife Refuge. Finally, adequate monies were available to cover O&M cost plus updating equipment. Past funding only permitted $2,000 to $4,000 for minor rehabs and supplies above the fixed cost.

Fiscal Year	1210	1220	1240	Total
1979-80*	98,000	2,000	17,000	117,000
1978-79*	93,000	2,000	16,000	111,000
1977-78	49,100	5,700	11,400	66,200
1976-77	36,850	7,450	8,300	52,600
1975-76	32,673		17,115	49,788

*Chautauqua NWR separated from Mark Twain NWR

For the first time in many years, there was a staffing increase with the addition of a Refuge Manager Trainee. The increase in staffing permitted greater involvement in monitoring the refuge (See APPENDIX A - Moist Soil Study).

II. CONSTRUCTION AND MAINTENANCE

A. Construction

The roof on the barn was repaired and re-roofed by Willard Blake of Beardstown, Illinois, for $1,055.92.

A front endloader was installed on the Ford tractor which will add to the safety and aid in lifting at the station. This equipment will aid in the maintenance of the facility also.

B. Maintenance

High water during the spring flood resulted in partial flooding of a D-7 dozer and a mobile crane stored in the barn at Meredosia.

The water was approximately 2 feet deep inside the barn. The crankcase, transfer cases, transmission, and final drive had to be drained, cleaned, and fluids replaced.

The floor of the barn was elevated approximately 2 feet by fill material to protect the heavy equipment during future high water conditions.

The old lodge on the river was removed under bids. The site was leveled and the remaining debris was buried. Available rip rap material was hauled to the deep holes in the transport ditch caused by pumping.

About 60% of the supply ditch was dug out using the mobile crane. A majority of the material removed was silt deposited by the high water and wave action.

The spoil material to raise the extreme south dike was pushed and leveled.

The pump site at the supply ditch was leveled for the pumping operation. It was decided that the pump site be lowered approximately 1 foot to eliminate PTO problems.

The dike at the barn in Hancock Slough was raised with spoil material and will be leveled in 1980 after the spoil material dries out.

The stoplog structure at the extreme south dike was removed and repaired. The stoplog channel had a 5 inch variance from the top to the bottom. Steel channel iron was welded on and the base was welded to the sides to give it additional support.

The main road into the refuge was raised approximately 18 inches for a length of 75 yards. During wet conditions, only a four-wheel drive can travel the road.

The road along the river from the old lodge was cleared of debris to Billings Pond for a patrol road to gain access to the proposed research natural area.

C. Wildfire

Nothing to report.

III. HABITAT MANAGEMENT

A. Cropland

Farming practices at Meredosia NWR continued during 1979 under a cooperative farming agreement. Of the 271.3 acres available, 43.5 have been designated and managed for moist soil vegetation production. TABLE III-1 presents a summary of the farming program over the past four years. Crop diversification has continued throughout this period.

All seed (with the exception of milo) and expenses incidental to seeding and cultivation of refuge crops were met by the cooperator. The cooperator's share amounted to 125.0 acres of soybeans. Refuge crops remained unharvested for wildlife consumption.

Milo (5 lbs. per acre) and black oil sunflower seed (8 lbs. per acre) was sown in alternate two rows at 28" intervals. Most sunflowers had been consumed by the end of 1979.

Annual spring inundation of fields creates ideal feeding opportunities for migrating waterfowl.

TABLE III-1. Meredosia NWR - Farming Program

	1979	1978	1977	1976
Soybeans	125.0	106.0	73.0	151.0
Corn	3.5	16.5	27.5	23.0
Buckwheat	29.5	17.0	25.0	79.5
Wheat	25.5	-	-	-
Milo	24.0	-	-	-
Milo-sunflower	18.0	-	-	-
Millet-sunflower	-	10.5	7.0	-
Seed pasture	-	-	60.5	-
MSU/Idle	45.8	121.3	78.3	17.8

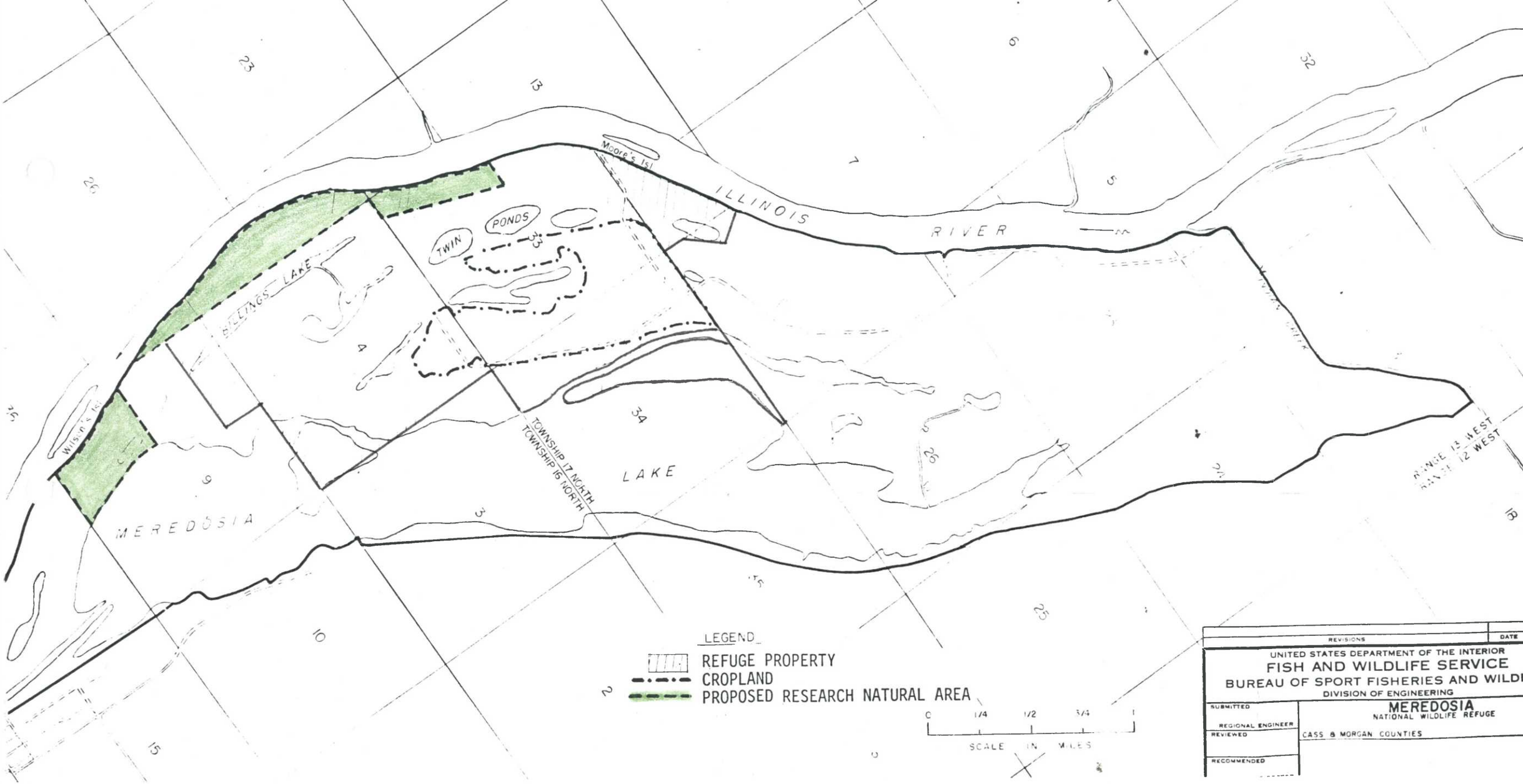
B. Grasslands

Nothing to report.

