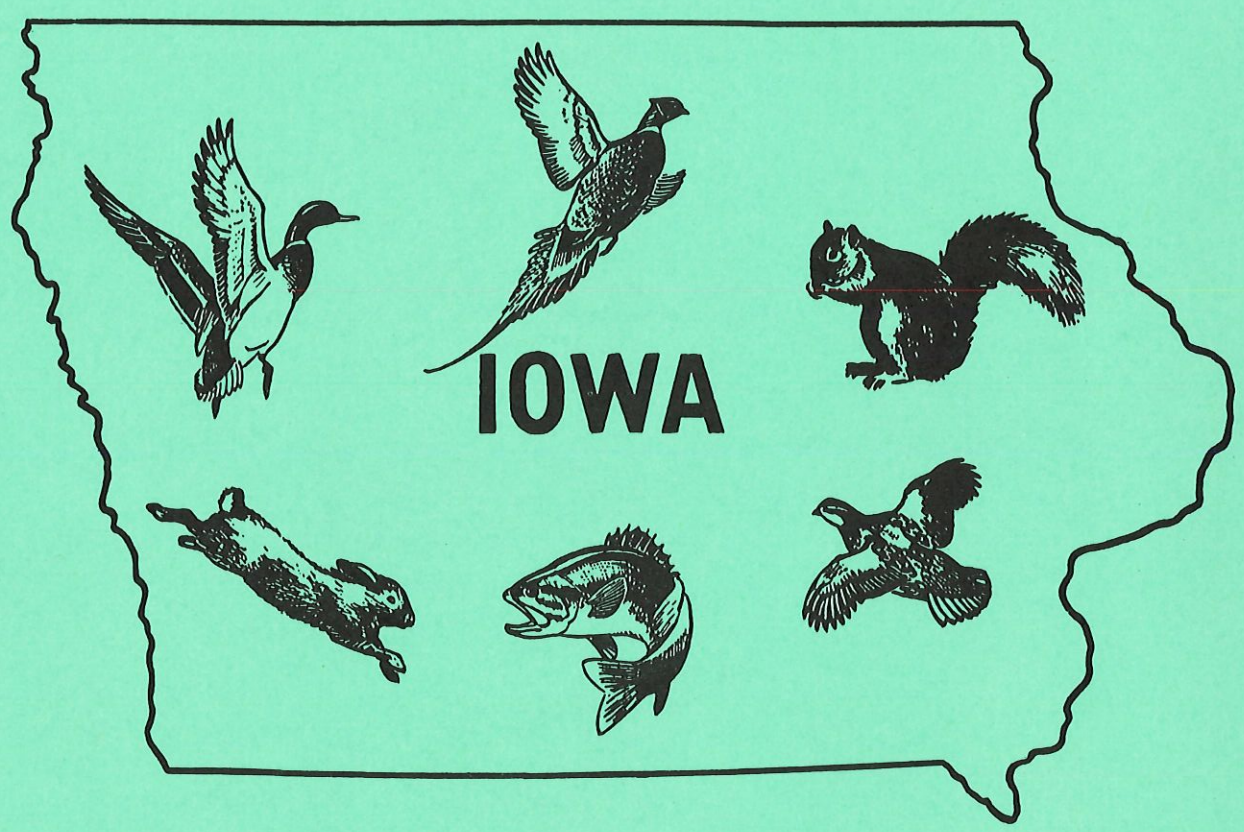
1968

QUARTERLY BIOLOGY REPORTS



QUARTERLY BIOLOGY REPORTS

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The ruffed grouse, a prized game bird in many states, still maintains a good population in northeast Iowa - primarily in Allamakee, Winneshiek and Clayton counties. The primary technique for measuring this population has been the spring roadside drumming count. During the 8 years such surveys have been made, an average of 1.6 drums per stop has been heard. This compares favorable with similar surveys from other states - for example, the 17 - year average for northern Minnesota is 1.7 drums per stop while the 9 - year average for central and southern Minnesota is 1.4. On a "simulated hunt" in early November of 1967, Biology personnel flushed 60 grouse during 55.5 man-hours of "hunting" - an average of 1.1 grouse per hour. They estimated good shots could have been taken at 33 of the 60 grouse sighted. Again, these figures compare well with actual hunting statistics from nearby states. It thus appears that Iowa grouse hunters can expect results commensurate with acceptable grouse hunting standards.

"FRENCH-WILD-STRAIN" REEVES INJECTED INTO STOCKING EXPERIMENT IN 1968

Gene Hlavka
Game Biologist

And

Eugene D. Klonglan
Asst. Supt. of Biology

The Reeves pheasant was first introduced into Iowa in 1963, with the original stock being obtained from Ohio. From 1963-66, 4,611 Reeves were stocked in Lucas and Monroe Counties. From 1965-67, 15 brood reports were received, two of which were unverified. In 1968 no brood reports were obtained, and sightings of birds were few. Reeves behavior has been sedentary and tame, which is not surprising since the Ohio stock has an unknown but long pen-reared history. In 1966, 27 "French-wild-strain" Reeves were obtain-

IOWA'S LATE SUMMER PHEASANT POPULATION - 1968

Richard C. Nomsen
Game Biologist

The August roadside pheasant count is the primary source of information on the status of the pre-hunting season pheasant population. Pheasants experienced a very mild winter in Iowa and early spring weather conditions were favorable for nesting activity. Observers recorded 9,637 pheasants at an average rate of 1.76 birds per mile - an increase of 6 per cent over the 1967 count. The pheasant population increased 25 per cent in the western third of Iowa's pheasant range and was 10 per cent higher in the eastern region. Little change was recorded in other areas. Production improved in all regions, being best in the southern region.

IOWA QUAIL POPULATIONS 1968

M. E. Stempel
Game Biologist

The July whistling quail counts is our chief source of information on the quail population. It is supplemented by spring pheasant survey route data, which includes quail sighted, and by information from routes established primarily for summer surveys of rabbits and pheasants. Winter, spring and summer weather in 1968 were mostly favorable. Best quail populations are in the south and the southeast. The whistling quail counts gave results similar to those taken in 1967. Combined information from summer counts indicated a slight increase over 1967 in the summer brood stock and in early production. Considering all information, 1968 should provide excellent quail hunting in Iowa.

RESULTS OF 1968 RABBIT SURVEYS

M. E. Stempel
Game Biologist

The July roadside rabbit survey for 1968 indicates a population which is slightly higher than that of 1967. Hunting prospects are good. The 6.36 rabbits per 10 miles is well above the long-term average of 5.07, being exceeded only twice in the past 19 years (1964-6.69, 1958-6.86). Highest populations by far, as usual, are to be found in southern Iowa. A mild winter again resulted in a good carryover of breeding stock, with a slight increase in number of rabbits being seen on spring pheasant counts as in 1967. All indications point

POPULATION ESTIMATES OF WALLEYE IN LAKE MACBRIDE

Larry R. Mitzner
Fisheries Biologist

Through the mark and recapture method an estimate of 1,410 walleyes with confidence limits of 980 to 2,748 was established in Lake MacBride. This population has been achieved through a management program initiated in 1957 and implemented by an annual stocking rate of 1,000 fry per surface acre.

