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WATERFOWL HARVEST AND HUNTER USE AT CARLYLE LAKE DURING THE 1972 SEASON

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Abstract:

During the 1972 waterfowl season at Carlyle Lake a total car count and sample bag check revealed that 9,362 hunters harvested 7,849 ducks for a success ratio of .84. Hunters came from 54 counties and 6 states and represented approximately 3,000 individuals. Some 67 percent of the hunters came from St. Clair, Madison, and Clinton counties. Hunters, harvest and success for each major hunting area are: subimpoundment-4,127 hunters, 3,297 ducks and .80 success ratio; flooded dead timber-4,244 hunters, 3,490 ducks and .82 success ratio, open water area-991 hunters, 1,062 ducks and 1.07 success ratio. Major species in the harvest were 72 percent mallards, 8 percent wood ducks and 6 percent green wing teal. The peak duck population of 240,000 came on November 20th.

INTRODUCTION

Development and management of a relatively new area requires considerable knowledge of waterfowl use, hunting pressure and harvest in order to properly fit the human need for recreation to the resource. The purpose of this study was to provide these pieces of information to form a sound basis for future planning and evaluation.

The Carlyle Lake Wildlife Management Area is a cooperative project between the U. S. Corps of Engineers and the Illinois Department of Conservation and offers approximately 18,000 huntable acres of water in Fayette and Clinton counties.

The following division personnel contributed many hours of effort and enthusiasm: Floyd Kringer, Paul Moore, Jack Golden, Bill Boyd, Merrill Collins, Don Wright, John Lake and Darrel Sims.

Dr. Ernie Lewis deserves special credit for assisting in sampling design and developing the prediction equations for estimating the harvest.

METHODS AND MATERIAL

Hunter use was determined by driving to all access points on the lake at or slightly after the opening of shooting hours. Cars were recorded for each

access point. The number of hunters per car was determined at the time of bag checks or from windshield cards.

On the two upper areas, access points were ramdonly selected for bag checks each day with one man on the subimpoundment area and one man on the flooded dead timber area. Each hunter was checked for number and kinds of ducks harvested. Each hunter was asked to fill out an address card to provide origin and the number of individuals using the area. Bag check data was gathered differently for the open water area. As cars were counted, information cards were placed on the windshield of each car. These were to be returned upon completion of the hunt to receptacles provided at the open water access lots.

Hunter use figures were estimated daily from the number of hunters per car multiplied by the number of cars.

Projections on harvest were done by three different methods. Dr. Ernie Lewis, a statistician from SIU analyzed the field data and made harvest projections (to limit the size of this report, procedures for these projections have been omitted but are on file at the Union County Field Office).

Duck use figures were obtained by five aerial inventories throughout the season.

RESULTS AND DISCUSSION

For ease in discussion the results are broken into sections: Hunting Pressure, Hunter Success, Species Composition and Harvest.

Hunting Pressure

The total number of hunters using Carlyle Lake during the 1972 waterfowl season was 9,362. The flooded dead timber area received the heaviest use with 4,244 man days effort (Table 1). The subimpoundment was next with 4,127 man days effort followed by the open water area with 991. The flooded dead timber and the subimpoundment accounted for 89 percent of the efforts, 45 percent and 44 percent respectively. The complete breakdown of use by access points is found in Table 1.

A problem with the access point data is that we do not know the percentage of people who use the flooded dead timber access points but actually hunt in the subimpoundment area. In reality all figures for the subimpoundment area are somewhat low and the figures for the flooded dead timber area are proportionally high.

Daily hunting was much heavier on weekends than weekdays and particularly on opening weekend when 1,267 hunters used the area (Fig. 1). The daily distribution for the two upper areas is found in Figure 2.

Weather factors tended to decrease the expected hunting pressure. Extreme high water made much of the subimpoundment inaccessible after November 5th. Boats were permitted on November the 16th which increased the pressure somewhat. An unusually early freeze the first few days of December sharply reduced pressure from the 4th until the end of the season.

The address cards collected at bag checks provided the hunter's origin, the frequency of his hunts at Carlyle and the other places he hunts.

There were 2,970 address cards collected, of which 883 were duplicates, leaving 2,087 individuals. Although each access point was not bag checked each day, it was felt that 2/3 of the individuals using the area were checked sometime during the season. Although subjective, this suggests that approximately 3,000 individuals hunted the lake an average of three times each.

A question on the address card requested what other areas does each hunter use. Results showed that 32 percent hunted only Carlyle, 33 percent hunted one other area, 12 percent hunted two other areas and only 4 percent hunted more than two other areas. Some 18 percent failed to answer the question.

The 2,970 hunters checked came from 54 counties all over the state (Fig. 3) and 5 other states. Dominant counties were St. Clair accounting for 30 percent and Madison with 26 percent. Other counties in the 5 to 10 percent range were Clinton, Fayette, Marion and Bond. Cook county accounted for 2 percent. Missouri was the biggest out of state representative with 4 percent. Figures 4, 5, and 6 show similar breakdowns for the three major hunting areas. Some 39 counties were represented in the subimpoundment area, 35 for flooded dead timber and 13 for open water areas.

Hunter Success

The average ducks bagged per hunter effort at Carlyle was .84 (Table 1). The subimpoundment offered success of .80 while the average on the flooded dead timber was .82. There was low hunting pressure in the open water area, but success was good, averaging 1.07 ducks per trip.

Figures 7 and 8 provide the daily distribution of success ratios throughout the season. Characteristically the daily success figures fluctuate violently with generally better and more consistant harvest coming the last of November and first of December. Success became non-existent around December the 10th when freezing weather drove birds out of the area.

In comparing the subimpoundment to the flooded dead timber "good days" and "bad days" did not come at the same time (Fig. 8). For example, on November 12th and 13th the success in the flooded dead timber was .00 while on the 13th the subimpoundment was over 3.00. Also interesting was that on eight days of above harvest in the flooded dead timber there was a substantialy lower harvest in the subimpoundment. The day following each of these eight "good days" there were "good days" recorded in the subimpoundment (Fig. 8). This suggests a directional relationship of duck movement from the flooded dead timber to the subimpoundment.

The access points offering the best success ratio were Tamalco with .98 and parking lot 3 with .92. The complete breakdown of harvest by access points is found in Table 1.

Species Composition

The waterfowl harvest at Carlyle Lake is primarily mallards making up 72 percent of the total. Wood ducks are next with 8 percent, followed by green wing teal at 6 percent. Eight other species were harvested in lessor amounts (Table 2).

There were noticeable differences in the species composition between the major areas (Table 2). The percentage of mallards was lowest in the subimpoundment

(64 percent) higher in the flooded dead timber (74 percent) and highest in the open water (82 percent). Wood duck harvest was best in the flooded dead timber (11 percent) but other species of puddle ducks showed up higher in the subimpoundment harvest (Table 2).

Birds available for harvest varied greatly throughout the season (Fig. 9). On November 20th there was a peak of 240,000 birds of which 191,000 were mallards. These birds remained until early December when a cold spell drove them south.

Species composition for the subimpoundment and the flooded dead timber area throughout the season is found in Figures 10 and 11. The subimpoundment progression of species composition exhibits the lack of mallards or an increased selective pressure on the low point species early in the season and a shift back to mallards the first week in November (Fig. 10). After November 20th there was no wood duck harvest in the subimpoundment (Fig. 10). In the flooded dead timber area the wood duck harvest was initially larger and was sustained throughout the season (Fig. 11). The flooded dead timber area stayed open and sustained a harvest longer into the freezing weather than did the subimpoundment (Fig. 10 and 11).