C. Wetlands

Meredosia NWR was inundated by floodwaters of the Illinois River from March 8 through May 23. The water level peaked at 445.7 on April 19.

The best production of sunflower during the past three years of planting. The sunflowers sown alternately with milo received heavy wildlife utilization.
(R-931, P-1, TSS) (9-20-79)


Moore's Isl.
ILLINOIS
RIVER
TWIN
PONDS
BELLINGS LAKE
Wilson's Isl.
MEREDOSIA
LAKE
TOWNSHIP 17 NORTH
TOWNSHIP 15 NORTH
RANGE 13 WEST
RANGE 12 WEST
LEGEND
REFUGE PROPERTY
CROPLAND
PROPOSED RESEARCH NATURAL AREA
0 1/4 1/2 3/4 1
SCALE IN MILES
REVISIONS
DATE
UNITED STATES DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
BUREAU OF SPORT FISHERIES AND WILDL
DIVISION OF ENGINEERING
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CASS & MORGAN COUNTIES

Dewatering of the 150 acre moist soil unit, which includes Moss-Brier Lake, Upper, Middle, and Lower Twin Lakes, was in part accomplished through existing breaks and low spots of the levee system. Controlled drawdown began on June 21st with the removal of all stoplogs at the South Dike. Water levels receded at the rates described in the results section of APPENDIX-I (Meredosia Moist Soil Vegetation Study).

The entire Upper 75 was reinundated in the fall to make moist soil vegetation more accessible to waterfowl. To accomplish this, water was pumped from Meredosia Bay and directed through a ditch network until near-full pool elevations were reached. Pumping operations began on October 26. A total of 200 hours pumping was required to flood the norhtern portion (Upper 75) of the moist soil unit. The water level rose 2.68 feet in Moss-Brier and Van's Ponds. The flooding of Lower and Middle Twin increased the water level 2.64 feet. Upper Twin received only three inches of water. The only area flooded in the cropland portion was Alice Pond, and area located north of the transport ditch. The lower half of the 150 acre moist soil unit was not flooded due to the available waterfowl food in the upper portion and in order to comply with the recent energy conservation order of 20% reduction in fuel consumption.

The following rationale was used to dispute claims received from local hunting clubs that refuge pumping operations caused a recession in Meredosia Bay water levels of 12 inches.

TABLE III-2. Breakdown of Water Use and Meredosia Lake Effects

Rate of pumping (GPM)	8,000	9,000
Gallons per hour	480,000	540,000
<u>October</u> 3 - 26 - 200 hours pumping		
Millions of gallons	96.00	108.00
Cubic feet (millions)	12.80	14.40
Effect on lake (acre-feet)	0.215	0.242
Effect on lake (inches)	2.58	2.90

Conversion facters:

7.5 gallons per cubic foot
Top one foot of lake - 1,365 acre x 43,560 = 59,459,400 cu. ft.

A study was initiated to examine drawdown timing effects in moist soil vegetation development. Preliminary results are included in APPENDIX-I

Marsh smartweed Control Study

Marsh smartweed (Polygonum coccineum) has been identified as valuable waterfowl food in the Illinois River Valley when it produces seed. However, inundation of the plants to a depth of 12-18" is required for optimum seed production. In addition, marsh smartweed rates low in total seed production (6cc/M2) as opposed to potential replacement species such as Walter's millet (Echinachloa walteri) (360cc/M2), or rice cutgrass (Leersia oryzoides) (80cc/M2).

The purpose of developing the following control methods is to reduce or eliminate competing stands of the smartweed in favor of increased mudflat surface acreage and associated moist soil vegetation. Creeping surface rootstalks enable the smartweed to encrouch upon and occupy vast areas of mudflats which otherwise might be occupied by volunteer moist soil vegetation highly productive as waterfowl foods.

In an effort to control marsh smartweed, a mid-summer cutting was completed and resulting vegetation was examined - see APPENDIX-II (Marsh Smartweed Cutting Experiment).

Burning was tested as an alternative measure to reduce marsh smartweed stands. A 15-acre burn unit was established consisting of a nearly pure stand of marsh smartweed. A burn plan was submitted to and approved by TCAO. Application for burning permit was submitted and approved by the Illinois Environmental Protection Agency.

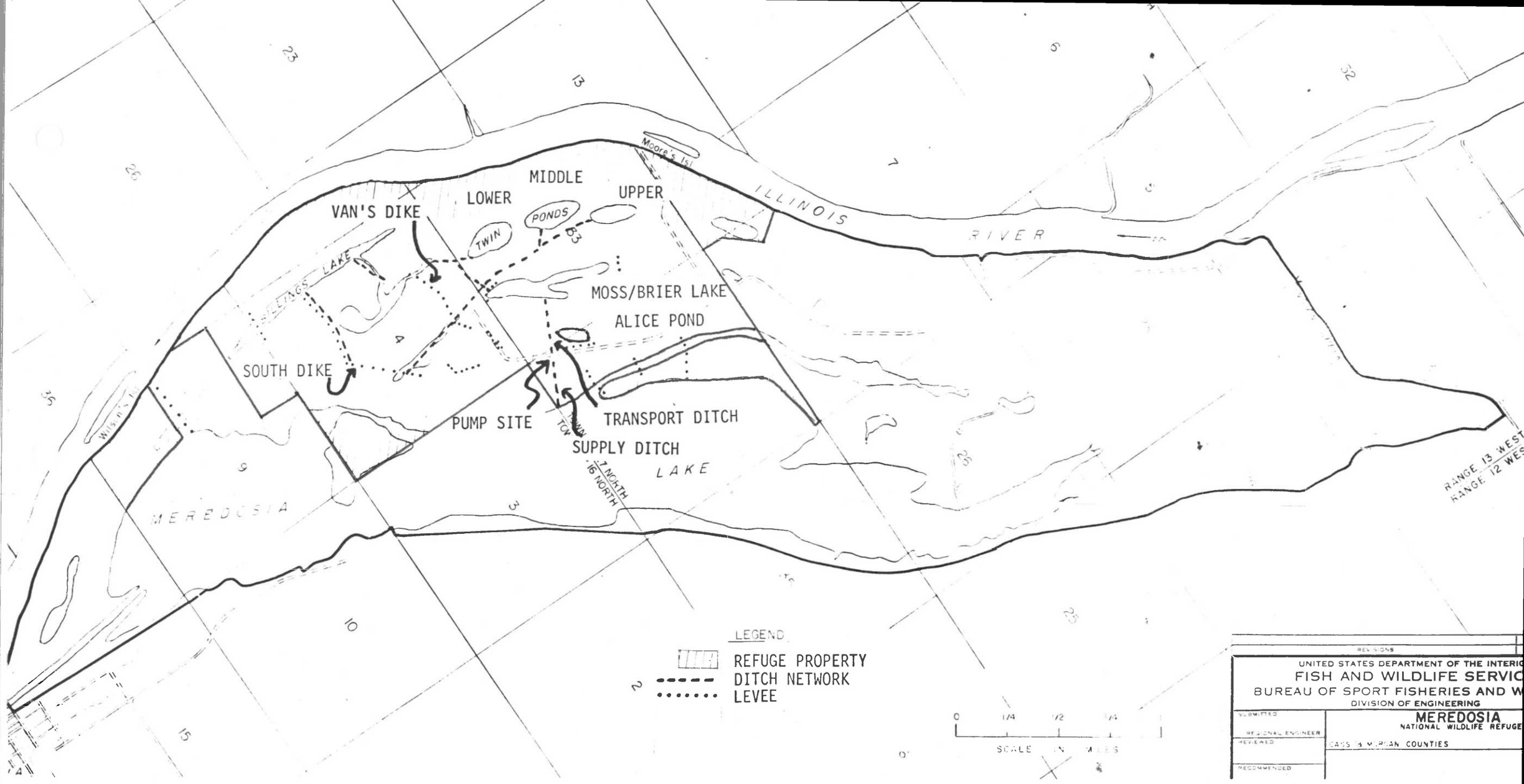
Alternatives to the burn include no action, continuous inundation of the unit for an extended period of the growing season, and clearing of vegetation with heavy equipment. The alternatives were negated for the following reasons:

-No action continues to stifle the potential of the area to provide waterfowl food given existing water management practices were to continue.

-There are no known herbicides currently approved for application on refuge lands that are effective in eliminating marsh smartweed.

-Continuous inundation of the marsh smartweed stand to produce a plant stress condition would require a significant amount of fuel energy through pumping activites to maintain the necessary water level.

-High soil moisture levels in the proposed unit disallow the implementation of heavy equipment.


VAN'S DIKE
LOWER
MIDDLE
UPPER
TWIN
PONDS
B3
HELLAGS LAKE
MOSS/BRIER LAKE
ALICE POND
SOUTH DIKE
PUMP SITE
TRANSPORT DITCH
SUPPLY DITCH
ILLINOIS
RIVER
Moore's Isl
LAKE
MEREDOSIA
16 NORTH
RANGE 13 WEST
RANGE 12 WES
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REFUGE PROPERTY
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Bill Watts, maintenance worker, and Kevin Kenow, manager trainee, are checking the Waukesha diesel motor and Crisafulli pump for vibration.
(R-931, P-17, TSS) (10-3-79)

The progressive stage of the moist soil production in Middle Twin. The major plant was Walter's Millet. Note the height of the vegetation on the individual. The outer band of millet was over six feet tall.
(R-931, P-11, TSS) (9-20-79)

TABLE III-3. Moist Soil Water Level Elevation

Date	Moss Pond	Van's Dike	South Dike	Middle Twin	Alice's Pond
8/-	425.34	424.58		424.70	
10/4	426.22	425.59	425.96		
10/5	426.66	426.49			
10/6	427.02	426.73		426.80	
10/7	426.82	426.73			
10/8	426.62				
10/9	427.04				
10/10	427.36	427.11			
10/12	426.96	426.97	425.64	426.81	432.75
10/18	426.58	426.57		426.58	432.57
10/22	426.52	426.51			
10/23	427.12	426.85			432.69
10/24	427.50	427.07		426.94	432.85
10/25	427.78	427.25	425.36	427.12	432.95
10/26	428.02	427.41		427.34	
10/30	427.38			427.32	432.90
11/1	427.26	427.27		427.30	432.87
11/5	427.08	427.07			432.73
11/7	427.00	427.09		426.98	432.67
11/27	426.66	426.67		426.66	
12/10	426.39	426.37	424.76	426.40	432.20
Differential (Feet)	2.68	2.67	No Pumping	2.64	Incomplete

Burning activities were held off until the close of waterfowl season, December 19. Although conditions were less than ideal, burning was attempted December 20 before severe weather moved in, As a result, the burn was spotty (5-10%) and ignited only in areas where graminoids provided sufficient fuel. Vegetation developing on burned sites will be monitored during the 1980 season.

D. Forestlands

Nothing to report.

E. Other Habitat

Nothing to report.

F. Wilderness and Special Areas

A 275 acre tract of woodland was proposed for designation as a Research Natural Area. The area under consideration is a silver maple forest on a natural levee of the Illinois River Valley with associated meander scars and backwater sloughs. It is representative of a forest type once predominant in the valley. The proposed area has Area Office approval and has since been forwarded to the Regional Office.

G. Easements for Waterfowl Management

Nothing to report.

IV. WILDLIFE

A. Endangered and/or Threatened Species

The nothern bald eagle (Haliaetus leucocephalus) was the only federally endangered species known to occur on Meredosia NWR. The population peaked December 12 when eleven birds were present on the refuge. Total use during the year amounted to 560 use days. Stranded fish and vulnerable waterfowl are primary food items.

Peak Bald Eagles Observed/Month

(Adult/Immature)

	1979-80	1978-79	1977-78	1976-77	1975-76	1974-75
Oct.	-	-/1	-	-	-	-
Nov.	5/4	7/5	4/3	5/2	-	3/-
Dec.	7/4	9/5	7/3	5/2	7/5	6/3
Jan.	6/5	6/3	6/3	5/2	10/6	8/5
Feb.	4/3	-	-	-	-	-

The Illinois Endangered Species Protection Board has identified a number of species, status of which have been determined as being in danger of extinction as a breeding species in Illinois. The following state endangered species were recorded at Meredosia during 1979.

Illinois Endangered Species Inhabitant Meredosia - 1979

	Use Days	Peak Population
Great Egret	2045	48
Black Tern	865	20
American Bittern	710	15
Cooper's Hawk	600	5
Bald Eagle	560	11
Marsh Hawk	505	5
Black-crowned Night Heron	410	10
Double-crested Cormorant	310	25
Common Tern	190	15
Red-shouldered Hawk	145	1
Short-eared Owl	100	2
Forster's Tern	55	2
Wilson's Phalarope	30	4

B. Migratory Birds

1. Waterfowl

Total waterfowl use amounted to 3,291,175 use days during 1979. This represents an increasing trend for the third consecutive year. Total duck use amounted to 3,188,260 use days and total goose use to 102,915 use days which represents a 34.1% and 40.8% increase respectively over 1978.

During the peak spring migration period aerial waterfowl surveys were conducted weekly, March 19 through April 13, by the Illinois Natural History Survey. Fall flights were conducted weekly, September 4 through December 12.

