

JOB COMPLETION REPORT
INVESTIGATIONS PROJECTS

As Required by
FEDERAL AID IN WILDLIFE RESTORATION ACT

WORK PLAN J-61
INVESTIGATIONS OF INTRODUCED SPECIES
Pittman-Robertson Project W-15-R-18

- Job No. J1 - Evaluation of Experimental Releases of Wild Turkey
in Nebraska
Job No. J2 - Evaluation of Experimental Releases of Scaled Quail

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Report for the period
March 1, 1961, to February 28, 1962

EVALUATION OF EXPERIMENTAL RELEASES
OF WILD TURKEY IN NEBRASKA

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Bibkey:
550431

Project 10-15-R-18

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WORK PLAN J-61

EVALUATION OF EXPERIMENTAL RELEASES OF WILD TURKEY IN NEBRASKA

March 1, 1961, through February 28, 1962

by Harvey Suetsugu

Abstract

Two sub-species of wild turkeys, Merriam's and Rio Grande, have been experimentally released in Nebraska. The Merriam's turkey, first released in early 1959 in the Pine Ridge, has increased from the initial 28 birds to an estimated population of 1,000-1,500 in three breeding years. The first release of Rio Grande turkeys was made during March 1961. Additional releases were made during the 1961-62 winter. Distribution of Merriam's turkeys now extends throughout the Pine Ridge and into adjacent areas in Wyoming and South Dakota. Trapping from established flocks to furnish transplant stock for other release sites was begun in 1960-61 and continued during 1961-62. During the two years' trapping-transplanting program, 94 Nebraska wild-trapped Merriam's turkeys were released at 10 sites in the state.

There was a total of 32 birds released at three sites in the Wildcat Hills-Cheyenne escarpments. Field data indicate that reproduction did occur at the early 1961 release site.

A total of 53 Merriam's turkeys has been released at six sites along approximately 100 miles of the Niobrara River. Eight birds released in early 1961 at the Schlagel Creek release site have increased to 48 birds in one breeding season.

Rio Grande turkeys have been released along the major river systems of the central and southwest portion of the state and one release was made in the northeast. Rio Grande turkeys released to date total 518 birds at 25 sites. Two release sites were stocked during March 1961. Reproduction occurred at both sites; however, data were insufficient to determine brood size and population numbers.

Objectives

This study is designed to evaluate experimental releases of wild turkey in Nebraska.

Techniques

Field reconnaissance for turkey sign and observations were conducted throughout the turkey range at frequent intervals by Commission personnel.

Regular landowner contacts were maintained for current information on movements, reproduction and mortality. Dill and Thornsberry cannon-net trap was used to capture Merriam's wild turkeys previously established in the Pine Ridge for the purpose of making additional experimental releases at suitable sites in Nebraska.

A reconnaissance was made of potential release sites to determine suitability of habitat for turkeys. If an area was found suitable, an agreement under the auspices of a local sponsor was signed by the local residents.

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Data similar to that collected for Merriam's releases were kept for the Rio Grande turkeys released in south-central Nebraska.

Findings

Merriam's Wild Turkey

Pine Ridge: The population of Merriam's wild turkey, based on the 1961-62 winter concentration counts in the Pine Ridge, was estimated to be between 1,000 and 1,500 birds. The population increased from an initial plant in 1959 of 28 wild-trapped birds obtained from Wyoming and South Dakota¹ to 115 during the fall of 1959, and 325 in the fall of 1960. During the winter of 1960-61 trapping from established turkey flocks in the Pine Ridge was begun. A total of 27 birds was wild-trapped in the Cottonwood drainage. These turkeys were released at the following sites: White Clay, which is the eastern-most release site in the Pine Ridge, Wildcat Hills escarpment, and Niobrara River system. The 1961-62 trapping program resulted in the transplanting of 68 birds to seven sites (Table 1).

