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Eugene D. Klonglan

Iowa State Conservation Commission

Gene Hlavka

Iowa State Conservation Commission

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Recent Status of Ruffed Grouse in Iowa

EUGENE D. KLONGLAN¹ AND GENE HLAVKA²

Abstract. The ruffed grouse is a native Iowa game bird, formerly present in forested areas over much of the state. Intensive land use that replaced forested areas with croplands or grazed them heavily with livestock resulted in the disappearance of the species from all but northeastern Iowa by about 1930. Ruffed grouse are presently found in suitable forested habitat in all of Allamakee and Clayton Counties, most of Winneshiek County and in portions of Fayette, Dubuque, Delaware and Howard Counties immediately adjacent to occupied range in the three counties first listed. Spring roadside drumming counts have given an index of 1.6 "drums" per stop during the past 8 years on several routes within the primary Iowa grouse range, indicating a good population does exist in the area. An average spring population for recent years of about 4,000 birds is estimated, with a fall population of about 12,000. Initial attempts have been made to re-introduce ruffed grouse into Shimek State Forest in southeastern Iowa, with further efforts scheduled for Stephens State Forest in south central Iowa.

Few Iowans of today realize that the ruffed grouse is a native Iowa game bird; most probably do not know what a ruffed grouse is. Yet this bird once lived in wooded areas throughout most of the state. By 1930, however, the only populations of any significance that remained in the state were to be found in the rough wooded hills and river bluffs of the northeastern corner of Iowa. Intensive land use that replaced forested areas with cropland or grazed them heavily with livestock so changed the environment that this remarkable game bird had vanished from most of the state by the early 1900's.

Anderson (1907) indicated that the ruffed grouse was becoming rare in localities where it was formerly common in the state, and only a few were known to be present where woodlands remained uncleared. Evidence of the density of grouse in Iowa forests in earlier years was shown by a report of the shooting of 20 grouse in a single day by a hunter in Linn County in 1903. Dumont (1933) reported the ruffed grouse as most numerous in Allamakee and surrounding counties in northeast Iowa, with a few remnants still present in Van Buren, Iowa, Guthrie, Hardin and Butler counties. Kaufman (1965) studied the distribution of grouse in northern Dubuque County and found small numbers of birds in suitable brushy areas.

Leopold (1931) showed on a map of ruffed grouse range in the north central states that the only significant Iowa population was in the northeast corner of the state along the Mississippi River, with grouse present in every township in this area. He also showed

¹ Assistant Superintendent of Biology, Iowa State Conservation Commission, Boone.

² Game Biologist, Iowa State Conservation Commission, Chariton.

that in 1928 there was a scattered population (not present in every township) in Van Buren County in southeastern Iowa. A former remnant population last verified in 1923 was indicated for Buchanan and Delaware counties. Further information, but unverified, placed grouse as possibly present in Linn, Benton, Cedar, Iowa, Johnson, Marion, Mahaska, Wapello and Davis counties (these involving portions of the Cedar, Iowa and Des Moines river valleys).

Bennett (1935) reported that the heaviest ruffed grouse population at that time was found in Allamakee, Clayton, Delaware and Dubuque counties. He felt that a few scattered birds were undoubtedly still present in some southeastern counties, though he had not been able to verify this. Stempel (1955) stated that to his knowledge ruffed grouse were last reported in Keosauqua State Park in Van Buren County about 1921, in the vicinity of Fort Dodge in 1920, and in parts of southwestern Iowa in the early 1900's.

Since about 1930, which date seems to mark the approximate completion of the restriction of the range of the ruffed grouse in Iowa to the northeastern corner of the state, it has appeared to many observers that a relatively static grouse population has been sustaining itself in northeastern Iowa. However, little attention was paid to this bird for several decades, with only one major attempt at investigating the species further (Polderboer, 1939, 1940, 1942a, 1942b). No serious effort was made to more precisely determine the density and range of ruffed grouse in the state, other than a brief attempt in the mid-1950's (Stempel, 1956).