Although fall use declined notably over 1978, spring use was 356.5% greater than a 5 year average (1974-1978). The spring waterfowl population peaked at 76,610 on March 19 at which time mallards made up 37.9% of the total population followed by lesser scaup (18.3%), ringnecks (14.4%), and wigeon (14.4%).

Lesser scaup and ringnecks went on to peak March 26 with 24,000 and 16,000 respectively. Fall waterfowl numbers peaked November 13 when 42,080 birds were recorded on the area. Predominant species included mallard (83.2%), wigeon (6.2%), pintail (2.1%), and lesser scaup (2.6%). Of the 21 species of waterfowl recorded during the 1979 fall migration only redheads and snow geese fell below the 5 year peak average (1974-78).

Figure IV-1 illustrates the proportion of ducks using Meredosia out of the total lower Illinois River Valley population during the fall migration period over the past 20 years. This information was derived from aerial surveys flown by Frank Bellrose and Tud Crompton of the Illinois Natural History Survey. Information presented in FIGURE IV-2, derived from the same source, allows comparison of duck fall population peaks recorded for Meredosia and the Lower Illinois River Valley.

Waterfowl Production

Of the 26 wood duck nesting boxes available at Meredosia only one was used by a wood duck. Poor use is attributable to an apparent abundance of natural cavities. This sufficiency has apparently diminished the supplemental value of nest boxes. Two great-crested flycatcher nests were discovered in nest boxes.

Total production estimate was based on brood counts and a check on natural cavities. A total of 405 young were estimated to be produced in natural cavities and 10 produced in nesting boxes.

Banding Activities

In order to supplement the 1979 banding quota at Chautauqua NWR, limited banding activities were initiated at Meredosia. A total of 28 birds were banded.

One wood duck hen was banded on a nesting box. Three 6'x6'x3' "Ohio-type" traps were placed at the Van's Dike control structure, the mouth of the transport ditch at Moss Pond, and on the levee east of the barn at Hancock Slough. Twenty one of the birds were trapped at the Hancock Slough site (77.8%) five at Van's Dike (18.5%) and on on Moss Pond (3.7%).

FIGURE IV-1. PROPORTION OF LOWER ILLINOIS RIVER VALLEY DUCK POPULATION OCCURRING ON MEREDOSIA - FALL USE.

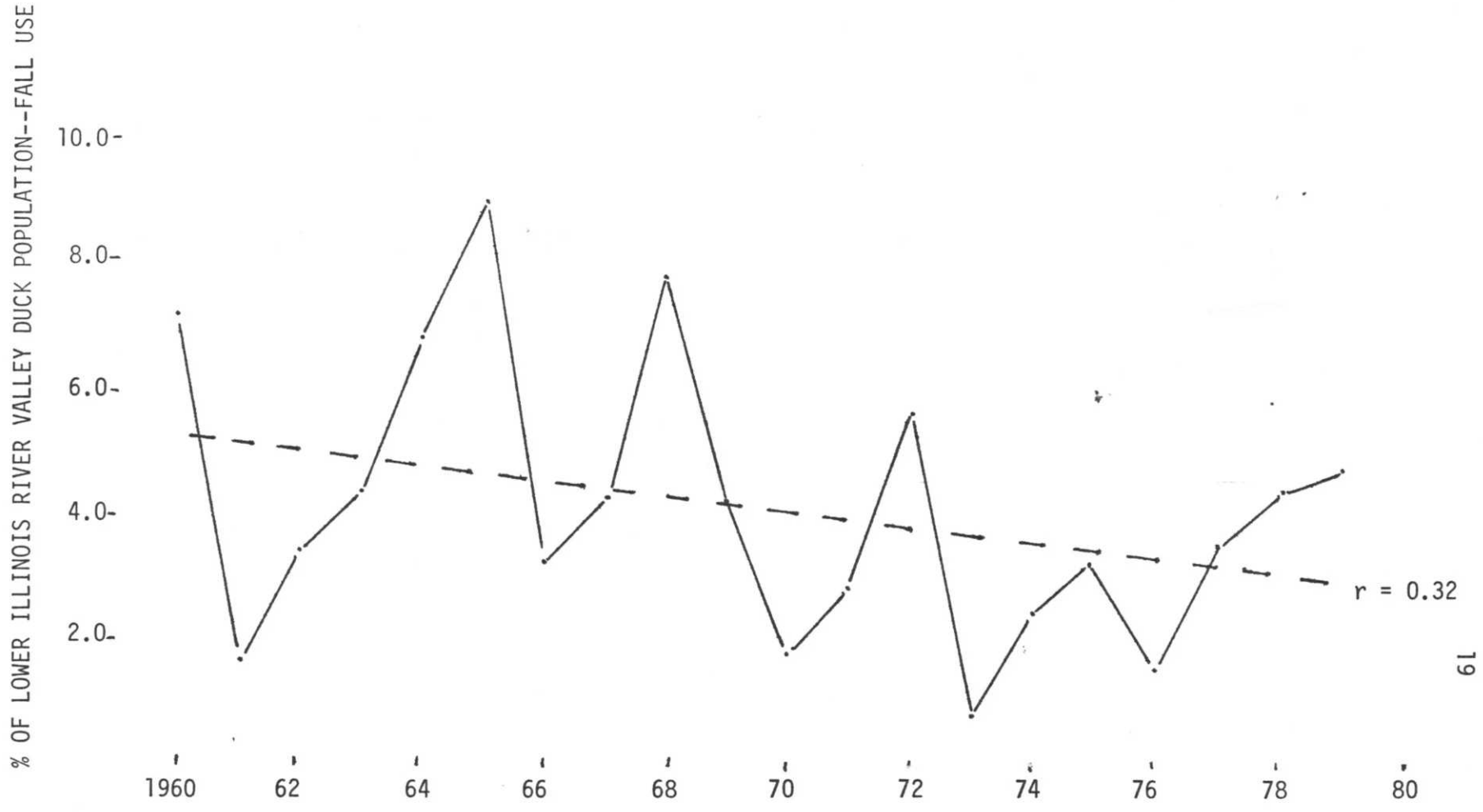
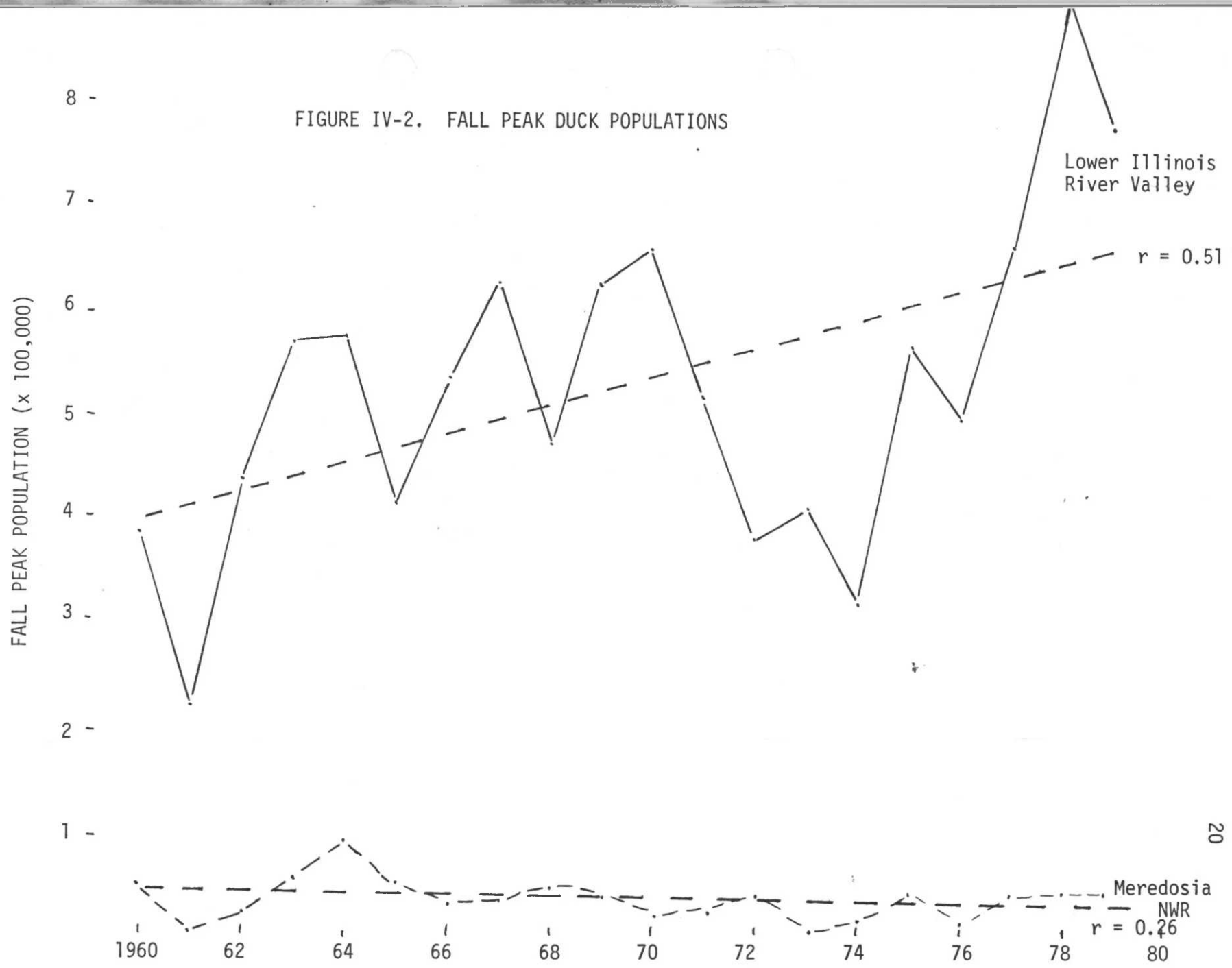