RUFFED GROUSE HUNTING POTENTIAL IN IOWA

Eugene D. Klonglan
Asst. Supt. of Biology

INTRODUCTION

The ruffed grouse, a prized game bird in many states, still maintains a population in northeast Iowa - primarily in Allamakee, Winneshiek and Clayton counties, with a few birds also to be found in those counties bordering on these three. The species was formerly found over much of Iowa, but intensive land use that replaced forests with agricultural fields resulted in their disappearance from most of the state by the early 1900's - some holding on in southeast Iowa until around 1930. During the decades that followed the original constriction of their range in the state, it appeared to many observers that a relatively static grouse populations was sustaining itself in the northeast corner of the state. Knowledge of the population dynamics of ruffed grouse gained in other states posed the distinct possibility that a harvestable surplus might well be available each year in northeast Iowa. To evaluate the feasibility of such, various investigations have been carried on by the Conservation Commission in recent years - including a cooperative research project with Iowa State University. The major findings of these studies as they relate to a hunting season are summarized in the following sections.

IOWA GROUSE POPULATIONS

The primary technique for measuring the ruffed grouse population in northeast Iowa has been the spring roadside drumming count. The number of male grouse heard drumming on their logs in early morning is counted for 4 minutes at each 15 stops a mile or more apart along about a dozen routes each year. This method was chosen because it is a standard procedure used in many important ruffed grouse states, and thus our results could be compared with theirs. During the 8 years such counts have been conducted, on average of 1.6 drums per stop on comparable routes has been heard. The range has been from 1.5 to 1.7, thus indicating that a relatively stable population has existed throughout the study period. Counts exceeding 3 drums per stop have been made on individual routes on occasion.

Comparison of the Iowa data with that from nearby states for years roughly comparable to our period of investigation supports the hypothesis that Iowa does indeed have a huntable grouse population. Drumming counts over a 17 - year span in Northern Minnesota

grouse per hour of hunting. Minnesota hunters contacted on opening weekend during 2 recent years reported seeing 550 grouse during 905 hours of hunting - or 0.6 grouse per hour. In six northwestern Wisconsin counties in one year hunters flushed an average of 1.8 grouse per hour of hunting (it is not clear from data whether this may include grouse flushed but only heard and not seen; there were 20 such flushes on our "Iowa hunt" - if these are included, our average becomes 1.4 grouse flushed each hour). During a recent season in Ohio, hunters checked saw 0.4 grouse per hour - with an average of 1.8 seen per hunting trip. Thus it appears Iowa hunters could expect to see grouse at a rate comparable to states now permitting hunting.

Harvest data is also available from these states. The Minnesota hunters contacted during the opening weekends for the 2 years mentioned above bagged 263 of the 550 grouse they saw - almost exactly half. The average daily take per hunter was 1.0 birds with a range of 0.8 to 1.2 for the 4 days involved. It took an average of 3.8 hours of hunting for them to put one grouse in the bag. Over a 5 - year period in Wisconsin, hunters averaged 1.6 grouse per trip (range of 1.5 to 1.9) with an average of 1 bird bagged per 2.4 hours of hunting (range of 1.9 to 2.5). In Wisconsin 3.3 grouse were reported flushed per bird shot (5.3 in southwestern counties!) as compared to the 2 to 1 ratio in Minnesota. However, the Wisconsin data is for an entire season, while Minnesota is for opening weekend only. Ohio hunters during one season killed 0.3 birds per day (less than 0.1 per hour). During two Minnesota seasons earlier than those above, hunters averaged 1.2 grouse taken per day.

No comparable Iowa grouse harvest data are available, of course. However the men involved in the simulated hunt felt they would have had good shots at 33 of the 60 grouse flushed and seen. Average hunters might well have "shot" at some of the remaining 27 flushed. In any event, it certainly appears that Iowa grouse hunters could expect to bag birds at a rate commensurate with acceptable grouse hunting standards.

DISCUSSION

Since the range of the ruffed grouse in Iowa is quite limited, as compared to that of pheasants and quail for example, the question arises as to the possibility of over - hunting them because they are relatively fewer in number. However, Wisconsin personnel familiar with the hunting situtation in that part of their state adjoining Iowa have expressed the opinion that there would be no danger of such. The more rugged terrain and resultent difficult hunting conditions give the birds in this type of habitat a big advantage. One Wisconsin survey showed that it was necessary to flush 61 per cent more birds to bag one

"FRENCH-STRAIN" REEVES RENEW STOCKING EXPERIMENT IN 1968

Gene Hlavka
Game Biologist

and

Eugene D. Klonglan
Asst. Supt. of Biology

Introduction

The Reeves pheasant was first introduced into Iowa in 1963 adjacent to the Cedar Creek Unit of the Stephens State Forest in Lucas County. The Reeves is essentially a forest pheasant and normally roosts in a large tree at night. The original brood stock was received via a shipment of 210 eggs from Ohio in 1961 (Klonglan and Hlavka, 1964). An additional 20 hens were obtained from Ohio in the spring of 1962. Nothing is known of the geneology of these Ohio birds, other than that they were of long pen-reared history. The primary objective of our stocking experiment was to establish surviving populations of a pheasant species in woodlands where the ringneck pheasant is absent or at a low population level.

Stockings and Sightings of "Ohio-Strain" Reeves

From 1963-66, 4,611 Reeves (2,347 cocks and 2,264 hens) were stocked in Lucas and Monroe Counties (Hlavka, 1966). The releases of September 15, 1966 liberated the last of the "Ohio-strain" stock. From 1963-65 about 98 percent of the released Reeves were sighted within 5 miles of the release site; 89 percent within the first mile (Hlavka, 1965). This data points out the sedentary behavior of the Reeves.

Lack of snow cover during the past 3 winters has hampered population estimates. Less than 50 birds were believed to have greeted the spring of 1967. October 1,1968, 7 sighting reports concerning 9 individual Reeves were noted. Thus 9 "bird-days" for three quarters of 1968 compare to 74 "bird-days" in 1963, 455 in 1964 and 149 in 1965 (Klonglan and Hlavka, 1964; Hlavka, 1965).

Brood Reports

From 1965-67, 15 brood reports were received, 5 for each of the 3 years. However,

3. From 1965-67, 15 brood reports were received, 5 for each of the 3 years. In 1968 no brood reports were noted.

4. Reeves behavior has been sedentary and tame.

5. In September 1966, 27 "French-strain" Reeves were obtained from Tennessee. In November 1967, 45 Reeves of the same "French-strain" were received from Missouri.

6. On September 30, 1968, 180 "French-strain" Reeves (as much as 9 generations removed from the wild) were stocked at the north boundary of the Chariton Unit of the Stephens State Forest.

7. As of October 1, 1968, 125 "French-strain" Reeves (25 cocks and 100 hens) were on hand at the Wildlife Research Station as 1969 brood stock.

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NIGHT-LIGHTING WATERFOWL ON THE BREEDING GROUNDS

Richard Bishop
Game Biologist

INTRODUCTION

A systematic waterfowl banding program was set up in 1963. The banding was accomplished mainly by two methods, the standard drive banding of young ducks on their natal areas and bait trapping birds after they were on the wing. This program was very successful, but due to the time and expense of drive trapping other techniques were considered to supplement the banding. In the summer of 1964 a unit was built by Bob Barratt and members of the Game Section to night-light young ducks on their natal marshes. This unit was an improved version of the old night-lighting gear previously used by other banders. Although very few birds were banded by this method in 1964, it showed considerable promise. Three night-lighting units were in operation in 1965 and very high success was achieved. Most of the birds banded on the breeding grounds since 1965 were caught by this method.

