

annual spikerush, increased temporarily. Hydrochloa and southern cutgrass did not materially increase until 3 years following control. By that time maidencane had become the dominant plant. During the normal summer drawdown, much of the shallow-growing alligatorweed became dormant. This allowed growth of many annuals, such as bull paspalum, fall panicgrass, wild millet, annual spikerush, and cyperus. It is very difficult for any plants of value to waterfowl to compete with dense stands of maidencane. It appeared that over a period of several years the benefits to waterfowl of alligatorweed control were outweighed by increased abundance of maidencane.

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WATERFOWL HUNTING ACTIVITIES AND HARVEST IN THE TISHOMINGO NATIONAL WILDLIFE REFUGE, OKLAHOMA, 1960-1963

By

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ABSTRACT

From 1960 to 1963 hunter activity was regulated in a 3,160-acre hunting unit of the Tishomingo National Waterfowl Refuge on perime-

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ter lands of Lake Texoma in southern Oklahoma. This report describes the habitat development program on the area, special hunting facilities and regulations, and duck and goose harvest. Special hunting regulations included delayed opening after the state-wide waterfowl season had begun, no hunting three days a week, assignment of hunters to goose hunting pits, and a daily limit on the number of shells a goose hunter could use. The report describes distances traveled by hunters, number of trips per hunter per season, and harvest.

INTRODUCTION

The Tishomingo National Wildlife Refuge is on the shores of Lake Texoma in south-central Oklahoma. A portion of the Refuge was first established for public hunting in 1958. This report of development and initial hunting activities and harvest covers the first four years of public use after development began in 1960.

In a cooperative project of this kind, many persons willingly contributed time and effort over and above regular duties. State game rangers Eugene Reid and Earl "Curly" Everett manned the main check station, and enforced laws along with ranger supervisors Toy Tipton and Bob Hamer and federal agents Aubrey D. Goodwin, Harry B. Lyman and Willard J. "Bill" Frazier. Several refuge personnel, Charles Ward, Kenneth Locke, Howard Johnson, Jack Graham, et al also checked hunters.

BACKGROUND

Goose hunting in Oklahoma is more highly prized than the more commonly available duck hunting. Even duck harvest has been very poor in recent years, but by comparison goose harvest is even more restricted. Good goose hunting in Oklahoma is limited to a few areas, with about half of the birds being taken near the two National Waterfowl Refuges with established goose flocks, Great Salt Plains and Tishomingo. The total state-wide goose kill from 1960 to 1963 ranged from 9,366 to 14,238 birds according to state-wide surveys (Table 1).

The Tishomingo National Waterfowl Refuge was established in 1946 on perimeter lands of Lake Texoma that were acquired by the Corps of Engineers for flood water storage. Hunters have bagged ducks and geese on surrounding private lands ever since the refuge began attracting waterfowl. Much of the land was open to hunters for a daily or seasonal charge. No hunting was permitted in the original 13,449-acre refuge. However, in 1957 an additional 3,170 acres were transferred from the Corps to the Bureau for inclusion in the refuge. In 1958 the Oklahoma Wildlife Conservation Department entered into a cooperation agreement with the Bureau for development of the area as a public shooting area and was designated as the Management Unit.

The Management Unit is a highly diversified tract of land in the west portion of the refuge consisting of a broad river bottom with adjacent rough hilly terrain transversed by numerous draws with tall post oak blackjack timber. Open fields remain where cultivated crops once were planted. The bottomland, which also once was marsh and cultivated land, has silted in considerably and grown up in willows with some sloughs and marshes remaining.

A development plan was prepared for the Management Unit by the Bureau and Department, and the development program was funded by both agencies beginning in 1960.

The evaluation period began when the old portion of the refuge had an established waterfowl flock of 40,000 geese and 80,000 ducks annually during peak periods. From 1960 to 1963 developments in the Unit included 19 small "potholes" with about one surface acre and four feet of depth. These were cleared of timber and shaped for ponds, planted to millet and smartweed, and filled as rainfall came. In addition,

nine clear, shallow ponds were impounded in draws and planted to sago pondweed, roundstem bullrush, smartweed, and wild duck millet. Goose feeding fields were planted to wheat and corn. In the main 210-acre goose hunting field in the northwest portion of the Unit 18 subterranean concrete blinds were constructed at minimum intervals of 125 yards. Across Washita River eight additional blinds were constructed in a 60-acre field.