If it were found to be true that a relatively static population was existing in northeast Iowa, it might then be true that this population would be capable of supporting a limited hunting season without detrimental effect. Knowledge of the population dynamics of ruffed grouse gained through numerous studies in the major grouse states posed the distinct possibility that such might be the case. Therefore, in 1961 the State Conservation Commission began a series of investigations aimed at determining the present density and range of ruffed grouse in Iowa to a degree accurate enough to permit an evaluation of the potential for annually harvesting a portion of the grouse population (Klonglan, 1961; Schnepf, 1965a). A part of these studies was also to be concerned with the possibilities for expanding the range of ruffed grouse in the state. In addition, it was felt that the obtaining of more detailed information on this interesting, but relatively neglected, game bird was a worthwhile goal in itself.

PRESENT RANGE OF RUFFED GROUSE IN IOWA

Beginning in 1961 and continuing to the present time, efforts

have been made to interview individuals who would be likely to have reliable knowledge of any ruffed grouse that might be present in their area and to check as many as possible of those areas in the state likely to have grouse present. It was often difficult to be certain that reports of the presence, or even absence, of ruffed grouse in a specific area were valid. Most people in Iowa today are not acquainted with the species; in fact, instances were found in northeast Iowa where farmers did not know grouse were present on their land. Comments about "big timber quail" were occasionally heard in southern Iowa, usually in reference to earlier years, and one can but wonder if some very small isolated population of grouse might not have survived in the wilder parts of southeastern Iowa well after 1930. A further problem in verifying many reports is the difficulty, if not impossibility, of searching a given area to the point where one could state with absolute certainty that grouse were or were not present, because of the nature of the cover and terrain inhabited by this species in Iowa. However, it is felt that a fairly accurate delineation of Iowa ruffed grouse range as of the mid-1960's was obtained.

It can safely be stated that ruffed grouse are currently present in suitable forested habitat throughout Allamakee County and Clayton County, in all of Winneshiek County except the west-central and southwestern parts, in the northeastern tip of Howard County along the Upper Iowa River, in the northeastern third of Fayette County, along the extreme northern edge and northeastern corner of Delaware County, and in about the northern quarter of Dubuque County (Figure 1). It would be difficult to draw an

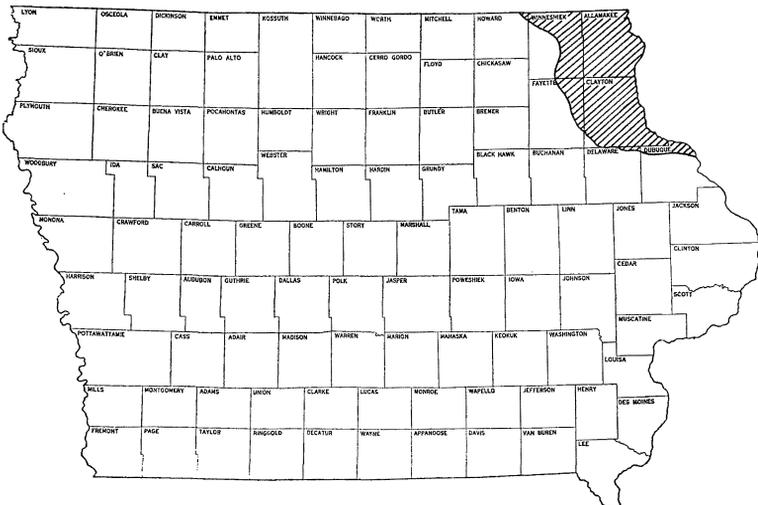


Fig. 1. Extent of area in northeastern Iowa where suitable forest habitat occupied by ruffed grouse in the mid-1960's.

exact range boundary line in each county without thoroughly checking each area of potential habitat, an obvious impossibility, but it is believed the boundary shown is reasonably accurate. There may be isolated timber tracts not far outside the area delineated which have a very few grouse present. This likelihood would be greatest in southeastern Dubuque and northeastern Jackson Counties.