METHODS

The night-light unit consists of a small 3 to 6 horse power gasoline motor, a 12-volt automobile generator, a voltage regulator, a 12-volt wet battery and an outlet where spotlights can be plugged in. All this equipment is mounted in a metal frame. A pair of 12-volt sealed beam lights, of the type used in airplane landing lights, are used for spotting the birds. One man worked in the front of the boat, wearing the light unit mounted on a football helmet. This left both hands free to handle a long-handled dip net used to capture the birds. The light is connected to the generator by a long cord with a plug-in adapter. The second light is mounted on a hand grip and is used by the man operating the motor to aid in locating birds. When birds are located, the second light is switched off leaving only the light in the front of the boat. A two compartment wire cage on a wood frame is used to hold the birds after their capture until the time of banding. Two overlapping strips of inner tube are stretched across the opening on each side of the cage so the birds can be pushed through the inner tubes and dropped into the cage. Two compartments of the holding cage are desirable in order to separate young teal from larger ducks such as wood ducks and mallards. This lessens the injury to birds while being contained.

A 16-foot Grumman sport boat powered by a $3\frac{1}{2}$-horse weedless Johnson motor is used for the operation. This combination of boat and motor proved the most successful in run-

crew caught as many as 130 birds. However, in 1967 and 1968 low water levels coupled with low teal production resulted in fewer birds banded.

It was found that areas that provided high success on one night would produce more birds on subsequent night's banding. The results indicate that generally a small proportion of the birds are actually banded during one night and areas of good production should be checked several times.

SUMMARY

The night-lighting method of banding young ducks on the breeding grounds in Iowa is more efficient and economical than other methods. Cost figures per bird banded are considerably less and the manpower needed to band a sample of birds is greatly reduced. Vegetative conditions, water levels, and waterfowl production are the three factors that determine the success of the banding operations. Areas with numerous wetlands usually provide enough marshes that can be night-lighted provided water levels are adequate. This technique is considered quite effective and suitable for the conditions that exist in Iowa.

and Sex by Species of Ducks Nightlighted in 1965, 1966, 1967 and 1968

1967						1968								
AF	IM	IF	LM	LF	TOTALS	AM	AF	AY	IM	IF	LM	LF	LU	TOTALS
6	9	9	44	35	110	11	7		2	3	47	46		116
2	10	11			24	9	3	1	5					18
36	100	57	165	147	572	108	76		42	21	201	182	1	631
1	1	1	2		6	3	1							4
		1	8		9	3	1			2				6
12	16	15	67	90	215	62	28		6	33	82	83		294
			12	10	23		2				4	5		11
1					3		2				1	1		4
1					3	1								1
						1								1
	1	1	2		6							1		1
2					5	1								1
1		1			2									0
62	137	96	300	282	978	199	120	1	55	59	335	318	1	1088
			3 Locals		3	7 Adults				7 Locals				14

birds were caught by night-lighting operations.

AGE COMPOSITION OF THE 1967 DEER HERD

Paul D. Kline
Game Biologist

INTRODUCTION

Age data has been collected annually starting in 1953 when Iowa held its first modern shotgun season for deer. Through the years this data has been used variously to demonstrate the high productivity of the deer herd and to prove the apparent high turnover in population components (scarcity of older age classes).

Division of the state in 1967 into six hunting Zones with hunters assigned to specific Zones gave us an opportunity to compare age data from various portions of Iowa. Additional comparisons could be made with data gathered from 1953 through 1962. Construction of life tables and calculation of mean expectation of life gives in this paper considerable insight into the effect of hunting on Iowa's deer herd.

METHODS

Biology and game management personnel were asked to visit locker plants during and after the shotgun deer season to examine harvested deer. These personnel recorded ages of deer they encountered and collected lower jaw bones whenever possible. The jaw bones each were labelled with the license number of the hunter who bagged the deer. All jaw bones and recorded data were submitted to the Biology Section for data analysis.

By using license numbers and information provided by Data Processing, State Comptroller's Office, it was possible to determine Zones of harvest of deer from which jaws had been collected. Zonal delineation was presented in an earlier report (Kline, 1968).

The data was worked into life tables for the six Zones. Data from Zone 2 was combined with that from Zone 3 when statistical analysis (Chi-square = 2.3796, 0.50 = 3.357, 4 d.f.) showed no difference in the two samples. Data from Zones 4 and 5 were combined for the same reason (Chi-square = 1.6027, 0.50 = 3.3357, 4 d.f.).

Life tables were constructed also for the 1967 statewide data; for 1953 data (Sanderson

DISCUSSION

It was hoped that age data reported by field checkers when compared to that obtained from the collected jaw bones would show similar results. If so the need to collect jaw bones in the future would be eliminated. However, differences did appear, although they were not statistically significant. They were of sufficient magnitude to suggest that the jaw bones should be collected and age data derived from them be used in preference to the field data.

It is apparent that the age structure of the deer herd has changed radically since our first hunting season in 1953. Young deer make up a larger portion of the total. Older deer are not as prevalent in 1967 as they were in 1953 and years following. This change appears in all areas except southeast and south central Iowa, and is outstanding in north central and northwest areas.

There are two primary possibilities for the change. First, the birth rate may have increased. Second, the death rate may have increased. In view of the fact that much of the change has occurred in areas where because of habitat limitations deer are most vulnerable to hunting, I believe we must accept the fact that mortality has increased; and most of this increased mortality is due to hunting pressure. After all, we have increased the number of paid licensed hunters from 10,000 in 1962 to 20,811 in 1967. This is more than a 100 percent increase. At the same time the deer herd has increased by only 60 percent, based on conservation officer estimates.

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Kline, Paul D. 1965. Status and management of the white-tailed deer in Iowa, 1954-62. Proc. Iowa Acad. Sci. 72: 207-217.