Strutting and mock-battling occurred as early as the first of the year, but it was in March before courtship and mating activities became intensive. By mid-March the wintering groups began to disperse widely for suitable nesting sites. Nesting birds were reported throughout the east-west length of the Pine Ridge with one exception of an area south of the White River southwest of the town of Crawford. No birds were reported sighted in this area.

Brood data indicated 10.1 young per hen (observed hen with brood) as compared with 8.8 in 1960, and 7.5 in 1959. Most brood observations occurred during the month of June with the earliest report made on May 25. Data indicated a possible early hatch during late May with the peak of the hatch occurring the first week of June.

Field observations indicated a complete east-west extension of the Pine Ridge range with the early 1961 transplant at the eastern-most area. Some reports included the range extension into Wyoming along the Pine Ridge extension and into South Dakota following the Hat Creek drainage. There is still a no-report area south of the White River near the village of Glen (Appendix 1). Considerable movement of the birds occurred during their nest site pilgrimages. The hens were noted to have traveled as much as ten miles in search of nesting sites. The numbers within groups traveling in search of nesting sites seemed to vary from five to ten hens with a few toms.

Flocking began in early fall. The smaller groups of several families banded together to form larger flocks. This gathering into large flocks may cause considerable concern on the part of the farmer due to the voracious appetite of the large birds for grain, waste or non-waste. Field notes indicated a rather limited fall and winter range of perhaps five miles in radius. During periods of snowfall and deep ground snow cover, the flock frequented the cattle feeding areas to utilize the waste grain found on the ground and also in the cattle dung. It did not take the birds long, if unmolested, to visit the corrals regularly for a handout.

¹/Twenty Merriam's turkeys trapped near Sundance, Wyoming, were obtained from the Wyoming Game and Fish Commission and eight birds trapped in the Black Hills near Spearfish and Custer, South Dakota, were obtained from the South Dakota Department of Game, Fish and Parks.

Table 1. Merriam's release data.

Area	Map Code	Site	Sex		Release Date
			Male	Female	
Pine Ridge	1M	Cottonwood Creek Sioux County S1, T32N, R54W	3	17	Jan. 16 & Feb. 10, 1959
	2M	Deadhorse Creek Dawes County S14, T31N, R49W	3	5	Feb. 28 & Mar. 11, 1959
	3M	White Clay Sheridan County S1, T34N, R44W	3	6	Feb. 19, 26 & 28, 1961
Wildcat Hills- Cheyenne Escarpment	4M	Carter Canyon Scotts Bluff County S29, T21N, R56W	3	6	Feb. 26, 1961
	5M	Bull Canyon Banner County S15, T18N, R58W	5	6	Nov. 9, 16 & Dec. 23, 1961
	6M	Miller, John Morrill County S27, T18N, R51W	5	7	Dec. 13 & 23, 1961
Niobrara River	7M	Schlagel Creek Cherry County S24, T28N, R33W	2	6	March 1, 1961
	8M	Kilgore Cherry County S3, T32N, R30W	2	7	Dec. 15, 1961
	9M	Sparks Cherry County S18, T34N, R25W	2	6	Jan. 18, 1962
	10M	Johnstown Brown County S33, T33N, R23W	4	5	Nov. 9, 1961
	11M	Pine Creek Brown County S5, T31N, R20W	3	6	Nov. 9, 1961
	12M	Carns Keya Paha County S13, T32N, R19W	2	8	Jan. 18 & Feb. 17, 1962
Total			37	85	

Winter observations indicated some inter-mixing of sexes among the adult birds; however, at times the adult toms gathered into completely separate flocks. This was especially true as spring approached. The wintering roost trees in the areas were used by both sexes. It has not been determined whether or not sex group segregation existed within the roost tree.

The second year's trapping operations resulted in successfully transplanting 68 birds to seven sites. At present a total of 94 birds has been transplanted to 10 sites in the Pine Ridge, Wildcat Hills-Cheyenne escarpment and the Niobrara River system. The trap-transplant mortality of one hen, 1.06 per cent, during the two years indicated some of the hardy traits of the species.