Harvest

The total duck harvest in all areas was 7,849 (Table 1). This figure was derived from a weighted prediction equation (sum (predicted hunters x predicted success ratio)) and seemed to be the most reliable of three predictions made. All three predictions were very close. Using the mean number of ducks checked x the number of days yielded a harvest figure of 7,531. Using unweighted daily success ratios x daily hunters for each area yielded a harvest figure of 7,736 ducks. At the 99 percent confidence interval the upper and lower limits of the harvest were calculated to be 9,740 and 5,761 respectively.

The flooded dead timber area accounted for 44 percent of the harvest or 3,490 ducks. An unknown percentage of these ducks were taken from the subimpoundment. The subimpoundment took 42 percent or 3,297 birds. The open water area harvested 1,062 ducks or 14 percent (Table 1). Tamalco was the most prominant access point taking 33 percent of the total or 2,585 ducks. Harvests and percentages for all access points are found in Table 1.

Area	Hunting Pressure: Hunter Number	Hunting Pressure: Percent of Area	Hunting Pressure: Percent of Total Area	Harvest: Duck Harvested	Harvest: Percent of Area	Harvest: Success Ratio	Harvest: Percent Kill of Total Area
Subimpoundment Area							
Lot #1	1,192	.29%	.13%	967	.29%	.81	.12
Lot #2	1,230	.30	.13	1,016	.31	.83	.13
Lot #3	794	.19	.08	729	.22	.92	.09
Cox's Bridge	911	.22	.10	585	.18	.64	.07
Total	4,127	100%	44%	3,297	100%	.80	.42
Flooded Dead Timber							
Tamalco	2,651	.62%	.28%	2,585	.74	.98	.33
Patako	1,593	.38	.17	905	.26	.57	.12
Total	4,244	100%	45%	3,490	100%	.82	.44
Open Water Total	991	100%	11%	1,062	100%	1.07	.14
Grand Total	9,362	100%	100%	7,849	100%	.84	100%

Table 1. The distribution of hunter numbers and harvest for each of the major areas and their access points at Carlyle Lake during the waterfowl season 1972.

Species	SUB-IMPOUNDMENT Sample Size	%	FLOODED DEAD TIMBER Sample Size	%	OPEN WATER AREA* Sample Size	%	TOTAL	
Mallard	702	.64	1078	.74	399	.82	2179	.72
Green wing teal	99	.09	52	.04	18	.04	169	.06
Wood duck	89	.08	158	.11	4	.01	251	.08
Baldpate	51	.05	31	.02	15	.03	97	.03
Gadwall	40	.04	20	.01	11	.02	71	.02
Ringneck	36	.03	22	.02	8	.02	66	.02
Pintail	35	.03	19	.01	5	.01	59	.02
L. Scaup	21	.02	17	.01	15	.03	53	.02
Black duck	14	.01	26	.02	6	.01	46	.02
Shoveller	12	.01	12	.01	1	T	25	.01
Blue wing teal	4	T	15	.01	5	.01	24	.01
Total	1103	99%	1455	100%	487	100%	3040	101%

* Species from windshield cards

Table 2. Species composition of the bag at Carlyle during the 1972 season.

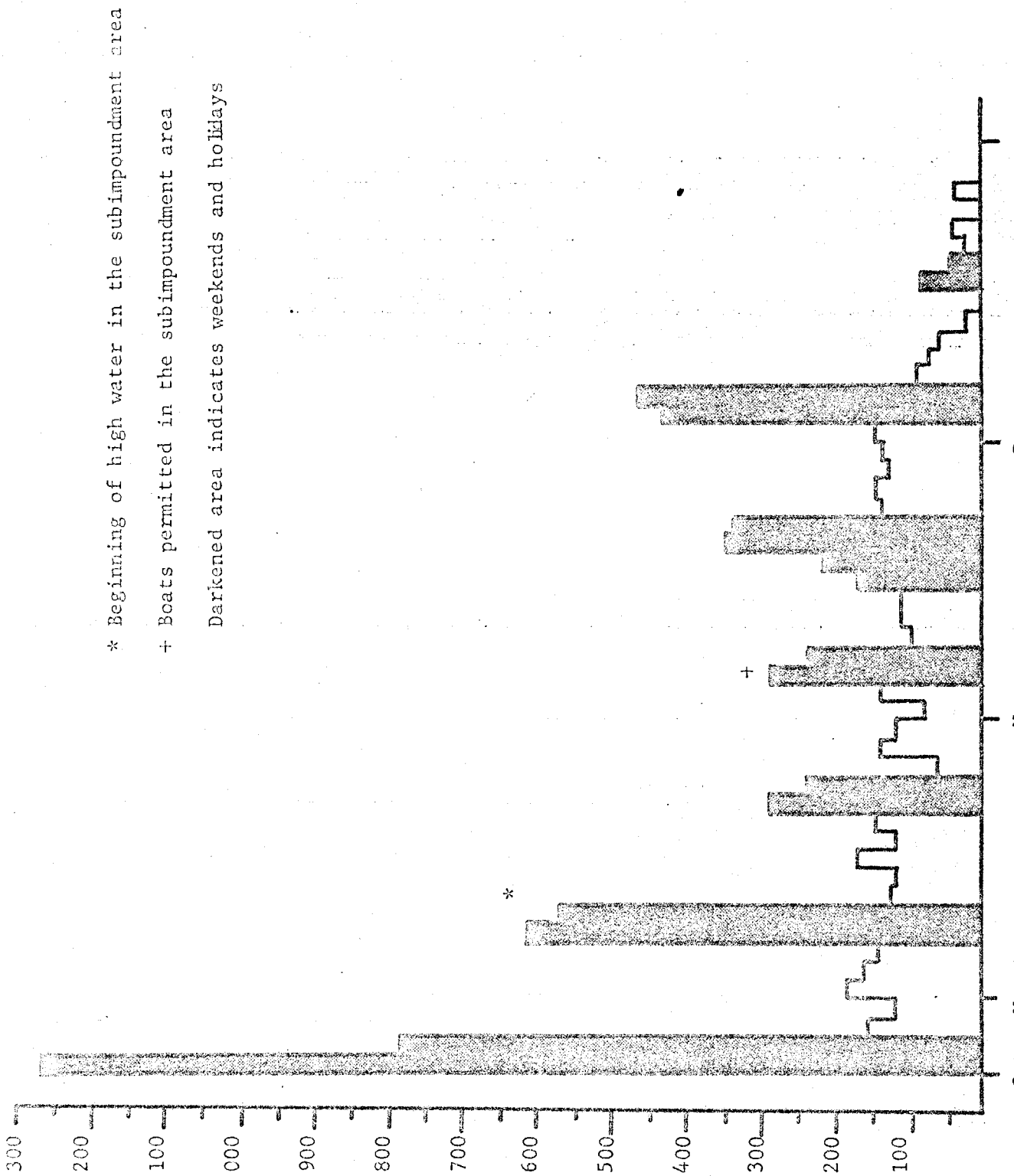


Figure 1. A progression of the total hunting pressure at Carlyle Lake throughout the 1972 waterfowl season.