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Table 3. Life Table Based on Deer from Zone 1

Age Class	Number Dead	Deaths per 1,000	Number Survivors per 1,000	Deaths Rate per 1,000	Mean Number Alive between age classes	Mean Expectation of life
Fawn	63	412	1,000	412	794.0	1.53
1½	53	346	588	588	415.0	1.25
2½	20	131	242	541	176.5	1.33
3½	7	46	111	414	88.0	1.31
4½	7	46	65	708	42.0	0.88
5½	2	13	19	684	12.5	0.82
6½	1	6	6	1,000	3.0	0.50

Table 4. Life Table Based on Deer from Zones 2 & 3

Age Class	Number Dead	Deaths per 1,000	Number Survivors per 1,000	Deaths Rate per 1,000	Mean Number Alive between age classes	Mean Expectation of life
Fawn	122	422	1,000	422	789.0	1.60
1½	73	253	578	438	451.5	1.45
2½	51	177	325	545	236.5	1.19
3½	28	97	148	655	99.5	1.01

Table 7. Life Table Based on 1954-62 Data (Kline, 1965)

Age Class	Number Dead	Deaths per 1,000	Number Survivors per 1,000	Deaths Rate per 1,000	Mean Number Alive between age classes	Mean Expectation of life
Fawn	1,728	417	1,000	417	791.5	1.64
1½	1,057	255	583	437	455.5	1.45
2½	752	181	328	552	237.5	1.19
3½	368	89	147	605	102.5	1.04
4½	154	37	58	638	39.5	0.86
5½ and older	86	21	21	1,000	10.5	0.50

Table 8. Life Table Based on 1953 Data (Sanderson and Speaker, 1954)

Age Class	Number Dead	Deaths per 1,000	Number Survivors per 1,000	Deaths Rate per 1,000	Mean Number Alive between age classes	Mean Expectation of life
Fawn	153	300	1,000	300	850.0	2.10
1½	109	213	700	304	593.5	1.79
2½	120	235	487	483	369.5	1.35
3½	66	129	252	512	187.5	1.14

RESULTS OF THE 1967 - 68 TRAPPER QUESTIONNAIRE AND FUR BUYERS REPORTS

Ron Andrews
Game Biologist

Iowa is one of the leading states in fur production. Nearly a million dollars worth of fur is harvested in Iowa each year. To properly manage this fur resource, we must have good information to assess the annual harvest.

Prior to 1966, fur dealer reports were the only measure of Iowa's fur harvest. In 1966-67, a trapper questionnaire was initiated to compare fur dealer harvest reports with trapper reports. Commission personnel generally felt that fur dealer report totals were not entirely satisfactory because of incomplete returns, inaccurate recording, and other inherent biases.

METHODS

A 30 percent sample is drawn from the duplicate file of trapping licenses. Approximately 2,000 of 6,764 licensed Iowa trappers were contacted in 1968 after the close of the 67-68 trapping season. Sampling was stratified according to the number of licenses sold per county.

Each cooperator is mailed an instruction letter and a card at the close of the long-haired trapping season. The trappers are asked to record the number of each of the 11 listed furbearers they trapped during the season and whether their furs were sold in or out-of-state and the average price they received for their furs (see figure 1).

RESULTS

Fifteen percent of the total licensed trappers returned 1,045 cards for a response of 52.2 percent of those sampled.

The trapper questionnaire indicates that 99.9 percent of the trappers caught muskrats, 65.6 percent caught raccoon and 29.7 percent caught mink. The number of muskrats and raccoon trappers was essentially the same as last year, however, the survey shows that about half as many trappers caught mink this year compared to last year. These figures do not necessarily reflect the true number of trappers pursuing a particular species as in some instances animals are caught incidental to trapping others, and in other cases an individual may have attempted to capture a particular species but was not successful.

Trapping licenses sales have dropped from nearly 10,000 in 1963-64 to 6,760 in 1967-68. The old "trapping blood" in people is dying out faster than new "trapping blood" is replacing it. Total fur value has dropped from nearly $1,100,000 in 1963-64 to about $641,000 in 1967-68.

LITERATURE CITED

Phillips, Robert L. 1967. Results of the 1966-67 Trapper questionnaire. Iowa Conservation Commission, Quarterly Biology Reports 14 (2): 44-49

OF 1967-68 IOWA TRAPPER QUESTIONNAIRE, WITH A COMPARISON OF THE 1966-67 RESULTS

nt reporting trapping this species		No. reported trapped*		Avg. catch/ trappers		Total expanded catch	
6-67	1967-68	1966-67	1967-68	1966-67	1967-68	1966-67	1967-68
.4	99.9	98,434	66,202	92.60	69.0	760,153	421,430
.3	29.7	3,949	3,376	3.71	3.5	30,455	16,337
.8	65.6	8,352	7,320	7.86	7.6	64,522	40,761
.0	27.1	2,593	1,846	2.44	1.9	20,030	12,196
.1	22.6	2,705	1,931	2.54	2.0	20,851	12,145
.0	4.5	174	97	0.16	1.1	1,313	608
.6	3.2	189	144	0.18	1.5	1,478	822
.1	26.6	1,698	920	1.60	1.0	13,134	4,368
.4	4.5	193	80	0.18	.8	1,478	414
.5	13.9	765	459	0.72	.5	5,910	1,656
.4	3.0	90	42	.08	.4	657	149
				Total pelts -		919,981	510,886

trappers responded while in 1967-68, 1,045 trappers reported their take.

RISON OF THE TOTAL FUR HARVEST FOR 11 MAJOR SPECIES FOR THE 1967-68 SEASON AS INDICATED
YER REPORTS AND THE TRAPPER QUESTIONNAIRE

o. pelts Reported bought by Iowa fur buyers*	No. reported sold to Iowa fur buyers by trappers**	No. reported sold to out-of-state fur buyers by trappers **	Total catch reported by Iowa trappers**
251,108	363,504	57,926	421,430
14,497	14,765	1,572	16,337
80,147	38,050	2,711	40,761
7,846	10,960	1,236	12,196
10,668	11,737	408	12,145
408	543	65	608
812	809	13	822
2,413	3,960	408	4,368
405	369	45	414
862	1,540	116	1,656
227	149	0	149
369,494	445,801	65,085	510,886

ports (includes pelts taken by hunting for some species)

rapper questionnaire

IOWA'S LATE SUMMER PHEASANT POPULATION - 1968

Richard C. Nomsen
Game Biologist

INTRODUCTION

The August roadside pheasant count is the primary source of information on the status of the pre-hunting season pheasant population. There were 182 routes checked by Conservation Officers, Unit Game Managers, and Biologists in 1968. A preliminary indication of reproductive success is also obtained from pheasant broods reported on July rabbit and quail routes.

Pheasants experienced a very mild winter in Iowa. Snowfall was much below normal, averaging only 12 inches for the season. Early spring weather conditions were favorable for nesting activity. Temperatures were much above normal in late March and early April which resulted in an early start of nesting activity. Strong winds caused frequent severe dust storms during this period and covered potential nesting cover along strip cover such as roadsides, drainage ditches, fencerows and railroad right of ways.

RESULTS AND DISCUSSION

Birds Per Mile

There were 9,637 pheasants sighted on the 182 routes (5,460 miles) censused, for an average of 1.76 birds per mile (Table 1). This count represents a 6 per cent increase over the 1.66 birds per mile reported in 1967.

Counts were 25 per cent higher in the western third of Iowa with the highest counts in the southwest region. Results of the roadside survey indicated no change in the north central and central regions. An increase of 10 per cent was recorded in the eastern region.

Broods per 30-mile Count

There were 1,181 broods sighted on the 182 routes compared to 1,113 broods on the same number of routes in 1967 (Table 2). The average of 6.5 broods per 30-mile count was up 7 per cent over the 1967 average. Substantial increases were noted in the two western regions with minor changes in other regions.

3. A total of 182 routes was checked in 1968 -- observers recorded an average of 1.76 birds per mile, which was 6 per cent higher than in 1967.

4. Highest populations were recorded in southwest Iowa. The pheasant population increased 25 per cent in the western third of Iowa - increased 10 per cent in the eastern region - and little change was recorded in other areas of the pheasant range.

