



SOCIETY OF

TYMPANUCHUS

CUPIDO

PINNATUS

LTD.

NEBRASKA SANDHILLS PROGRESS REPORT No. 6 – April 27, 2014

The information in this Progress Report is preliminary and ongoing. As such observations and data are incomplete and can and will change. Thus it should not be cited or quoted until a final report is produced.

This progress report summarizes the results of the Society of Tympanuchus Cupido Pinnatus, Ltd. Nebraska Project for the period 1 November, 2013 to 18 April, 2014.

Robel (1980): *“Long term biologically oriented research on remnant and/or isolated prairie grouse populations may not produce data representative of viable prairie grouse populations in the central portions of their ranges.”*

Overall winter survival of greater prairie-chickens in Nebraska and Minnesota during the winter of 2013-2014 were comparable at 71.9% (n=89) and 70.0% (n=50) with adult survival of both cocks and hens being higher than young of the year. One should not be surprised at the high survival of birds in northwestern Minnesota. Even though it was a long, cold winter with lots of snow, conditions were good for survival. There were over 1,700 acres of standing corn left in the field in Norman and Clay counties and ideal snow conditions for snow burrowing at night.

Of the 30 adult hens located in Nebraska during the winter, 9 (30.0%) remained within 3 miles of their autumn areas and 8 (26.6%) were never found during the late winter airplane searches yet showed up in their 2013 nest areas in early April 2014. This indicates that they also probably made seasonal movements of considerable distances from their autumn to winter areas. The remaining 13 (43.3%) adult hens made movements to wintering areas of 10 to 75 miles with 7 making unprecedented movements of 24, 25, 31, 40, 56, 56 and 75 miles. All but one of the 13 returned to their 2013 nesting areas by mid-April. The latter bird as of 17 April had remained 30 miles from last year's nesting area. Such seasonal movements have never been documented in greater prairie-chickens and will definitely alter our concept of habitat utilization and especially how large an area of grassland is necessary to sustain a viable prairie-chicken population.

All of the young hens located in Nebraska dispersed 10 to 50 miles during the winter and none have returned to their natal areas. Cocks in Nebraska were the most sedentary as adult cocks wintered at most four miles from their home booming grounds (the one they displayed on in 2013) with all the rest remaining within 2 miles. The trend in the pattern of the mean distances from autumn area to their wintering area was greatest for adult hens (17.4 miles, n=20, Range 1-75 miles) followed by young of the year hens (16.9 miles, n=7, Range 3-45) then young of the year cocks (Mean=1.6 miles,

n=11, Range 0.5-3.0 miles). Adult cocks remained the closest to their autumn areas and home booming grounds (Mean=1.4 miles, Range n=7, Range 0.5-4.0 miles).

All the radioed prairie-chickens followed in Nebraska like last winter 2012-2013 either fed in center pivot corn or soybean fields or where ranchers were feeding their cattle corn or supplements (corn waste from ethanol plants). The birds pick the undigested corn from cow pies. The ranchers refer to this as recycled corn. Night roosting typically occurred in lowland areas with taller lightly grazed vegetation

In northwestern Minnesota the movement pattern autumn to winter was the same with hens moving farther than cocks. However the magnitude of the movements was six times greater for adult and immature hens in Nebraska (17.1 miles, n=27, Range 1-75 miles) versus Minnesota (2.5 miles, n=20, Range 1-4 miles). Young of year hens in Minnesota made the greatest moves (Mean=2.8, n=9, Range 1-4) followed by adult hens (Mean=2.2, n=11, Range 1.3), the young of year cocks (Mean=1.7, n=10, Range 1-3) and adult cocks remained the closest (Mean=1.3, n=11, Range 1-2.5 miles). Movements of cocks are comparable between Nebraska and Minnesota however the difference in movements between hens in Nebraska and Minnesota is striking and are once again are six times greater in Nebraska than Minnesota.

Using a conservative 50-mile radius for dispersal and seasonal movements (autumn to winter) for hens generates an area of about 8,000 square miles or 5 million acres. None of the radioed birds in northwestern Minnesota moved further than 4 miles to their winter areas in 2013-2014 and one moved 8 miles in 2012-2013. There is no contemporary evidence of any long distance migration for prairie-chickens in Minnesota.

The dramatic difference between seasonal movements between hens and cocks is puzzling at this time considering the fact that their daily movement patterns were similar once hens were found at their wintering areas(s) - that is they feed in agricultural fields or rancher feed lots and night roost in nearby lowland or wetland grass usually within a half-mile. Also, the hens that left their autumn areas in the Sandhills left during late October with all departed by the first week of November when weather was still warm with no snow on the ground.

Based on the information collected in two winters we are now presented with an unprecedented opportunity to once again step forward and document unique information on behavior, movements and habitat use in a large prairie-chicken population in the largest expanse of grassland in North America. This is in contrast to contemporary studies that are studying reproductive ecology of small isolated, declining populations that have low genetic diversity and are threatened or endangered.

The pilots we use for our aerial radio-tracking are the best there are at this type of work. Over the years we have developed the search techniques and plane set up used for prairie-chickens (two pilots in the plane, duplicate search transects, three element external yagii antennas, utilizing two and at times three receivers. All of these elements

are necessary to search and locate a large number of missing birds that have made significant dispersal movements

The receivers are computerized and can scan for radio frequencies at a set rate - usually 2-4 seconds. When 20-30 or more radioed individuals are missing and one is flying 90-100 miles per hour it is very easy to fly over or near a radio-marked bird and not pick up a signal using a single receiver because of the lag in time (it takes 120 seconds of scan time between each frequency). Hence two to three receivers are used simultaneously to scan for more frequencies more rapidly so one is less likely to miss a bird.

With our current airplane budget we would only be able radio 4 birds with satellite units and would get far less information. Instead however, with our standard radios we are now getting good survival, movement, nesting (150 nests) and brood rearing data on over 75-100 birds each year both from the ground and the air. I am quite aware that the airplane searches are expensive yet this investment has obtained movement and habitat information on prairie-chickens never before recorded and now raises very serious questions about management of small populations. These data could not be collected by an assistant or me only from the ground or with a few GPS or satellite units.

This type of information has not been documented by previous studies because they radioed only a few birds (20-30) attached a few satellite transmitters and focused only on nesting and brood rearing. There have been very few year-round studies of prairie grouse and there have been only five studies that have documented winter ecology all done by this author.

One big disadvantage we do have is that our radios are not as powerful as others because we use tuned loop and/or coiled whip transmitters to avoid having an external whip hit a prairie-chicken's wings as it flies possibly altering behavior and survival (Marks and Marks 1987). Because of this the effective range of our transmitters is reduced to about .75-1.0 miles on the ground with an air to ground range of 3-5 miles depending on the direction the bird is facing.

It should be obvious that the locating of wintering adults and dispersing young of the year has been under funded in the budget and if we want to document what prairie-chickens do in a large viable population we will have to radio-mark more young of the year, search a larger area and spend an additional \$12,000-\$15,000. This would cover additional radios and flights to locate the missing young of the year hens which would provide a better understanding of their dispersal and migration mechanisms as they relate to food and the size of a grassland area necessary to support a large secure prairie-chicken population. There is nobody else doing this type of year-round ecology and winter work and no project has every radioed this many young of the year greater prairie-chickens to begin to document such dispersal movements and behavior in a very large population.

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