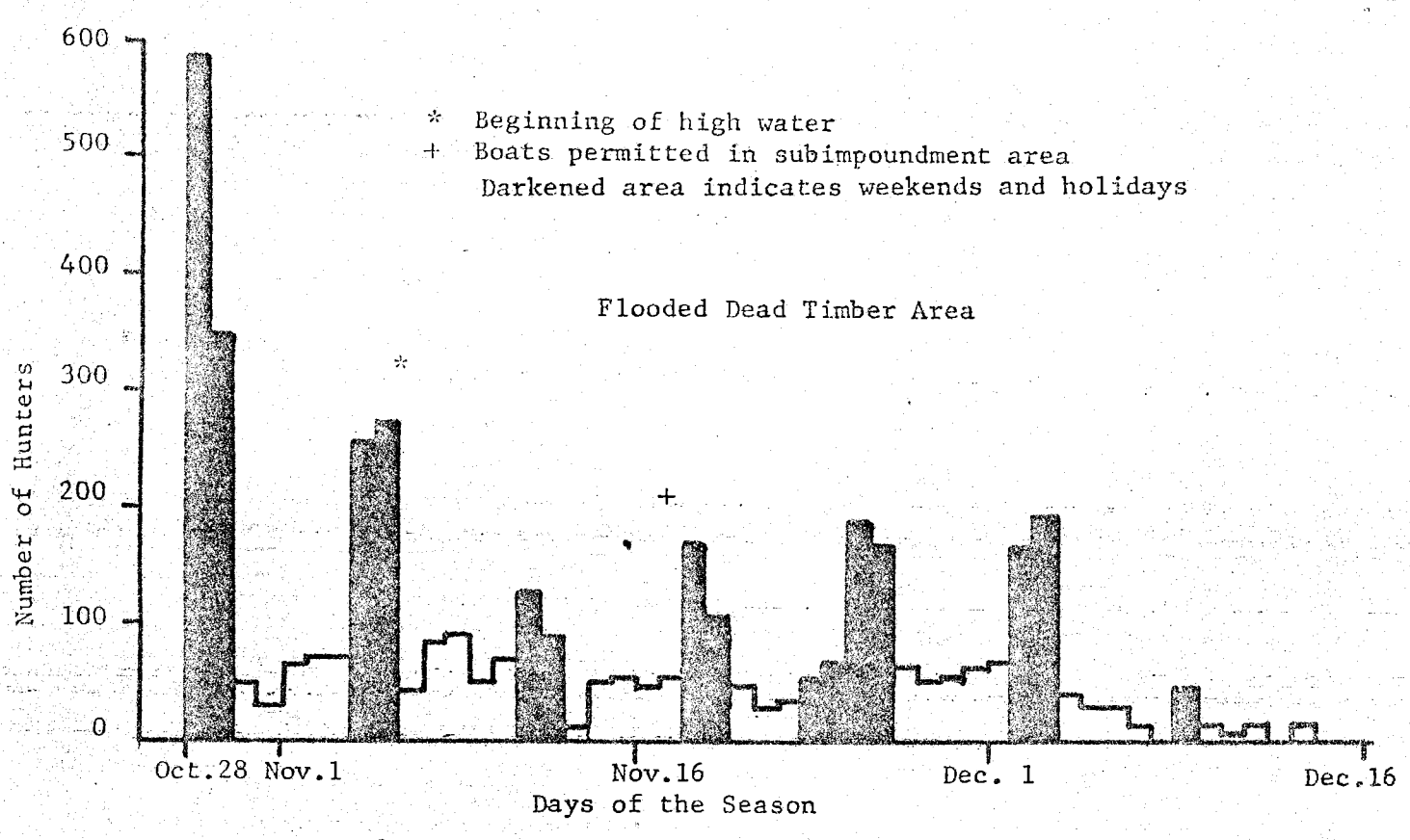
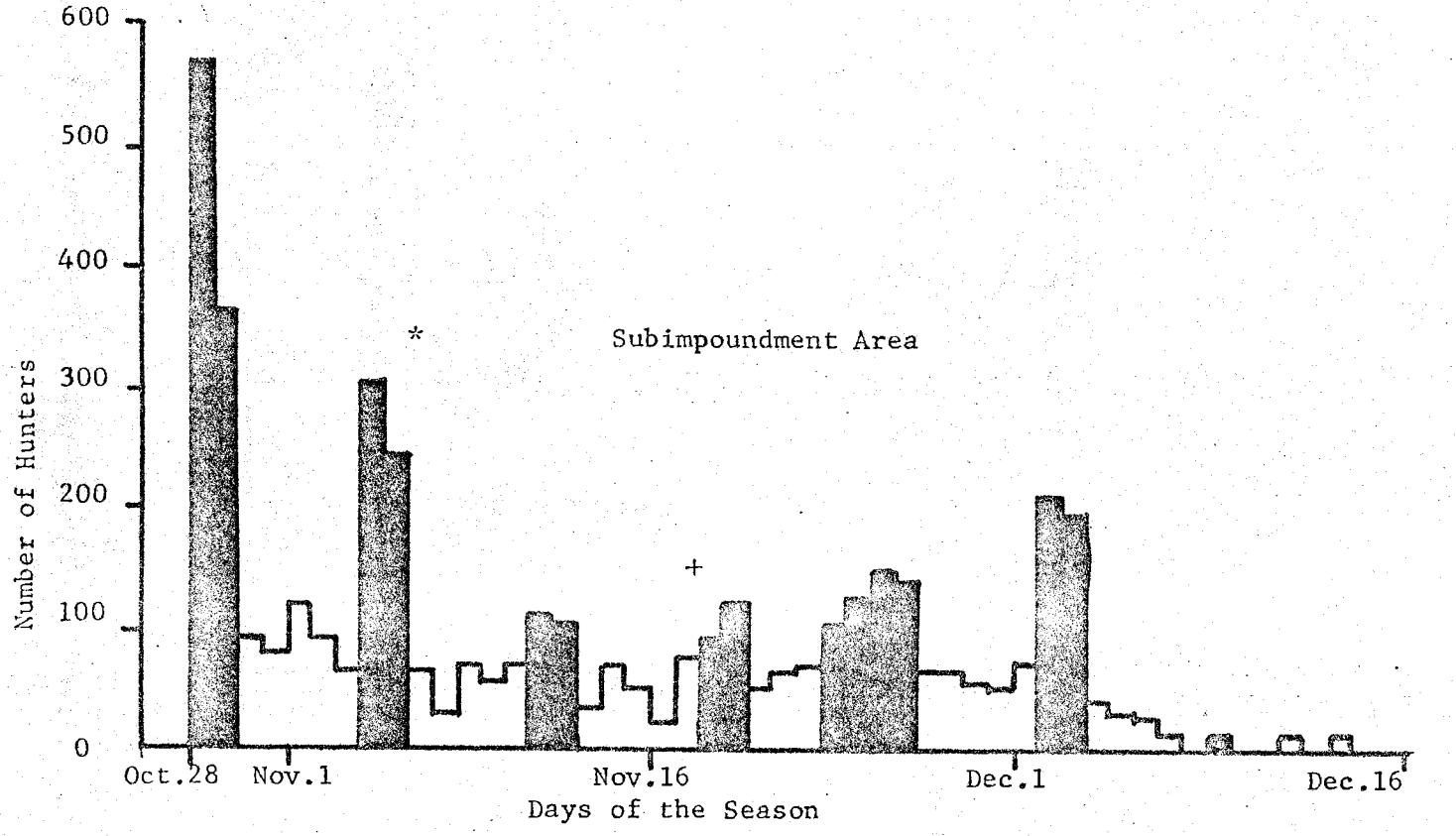
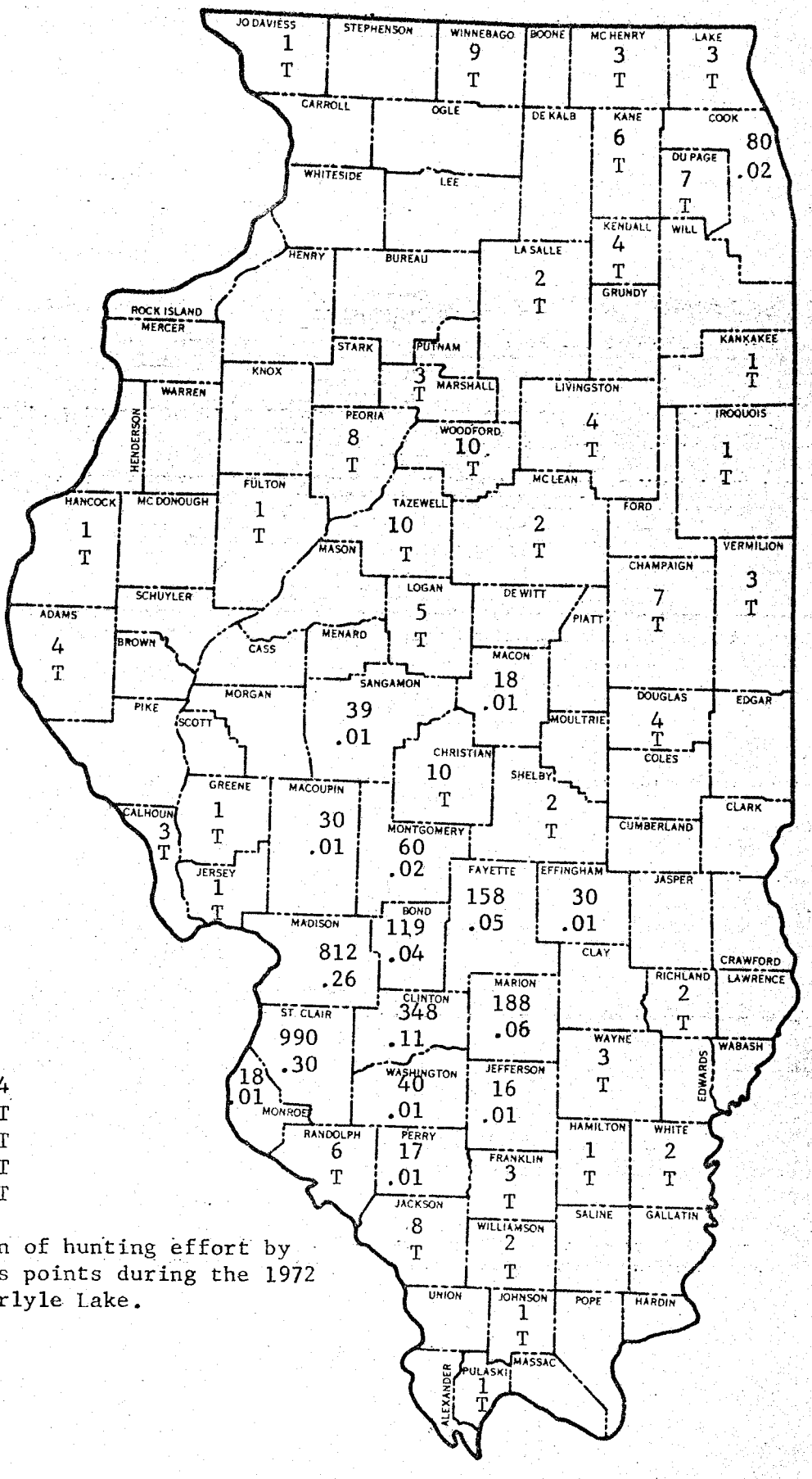