5. Production improved in all areas of Iowa's pheasant range. Hatching success was best in the southern and east regions - lowest in the north central region.

m 1968 August Roadside Pheasant Count

No. of Cocks	No. of Hens	Sex Ratio Index M:F	Hens Without Broods	Hens With Broods	% Hens With Broods	No. of Chicks	No. of Young Per Hen	No. of Young Per Broods
157	203	1:1.3	73	130	64.0%	750	3.7	5.4
206	309	1:1.5	148	161	52.1%	1044	3.4	6.1
156	345	1:2.2	104	241	69.8%	1784	5.2	6.2
156	263	1:1.7	91	172	65.4%	1131	4.3	5.8
163	175	1:1.7	83	192	69.8%	1419	5.2	6.4
129	171	1:1.3	59	112	65.5%	974	5.6	5.8
967	1,566	1:1.6	558	1,008	64.4%	7,102	4.5	6.0

Broods Observed on 1968 Mid-July Rabbit Roadside Survey and Quail Whistling Counts

Rabbit Survey			Quail Survey			Combined 1968			1967
o. Miles	No. Broods	Broods per 100 miles	No. Miles	No. Broods	Broods per 100 Miles	No. Miles	No. Broods	Broods per 100 Miles	Broods per 100 Miles
20	22	5.2	140	15	10.7	560	37	6.6	2.7
50	30	6.7	130	7	5.4	580	37	6.4	5.3
60	30	8.3	110	7	6.4	470	37	7.9	4.2
50	45	10.0	170	9	5.3	620	54	8.7	3.7
70	27	4.7	200	7	3.5	770	34	4.4	4.0
60	41	6.2	220	11	5.0	880	52	5.9	3.1
10	195	6.7	970	56	5.8	3,880	251	6.5	3.8

IOWA QUAIL POPULATIONS, 1968

M. E. Stempel
Game Biologist

The July count of whistling cock quail is the primary means of determining breeding quail populations. A resume of this procedure is given in the 1963 July-September Quarterly Biology Reports. The method as used in Iowa is based on 97 ten-stop routes distributed throughout the state.

Additional information used in calculating the prospective fall population is obtained each year from other game surveys on which quail are recorded. These censuses are taken from April through August. Information from all these counts gives a fairly complete picture of post-winter survival, summer adult populations, and of the production up to late summer.

Favorable weather preceeding pairing and nesting is necessary so that breeding quail will be in prime condition. In this respect, in the primary quail territory the 1967-68 winter had no excessive snowfall, and weather was mostly favorable to quail survival. Spring populations were high. There were a few storms, though drouth-like conditions did continue for a long period; nevertheless, there was usually some dew at night and this was favorable to production. (The above weather information for the period concerned is from Iowa Climatological Data and Iowa Weekly Weather and Crop Reports.)

The censusing system and changes in the system are described in the Quarterly Biology Reports for July-September 1964 and for July-September 1967.

RESULTS

Whistling Quail Census: Statewide

This July count measures annual variations in the number of Iowa breeding quail (Table 1). The 1968 count was made on 97 routes. On the total of 970 stops, 1,637 cocks were heard calling. This amounted to a mean of 1.69 per stop which was similar to the 1.70 for 1967.

In prime quail range (south-central and southeast) there was a 7 per cent decrease. In the areas which border the prime range (central, east and south-west) there was a gain over 1967; however, these areas have relatively few quail. In northern Iowa counts were above those for 1967 but since the number of quail is small a precise measure of the pop-

DISCUSSION

In April and May the first count is made of the adult quail which eventually produce the new coveys. This is done in conjunction with the spring pheasant survey, on this year it indicated that more quail survived the 1967-68 winter than had survived the 1966-67 winter. Next to be taken is the whistling cock quail count in early July, and this count also indicated an increase. On this same census, 77 cooperators said they thought there were as many or more quail as in 1967, while only five though there were fewer. The latter were in marginal quail range. The June, July and August calling quail counts were made this year on the Wapello and Decatur-Wayne Research sites; on these sites we now have 3 year's data, and the 1968 record shows the May to July calling was similar in 1968 and 1967 but fewer were calling in late 1968 summer. Overall, this indicates early production at a good rate. Early July quail counts along rabbit survey routes indicated good production. About the same number of young quail coveys were seen in 1966, 1965 and 1964. The number of these is always small and none were seen in 1967. In 1968 a record was made of the young seen and coveys or young were reported on 11 routes.

Because of the relatively small number of quail sighted on the quail, rabbit and pheasant surveys made during the summer by Commission personnel, it is likely a better idea of the over-all quail picture can be obtained by combining data from these three counts. When this was done, it was found that 6.99 quail were seen per 100 miles in 1968 as compared to 6.67 in 1967; 8.38 in 1966; 5.68 in 1965 and 4.84 in 1967 (Table 4). It may be the dry weather during the census period caused a reduction in number seen in both 1968 and 1967 (since it would not be as necessary for birds to seek the roads to find a dry place). Many of the birds counted are adults, and thus still must be classed as brood stock.

The August pheasant surveys show a higher proportion of young, and it is possible the reduction in numbers from 1967 shows that the quail population is no longer climbing as it has in recent years, but has leveled off at its current high stage. This decline in quail seen is only 7 per cent and this amount is not significant and would not be noticed by a casual observer. However, a few more year's data on these recently revised quail counts will be necessary before their relative worth can be fully evaluated.

Table 3. Quail Sighted on the August Pheasant Count, Iowa, 1968

Region of state	No. routes	No. miles driven	No. quail seen	No. Quail seen/100 miles	1967 No. quail seen / 100 miles	Per cent change from 1967
N.W.	29	870	3	0.34	2.22	-85
N.C.	24	720	0	0.00	0.00	0
C.	27	810	14	1.73	0.78	+122
E.	36	1,080	93	8.61	6.27	+37
S.W.	23	690	44	6.38	3.64	+75
S.C.&S.E.	40	1,200	197	16.42	22.11	-26
Statewide	179	5,370	351	6.54	7.03	-7

Table 4. Quail Sighted on Whistling Quail Counts, Iowa, 1968

Region of state	No. routes	No. miles driven	No. quail seen	No. of quail seen/100 miles	1967 No. quail seen /100 miles	Per cent change from 1967
N.W.	14	140	3	2.14	0.00	+214
N.C.	13	130	2	1.53	0.77	+99
C.	17	170	17	10.00	5.29	+89
E.	20	200	27	13.50	5.00	+170
S.W.	11	110	16	14.66	6.36	+131
S.C.&S.E	22	220	59	26.82	20.48	+31

RESULTS OF 1968 RABBIT SURVEYS

M. E. Stempel
Game Biologist

INTRODUCTION

The annual July rabbit roadside counts were continued in 1968. This survey has been conducted with slight modifications every summer beginning in 1950. It is made from July 10 to 20 by Conservation Officer, Biology and Game Section personnel. In 1968 they drove pre-determined 30-mile routes on graveled roads. Participants drive 20 to 25 miles per hour, starting at sunrise, and record all rabbits sighted along the routes. The July counts were developed for use in surveying cottontail populations. However, starting in 1958, jackrabbits were counted as well.