Excellent gravelled roads to all parts of the Unit, fences, boundary and entrance signs, and information pamphlets at the gate rounded out the development program for waterfowl. In addition, strip clearing in dense timber and tree, shrub and annual forb plantings in open fields improved food and cover distribution for quail, rabbits, squirrel, and dove. The shallow ponds were managed to enhance largemouth bass fishing.

MANAGEMENT OF HUNTING ACTIVITIES

Annual hunting regulations for the Management Unit were designed primarily to accommodate goose hunting. Second to this was duck hunting, with dove (in September), squirrel, rabbit, and quail hunting being incidental.

All activities were prohibited in the Management Unit in October, November and December except hunting as prescribed in special regulations. No fishing, camping, sightseeing or other general activities were permitted.

No hunting was permitted in the Unit until two weeks after statewide goose hunting had begun (Table 2), and then only four days a week. In addition to Tuesdays, Thursdays, Saturdays and Sundays, hunting was permitted on Veterans Day, Thanksgiving, and Christmas (when the season extended past December 24). Daily duck and goose bag limits were identical to state limits (Table 3).

Hunters were permitted ingress and egress only at designated points, and were required to check out when an attendant was on duty. Duck and goose hunting was permitted from blinds only. Permanent blinds were assigned first-come, first-choice. Where blinds were not provided, hunters were permitted to construct temporary blinds for the season at locations selected by the hunters. These blinds had to be at least 80 yards apart. "Jump" or "sneak" hunting was prohibited. Other miscellaneous rules prohibited destruction of government property, littering, and required hunters to be out of the Unit by 6:00 p.m.

In 1960 and 1961 geese frequently were fired upon while the birds were well out of range, thus spooking them from more **considerate and** experienced hunters. In 1962 and 1963 this practice was materially curbed by limiting each hunter to eight shells per day in the goose hunting fields.

HUNTING ACTIVITIES AND GAME HARVEST

We mentioned earlier that there are very few places where the public can hunt geese in Oklahoma. Hunters pay up to ten dollars per day for the privilege of hunting the better fields around Great Salt Plains and Tishomingo Refuges. Therefore, when public lands were developed for goose hunting, hunters flocked into the area. Even under stress of waiting in line all night to get an opportunity to select a blind and initial low success ratio, hunters came enthusiastically to the *Management Unit*.

While the Unit was being developed, it was not publicized as a public hunting area, but word got around. The first hunters came from at least nine counties, mostly from towns within 50 miles (Table 4). The second year they came from the entire southcentral portion of the state, and from distant counties of the southeast, northeast and pan-

handle, from a total of 30 counties. Hunters came from 33 of the 77 counties in 1962 and from 29 counties in 1963.

Local sportsmen hunted the Unit the first year and in later years when the geese were known "to be flying"; they were more successful than out-of-county hunters. Local hunters never comprised more than 28.1 per cent of the total number of hunters for the season. Other hunters came primarily from the major cities and towns—Oklahoma City (Oklahoma County), Ada (Pontotoc), Ardmore (Carter), Madill (Marshall), Duncan (Stephens), Sulphur (Murray), Pauls Valley (Garvin), Norman (Cleveland) and Lawton (Commanche). Seven out-of-state hunters were recorded in 1961 and 1962.

We were impressed by the regularity with which hunters fully occupied permanent goose hunting blinds, even when few geese were visiting the hunting area. The simple fact that this was a developed goose hunting field, it was free, and hunters were welcome, was ample attraction for novice goose hunters.

The day carrying capacity of the 3,170-acre Unit was considered to be about 150 persons. Three hunters were permitted in each of the 25 blinds, and about 75 additional hunters were accommodated at ponds, potholes and other fields. Total use for one year ranged up to 1,480 visits and goose harvest up to 355 birds (Table 5). About 500 to 1,500 geese have been bagged on private land near the refuge each year.

A majority of the hunters visited the Unit only one or two times. Goose hunters averaged 1.7 trips each in 1960. In 1961 duck and goose hunters together averaged 1.8 visits each (Table 6).