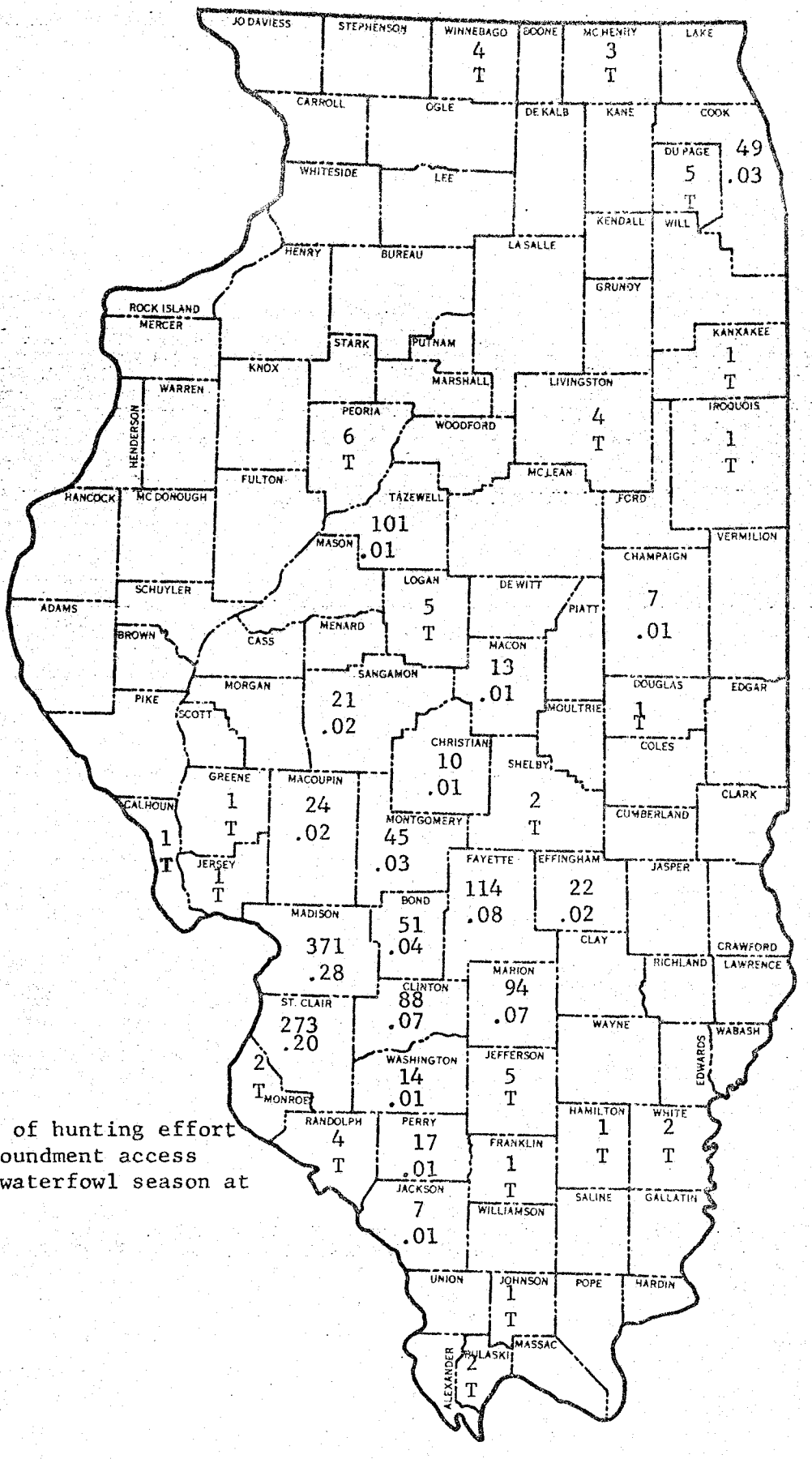
Figure 2. A progression of hunting pressure in the subimpoundment area and the flooded dead timber area at Carlyle Lake during the 1972 waterfowl season.