FIGURE IV-2. FALL PEAK DUCK POPULATIONS



WATERFOWL USE DAYS

Ducks

	Jan.-March	April-June	July-Sept.	Oct.-Dec.	Total	Δ%
1974	294,335	54,318	48,055	371,460	768,188	
1975	286,605	54,318	52,750	826,720	1,220,393	+58.9%
1976	491,365	169,940	59,645	272,460	993,410	-18.6%
1977	360,737	92,130	72,400	1,054,365	1,579,632	+59.0%
1978	148,280	479,640	68,725	1,680,025	2,376,670	+50.5%
1979	1,455,795	240,620	117,065	1,347,780	3,188,260	+34.1%
Average	506,190	181,828	69,773	929,968	1,687,759	
Percent	30.0%	10.8%	4.1%	55.1%		

Geese

	Jan.-March	April-June	July-Sept.	Oct.-Dec.	Total	Δ%
1974	31,445	900	450	12,275	45,070	
1975	32,313	900	450	12,355	46,018	+2.1%
1976	13,700	2,400	600	6,605	23,305	-49.4%
1977	7,820	300	900	17,900	26,920	+15.5%
1978	11,625	3,600	1,500	56,375	73,100	+171.5%
1979	76,465	3,300	1,500	21,650	102,915	+40.8%
Average	28,895	1,900	900	21,193	52,888	
Percent	54.6%	3.6%	1.7%	40.1%		

Peak Fall Waterfowl Population By Species 1974-79

Species	1974	1975	1976	1977	1978	5yr. Average 1974-1978	1979
Mallard	12,000	38,000	7,900	34,000	36,000	25,580	35,000
Black Duck	250	1,300	115	600	700	593	600
Gadwall	65	75	30	45	250	93	400
Pintail	200	130	275	200	485	258	1,500
Green-winged Teal	400	500	425	350	500	435	1,000
Blue-winged Teal	600	550	575	950	850	705	2,100
American Wigeon	650	400	450	750	3,200	1,090	7,500
Shoveler	30	50	35	65	40	44	150
Wood Duck	150	350	375	400	600	375	550
Redhead	-	25	-	80	75	36	25
Ring-necked Duck	65	75	85	430	500	231	325
Canvasback	17	50	50	75	325	103	350
Lesser Scaup	675	300	325	650	2,700	930	1,100
Bufflehead	-	25	-	-	115	28	40
Ruddy Duck	50	35	15	25	30	31	50
Common Merganser	100	15	15	85	650	173	275
Hooded Merganser	-	-	-	-	50	10	40
Red-breasted Merganser	-	-	-	-	25	5	40
Common Goldeneye	75	35	60	175	1,300	329	900
Canada Goose	300	200	250	650	950	470	600
Snow Goose	350	200	50	425	400	285	250

Banding Results - Meredosia NWR

Species	Age Class/Sex	Number Banded
Wood Duck	AHYF	1
	HYM	12
	HYF	14
Mallard	HYF	1
Total		28

2. Marsh and Water Birds

Coot use was up 42.6% from 1978 thus continuing an upward trend for the past four years. Total use amounted to 770,052 use days.

The large increase in first quarter figures expressed over the past five years is attributable to excellent conditions developed during record spring flooding. Spring populations peaked at 19,000 on 3/26. Fall numbers reached 16,000 on 10/24, somewhat down from a peak figure of 19,000 recorded in 1978.

Marsh and water bird use figures show a 4.8% drop in total use from 1978. Of the total 11,305 use days reported during 1979, nearly 70% occurred during the period of July to September. Predominant species include great blue heron (48.1%), great egret (18.1%), and sora rail (10.2%).

Low mid-summer water levels provided ideal feeding conditions for egrets and great blue herons. Timber surrounding Moss, Middle Twin, Lower Twin and Billings Lakes offered daytime roost sites for a peak of 75 herons and 48 great egrets during mid-September.

