

## ACKNOWLEDGMENTS

The author expresses his appreciation to those individuals who contributed information, assisted with laboratory and field work and the task of preparing the manuscript. Special thanks are expressed to H. E. Wallace, W-39-R Project Leader, who suggested the problem and for his patience, guidance and review of the manuscript; E. B. Chamberlain, Jr., Chief, Game Management Division, for cooperation and review of the manuscript; Dr. C. W. Watson, Regional Federal Aid Supervisor of the Fish and Wildlife Service, for review of the manuscript; J. O. Brown, Area Supervisor of Law Enforcement and Wildlife Officers James Jordan and Thomas Shirley for observations on frogger activity; Commission pilot, Louis Conrad, for assistance with aerial surveys and photography of various habitats; C. M. Loveless, William Ware and Wayne Cone of the Game Management Division for assistance with field and laboratory work and to Mrs. Anne Baldwin Stinson for typing of the manuscript.

The author also wishes to express his gratitude to Dr. B. B. Leavitt, University of Florida, for insect and snail identifications; Dr. Keith Hansen, Stetson University, for assistance with laboratory techniques on induced frog ovulation experiments; Jacob Valentine, South Florida Refuges, for helpful suggestions and frog tagging and Mr. Johnny Lamb, Loxahatchee Refuge Manager, for information on early frogging history and for assistance given during collecting trips.

## WEIGHTS OF MALLARDS IN ARKANSAS

By THOMAS WAYNE WRIGHT  
*Soil Conservation Service*  
Little Rock, Arkansas

The weights of 3,425 mallards were recorded in Arkansas during the 1957-58 and 1958-59 hunting seasons. An analysis was made of the food eaten by 583 of these birds. The purpose of this study was to determine: (1) seasonal weight changes, (2) the kinds of food most eaten, and (3) possible effects of the kind and availability of food on the weights of mallards.

## METHODS

Fresh killed ducks were weighed and the gullets examined for food at duck cleaning establishments in Stuttgart and Little Rock, Arkansas. Most of the ducks killed by sportsmen in this part of the state are cleaned at these commercial places. The ducks examined in 1957 were approximately 95 percent mallards, 3 percent pintails, and 2 percent other ducks. Only mallards killed in the morning are reported in this paper. No allowance in weight was made for "wetness" of the ducks.

## DESCRIPTION OF AREA

The general area of collection is one of the major waterfowl wintering grounds in the United States. The Stuttgart area is on the flat, loessial terrace and bottomland soils of Southeast Arkansas. Ducks that were killed in hunting areas within a 20-mile radius usually were brought to Stuttgart to be dressed. This area is considered to be the center of the rice growing business in Arkansas. Soybeans and cotton are the other important farm crops.

The Little Rock area is located on forested coastal plains, bottomland, and some loessial terrace soils. The Little Rock duck cleaning stations serve a considerably larger territory than do the Stuttgart businesses. Most of the ducks cleaned at Little Rock are killed within a 30-mile radius. Some, however, are killed in the Stuttgart area, approximately 50 miles away. Several large impoundments, Maumelle, Conway, Harris Brake, and Peckerwood Lakes, are hunted by sportsmen from the Little Rock area. Rice, soybeans, and cotton are the main crops grown. However, the rice acreage in the Little Rock area is estimated to be about one-half of that in the Stuttgart area.

Many harvested rice fields are flooded in both areas each fall for the purpose of duck hunting. Other rice fields are flooded for growing foodfish as a rotational crop for a period of one to three years. Both areas have extensive tracts of bottomland oak forests which are flooded both artificially by the use of levees and naturally by heavy rains during the winter. Those which are leveed and flooded artificially are usually drained by March to keep the oaks alive to produce acorns.

Winter rains sometimes flood the rice fields, providing good feeding for ducks on waste rice and seeds of plants associated with rice, especially barnyardgrass (*Echinochloa crusgalli*) and junglerice (*E. colonum* [Kelsey and Dayton, 1942]). One-year-fallow rice fields are also flooded when heavy rains occur, exposing good feeding areas of signalgrass (*Bracharia platyphylla*) and bull paspalum (*Paspalum boscianum*).