The age of rabbits were recorded as adult or juvenile to obtain age ratios and for computation of the fall population index. Numbers of quail, hungarian partridge, and pheasant broods sighted during each survey were also recorded. These data are given to the Biologists responsible for these species for evaluation. Similar data on cottontails and jackrabbits taken in conjunction with quail and pheasant surveys are reported in this paper.

RESULTS

Ninety-nine routes totaling 2,970 miles were surveyed. This is two more routes than were used in 1967. In all 1,890 cottontails were seen for an index of 6.36 per 10 miles (Table 1). Cottontails were most abundant in the Southern Loess area, where they have traditionally been most abundant (Table 2). Populations of cottontails in other areas ran, in ascending order, as follows: Northern Glaciated, Eastern Western Loess. The order of relative abundance was similar to the 19-year average for the four areas(Table 2).

The statewide index indicates populations may have increased very slightly from 1967. The highest populations within the past 19 years were in 1958 (6.86) with the low in 1953 (3.31); the indices have been above 6.0 seven times, including the last five years. Average index for the 19 years, including 1968 is 5.07 cottontails per 10 miles of route. There were increases over 1967 in the Northern Glaciated and in Eastern Iowa. In all regions the 1968 figures were higher than was the 19-year average.

Twenty-one jackrabbits were counted during the surveys, the number was 27 in 1967. The index of jackrabbits seen per 10 miles in 1968 was 0.11, as compared to 0.09 in 1967,

Table 1. Results of July rabbit survey for Iowa 1968

Area	No. of routes	Total miles	Cottontails observed	Jackrabbits observed	Cottontails per 10 miles	Jackrabbits per 10 miles
Northern glaciated	44	1,320	569	21	4.31	0.16
Western Loess	13	390	324	8	8.31	0.21
Southern Loess	27	810	779	3	9.62	0.04
Eastern	15	450	218	0	4.84	0.00
Statewide	99	2,970	1,890	32	6.36	0.11

Table 3. Age ratios of Cottontails observed during July 1968 surveys

Area	Number of Adults	Number of juveniles	Juveniles per Adults
Northern glaciated	207	362	1.75
Western Loess	152	172	1.13
Southern Loess	236	543	2.30
Eastern	69	149	2.16
Statewide	664	1,226	1.85

Table 4. Rabbits sighted during 1968 spring pheasant surveys

Area	Number Miles	Cottontails observed	Jacks seen	Cottontails per 10 miles	1967 index	Jacks per 10 miles
Northern glaciated	1,771	395	78	2.23	1.99	0.44
Western loess	676	256	4	3.79	3.74	0.06
Southern loess	1,100	495	5	4.50	4.83	0.05
Eastern	600	92	1	1.53	0.82	0.02
Statewide	4,147	1,238	88	2.99	2.83	0.21

A SUMMARY OF THE 1967 INTENSIVE CREEL CENSUS ON POOLS 11 AND 18 OF THE MISSISSIPPI RIVER

Don R. Helms
Fisheries Biologist

INTRODUCTION

From April 1 through October 31, 1967, an intensive creel census was conducted on navigation pools 11 and 18 of the Mississippi River. This census was conducted by the Biology Section of the Iowa Conservation Commission in cooperation with the Upper Mississippi River Conservation Committee. The census is repeated every five years to determine trends in the sport fishery. The first census was completed in 1962. Similar studies are conducted on pools 4, 5, 7, 13, and 26 by other UMRCC states.

Pool 11 is located in northeastern Iowa between Guttenberg and Dubuque. It is 32 miles long and contains 21,100 surface acres of water. Pool 18 is located in southeastern Iowa, from near New Boston, Illinois to near Burlington, Iowa. The pool is 26.6 miles long and has a area of 13,300 surface acres.

METHODS

Methods differed from previous census only by the fact there were eight sections in each pool rather than four, and the census clerk covered one-half of the pool each day rather than the entire pool. Coverage of each section was according to a pre-determined schedule. Clerks worked four consecutive days followed by two days of non-work.

Clerks were required to spend two hours in each section of the pool. Upon entering a section, he would first make a count of all fishermen and pleasure boats. This instantaneous count was made in a maximum of one hour. The remaining time was spent interviewing anglers. Information collected from anglers included: number of fishermen in party; number of hours fished; complete or incomplete fishing trip; origin (home post office) of the anglers; location fished (boat, bank or barge); method fished (casting, trolling or stillfishing); bait used (natural, artificial or prepared); access used (public or private); habitat fished (tailwater, main channel, main channel border, side channel, slough, lake or pond); total number of fish caught by species; and species of fish the angler preferred to catch.

The interview and count data were expanded independently for each of the three seasons: spring (April and May); summer (June, July and August); and fall (September and October). The average numbers of boat, bank and barge fishermen and pleasure boats

Table 1. Species composition of the sport fishing in pools 11 and 18 of the Mississippi River.

Species	Pool 11		Pool 18	
	Number	Rank	Number	Rank
Bluegill	57,627	3	18,834	2
Other Sunfish	1,695	11	57	14
Crappie	107,718	1	16,426	4
Largemouth Bass	9,084	6	2,168	9
Smallmouth Bass	332	13	68	13
White Bass	2,672	9	11,437	5
Walleye	4,497	7	1,140	11
Sauger	9,359	5	5,432	6
Northern Pike	308	14	16	15
Channel Catfish	16,502	4	56,346	1
Blue Catfish	------	--	1,510	10
Flathead Catfish	1,205	12	454	12
Bullhead	2,607	10	4,510	7
Carp	2,723	8	4,240	8
Drum	73,973	2	17,799	3
Rock Bass	41	16		

SPIRIT LAKE WALLEYE STUDIES
Part I: 1967 Population Estimate

Terry Jennings
Fisheries Biologist

INTRODUCTION

Spirit Lake has the reputation of being a "walleye" lake. It is located in northwest Iowa and is Iowa's largest natural lake. It lies in a drainage basin containing five additional Iowa lakes and several in southern Minnesota. Except during periods of high water it is isolated from the other lakes. The basin was originally formed by glacial drifting and has a maximum depth of about 25 feet. It is eutrophic and contains a large fish population. Walleye is only one of several game-species present. Rocky reefs, bars, and points in the lake provide excellent walleye habitat.

Creel census data indicates that more walleye are creeled from Spirit Lake than from any other Iowa lake in this drainage basin. Creel data also indicates that even though walleye are generally third in creel abundance, fishing success for this species greatly influences total angling pressure (Jennings, 1967). Because they are an important gamefish, walleye are being and have been subjected to considerable study.

In order to evaluate other walleye management practices it was expedient to capture and observe as many adult walleye from the 1967 spawning run as possible. Thus, the opportunity presented itself to further our knowledge of this population with a minimum of effort. Other studies of this type were completed at various intervals by Rose (1949, 1954); Moen (1962, 1963) and Jennings, (1965).

CAPTURE AND MARKING

For this study 2,175 walleye $\geq$ 12 inches total length were marked by excising the left pelvic fin. Electro-fishing provided about 70% of these fish and gill netting 30%.

Walleye collected by electro-fishing were marked and released near the place of capture. Gill-netted fish were taken to the hatchery, spawned, marked, then returned to the lake at various locations. Nearly all of the larger walleye in the sample were taken by gill nets. There were 302 fish $>$ 20 inches marked. Over 97% of these were taken by gill nets. Most walleye collected by electro-fishing were small males (13 - 17 inches).