3. Shorebirds, Gulls, Terns and Allied Species

Shorebird use was estimated at 109,440 use days, a 21.6% drop from 1978. The largest loss occurred during the third quarter when 30,865 use days were recorded as compared to 107,980 use days in 1978, a 71.4% decline. This decline is attributable to the apparent migratory overflight during periods of high water in August and September.

A total of 28 species were recorded in this group. Ring-billed gulls made up 55.0% of the total use recorded at Meredosia for this group. Other abundant species include herring gull (9.7%), pectoral sandpiper (9.5%), least sandpiper (8.1%), killdeer (4.9%) and lesser yellow-legs (3.6%).

4. Raptors

Raptorial use days continued to increase over the past six years. The area offers a variety of woodland, lacustrine, riverine and open field habitats. Total use was recorded at 12,845 use days, a 36.7% increase from 1978. Predominate species include great-horned owl (23.3%), screech owl (18.6%), barred owl (10.8%), red-tailed hawk (8.5%) and sharp-shinned hawk (6.8%).

Bald eagle use information is discussed in Section II A, Endangered and Threatened species.

5. Other Migratory Birds

Mourning dove use amounted to an estimated 24,000 use days. The population peaked at 150 birds in mid-September. Refuge farming program and "weed" seed crops provide a ready food supply during the fall migratory period.

C. Mammals and Non-Migratory Birds and Others

1. Game Animals

The white tailed deer population continues to remain stable with an estimated 20-25 deer on the refuge. Field surveys of milo and corn plantings indicate moderate utilization. Young willow growth on exposed mudflats offers additional forage.

2. Other Mammals

Resident species include fox and southern flying squirrel, muskrat, raccoon, cottontail rabbit, opposum, wood chuck, skunk, red fox and mink. Populations appear to remain stable. Harvest, though prohibited, nonetheless occurs.

3. Resident Birds

Bobwhite quail and ringneck pheasant are the only resident game birds existing on the refuge. Annual inundation of the area limits the population. An estimated 54 quail and 10 pheasants use crops left remaining on the refuge.

Coot Use Days

	Jan.-March	April-June	July-Sept.	Oct.-Dec.	Total	Δ%
1974	10,800	7,350	540	90,000	108,690	
1975	10,800	7,350	1,290	28,800	48,240	-55.6%
1976	12,450	64,800	5,100	23,700	106,050	+119.8%
1977	10,350	20,700	3,810	118,500	153,360	+44.6%
1978	12,600	187,350	5,700	334,500	540,150	+252.2%
1979	382,385	55,985	5,012	326,670	770,052	+42.6%
Average	73,231	57,256	3,575	153,695	287,757	
Percent	25.4%	19.9%	1.2%	53.4		

Marsh and Waterbirds Use Days

(Excluding Coots)

	Jan.-March	April-June	July-Sept.	Oct.-Dec.	Total	Δ%
1974	1,260	345	6,490	2,214	10,309	
1975	480	540	3,655	5,085	9,760	-5.3%
1976	135	1,355	5,700	1,090	8,280	-15.2%
1977	400	1,210	4,555	870	7,035	-15.0%
1978	490	3,420	6,805	1,160	11,875	+68.8%
1979	340	1,315	7,870	1,780	11,305	-4.8%
Average	518	1,364	5,846	2,033	9,761	
Percent	5.3%	14.0%	59.9%	20.8%		

Shorebirds, Gulls, Terns & Allied Species Use Days

	Jan.-March	April-June	July-Sept.	Oct.-Dec.	Total	%
1974	8,100	350	21,240	1,890	31,580	
1975	8,950	350	107,285	12,955	129,540	+310.2%
1976	5,500	1,350	97,575	9,450	113,857	-12.2%
1977	10,050	980	29,820	6,215	47,065	-58.7%
1978	18,740	6,685	107,980	14,700	148,105	+214.7%
1979	5,625	575	30,856	72,375	109,440	-26.1%
Average	9,494	1,715	65,794	19,598	96,601	
Percent	9.8%	1.8%	68.1%	20.3%		

Raptor Use Days

	Jan.-March	April-June	July-Sept.	Oct.-Dec.	Total	%
1974	675	230	490	370	1,765	
1975	1,090	225	490	835	2,640	+49.6%
1976	870	325	1,645	910	3,750	+42.0%
1977	1,430	850	1,200	2,620	6,100	+62.7%
1978	3,060	1,395	2,520	2,420	9,395	+54.0%
1979	4,625	1,130	4,600	2,490	12,845	+36.7%
Average	1,958	693	1,824	1,608	6,083	
Percent	32.2%	11.4%	30.0%	26.4%		

4. Other Animal Life

A total of 13 amphibians, 29 reptiles and 14 fish have been reported to have inhabited the refuge area.

Dewatering of lakes for moist soil vegetation production resulted in oxygen stress and subsequent die-offs of gizzard shad and carp during mid-summer. These were rapidly consumed by great blue herons and egrets.

V. INTERPRETATION AND RECREATION

A. Information and Interpretation

1. On Refuge

Nothing to report.

2. Off Refuge

Nothing to report.

B. Recreation

1. Wildlife Oriented

Nothing to report.

2. Non-wildlife Oriented

Nothing to report.

C. Enforcement

Posting of boundaries prior to the waterfowl seasons and periodical patrols of the refuge during the year reduced law enforcement problems.

1979 Law Enforcement

Case Summary

Violation	Disposition
Vehicle trespass (Givenrod, Lipe & Jacobs) surveyers.	Courtesy Warning
Commerical Fishing on Hancock Slough.	Courtesy Warning

Replacing cables and posts at two entrances and placing earthen barriers has slowed vehicle trespassing and illegal deer hunting.

VI. OTHER ITEMS

A. Field Investigation

Nothing to report.

B. Cooperative Programs

The bald eagle data was reported to Elton Fawks, coordinator for bald eagle research, Mississippi Valley Winter Bald Eagle Survey.

The YACC program provided assistance in cleaning up the old lodge site. Rip rap material was removed from the site and used in the transport ditch.

C. Items of Interest

High water on April 16 resulted in an oil spill within the McGee Creek Drainage and Levee District. The oil spill came from a tank farm located at river mile 27.5 which is one mile below the southern boundary of the Meredosia Refuge. Refuge personnel monitored the spill during the Coast Guard operations to contain the spill. Follow-up surveys indicated no loss of waterfowl as the spring migration had already passed through.

An item of interest was the absorption of the light oil in the corn stalks which serviced very nicely for cleanup. Usually, a great deal of manpower and material is used for cleanup of an oil spill.

The Chautauqua Refuge Manager position classification was changed to include the duties of a Field Response Coordinator due to the transfer of David Potter who was stationed on the Mark Twain National Wildlife Refuge.

Revenue-sharing checks were delivered by the Refuge Manager to Cass and Morgan County Treasurers along with news releases to the Jacksonville and Virginia newspapers.

Year	Cass County	Morgan County
1973	$ 964.14	$425.74
1974	964.14	425.74
1975	964.14	425.74
1976	1,315.23(1)	580.77(1)
1977	1,068.38	471.77
1978	749.37(2)	330.90(2)
1979	713.00(3)	315.00(3)

(1) 15-month period (2) 53% total payment (3) 50% total payment

Sections I and VI were written by the Refuge Manager. Sections II and V were written by the Maintenance Worker and Section III and IV were written by the Refuge Manager Trainee.