Suitable trappingsites based upon availability of trap-stock and flock habits were selected in the West Hat and Cottonwood drainages. Natural feed stations were utilized whenever possible with cracked corn, and later oats, used as bait material.

A total of 25 birds was successfully captured in two attempts at the West Hat trappingsite and 43 turkeys were captured at the Cottonwood site.

Nearly all the birds were released within 24 hours after their capture and were in excellent condition. One group of three was held for three days before being released. One of the three, a male, seemed to be in poor condition at the time of release. The carcass of this bird was found on March 10th at the release site.

As a rule, during trapping operations the males were less wary than the females. This may have been due, in part, to not firing the equipment when males made up the bulk of the birds on the bait area. The toms were more aggressive and seemed to have kept the females and younger birds off the bait area until the food was nearly gone. At times the flock could be hazed on foot or from a vehicle, but generally there were too many opposing factors for success using these techniques.

Wildcat Hills and Cheyenne Escarpments: The range is located in the southwestern section of the state, paralleling the North Platte River. Created by the erosion of the North Platte River and Pumpkin Creek and its tributaries, the range is a system of numerous rugged canyons and spurs intersected by seeps, springs, and streams. The soil type is of a fine sandy-loam texture. Annual precipitation averages approximately 15 inches. Principal land use in the Hills proper is cattle grazing. However, there is considerable cropland in the valley along the foot of the northern slopes. Crops include wheat, oats, corn and barley, with sugar beets in the more fertile irrigated sections. The type of the range is ponderosa pine-juniper-grassland group.

One release of nine birds (three males and six females) was made in this area in 1961. During the winter of 1961-62, two additional releases were made (five males and six females); (five males and seven females).

Limited data from the February 1961 release indicated reproductive activities commenced immediately after the birds were released and reproduction did occur. Following their release the turkeys became very secretive and difficult to observe due to the approaching nesting period. The birds were not seen and reported until the summer was nearly over. Based on two brood observations, there were 6.0 young per hen.

Several reports of eastern turkeys were noted during 1961 and they seemed to be centered around Lawrence Fork drainage south of Redington in Morrill County.

Niobrara River System: Traversing nearly the total length of the state along the northern border, the river becomes deeper and wider as it proceeds east. The vegetative cover changes from the short-grass plains type to the more rugged canyon-river bottom type. The turkey range is in the more rugged, ponderosa pine-juniper-bottomland type habitat along the river system. The principal land use is cattle grazing, with farming of less importance. Eight birds (two males and six females) were released at Schlager Creek near its confluence with the Niobrara River south of Valentine in early 1961. During the winter of 1961-62, 45 turkeys were released at five sites.

A summary of the Merriam's turkey release data is presented in Table 1 and Figure 1.

Because relatively few early brood observations were reported from the Schlager Creek release, it appeared that only limited reproduction had occurred. However, reports received during the fall big-game season plus later observations indicated a total of 48 birds in the area. This would indicate good reproduction comparable to other releases. At least one hen is known to have failed to bring off a brood. If all other hens were successful and no young mortalities occurred, the data would show an average brood size of 8.0 young per hen.