RECAPTURE AND POPULATION ESTIMATES

of walleye data and population estimates based upon the adjusted sample

Total Observed	Under 12 inches No.	%	Recruitment No.	%	Adjusted Sample	Marked No.	%	Population Estimate
603					603	35	5.8	37,472
389	27	3.03	17	1.88	845	34	4.0	54,055
272	4	1.47	27	10.00	241	12	4.9	43,686
223	35	15.69	49	21.97	139	6	4.3	50,388
987	66	3.32	93	4.68	1,828	87	4.7	45,700

PRELIMINARY REPORT OF DES MOINES RIVER INVESTIGATIONS, 1968 [1].

Don Kline
Fisheries Biologist

INTRODUCTION

Emphasis was placed this year on an estimate of the channel catfish population. A large fish kill during the winter of 1967-68 caused this change in plans. Low oxygen levels in the river caused the kill. D O levels in the study area remained below the minimum tolerance limit of fish for three weeks during the period of ice cover. Dead fish were observed from Des Moines downstream to the Ottumwa Area. The extent of the kill in the study areas was not known, so a population estimate was the only recourse. This years channel catfish population estimate compared with the 1966 estimate indicates a fast rate of recovery in total numbers. The best estimator of total kill is the recapture rate of channel catfish marked in 1966.

METHODS OF THE POPULATION ESTIMATE

Channel catfish were marked by removing the right pelvic fin. This mark is effective for short-term use, but fast regrowth will make it ineffective for long-term recognition.

The period from June 3rd to September 21st has been divided into 7 bi-weekly periods. During these 7 periods from 10 to 24 baited hoop nets have been used continously. Placement of these nets are listed in Figure 1. The nets were raised and rebaited with cheese and soybean meal at 24 hour intervals. The nets remained closed and baited during the week-ends without causing undue stress to the fish. High river flow prevented fishing operations between June 29 and July 14. Figure 1 shows that a range of 8 stream miles near the center of the original study area were covered.

SPECIES COMPOSITION

Effort was again directed toward the commercially important species. Total numbers and weights were taken for aggregates of each species of fish caught. Each species was counted into a plastic bucket and weighed on a dairy scale calibrated in tenths of pounds. A catch of 13,326 fish weighing 6,708.6 pounds has been recorded during the first 7 periods (Table 1). Effort totaling 1,663, $\frac{1}{2}$-inch mesh net days, and 72, $1\frac{1}{2}$-inch wing net days has been expended. Numerically, channel catfish ranks first with 59.6%; followed by bullheads (15.1%), carpsuckers (14.1%), carp (9.4%), other (1.5%) and flathead catfish (0.3%).

Table 1. Catch statistics of intensive netting in 8 miles of the Des Moines River, 1968

Species	Total Number Caught	Total Weight	Mean Weight
Channel Catfish	7,930	3,372.4	0.42
Carp	1,254	1,289.8	1.03
Carpsucker	1,886	1,713.2	0.91
Flathead Catfish	39	22.3	0.57
Bullhead	2,013	205.8	0.10
Others*	194	105.1	0.54
Total	13,316	6,708.6	

* Includes crappie, walleye, bluegill, green sunfish, largemouth bass, sheepshead, goldeye, white sucker, redhorse, buffalo, stone cat, and creek chub.

Channel catfish dominated the total weight with 50.1%; followed by carpsuckers (25.4%), carp (19.1%), bullhead (3.6%), other (1.5%) and flathead catfish (0.3%).

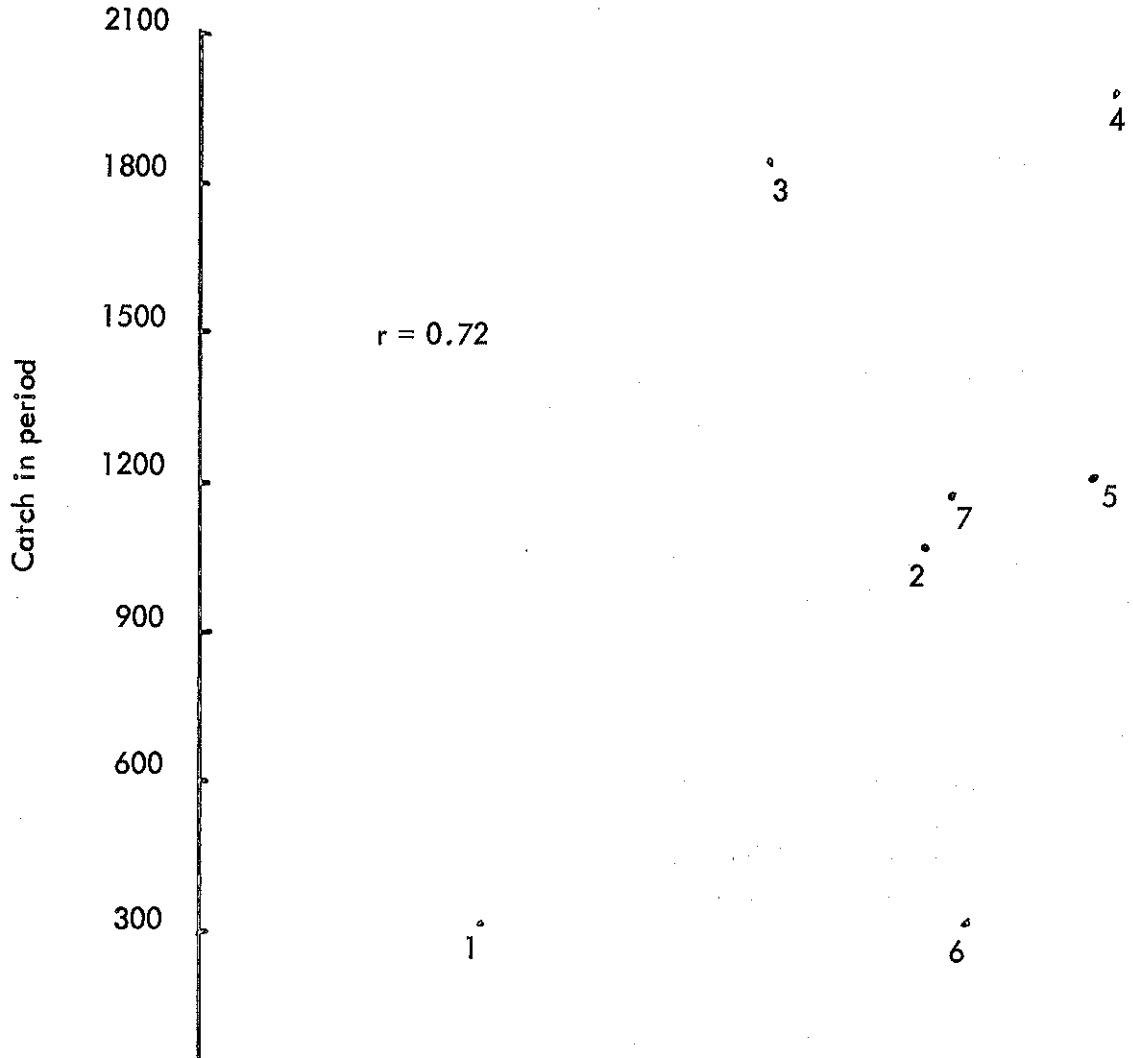
Increase in the number of carpsuckers and a decrease in carp mean weight account for most of the change in composition from the two previous years. Although a large number of bullheads were caught, their small size makes them commercially unimportant. Much of the increase in other fish caught was due to the effectiviness of the wings to funnel crappie into the wing-net.