D. Safety

Nothing to report.

Kevin Kenow, Refuge Manager Trainee, sampling moist soil plants for height and abundance.
(R-931, P-10, TSS) (9-20-79)

Tim Howe, Biological Aid, assisted in collecting field data for the moist soil study at Meredosia NWR.
(R-931, P-12, TSS) (9-20-79)

APPENDIX II. MARSH SMARTWEED CUTTING STUDY

INTRODUCTION

The purpose of this report is to present the results of a study undertaken to determine the effect of mid-summer cutting on the flora of a marsh smartweed bed (Polygonum coccineum). The study was designed to assess the effectiveness of cutting in eliminating extensive beds of the smartweed in order to increase the potential of the area for the production of better yielding waterfowl foods.

Marsh smartweed spreads vegetatively as surface rootstalks send up periodic shoots. This process enables the plant to encroach upon exposed mudflats. Dense stands out-compete moist soil vegetation, thus reducing the potential of these sites to produce highly preferred waterfowl foods. Although marsh smartweed has been found a valuable duck food in the Illinois River Valley, it produces little seed when growing out of water (Bellrose and Anderson, 1943). Water control in the study area at Meredosia National Wildlife Refuge is not such as to allow the complete inundation of the beds throughout the summer as apparently required for optimum seed production.

METHODS

The study area was located on Meredosia NWR where cuts were made in nearly pure stands of marsh smartweed to the south and north of "Van's" dike (FIGURE I). A Bachtold mower was employed to make the cut on July 19 and 20.

The effectiveness of the method was evaluated by determining differences in vegetative composition and structure on cut and adjacent uncut areas. Plots were sampled at predetermined locations. Average height and percent coverage for each species occurring in a 0.6 M^2 sampling hoop were recorded as described by Daubenmire (1959).

RESULTS

Approximately 8.5 hours cutting time required five gallons of fuel to complete the three acre cut. The height of marsh smartweed was approximately 110 centimeters at the time of cutting. Stems were clipped a few inches above the surface. Consequently, creeping rootstalks lay virtually undamaged. It was anticipated fire would supplement the cutting by damaging these rootstalks. However, ill-timed precipitation and high humidity reduced firing attempts to contact burns only. Shoots had re-sprouted to a height of 15 centimeters from rootstalks one week following cutting which also hampered attempts to burn.

Large seed smartweed growing at the south dike water control structure.
(R-931, P-8, TSS) (9-20-79)

Experimental mowing of the marsh smartweed stand in order to open up the area to other moist soil plants. Two plots were mowed with the flooding of one plot.
(R-930, P-16, TSS) (7-19-79)

FIGURE I - Marsh Smartweed Study Area

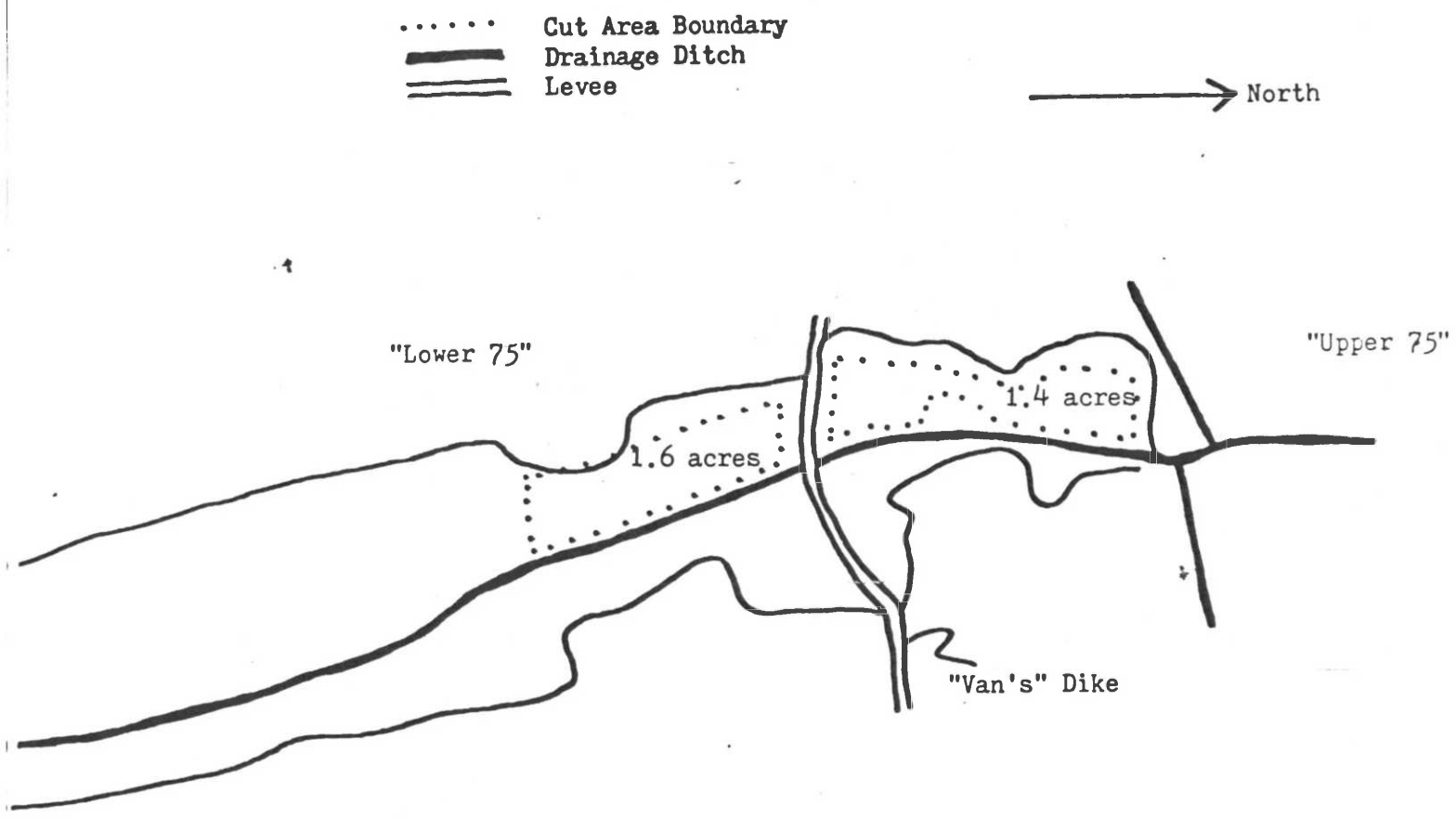


TABLE I - Vegetation Summary, Van's Dike North Area - Cut vs Uncut
(as determined by 0.6 M/2 sample plots)

