

PENNSYLVANIA WILD PHEASANT RECOVERY PROGRAM

Recommendations for the Future

2008-2019





Prepared by Scott R. Klinger & Thomas J. Keller
Pennsylvania Game Commission



Purpose: This document provides recommendations for the future of the Wild Pheasant Recovery Area (WPRAs) program.

Introduction:

Pennsylvania's wild pheasant population began declining drastically in the early 1970's and most wild birds had disappeared by the mid 1990's. The Pennsylvania Game Commission (Commission) has been able to maintain a strong pheasant hunting tradition throughout the state through a raise and release program. Pheasant hunter surveys documented a strong interest in trying to restore wild pheasants in Pennsylvania. In response to this and the need to direct pheasant management into the future, the *Ring-necked Pheasant Management Plan for Pennsylvania 2008-2017* was completed. This comprehensive plan set forth many goals and objectives to direct both wild and propagated pheasant management for the state, with the first goal to restore wild pheasants:

Goal 1. Restore self-sustaining and huntable ring-necked pheasant populations in suitable habitats throughout PA.

To achieve this, objectives were established such as developing a habitat model for the state to determine where these populations should be placed, restoring 300,000 acres of needed habitat within several designated WPRAs, translocating 900 wild pheasants into each WPRAs, and then monitoring those populations to determine success or failure as well as collect valuable biological data for future management of the species. A threshold of 10 hens per square mile (3.86/km²) was established as the benchmark for achieving a huntable population.

At the outset of the project, expectations varied widely. The most optimistic proponents predicted that wild pheasants were the only missing ingredient and would thrive anywhere grassland habitat existed. On the other end of the spectrum, some opposed the entire WPRAs concept based on the view that the contemporary landscape is totally unsuitable for pheasants and predicted that wild populations would disappear soon after reintroduction.

Wild Pheasant Recovery Areas:

In 2009, the Central Susquehanna (CS: 97,645 ac.) and Somerset (SOM: 17,115 ac.) WPRAs were officially recognized although work had begun many years previously. The Hegin-Gratz Valley WPRAs (HG: 36,210 ac.) was approved in 2010 and the Franklin County WPRAs (FC: 62,799 ac.) was approved in 2011. These four WPRAs, having 12 study areas, represented the recovery areas found throughout the state following the specifics set forth in the plan. This project was a true collaborative partnership between the Commission, Pheasants Forever (PF) staff and chapters, as well as private landowners. The greatest challenge was finding willing landowners who would voluntarily restore their properties into needed pheasant habitat.

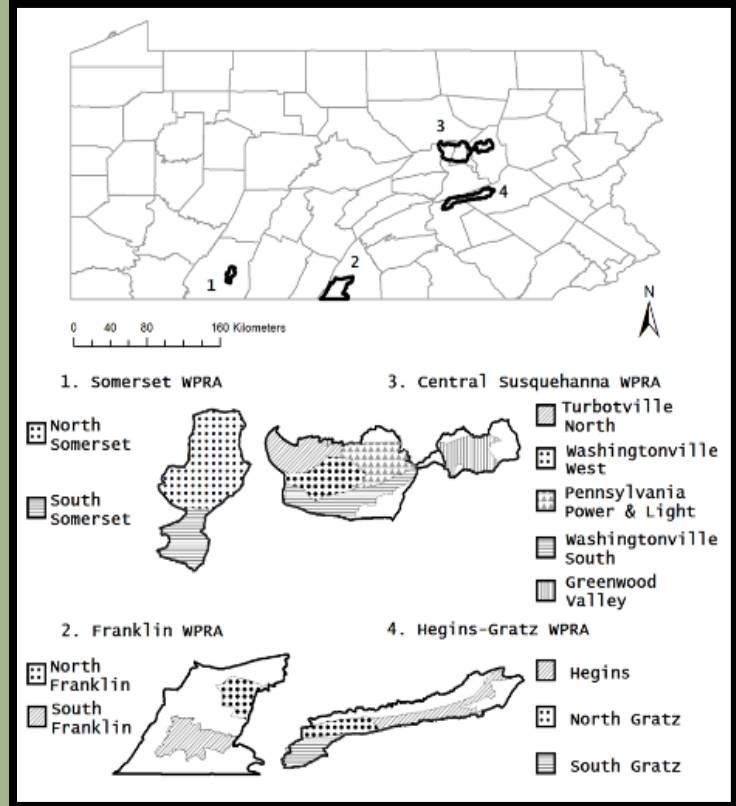
Habitat Restoration:

An ambitious goal of establishing 25% of cropland in nesting/brood cover and 5% of land in winter cover was established for each WPRAs. This goal equates to creating 53,442 acres of nesting/brood rearing cover and 10,688 acres of winter cover over all WPRAs.