CATCH STATISTICS

Two periods (3 and 4), just after high water stage, and while river flow was declining, continued to be the time of greatest catch success (Table 2). Lowest catch season was recorded in early June. River flow was low at that time and netting operations were confined to $1\frac{1}{2}$ miles upstream and 2 miles downstream from the dock.

Because hoop nets depend upon movement to catch fish, increased effort does not proportionately increase catch (Figure 2). Effort was not correlated with catch during the first 7 periods (p=0, r=.754 at 5 d, f,).

Combined environmental and biological factors determine total catch. Catch success was effected most by flow. Flow in turn effects temperature and turbidity. Periods 3, 4 and 5 were characterized by declining flow, increasing temperatures and decreasing turbidity. Catch success was highest during period 3 and lowest during period 6 (Figure 3).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Catch in period
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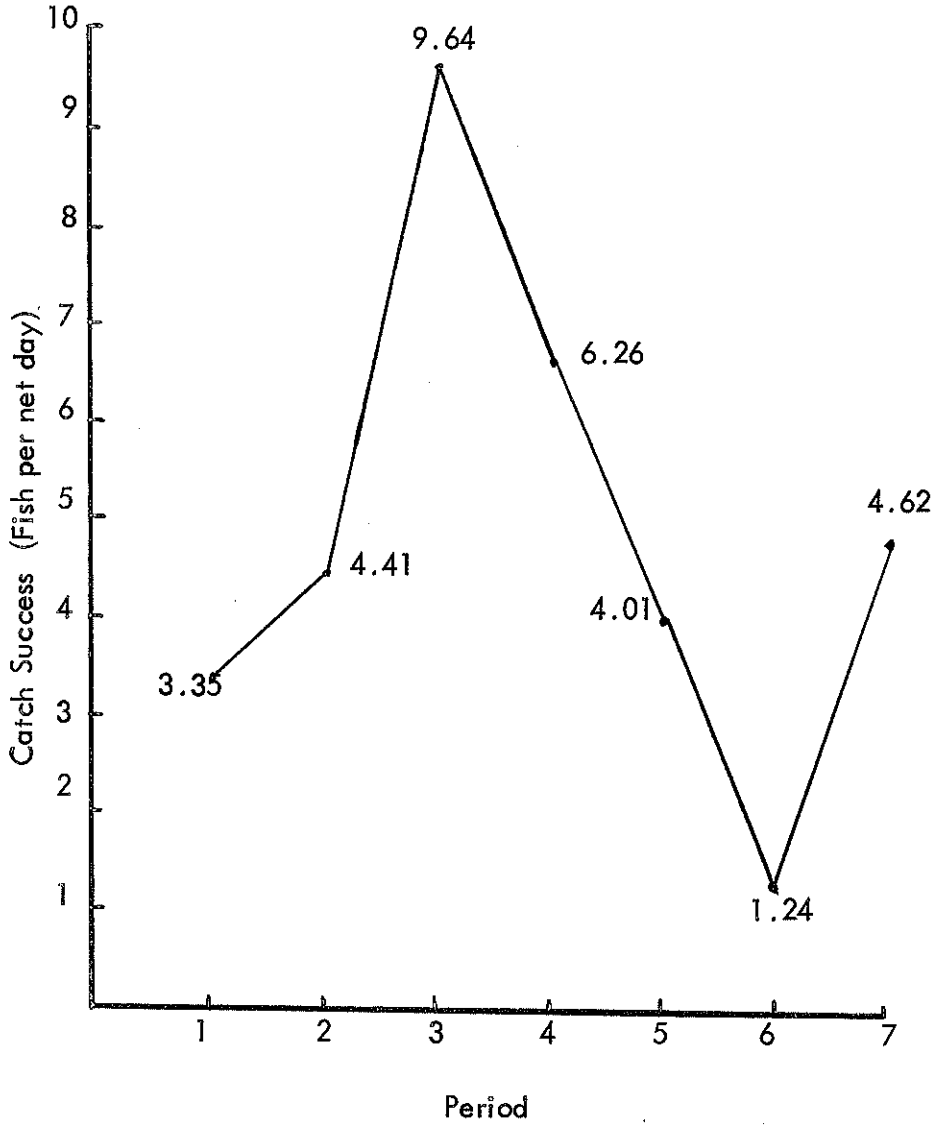

Figure 3. Catch success of channel catfish during 7 bi-weekly periods in the Des Moines River

Population Estimate of Walleye in Lake MacBride

Larry R. Mitzner
Fisheries Biologist

Lake MacBride is a man-made recreational impoundment in Johnson County, Iowa consisting of 950 surface acres. The lake has a maximum depth of 48 feet and exhibits severe chemical and thermal stratification. The physical, chemical and biological characteristics of this lake subject it to class I as determined by Mayhew (1965) in his system of Iowa artificial lake classification.

An enlargement and renovation project was completed in 1957. During this project an evaluation of the physical characteristics and habitat development of the lake determined it was feasible to introduce walleye . This recommendation was first made by R. E. Cleary in a letter to Mr. Speaker concerning the management of Lake MacBride when renovation was complete. This was proposed in 1953. On May 5, 1958, one million walleye fry were stocked followed by 1,250 juveniles that fall. Until 1964, fry was stocked at 1,000 per acre annually. This rate for successive years was increased to 3,000 per acre. Comprehensive surveys and creel census by Mitzner (1967) indicated walleye contributed to anglers creel.

Factors affecting the success of this management should be evaluated to determine if it should be continued, improved, expanded to other artificial lakes of similar characteristics or abandoned. A comprehensive program of the life history of walleye in artificial lakes was initiated to present such an evaluation. One phase of the project was conducted at Green Valley Lake by Mayhew (1963) starting in 1960. The other segment of the project was initiated at Lake MacBride in 1965. The objectives of this program were to determine growth, population magnitude and angler utilization. This report is one of progress and will deal with population magnitude as determined by mark and recapture methods.

Methods

Walleye were captured by electro - fishing gear and pound netting during the spring spawning activities. This period occurred in the later part of April in 1965 and the first two weeks of April in 1966 and 1968. No fish were marked in 1967.

A monel metal jaw tag, placed around the pre-maxillary and maxillary, was used to identify each measured, recorded and released specimen. Fish were not marked if less than 10 inches in total length.

Recoveries were based on tagged fish captured during marking periods and by special

Conclusions

Through the method of mark and recapture an estimate of approximately 1,410 walleye with confidence limits of 980 to 2,748 was established in Lake MacBride. This population density has been achieved through a management program initiated in 1957 and implemented by an annual stocking rate of at least 1,000 fry per acre. Further evaluation will determine the effect of the tripled stocking rate since 1964. These plantings have not yet recruited to the fishable population. Management implications for this phase of the walleye project are not comprehensive and should be viewed in light of the total project when it is complete.

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