Species	Variable	Treatment Cut (n=30)	Control Uncut (n=10)
Marsh Smartweed (Polygonum coccineum)	Avg. Ht. (cm)	107.2	152.0
	Avg. % Coverage	97.5	97.5
	% Occurrence	100.0	100.0
Water Hemp (Amaranthus tuberculatus)	Avg. Ht. (cm)	125.0	13.3
	Avg. % Coverage	33.9	0.8
	% Occurrence	86.7	30.0
Nutgrass (Cyperus sp.)	Avg. Ht. (cm)*	57.4	15.0
	Avg. % Coverage	13.5	0.3
	% Occurrence	86.7	10.0
Nutgrass (Flowering) (Cyperus sp.)	Avg. Ht. (cm)	56.7	0
	Avg. % Coverage	0.3	0
	% Occurrence	10.0	0
Bur Cucumber (Sicyos angulatus)	Avg. Ht. (cm)	200. +	200 +
	Avg. % Coverage	10.5	0.3
	% Occurrence	53.3	10.0
Silver Maple (Acer saccharinum)	Avg. Ht. (cm)	17.3	17.5
	Avg. % Coverage	0.3	5.3
	% Occurrence	10.0	60.0
Buttonbush (Cephalanthus occidentalis)	Avg. Ht. (cm)	65.0	0
	Avg. % Coverage	1.0	0
	% Occurrence	6.7	0
Beggar-ticks (Bidens frondosa)	Avg. Ht. (cm)	111.7	0
	Avg. % Coverage	0.7	0
	% Occurrence	10.0	0
Beggar-ticks (Bidens cernua)	Avg. Ht. (cm)	72.5	0
	Avg. % Coverage	0.2	0
	% Occurrence	6.7	0

*Refers to height of terminal leaf. Other measurements to height of terminal inflourescens.

TABLE I presents the results of a vegetation survey conducted 10/4/79. The mid-July cut failed to reduce the coverage status of marsh smartweed. A setback was evident as there was a height difference of 45 cm. between cut and uncut stands. Water hemp (Amaranthus tuberculatus) made the most noticeable increase in presence and stature with cutting. Nutgrasses (Cyperus sp.), bur cucumber (Sicyos Angulatus), beggar ticks (Bidens sp.), and buttonbush (Cephalanthus occidentalis) were more frequently observed in the cut area. Only silver maple seedlings (Acer saccharinum) were more frequent in uncut vs. cut areas. There was no measurable difference in marsh smartweed stem density.

DISCUSSION

During the period in which the canopy of marsh smartweed was removed, the amount of solar insolation and in turn, soil moisture/temperature regimes were undoubtedly affected. This reduction in marsh smartweed competition apparently allowed for increased seed germination and greater development of a variety of moist soil plants.

There was a noticeable increase in presence of four genera which may be attributable to the cutting; Three of these are considered fair to excellent waterfowl foods. Water hemp was the only species which made up a considerable component of the cut stand with an average coverage of 33.9%. It was the only species which developed to the degree of producing a substantial amount of seed. Although nutgrasses occurred in 86.7% of the plots examined, conditions disallowed production of inflourescens in all but two individuals. The two species of Bidens contained small flowering heads but had a combined average percent coverage of less than one percent.

The technique was unsuccessful in eliminating marsh smartweed for any appreciable period of time and will probably have little effect on future development of the stand. The ineffectiveness is in part due to the failure of the cutting to destroy, much less damage, the surface root system. I would suspect only through an intensive program of frequent, periodic cutting could the plant be drained of enough stored energy to reduce its status.

Alternatives to this method include herbicide application, continuous inundation, and controlled burning. Currently, there are no known herbicides approved for refuge use that would suppress marsh smartweed. Application would be costly. Unforseen side effects may have detrimental consequences on other terrestrial and aquatic life forms.

Continuous inundation of the stand to a depth of 12 to 16 inches for a period of about three years is believed to decrease the vigor of marsh smartweed to its demise. However, it is not possible to retain water in the area described throughout summer months.

Although untested, fire appears to be the most promising alternative if conditions are favorable. In spot burns this summer, damage to rootstalks was sufficient to check re-sprouting. The effectiveness of a burn depends on surface soil moisture content and the accumulation of combustible residue. This in turn will influence the effective penetration of the burn to active rootstalks beneath annual silt layers.

It is desirable to develop a technique capable of increasing the potential of areas of extensive marsh smartweed. Some 45 acres of this vegetation type now exists within the "lower 75" which may be managed for waterfowl food production.

Literature Cited

Bellrose, F.C. Jr. and Harry G. Anderson. 1943. Preferential rating of duck food plants. Ill. Nat. Hist. Survey Bull., Vol. 22, Art. 4-5.

Daubenmire, R. 1959. A canopy-coverage method of vegetational analysis. Northwest Science., Vol. 33, No. 1, 1959.

Chicago Extruded Metals Company

James R. Anderson, Jr.
Chairman of the Board

November 19, 1979

Mr. Tom Sanford
Chautauqua National Wildlife Refuge
Route #2
Havana, Illinois 62644

Dear Tom:

I stopped at Meredosia last Saturday on my way home from St. Louis. I am happy to report that the duck population and the water and feed conditions all appeared to be excellent. There were several thousand ducks in Bill's new pond in the field near Hancock Slough. Although I was only there for about an hour, I saw many species including redheads, bluebills, blackjacks, pintails and widgeons.

It was a very satisfactory visit and I want to complement you and Bill, and the Fish and Wildlife Service, for the work accomplished and the success of the management plan undertaken several years ago.

I was particularly impressed with the quantity and quality of standing feed. There will be many well fed songbirds and water fowl this winter and spring.

Thanks again to you and Bill for all your hard work.

Sincerely,

James R. Anderson, Jr.

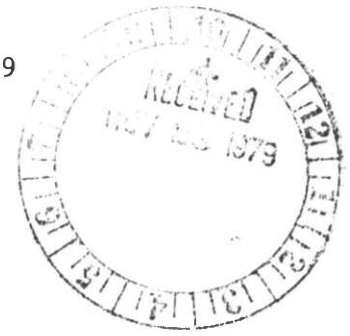
JRA/np
cc: Mr. John Humke
The Nature Conservancy

600 HUNTER DRIVE OAK BROOK, ILLINOIS 60521

The Nature Conservancy

Midwest Regional Office
328 East Hennepin Avenue, Minneapolis, Minnesota 55414
(612) 379-2134

November 26, 1979



Mr. Harvey K. Nelson
Regional Director, Great Lakes
Regional Office
U.S. Fish and Wildlife Service
Federal Building, Fort Snelling
Twin Cities, Minnesota 55111

Dear Mr. Nelson:

A number of years ago I was directly involved in the donation of Meredosia Island to The Nature Conservancy and from the Conservancy to the Service. I was pleased to see that Jim Anderson, the donor, recently visited the Refuge and was most favorably impressed with your management program. Tom Sanford and his associates are certainly to be congratulated for a job well done.

Sincerely yours,

John W. Humke
Regional Vice President

JWH:lrp

cc: Tom Sanford
Jim Anderson
Tom Follrath