Farm bill biologists worked closely with landowners within WPRAs to establish this habitat. Much of this came through the federal Conservation Reserve Enhancement Program (CREP) where landowners received an annual rental payment for planting and maintaining grass for at least a

10-year commitment to improve water quality, prevent soil erosion, and enhance wildlife habitat. The Commission also instituted a program called Deferred Use of Grasslands (DUG) under which landowners within WPRAs who enrolled in the Hunter Access Program could receive an annual payment for not disturbing their grass during the nesting season.

Initially, habitat restoration flourished. Unfortunately, rising commodity prices and various other social factors, have led to steady habitat declines since 2013. The two primary sources of providing habitat (CREP & DUG) have shown continual drops in enrollment.



Over 2,300 wild ring-necked pheasants were translocated from South Dakota & Montana for release within Pennsylvania's Wild Pheasant Recovery Areas

Translocation:

Beginning in 2007, the Commission in partnership with PF and their sister organization Habitat Forever began the task of trapping wild pheasants and transferring them into Pennsylvania. Much of the funding that supported this effort was provided by the local PF chapter closest to each WPRAs. Pheasants were trapped during the late winter/early spring periods on either public land in South Dakota or Native American Reservations in Montana. Prior to release they were banded and then tested for Avian Influenza and parasites. Radio transmitters were placed on 459 translocated birds of both sexes and later 86 transmitters were deployed on resident birds (birds that

had been established within the WPRAs post-translocation).

	2007	2008	2009	2010	2011	2014
CS	329	365	298			
SOM			346	318	300	
HG					300	
FC						72

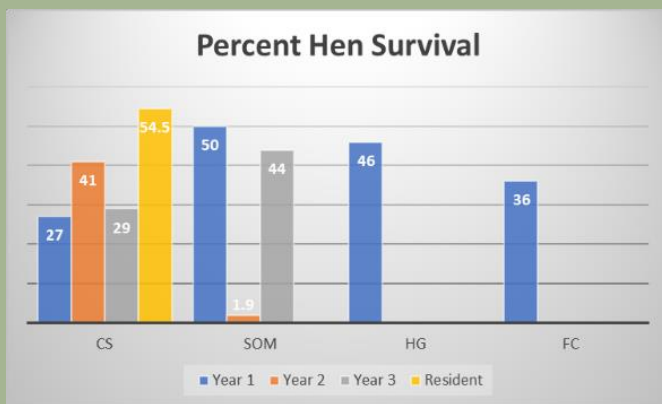
The goal of the program was to translocate 300 birds/year over 3 successive years for each WPRAs eventually reaching a density of 10 females/mi². The translocation goal was not achieved on the Hegins-Gratz and Franklin County WPRAs because of declining populations in the mid-west and un-cooperative trapping weather. In total, 2,328 pheasants were released within the 4 WPRAs over 6 years with 1,930 females and 398 males.

Research & Monitoring:

Following translocation, Commission biologists began intense monitoring and research to gather as much biological information as possible including survival, home range, movement, habitat preferences and density estimates.



Survival – Hen survival was measured only for the spring-summer period out to approximately 20 weeks post-release. Post translocation survival estimates ranged from