That such isolated populations have existed in some areas in the recent past is certain. Ruffed grouse were both heard and flushed near Palisades—Kepler State Park in Linn County about 1957 by the District Forester of the State Conservation Commission assigned to the territory at that time (Wm. Ritter, 1962, personal communication). He also reported having seen a few grouse in the mid-1950's particularly in 1956 and 1957, along the Mississippi River in Jackson, Clinton and the northeastern corner of Scott counties, along the Wapsipinicon River in Jones and Linn Counties, and along the Maquoketa River in Jones and Jackson Counties. These sightings were all made in isolated, very wild areas and grouse were obviously few in number. The possibility cannot be discounted that there may yet be a few remnant grouse in such areas, though no verification of such could be made during the current investigation.

An interesting and perhaps significant, though it as yet must be classed as unverified, report of the continued possible presence of ruffed grouse in southeastern Iowa was received in 1964. Grouse were reported as having been seen during the 3 or 4 years previous, with five or six birds being sighted in 1964, in an 800-acre area known as "Bell Thicket" located 4 miles west of Houghton in extreme northwestern Lee County. An attempt was made to search this area on one occasion with the aid of dogs, and though no grouse were found at that time the nature of the habitat was such that coverage by the investigators was certainly less than complete. It is intended that a further check will be made for grouse in this area.

DENSITIES OF RUFFED GROUSE IN THEIR IOWA RANGE

Unfortunately there are no good records of densities and fluctuations of ruffed grouse populations in their primary range in northeastern Iowa over the years. Polderboer (1942b) had a 1939 spring breeding population of 45 birds on his 3200-acre study area near Lansing, 1400 acres of which were forest, thus giving a density level of about 1 grouse per 30 acres of wooded habitat.

To obtain a measure of annual population levels of grouse in Iowa, a census method adaptable to the amount and type of area to be covered and the limited time and personnel available for such

work was needed. The most suitable technique appeared to be the spring roadside drumming count (Petraborg et al., 1953) which consists of counting the number of grouse "drums" heard at each of several listening stops. It is not a count of individual grouse heard drumming. Petraborg and his co-workers in Minnesota found this a satisfactory method of determining population trends and relative abundance of ruffed grouse, and it was one which made it possible to cover a large area with few observers and to obtain a large number of observations even in a low grouse population. Dorney et al. (1958) in Wisconsin, using methods adapted from Minnesota techniques, concluded that the drumming count was a simple and efficient method for obtaining an index to the breeding population. Gullion (1966) stated that the roadside drumming count appears to be adequate for estimating region-wide population trends and forecasting fall hunting prospects, but does not appear an adequate means of measuring population changes in investigations on small research areas.

A further advantage of using the spring roadside drumming count in Iowa is that it is a fairly standard census procedure in most important grouse states, and thus results in this state could be easily compared with those of other states. To implement the roadside drumming count technique in Iowa, several routes were laid out on roads passing through typical northeast Iowa habitat. The number of male grouse heard drumming in early morning is counted for 4 minutes at each of about 15 stops a mile or so apart. Random stops along a route often would not sample enough wooded area so listening points were selected close enough to timber so grouse could be heard drumming; such was imperative in the uneven country typical of northeastern Iowa. The count is started 30 minutes before sunrise on clear, calm mornings. Surveys are run during the drumming peak which usually occurs in the last half of April in Iowa.

Each year since 1961 about a dozen routes have been surveyed by Conservation Commission personnel. Several exploratory routes have been sampled over the years to test their suitability for inclusion in an annual survey system. Some had to be abandoned because the roads did not adequately traverse the grouse habitat in the area, or because it was not possible to lay out enough stops in grouse habitat to constitute an adequate route. This was particularly true in areas on the fringe of the grouse range. At the present time, a system of nine routes is used for making annual comparison over the 8 years drumming surveys have now been made. Counts have been made on all or most of these throughout the study period. Five of these are located in Allamakee County (designated as Yellow River State Forest, Village Creek, Harpers Ferry-Wexford,

Upper Iowa River, and Lower Yellow River routes), two are in Clayton County (Sny Magill-Bierbaum Timber and Bloody Run routes), and two are in Winneshiek County (Highlandville-North Bear and Frankville-Yellow River routes).