Goose harvest was very low the first two years, then jumped to a level comparable to the kill on private fields near the refuge. In 1960 only one hunter in eight got a goose, and in 1961 one hunter in 11 got a goose. One in six got a goose in 1962, and one in four got one in 1963 (Table 7).

In the fourth year, after geese began to establish a daily feeding pattern in the Unit prior to open season, we experienced a high early season kill, a low mid-season kill as birds gradually restricted more of their activities to the sanctuary, and a high late season kill after crops in the sanctuary were depleted and the birds resumed flights into the Unit (Figure 3).

In the partial check of ducks in the bag, mallards comprised 42.8 per cent for the four years, green-winged teal 26.8 per cent, and ten other species were taken in lesser numbers (Table 8).

Ninety-eight per cent of the geese harvested were Canadas, and two per cent were white-fronts (Table 8).

In 1962 when 355 geese were bagged, 38 birds reportedly were crippled (Table 9). This is 9.7 per cent of the total number of birds thought to be hit by shot.

On opening day of the hunt in 1962 we recorded the number of shots fired by hunters in the main goose field. Hunters were permitted to take only eight shells each into the field. The 73 hunters fired 3.26 shells each to bag 46 geese, or 5.2 shells per goose bagged (Table 10).

DISCUSSION

The hunting regulations and restrictions for the Management Unit proved to be adequate for control of hunters. In 1962 cleanup crews found one whiskey bottle and one-half dozen beer cans in the permanent blinds. This problem was cleared up in 1963 with a prohibition against alcoholic beverages.

The limit of only eight shells per hunter was well accepted by nearly all hunters. Someday it may be necessary to reduce the number of shells even further, but for the time being we feel like we have accomplished the needed reduction in sky busting. Next year we will make

some major field checks once a week to put a stop to any violations of the eight shell limit.

Only half a dozen hunters had to be "black-balled" and prevented from re-entry during the season because of "sneak" hunting, failing to check in as they left the Unit, and picking limbs or fruit from trees.

The spacing of blinds with a minimum of 125 yards separation to a maximum of 150 yards helped to avoid cross shooting from two or more blinds. On nearby privately-owned fields where some blinds were only 50 yards apart, the guy that could run the fastest often got the most geese.

In order to entice the geese into the Management Unit early in the season, 170 concrete goose decoys were put in place before birds started arriving from the north. The concrete decoys were not easily damaged or stolen. The first couple of years that the Unit was open, many of the novice hunters had to learn for themselves the worth of the decoys. However, they are now bringing in their own and making better hunters. In 1963 about two out of three hunters had their own supply of decoys.

When we got a build-up of hunters early in the season and on weekends, hunters lined up their cars at the gate at sundown before the day they were to hunt. Then, just before daybreak the next morning, their buddies drove out from town and sneaked into the cars in the front of the line. We put a stop to this by tagging the cars as they arrived or sometime before midnight, and listing the number of persons in each car. Then about two o'clock the next morning we began checking hunters into the area, after which time they were free to go to the fields or anyplace they wished.

Advanced reservations have been discussed from time to time but rejected as being too expensive for this small area with our limited facilities. We have all the hunters we can accommodate with the present system and don't care to tie down facilities in advance and have people fail to show up or cancel at the last minute. Some changes may come, if and when a user fee is charged.

In the future we expect to add seven more permanent concrete blinds in the southwest portion of the shooting area where hunters have