Rio Grande Wild Turkey

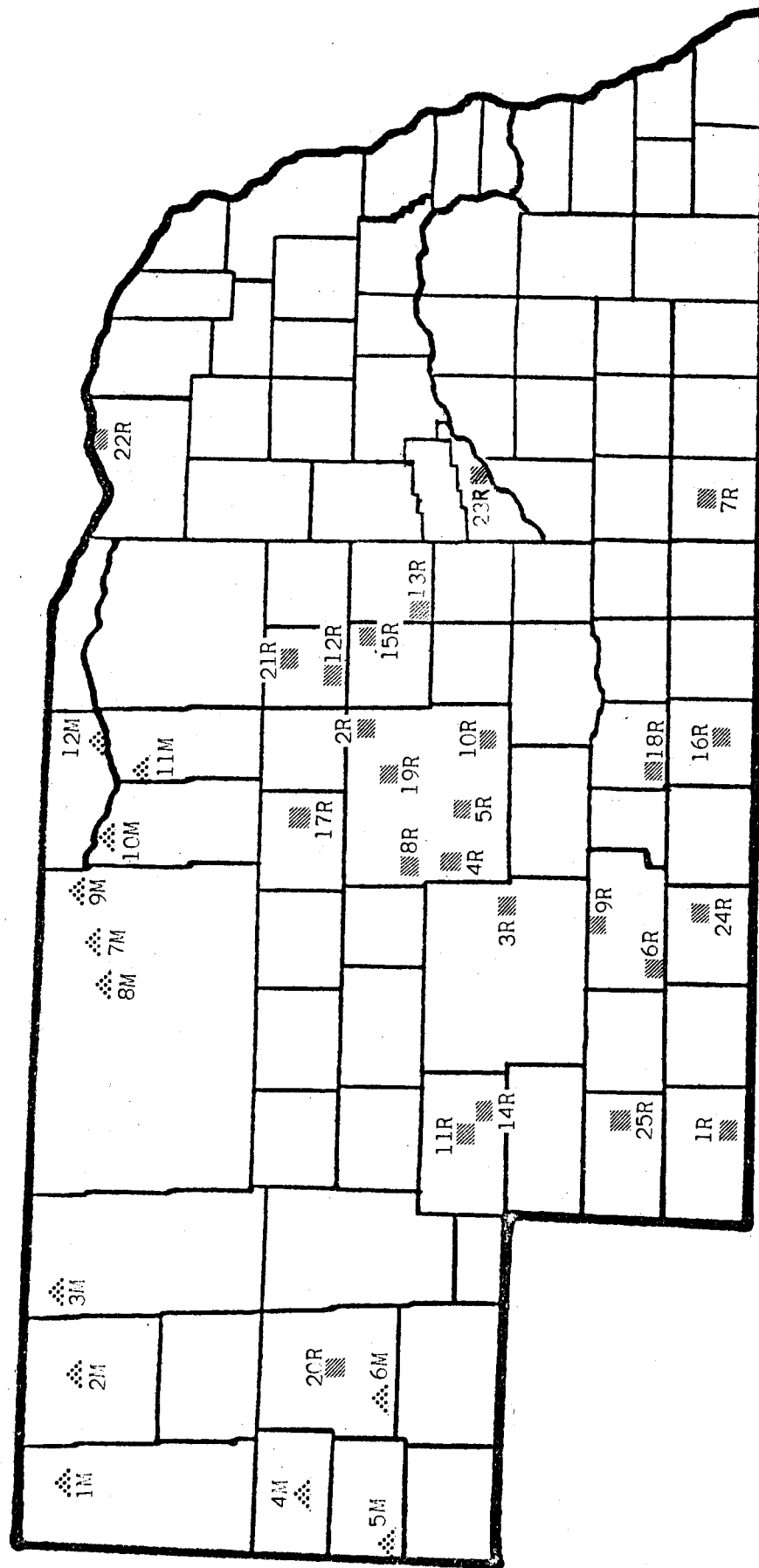
During late spring of 1961, 31 Rio Grande wild turkeys were obtained from the Texas Game and Fish Department for experimental releases in Nebraska. These birds, trapped on the King Ranch in southern Texas, were from a 25-inch rainfall belt area. The vegetation in the region where the birds were trapped consists of mesquite, live oak, plus a variety of grasses. Rio Grande turkeys have been successfully transplanted in the northern panhandle of Texas and have spread into the western one-third of Oklahoma. The habitat in this region is quite similar to that found along the river systems in central Nebraska. In the Texas panhandle, woody cover consisting mainly of cottonwood is restricted to a narrow belt along the stream courses in the short-grass region. The birds are reported to reach their greatest density on sandy soils along stream courses.