An average of about 1.6 "drums" per stop has been heard on these key routes during the 8 years counts have been made (Table 1). This figure compares quite favorably with drumming survey indices from the major grouse states, and indicates that even though Iowa's grouse range is limited in area, it does contain a good grouse population therein. Individual counts on certain routes have exceeded 3 drums per stop on a few occasions, with several routes often surpassing 2 drums per stop. The highest number of drums heard at any one stop during the 4 minute listening period was 10 (on two occasions).

Table 1

Indices to Ruffed Grouse Population Density in Northeastern Iowa, 1961-1968, as Measured by the Spring Roadside Drumming Count (comparable routes only).

Year	No. of Routes	No. of Stops	Total Drums	Drums per Stop	Change
1961	6	89	137	1.54	—
1962	8	111	189	1.70	+10%
1963	9	130	217	1.67	— 2%
1964	9	133	203	1.53	— 8%
1965	9	135	227	1.68	+10%
1966	(2)	(30)	(54)	(1.80)	(Insuff. Data)*
1967	7	105	154	1.47	—12%
1968	9	130	190	1.46	None
8 years—	59	863	1,371	1.59	Little

* Unfavorable weather throughout peak drumming period made it impossible to obtain satisfactory counts on most routes.

There has been very little variation in the yearly means obtained from the key routes. Thus there is at present no evidence of any cyclic trend in Iowa grouse populations. The ruffed grouse is considered quite cyclic in its more northern range. Leopold (1931) felt that there was sufficient evidence to infer that ruffed grouse have probably not had the wide cyclic fluctuations at the southern edge of their range in the north-central states.

The roadside drumming count only provides an index to grouse population levels and trends and not a measure of the number of

birds per unit area. Any attempt to convert drumming count data to "acres per grouse" or "grouse per square mile" figures is subject to many complications. Petraborg et al. (1953) gave a formula for computing the number of grouse per square mile, using a $\frac{1}{8}$ mile radius of audibility and the number of drums heard per stop. However, Dorney et al. (1958) believed a $\frac{1}{4}$ mile radius of audibility was more correct. Since this reduces the population figures obtained by a factor of 4, it is obvious that the audibility radius figure used is critical. Hardy (1952), felt that the effective range of audibility was slightly less than $\frac{1}{4}$ mile in the type of topography occupied by grouse in Kentucky. The situation in Iowa would probably be similar. Thus the average drumming count of 1.6 drums per stop found in Iowa would indicate a spring breeding population of approximately 15 birds per square mile. This seems to agree with the general interpretation on this basis of such counts in other grouse states.

Recent intensive investigation of several aspects of the population biology of the ruffed grouse in northeastern Iowa have provided us with some idea of the actual densities of ruffed grouse to be found in the better habitats. Studies in the Little Paint Creek portion of the Yellow River State Forest have given a spring breeding population estimate of about 30-35 birds per square mile during the past 3 years (Porath, 1968; Vohs, 1968). Late summer populations were in the vicinity of 90-135 birds per square mile in this area. This is above average grouse habitat for northeast Iowa, and it would not be expected that such densities would occur very frequently within Iowa's grouse range. However, these figures do lend credibility to the drumming count based population estimate of 15 birds per square mile as an average for primary grouse range in the state.