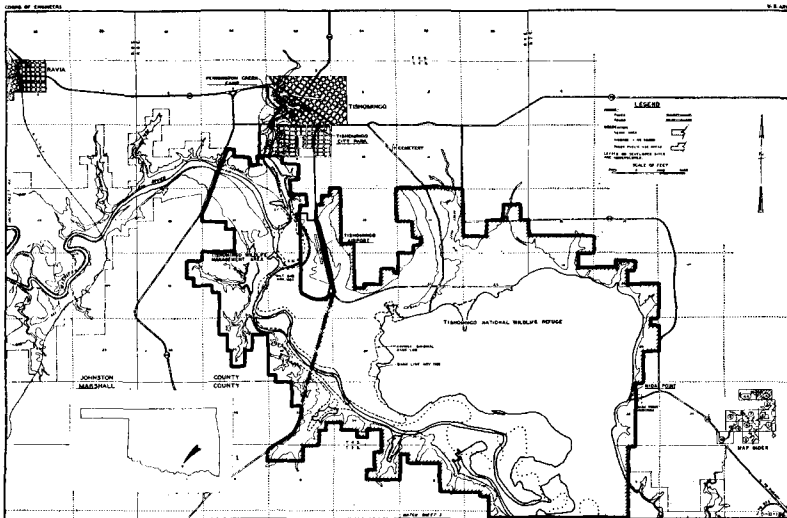


Figure 1 Tishomingo National Wildlife Refuge

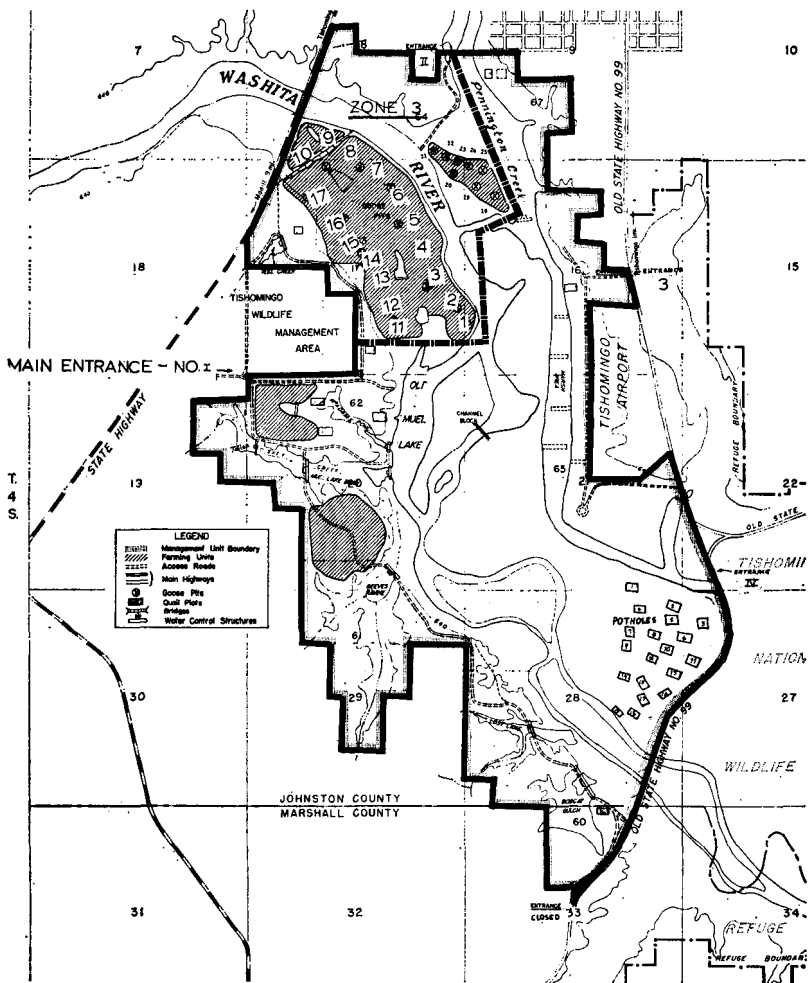


Figure 2 Tishomingo Wildlife Management Unit

begun to kill about twenty per cent of the geese taken in the area, even though this is not a field geese normally use. We have some exceptionally good hunters that are able to call in the birds from their established flight patterns.

Future regulations will specify that hunters must open their cars to inspection upon leaving the area. If the hunter refuses to be checked, he will be black-balled for the remainder of the season.

As this report is submitted, work is in progress on a hunter check station building, water diversion channel to potholes, and eight potholes. Eventually we expect to extend pothole construction until we have 37 or 38.

Now that development of the Management Unit is essentially complete, we expect a slightly higher take of birds in the next year or two,