Benkelman Release Site: A release of four toms and ten hens was made in late spring of 1961 along the Republican River approximately eight miles west of Benkelman. Within a month after the release, one bird was found dead. Examination of the bird indicated death was probably caused from a collision with a power line.

Data on movement and distribution were lacking; however, reproduction did occur despite the late release. This was substantiated with the locating of a nest and also the late season observations of broods. The 20 wintering birds on the original release site may well have been the result of two broods as indicated by the sex count of 11 females in the group. Observations of other groups during the summer and fall were made further east of the release site, indicating perhaps a distribution of eight miles east along the river.

Sargent-Taylor Release Site: During the late spring of 1961, an experimental release of six toms and 11 hens was made in the rough canyon breaks north

Figure 1. Wild turkey release sites.



Map Code

Numbers refer to stocking sequence.

⊞ Merriam's (Information on specific Merriam's releases is presented in Table 1.)

■ Rio Grande (Information on specific Rio Grande releases is presented in Table 3.)

of Sargent on the Bomberger Ranch. A banded bird was noted road-killed, another banded bird was found dead in which cause of death was not determined, and a third mortality from which no band was reported occurred north of Sargent during the summer.

Landowner reports of groups of turkeys were generally insufficient to evaluate as to brood size, date of hatch, sex ratio, and the like. Sufficient data have been received to indicate that relatively successful reproduction did occur despite the late season transplant into the area. The 1961-62 winter population at the release site is estimated at around 35 turkeys.

Rio Grande Turkey Release (1961-62): A total of 548 birds was received at various points in Nebraska via rail and trucking systems (Table 2). The total shipping loss was 61 birds, favoring the trucking system for long distance transporting. Nine mortalities were reported from the various release sites. The cause of the majority of the loss was undetermined; however, it is believed to be connected with the condition of the birds at the time of release. There were mortalities by golden eagles reported at two sites, and by a coyote at one other site.

The 487 birds were released at 23 sites during the winter period. Reports of movements following their release were varied. At some release sites the groups stayed together and moved only a short distance, while others moved a maximum known distance of eight miles from the site. Other groups formed into several smaller flocks and commenced traveling in various directions. It is believed these smaller groups were the ones that were released later in the winter at which time the breeding period was approaching, thus were in search of breeding grounds and nesting sites.

A summary of the release data is presented in Tables 2 and 3 and Figure 1.

Table 2. Summary of Rio Grande turkey shipments received during 1961-62.

Date Received	Released			Shipping Losses	Total Received
	Males	Females	Total		
Nov. 22	29	37	66	5	71
Dec. 1	8	20	28	6	34
Jan. 12	2	92	94	14	108
Jan. 22	18	149	167	3	170
Feb. 2	19	30	49	28	77
Feb. 16	40	43	83	5	88
Total	116	371	487	61	548

Table 3. Rio Grande turkey release data.