## RESULTS

The weights of mallards in this report are recorded by sex only (not by age). Tables I and II represent the average weights of 3,425 mallards collected from two adjacent areas, Stuttgart and Little Rock, for two hunting seasons, 1957-58 and 1958-59.

TABLE I  
AVERAGE WEIGHTS OF 1957-58 MALLARDS BY TWO-WEEK PERIODS FROM ADJACENT HUNTING AREAS IN ARKANSAS \*

Date by Two-Week Periods	Average Weights (lbs.)		Average Weights (lbs.)	
	Little Rock	Stuttgart	Little Rock	Stuttgart
	Males	Males	Females	Females
November 1-15		2.9		2.5
November 16-30	2.7	2.8	2.4	2.5
December 1-15	2.8	2.9	2.5	2.5
December 16-31	2.7		2.4	2.5
January 1-15	2.7	2.8	2.3	2.5
Season Average †	2.7	2.9	2.4	2.5

\* Based on averages of 321 mallards from Little Rock and 1,344 from Stuttgart.

† Figures based on sum of all ducks and not from averages shown in this table.

TABLE II  
AVERAGE WEIGHTS OF 1958-59 MALLARDS BY TWO-WEEK PERIODS FROM ADJACENT HUNTING AREAS IN ARKANSAS \*

Date by Two-Week Periods	Average Weights (lbs.)		Average Weights (lbs.)	
	Little Rock	Stuttgart	Little Rock	Stuttgart
	Males	Males	Females	Females
November 1-15	2.6	2.7	2.3	2.3
November 16-30	2.7	2.9	2.4	2.4
December 1-15	2.8	2.8	2.5	2.4
December 16-31	2.7	2.8	2.4	2.4
January 1-15	2.7	2.7	2.3	2.1
Season Average †	2.7	2.8	2.3	2.4

\* Based on averages of 394 mallards from Little Rock and 1,366 from Stuttgart.

† Figures based on sum of all ducks and not from averages shown in this table.

The seasonal weights of mallards in Arkansas fluctuated little through November and December, but the averages show a slight drop in weights of both sexes in January. Leopold (1921) reported a decline in mallard weights in December and January. Bellrose and Hawkins (1947) state that "except in rare instances, the number of ducks present in an area is well within the carrying capacity of that area; a reduction in the available food supply, brought about by adverse weather or other conditions, results in a reduction in numbers comparable to the reduction in food supply." The fact that there were only slight changes in weight may reflect the decrease in population that occurs as the hunting season progresses.

The mallards from Arkansas were in good flesh and compared favorably with weights from other areas. Bellrose and Hawkins gave the average weight of males from the Illinois River as 2.7 pounds and females 2.3 pounds. They also reported weights from the Mississippi River in Iowa as follows: males, 2.6 pounds in 1938 and 2.5 in 1939; and females averaged 2.3 pounds in 1938 and 2.2 in 1939. The weights of males from Arkansas averaged 2.7 pounds at Little Rock and 2.8 at Stuttgart in 1957 and 2.9 in 1958. The largest male weighed 3.8 in Arkansas, compared to 3.9 reported by Marshall and Harris and 3.7 by Bellrose and Hawkins. These variations between Arkansas and Illinois probably have no significance. Frank C. Bellrose, by letter, points out that Arkansas bags consistently contain more adult mallards than do hunters' bags in Illinois. Female weights from Arkansas are comparable to those reported by Bellrose and Hawkins.

The Stuttgart mallards consistently out-weighed the Little Rock ducks by 4 to 8 percent as can be seen in Tables I and II. Additional evidence of heavier ducks at Stuttgart is shown in Table III. As an example, in 1957, 72 percent of the mallard males at Stuttgart weighed more than 2.75 pounds, while only 54 percent of the males from Little Rock weighed more than 2.75 pounds. In 1958, 56 percent of the males from Stuttgart weighed more than 2.75 pounds, while only 39 percent of the Little Rock males were above 2.75 pounds. The slightly lighter average weights in 1958 could have been due to a different ratio of young and adult mallards.

The reason for heavier ducks at Stuttgart may be the increased availability and abundance of high quality food. Table IV compares the major food items analyzed from 583 mallard gullets taken from both areas. The Stuttgart ducks ate more rice both years than did Little Rock ducks. The Stuttgart mallards usually contained greater quantities of food than did the Little Rock mallards. Since Table IV is in volume percent, it does not indicate this difference.