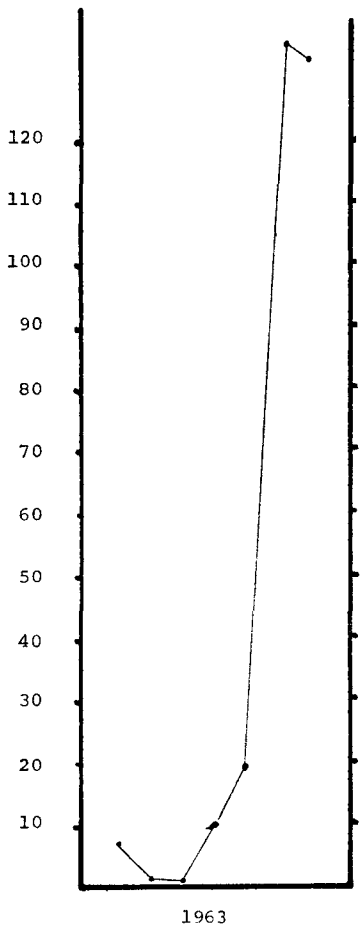
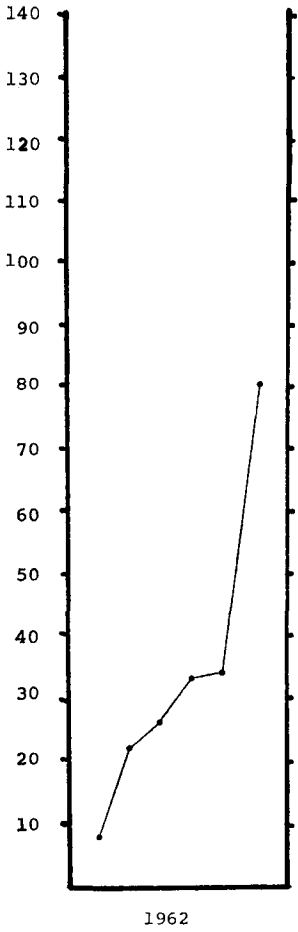
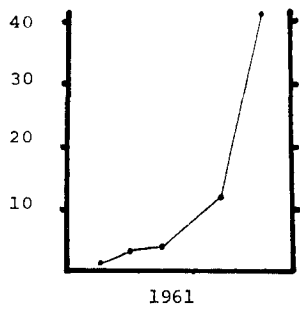
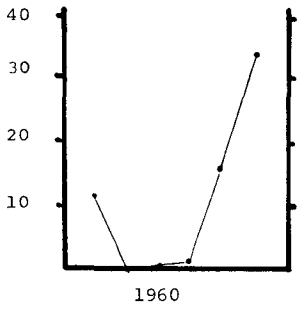


FIGURE 3
 TOTAL GOOSE HARVEST BY FIVE DAY HUNTING PERIODS

particularly on ducks. Completion of the water diversion channel will permit us to fill the potholes at will and should add materially to duck usage of the Unit. Additional hunters would visit the Unit if more space were available. The inclusion of additional Corps lands and their development sometime in the future would be desirable.

TABLE 1
GOOSE KILL IN OKLAHOMA, 1960-1963

1960	14,238
1961	9,827
1962	9,366
1963	10,463

TABLE 2
SEASON DATES IN OKLAHOMA, 1960-1963, AND OPEN DATES IN
THE TISHOMINGO NATIONAL WILDLIFE REFUGE

	DUCKS	GEESE	
	Statewide And Mgt. Unit	Statewide	Mgt. Unit
1960	Oct 20 - Dec 18	Oct 14 - Dec 27	Oct 29 - Dec 18
1961-62	Nov 1 - Nov 30	Oct 15 - Dec 12	Oct 28 - Jan 15
1962	Nov 8 - Dec 2	Oct 13 - Dec 26	Oct 27 - Dec 26
1963	Nov 8 - Dec 12	Oct 12 - Dec 25	Oct 27 - Dec 25

* Except goose hunting fields

TABLE 3
OKLAHOMA DUCK AND GOOSE BAG LIMITS, 1960-1963

Year	Ducks	Geese
1960	3	5**
1961	3	5**
1962	2*	5**
1963	4	5**

* In addition, two scaup were allowed.

** The daily bag limit in no event may include more than (a) one white-fronted goose, or (b) two Canada geese or its subspecies, or (c) one Canada goose and one white-fronted goose.