Site	Map Code	Sex		Total Released	Release Dates
		Male	Female		
Benkelman - Republican R. S24, T1N, R39W	1R	4	10	14	Mar. 20, 1961
Sargent - Bomburger Ranch S9, T20N, R18W	2R	6	11	17	Mar. 20, 1961
Brady - Platte R. S23, T12N, R27W	3R	10	13	23	Nov. 20, 1961
Arnold - South Loup R. S6, T16N, R24W	4R	8	20	28	Nov. 20, 1961 & Jan. 12, 1962
Callaway - South Loup R. S13, T15N, R22W	5R	11	19	30	Nov. 20, 1961 & Jan. 12, 1962
McCook - Red Willow Creek S34, T5N, R30W	6R	6	17	23	Dec. 1, 1961 & Feb. 17, 1962
Nelson - Elk Creek S15, T3N, R6W	7R	4	9	13	Dec. 1, 1961
Arnold - Cedar Canyon S25, T18N, R25W	8R	5	22	27	Jan. 12 & Feb. 2, 1962
Curtis - Fox Creek S21, T8N, R28W	9R	5	19	24	Jan. 12, Feb. 2 & 17, 1962
Eddyville - Buzzard's Roost S13, T13N, R20W	10R	5	19	24	Jan. 12 & Feb. 17, 1962
Ogallala - North Platte R. S12, T14N, R37W	11R	6	22	28	Jan. 12, Feb. 2 & 18, 1962
Burwell - Jones Canyon S5, T21N, R15W	12R	4	15	19	Jan. 22, 1962
Scotia - Davis Creek S34, T17N, R12W	13R	4	15	19	Jan. 22 & Feb. 17, 1962
Paxton - South Platte R. S9, T13N, R36W	14R	5	21	26	Jan. 22, Feb. 2 & 18, 1962
Ord - Messenger Creek S23, T19N, R13W	15R	4	14	18	Jan. 22 & Feb. 17, 1962
Orleans - Republican R. S34, T2N, R19W	16R	4	14	18	Jan. 22, Feb. 2 & 17, 1962
Brewster - North Loup R. S4, T21N, R21W	17R	2	8	10	Jan. 22, 1962
Holdrege - Spring Creek S34, T5N, R20W	18R	4	15	19	Jan. 22, 1962
Anselmo - Middle Loup R. S11, T19N, R22W	19R	3	14	17	Jan. 22 & Feb. 2, 1962
Bridgeport - North Platte R. S1, T19N, R50W	20R	5	19	24	Jan. 22 & Feb. 18, 1962
Cedar River - Garfield Co. S35, T23N, R14W	21R	2	8	10	Jan. 22 & Feb. 17, 1962
Devil's Nest - Knox Co. S25, T33N, R4W	22R	6	18	24	Jan. 22 & Feb. 17, 1962
Clarks - Prairie Island S7, T14N, R5W	23R	4	16	20	Feb. 2 & 16, 1962
McCook - Republican R. S29, T3N, R30W	24R	4	17	21	Feb. 2 & 17, 1962
Imperial - Spring Creek S35, T7N, R37W	25R	5	17	22	Feb. 2 & 17, 1962
Total		126	392	518	

Discussion and Analysis

Merriam's Wild Turkey

The population increases during the past three breeding seasons have followed the same pattern reported from other western states. The pattern of explosive increases for the first several years is experienced until the carrying capacity of the range is neared. An investigator in one of the southwestern states once remarked upon the characteristic of the Merriam's turkeys doing extremely well in areas outside their ancestral range, and it was recommended that a removal program be initiated soon to maintain a high flock fecundity index.

The Pine Ridge population is believed to be approaching the peak of increase in the population curve. Perhaps this peak will be reached by the fall of 1963. Limited brood data have indicated a high young per brood index. This index has increased from 7.5 in 1959, to 8.8 in 1960, to 10.1 in 1961. It is predicted that this year's index will remain high, indicating an efficient reproductive population. A removal program of sufficient nature is highly recommended during the fall and winter of 1962-63. An open season seems to be the most economical method to utilize the resource.

Landowners' reports indicate that the hypothesis of nesting sites being located on the drier, higher slopes bordering timber cover, and within one-half mile from water, may be true. The data on nesting and hatching as computed by brood observations seem to agree with the previous years' data. The nesting and hatching period depends upon phenology, and the reproductive success depends to a large degree upon the weather during the critical period. The critical period has been cited in the literature as the latter half of incubation and the first two weeks in the young bird's lives. At this time hail and rain can be disastrous to reproduction. Fortunately this has not yet occurred in the Pine Ridge area.