TABLE III  
PERCENT OCCURRENCE OF MALLARD WEIGHTS FROM STUTTGART AND  
LITTLE ROCK, ARKANSAS, FOR TWO HUNTING SEASONS

Pounds	1957				1958			
	Stutt- gart	Little Rock	Stutt- gart	Little Rock	Stutt- gart	Little Rock	Stutt- gart	Little Rock
	Males		Females		Males		Females	
3.25+	10.2	5.8	.7	.8	5.4	2.6	.3	...
3.0 to 3.24	22.1	13.8	1.6	0	18.6	10.6	.3	.6
2.75 to 2.99	40.0	35.9	17.3	9.6	32.2	25.6	11.7	4.2
2.5 to 2.74	21.6	31.3	35.8	28.8	30.1	32.6	29.9	24.0
2.25 to 2.49	5.4	12.8	32.7	38.4	12.9	24.2	39.1	40.1
2.0 to 2.24	.6	2.1	11.1	21.6	1.7	4.4	15.3	27.6
1.75 to 1.99	...	...	.7	1.6	.7	...	3.1	3.6
1.5 to 1.74	...	...	...	...	...	...	.3	...

TABLE IV  
VOLUME PERCENTAGE OF MAJOR FOOD ITEMS COLLECTED FROM 583 MALLARD  
GULETS DURING THE 1957-58 AND 1958-59 HUNTING SEASON  
FROM ADJACENT AREAS \*

Name of Food Item	1957-58		1958-59	
	Stuttgart	Little Rock	Stuttgart	Little Rock
Rice	41	29	52	42
Acorns	35	45	19	7
Miscellaneous †	21	19	19	45
Soybeans	3	7	10	6
<b>TOTAL</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

\* A complete list of the foods eaten by these ducks was reported by the author (1959).

† Primarily *Echinochloa crusgalli*, *E. colonum*, *Paspalum boscianum*, *Bracharia platyphylla*, and other grasses associated with rice culture.

## MANAGEMENT SIGNIFICANCE

The Stuttgart mallard weights indicate that land use and resultant foods might affect the size and condition of individual ducks. The larger size mallards from Stuttgart winter in the same climate as the Little Rock ducks, come from the same nesting grounds and, in general, are subject to the same conditions prior to their arrival. At Stuttgart, however, the rice acreage is approximately double that of the Little Rock area. There is a greater acreage of harvested rice fields and bottomland oak woods flooded for hunting in the Stuttgart area than in the Little Rock area. This provides an abundance of choice foods for ducks.

## SUMMARY

The weights of 3,425 mallard ducks, collected in 1957-58 and 1958-59 from adjacent areas in Arkansas, showed little seasonal or other fluctuations in weights from the first to the last of the hunting season. A slight decline occurred in weights each year during January.

The mallards were in good condition and compared favorably with mallards reported in other areas by Bellrose and Hawkins and Marshall and Harris. Arkansas mallard males averaged 2.8 pounds and females 2.4 pounds. The largest weighed 3.8 pounds.

Food availability in the Stuttgart area may have influenced the size of the mallards as they were larger at Stuttgart than at Little Rock. Rice, acorns, and other choice foods of mallards are generally more abundant in the Stuttgart area than in the Little Rock area.

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## WATER POLICY AND WILDLIFE

By HAROLD E. ALEXANDER

*Arkansas Game and Fish Commission  
Presentation from Committee on Water Use  
Southeast Section, Wildlife Society \**

When we consider water policy and wildlife, we view a vast maze of conflict and confusion. In examining the relationship of these resources, we find that, to evaluate water-wildlife problems, we must be concerned with the total pattern of resource use, since all of our resources are related to land and water, and these to human welfare. As we progress with these considerations, we become increasingly aware that we do not have separate and divisible problems, but only one—the determination of the kind of world we are creating and in which all of us must live, now and in the future.

Water is essential to life. We cannot exist without it. But in considering the uses to which we put this necessary resource, we have given first consideration to a few of what we define as priority uses, and have often been more concerned with the efficacy of our water development techniques than with

\* Committee: Harold E. Alexander, Chairman; Fred Stanberry, Tennessee Game and Fish Comm.; Spencer Smith, U. S. Fish and Wildlife Service.