TABLE 4
TOP RANKING HOME COUNTIES OF HUNTERS

County	PERCENTAGE OF ALL HUNTERS			
	1960	1961	1962	1963
Johnston*	25.3	9.0	15.2	28.1
Oklahoma	5.3	28.4	16.8	17.9
Pontotoc	17.3	16.2	12.1	12.6
Carter	27.0	13.2	17.4	12.0
Marshall	—	1.2	4.7	9.8
Stephens	5.4	6.6	13.1	5.6
Murray	—	1.4	3.2	2.9
Garvin	9.3	6.6	2.7	2.8
Cleveland	—	2.0	3.2	2.0
Commanche	—	1.1	.7	.8
Tillman	—	—	—	.8
Others	10.4	14.3	10.9	4.70

* Ranked by 1963 data

TABLE 5
TOTAL USE DAYS
HOURS HUNTED AND HARVEST
1960-1963

Year	Total Hunting Trips	Hours Per Visit	Harvest	
			Ducks*	Geese
1960	900	—	—	64
1961	1033	3.1	173	61
1962	1480	3.8	30	355
1963	1290	4.4	131	335

*Perhaps some hunters were not checked.

TABLE 6
NUMBER OF TRIPS BY DUCK AND GOOSE HUNTERS
IN 1961

Times Hunted	Total Hunters	Total Days Hunted
1	322	322
2	107	214
3	32	96
4	25	100
5	9	45
6	6	36
7	2	14
8	1	8
9	1	9
10	2	20
11	1	11
12	2	24
13	1	13
	511	912 or 1.8 times each

TABLE 7
GOOSE HUNTING AND HARVEST

Year	No. Of Goose Hunters	No. Of Geese Harvested	Geese Bagged Per Trip	Successful Hunters	
				No.	Per Cent
1960	503	64	.127	64	12.7
1961	511	61	.119	47	9.2
1962	1311	355	.271	225	17.2
1963	787	335	.426	212	26.9

TABLE 8
SPECIES KILL OF DUCKS AND GEESE

Species	1960	1961	1962	1963	Percentage 1960-1963
Mallard	37	51	9	69	42.8
Gadwall	—	5	2	8	3.9
Baldpate	1	8	4	—	3.3
G-W Teal	15	65	7	17	26.8
B-W Teal	4	2	2	3	2.8
Shoveller	—	6	—	4	2.6
Pintail	—	9	—	1	2.6
Wood Duck	2	16	6	14	9.8
Scaup	—	4	—	3	1.8
Ringneck	—	—	—	5	1.3
Goldeneye	—	2	—	—	.5
Hooded Merganser	—	—	—	7	1.8
TOTAL DUCKS	59	168	30	131	100.0
Blue Geese	—	—	—	—	—
Canada	64	61	351	323	98.0
Snow	—	—	—	—	—
White-Fronted	—	—	4	12	2.0
TOTAL GEESE	64	61	355	335	100.0

TABLE 9
 GEESE BAGGED AND CRIPPLED IN 1962

Day	Geese Bagged	Geese Crippled And Lost
10-27	83	4
10-28	20	5
10-30	6	
11-1	38	2
11-3	5	
11-4	3	1
11-6	2	1
11-8		2
11-10	3	1
11-11		
11-13	10	
11-15	1	
11-17		1
11-18	5	
11-20	6	1
11-22		2
11-24		
11-25	4	
11-27	2	
11-29	20	4
12-1	6	2
12-2	9	2
12-4	16	2
12-6	2	
12-8		
12-9	2	
12-11	1	
12-13	13	2
12-15	12	2
12-16	6	
12-18	17	
12-20	11	1
12-22	26	3
12-23	13	
12-25	13	
TOTAL	355	38

TABLE 10
SHELLS FIRED OPENING DAY
Listed By Blinds In The 210 Acre Field

Blind	Geese	Successful Hunter	Total Hunters	Shells Fired
1	2	1	3	17
2	1	1	5	30
3	5	5	7	20
4	6	3	5	15
5	4	2	3	13
6	2	2	5	14
7			6	13
8	3	2	3	6
9	1	1	3	1
10	1	1	3	9
11			3	9
12	4	3	5	12
13	6	3	6	21
14	3	2	3	10
15			3	14
16	8	4	5	21
17			5	13
TOTAL	46	30	73	238 or 3.26 per hunter

**Lead Shot on Catahoula Lake
and Its Management Implications**

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Southeastern Association of Fish and Game Commissioners

Clearwater, Florida

October, 1964

**LEAD SHOT ON CATAHOULA LAKE
AND ITS MANAGEMENT IMPLICATIONS**

Catahoula Lake is one of the most important waterfowl wintering