With an additional release in the northeast end of the Pine Ridge escarpment, the range of the Merriam's turkey has been extended to cover the whole area. There is still a major area that has no reports of wintering populations (Appendix 1). The no-report area is probably due to the lack of landowner contacts rather than habitat restrictions. There have been reports of birds in the area during the spring movement of 1962, indicating a possible 100 per cent distribution throughout the Pine Ridge by fall of 1962.

Movements of Merriam's turkeys from Nebraska into Wyoming and South Dakota occurred during the spring of 1961, indicating one of the characteristics that insure the success of a new transplant of the species. These movements may also indicate the saturation of the habitat during a particular period of the year. It is believed to occur during the nesting period when nesting sites are at a premium, for certainly the large wintering flock belies saturation of an area. One wintering area continuously maintained a population in excess of 200 birds without noticeable ill effects.

Limited reports from the Wildcat Hills-Cheyenne escarpments release during the winter of 1960-61 indicate fair reproductive success. Two additional releases were made during the winter of 1961-62 to populate the whole of the range. It will be very interesting to follow the turkey population in this area since more and more free-ranging eastern and domestic turkeys are being noted.

Data indicated the Schlagel Creek release in the Niobrara River system has increased from eight to 48 birds in one breeding year. This increase of 8.0 young

per hen is comparable to the Wildcat Hills index of 6.0 young per hen. The birds have been reported ranging close to the release site. Five additional Merriam's releases totaling 45 birds extended the distribution approximately 75 miles east and 18 miles west along the Niobrara River from the Schlagel Creek site.

Rio Grande Wild Turkey

While it is still too early to predict success for the Rio Grande turkey, the fact that reproduction occurred following the March 1961 releases was most encouraging. It was felt that since the birds were already nesting in Texas when they were trapped, the handling and moving into a completely different environment would sufficiently disrupt their reproductive cycle as to result in little or no reproduction. Releases of birds obtained during the 1961-62 trapping period were made throughout a larger portion of what is considered potential turkey habitat in Nebraska.

Summary

Merriam's Wild Turkey

The Merriam's turkeys in the Pine Ridge have increased from 28 birds to 115 in the fall of 1959; 325 fall of 1960; 1,000-1,500 by fall of 1961. Brood data indicated an average brood size of 10.1 young per hen in 1961; 8.8 in 1960; and 7.5 in 1959. This probably is a reflection on the limited number of brood observations rather than an actual increase in brood size. Distribution extends throughout the Pine Ridge area with a no-report area existing. Some birds have moved into Wyoming and South Dakota. A hunting season is strongly recommended for the fall of 1962 with a spring gobbler season following.

Trapping and transplanting continued for the second year with a total of 94 Nebraska-trapped birds being released at 10 sites in the state.

There are three release sites in the Wildcat Hills-Cheyenne escarpments totaling 32 birds. Reproduction occurred in the early 1961 release and limited data indicate a 6.0 young per hen brood index.

There are now six release sites totaling 53 birds along approximately 100 miles of the Niobrara River system. Eight birds released in early 1961 have increased to 48 birds in one breeding season. Brood data indicated 8.0 young per hen as the average brood size. This is comparable to the Wildcat Hills-Cheyenne escarpment index.

Rio Grande Wild Turkey

Rio Grande turkeys released along the major river systems throughout the south-central portion of the state now total 518 birds at 25 sites. At least 12 mortalities were reported of the birds being released. Losses were reported caused by predation by golden eagles, coyotes, and accidental road-kills; however, the majority of the losses were probably connected with the condition of the birds when released.

Reproduction occurred at the two early 1961 release sites. Data were insufficient to calculate brood size, but based on limited data a 7.0 brood index was indicated.