If it were known with some accuracy how many square miles of grouse habitat are currently present in northeast Iowa, it would be possible to use the above population figures to obtain a crude estimate of the total ruffed grouse population in the state. Figures are readily available on the number of acres of forested land in the counties concerned, but it is certain that not all of this acreage can be considered suitable grouse habitat. There are about 500 square miles of forest area within the primary grouse range in Iowa, not including acreage on the fringe of the range where occupancy by grouse is questionable or very sparse at most. It is believed that about half of this could be considered actual or potential grouse habitat. Applying the average density figure of 15 birds per square mile to the estimated 250 square miles of habitat, and allowing some leeway for fringe areas, gives a spring ruffed grouse population estimate for the state of roughly 4000 birds. Further, apply-

ing the rate of spring to fall increase as found on the Little Paint Creek study area gives a fall population estimate of 12,000 grouse present in the state, on the average, in recent years. These figures are admittedly crude, and they are certainly subject to correction pending continued and more detailed investigations.

EXPANSION OF RUFFED GROUSE RANGE IN IOWA

The disappearance of ruffed grouse from most of Iowa's counties resulted from the clearing of timber and heavy pasturing of woodlands. It would be futile to try to re-establish grouse throughout most of the state since the conditions that caused them to vanish still exist, and, for the most part, are becoming even more unfavorable. Only if a sizable area can be found where the trend toward clearing and pasturing of forest acreage is, or can be, reversed, would it pay to attempt to expand the current range of ruffed grouse in Iowa by a re-stocking program.

One such area with potential for re-establishing grouse is the Shimek State Forest and surrounding territory in Lee and Van Buren Counties in the southeastern corner of the state. State control over nearly 10,000 acres, with resultant reforestation and related management programs, plus many privately owned tree farms and associated wooded tracts appear to have swung the habitat balance enough that ruffed grouse could again maintain populations in this area—one in which they managed to hang on until about 40 years ago, but faded out of before public ownership of much of the land came into being. Thus efforts, that have to date been rather limited, have been made to re-stock Shimek with ruffed grouse. The first attempt to capture birds in the Yellow River Forest Area was made in the fall of 1962. Seven birds, three males and four females, were ultimately released in Shimek as a result of this abortive effort. Lack of time, personnel, experience, and other problems precluded further attempts until the fall of 1965. Twelve grouse, all juveniles but of unknown sex, were transplanted to Shimek Forest as a result of this effort (Schnepf, 1965b).

Drumming counts made around the Shimek area for the past 5 years (1964-68) have all proved negative. One bird was flushed in late winter of 1966 and another in spring of 1966. A few additional possible, but unverified, sightings were reported. For example, a bow and arrow deer hunter reported seeing some grouse about November 1965, or not long after the 1965 release. A farmer reported a possible grouse sighting in the summer of 1965, stating that the birds flushed were far too large for quail. Since this preceded the 1965 releases, such birds—if they were grouse—would have to be results of the 1962 stocking. Another farmer reported a possible grouse sighting in the summer of 1967. Thus it must be

granted that there is some chance that there may yet be a few ruffed grouse present in the Shimek Forest vicinity as a result of the stocking of the 19 birds in 1962 and 1965.

However, it is intended that a trapping and transplanting program on a larger scale than the part-time efforts previously expended will be initiated in the very near future. It is hoped that at least 50 grouse can be captured and moved from northeast Iowa to the Shimek State Forest. If this can successfully be accomplished, the Stephens State Forest in Lucas and Monroe Counties in south central Iowa will be the second target area for the re-introduction of ruffed grouse into their former range in the state.

Aldo Leopold (1931) felt that the persistence of ruffed grouse in small remnants of woodland along the river bluffs of Iowa, Illinois and Indiana was strongly suggestive of a special affinity for this cornbelt range. He believed that an equal degree of deforestation in central Wisconsin would have exterminated the species. He further believed that this center of the north-central region was the optimum range of the ruffed grouse, and that the bulk of its present distribution in the region occurs on marginal, or adverse, environments. If this is actually true, then our chances of keeping the ruffed grouse on the Iowa scene in the face of the drastic environmental changes constantly going on may be better than we dare hope.

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