Mo.	140	.04
Wisc.	1	T
Ohio	5	T
Tenn.	2	T
Okla.	1	T

Figure 3. Distribution of hunting effort by counties for all access points during the 1972 waterfowl season at Carlyle Lake.



Mo. 61
.05

Wisc. 1
T

Ohio 5
T

Tenn. 2
T

Okla. 1
T

Figure 4. Distribution of hunting effort by counties from subimpoundment access points during the 1972 waterfowl season at Carlyle Lake.

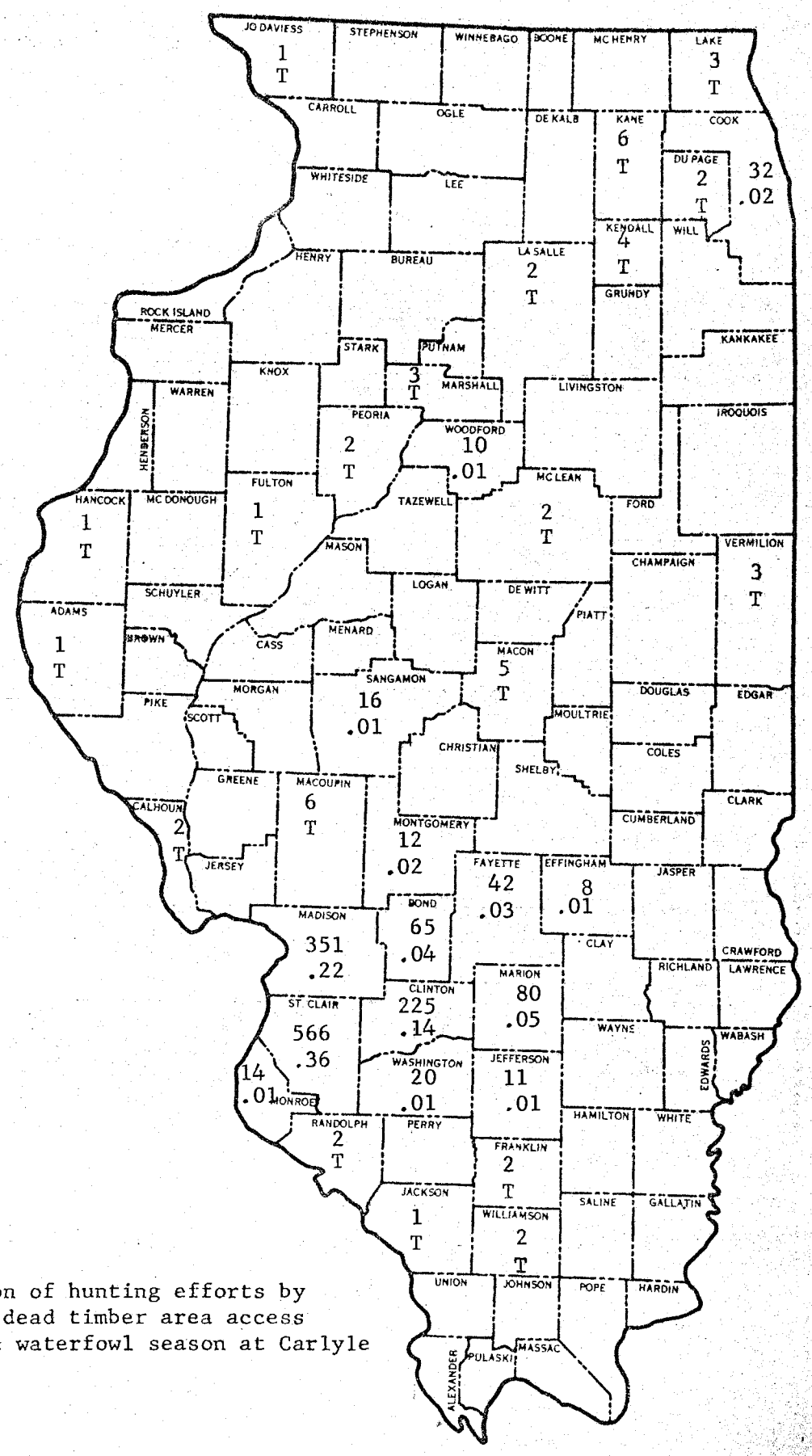


Figure 5. Distribution of hunting efforts by counties from flooded dead timber area access points during the 1972 waterfowl season at Carlyle Lake.