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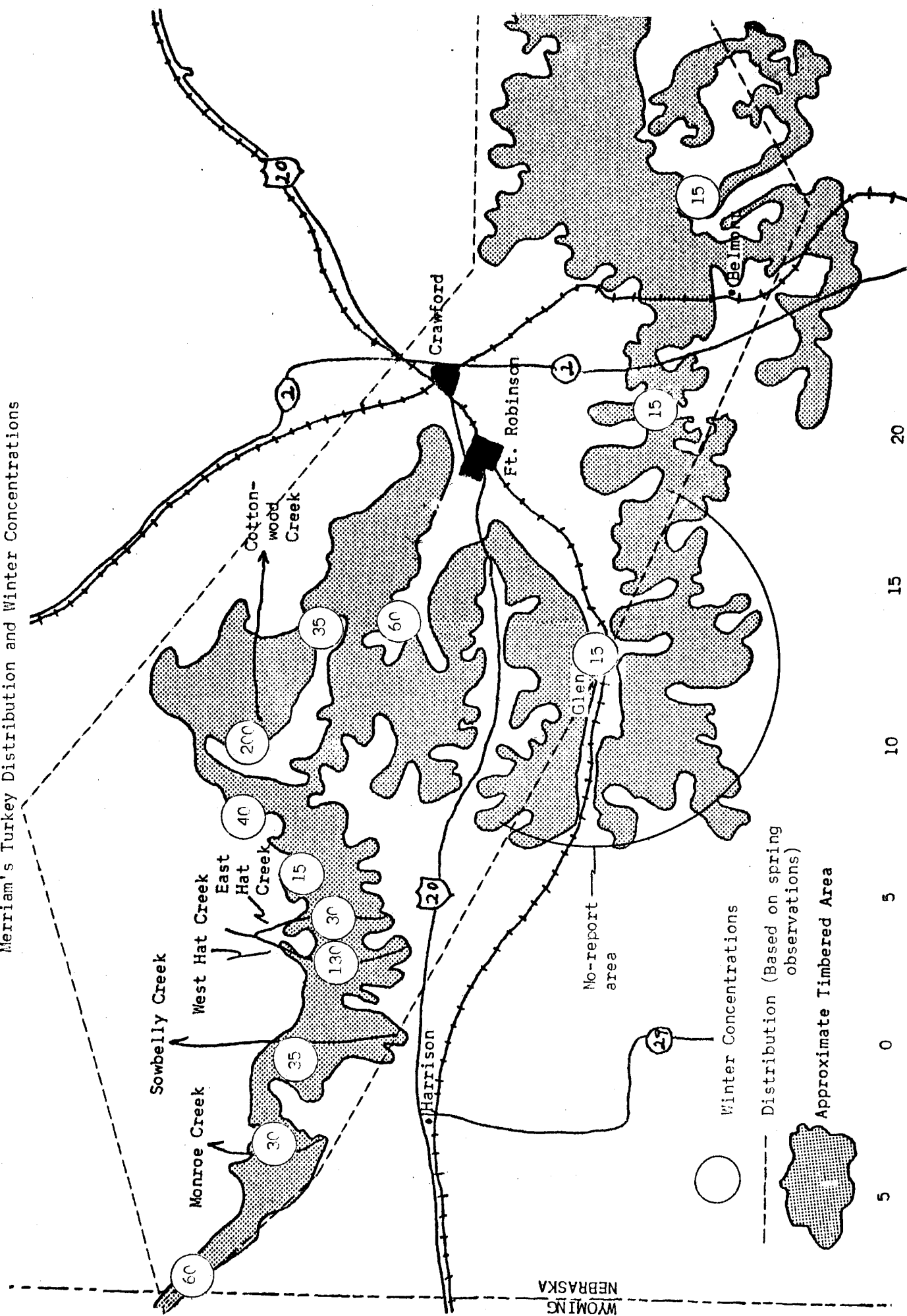
Date: May 1, 1962

Approved by: Kenneth L. Johnson
Assistant Project Leader

Date: May 14, 1962

A P P E N D I X

Merriam's Turkey Distribution and Winter Concentrations



SOUTH DAKOTA
NEBRASKA

Appendix 2

Merriam's Turkey Distribution and Winter Concentrations