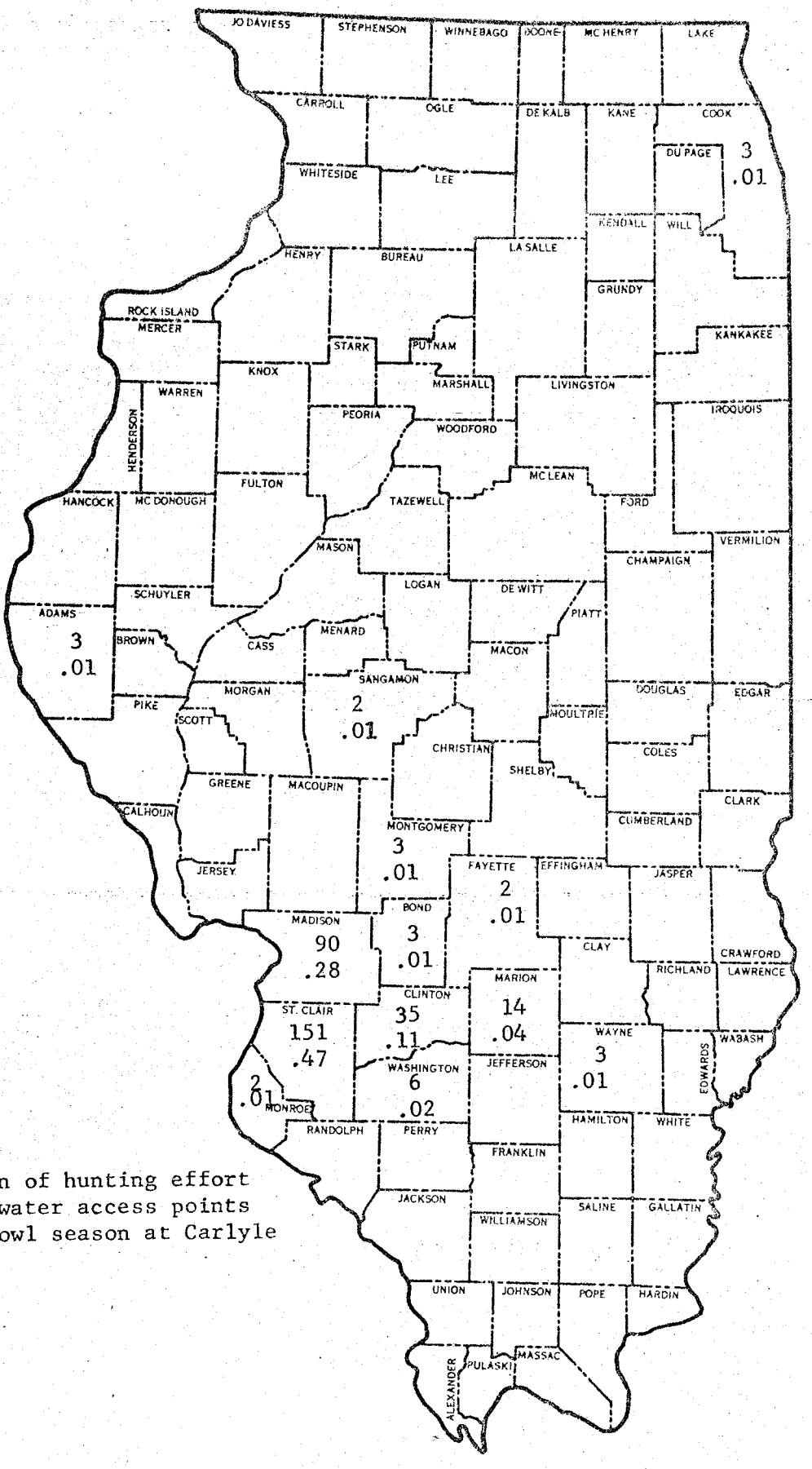


Figure 6. Distribution of hunting effort by counties from open water access points during the 1972 waterfowl season at Carlyle Lake.

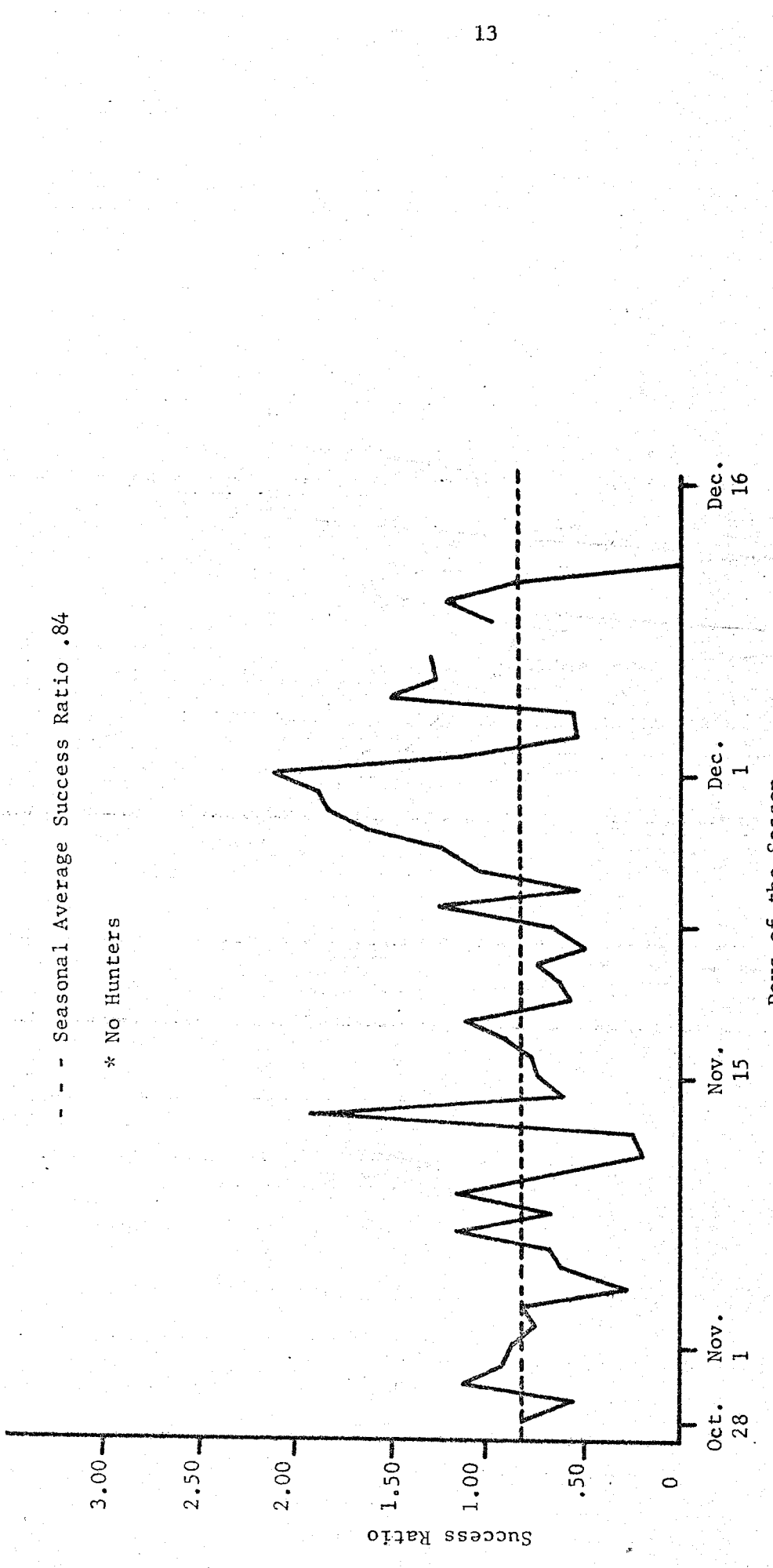


Figure 7. Daily success ratio from all hunting areas at Carlyle Lake during the 1972 waterfowl season.

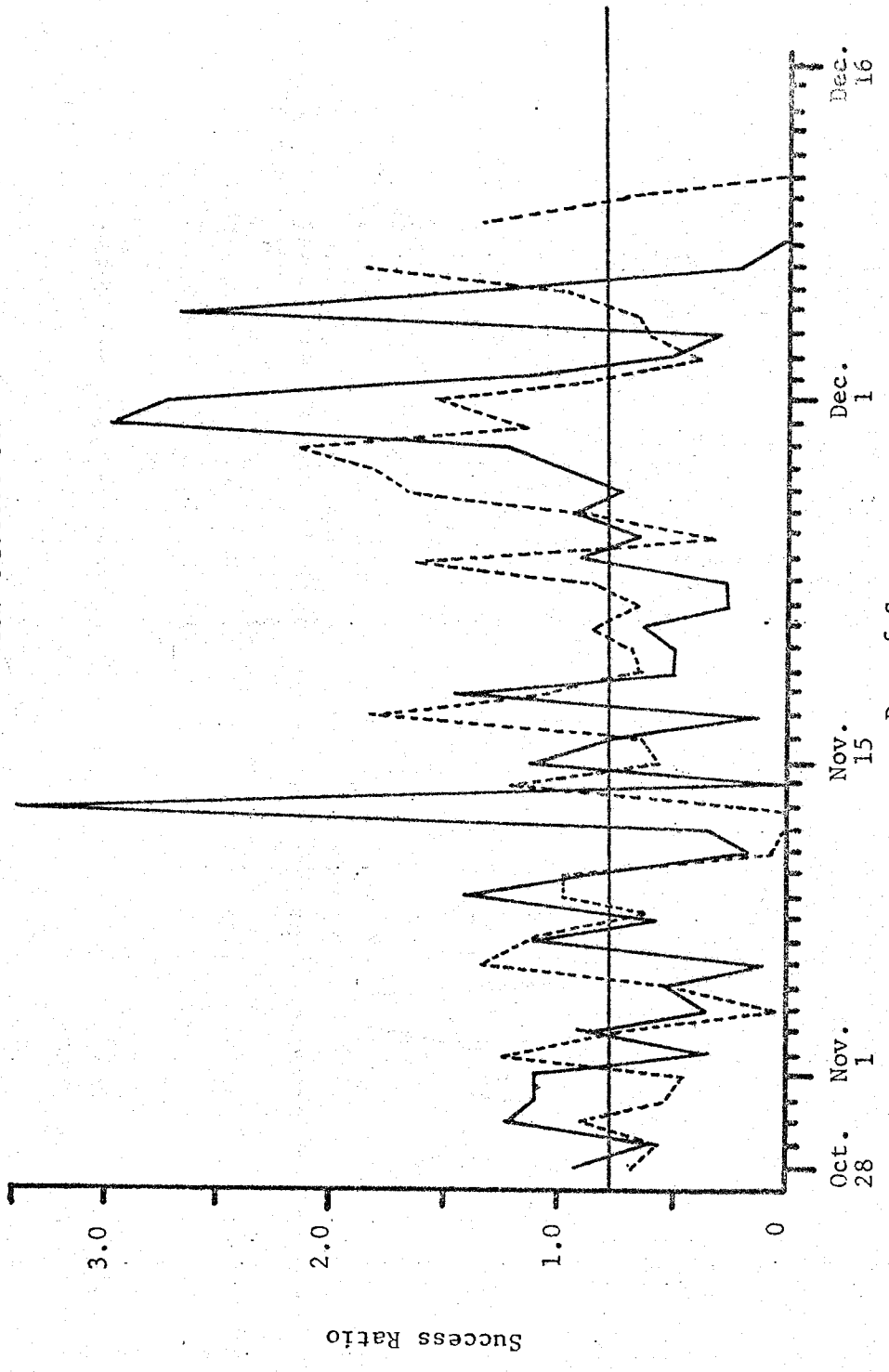


Figure 8. Daily success ratios from subimpoundment and flooded dead timber area at Carlyle Lake during the 1972 waterfowl season.

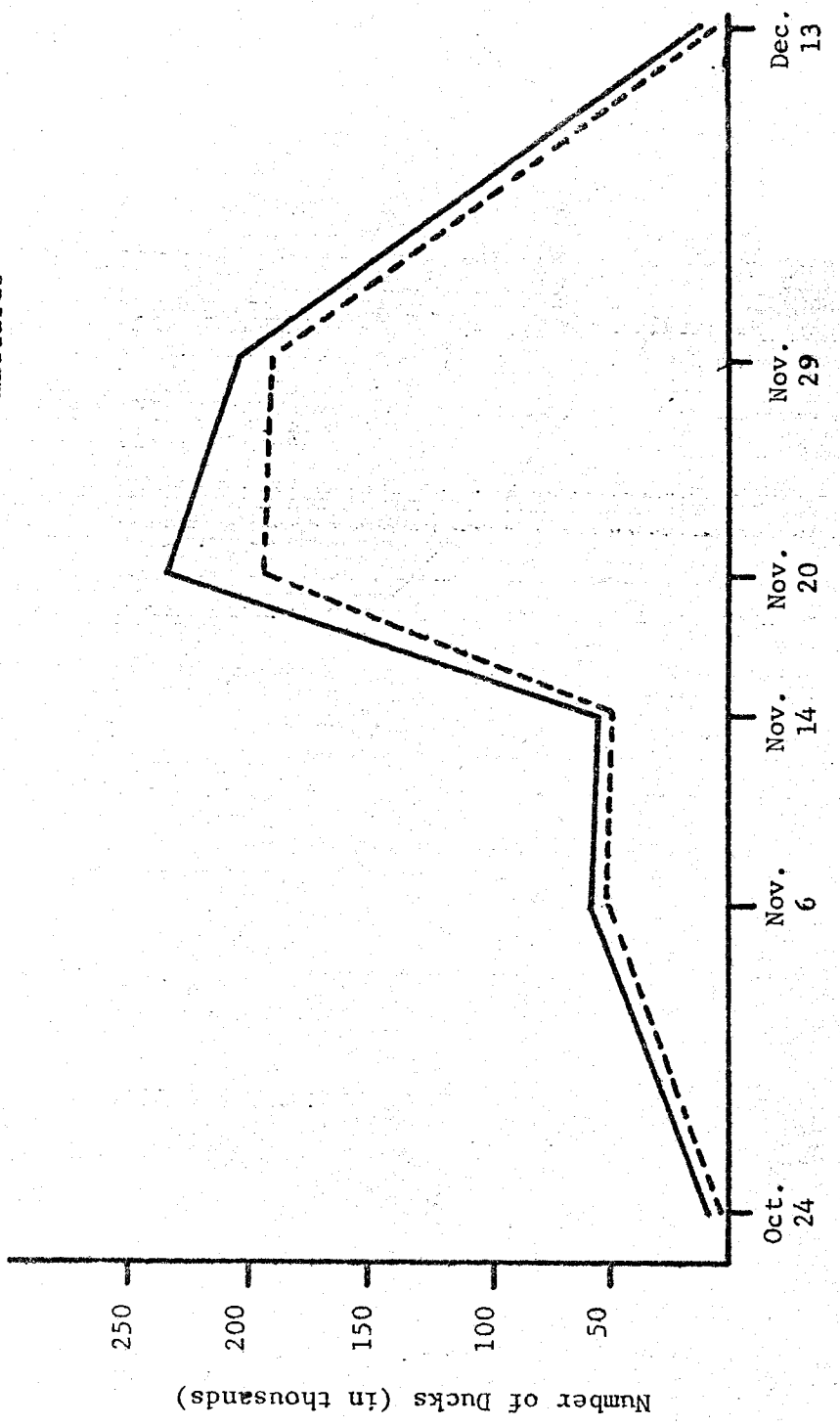


Figure 9. Waterfowl inventories figures for Carlyle Lake 1973.

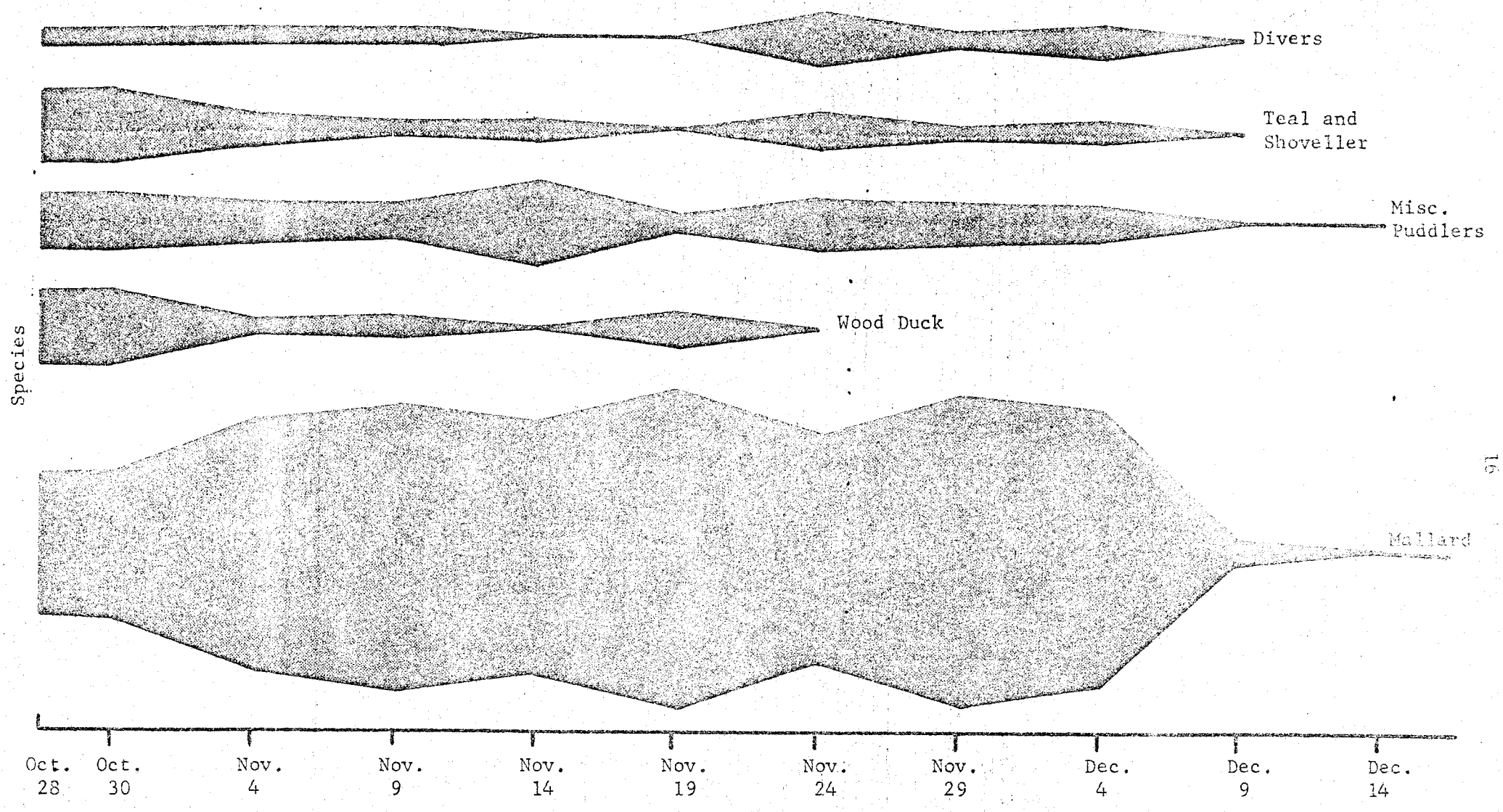


Figure 10. Species composition by five day periods throughout the 1972 waterfowl season on the subimpoundment areas of Carlyle Lake. The total of all shaded portions on any verticle plane through the graph represents 100% of the harvest for that day.

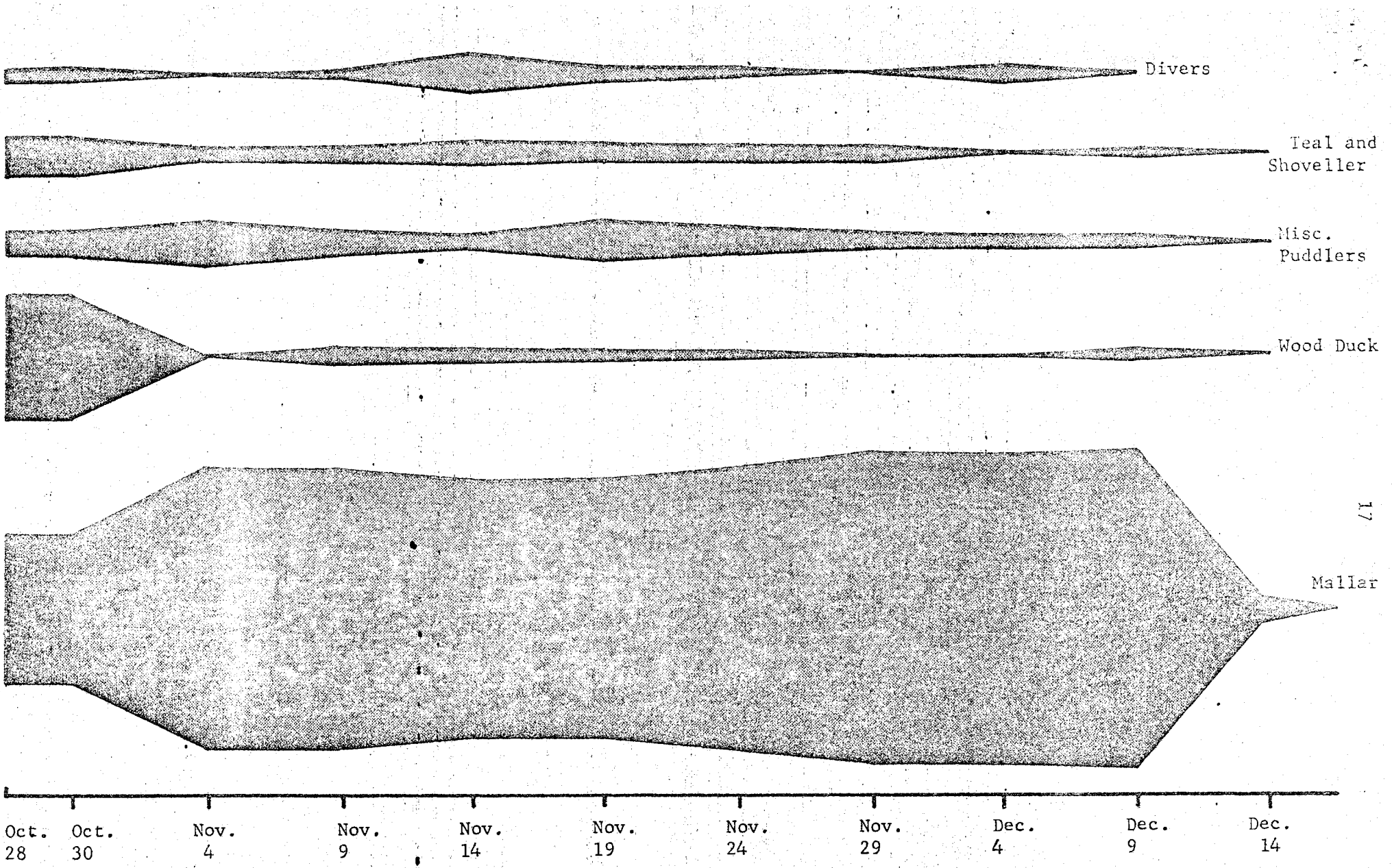


Figure 11. Species composition by five day periods throughout the 1972 waterfowl season on the flooded dead timber area of Carlyle Lake. The total of all shaded portions on any verticle plane through the graph represents 100% of the harvest for that day.