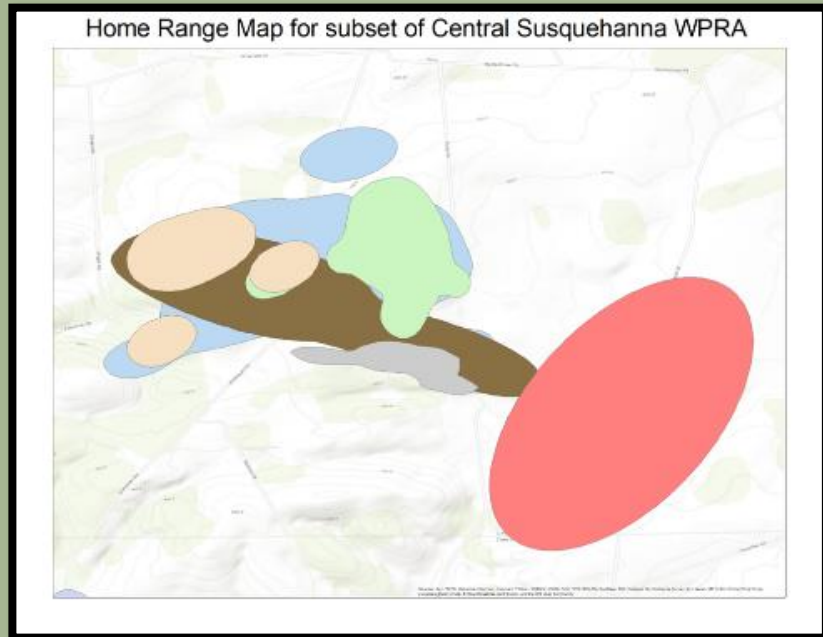


1.9% to 50% with a 34.4% average and were variable between years and WPRAs. The initial two weeks post-transfer were by far the most difficult for pheasants with much predation occurring, but following acclimation to their environment, survival increased. To test the survival differences between newly transferred hens and resident hens, 5 years of trapping and collaring resident hens within the CS

WPRA was completed. Resident hen survival averaged 54.5%; a 20.1% increase over the out-of-state translocated hens.



Home Range - Based on 32 pheasants in 2 WPRAs, average home range was 207 acres (0.32 mi²). Franklin County WPRA had 191.38 acres (0.30 mi²) based on 18 pheasants and Central Susquehanna had 227 acres (0.35 mi²) based on 14 pheasants. Home range varied widely between individuals with a low of 10 acres (0.02 mi²) and a high of 1,077 acres (1.68 mi²). In comparison to previous research that found a home range of 1-2 mi², pheasants on WPRAs had significantly smaller home ranges.



Movement & Dispersal – Looking at the 32 pheasants used for home range estimation there was quite a bit of difference in how far birds moved in general and how far they traveled from release site. Pheasants can travel a significant distance to occupy suitable habitat as was seen in the Hegins-Gratz WPRA when a farm 4.5 miles from a release site was populated by wild birds. The furthest a collared surviving female traveled from the release site was 3.2 miles with the greatest distance between recorded points being 4.2 miles. Most females showed a much smaller movement pattern however with an average of 0.32 miles. Literature review has previous research at 1.98 miles which is considered more indicative of established resident birds in contiguous habitat. This information is crucial in determining how suitable habitat must be spatially positioned within the greater agricultural matrix.

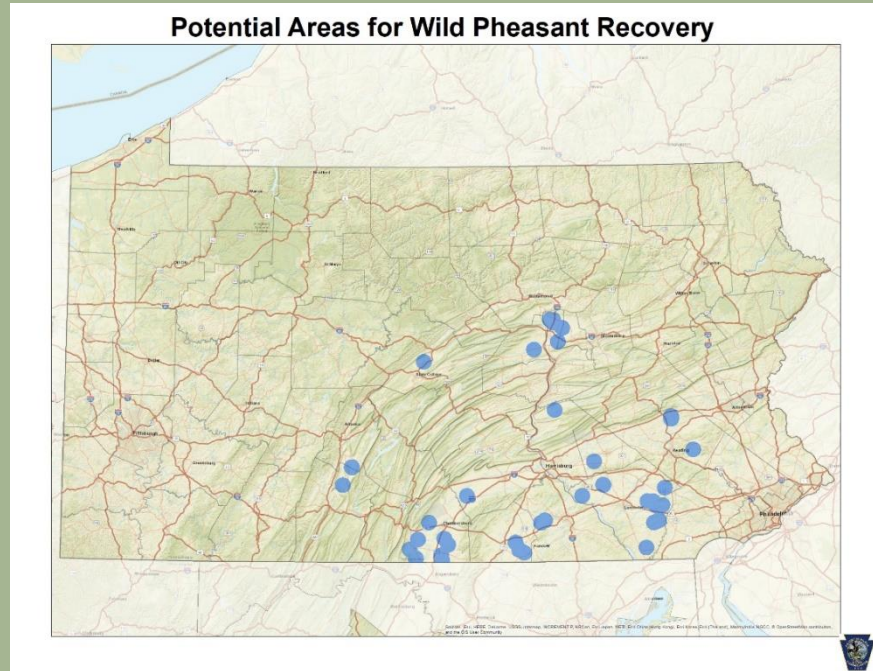



Habitat Surveys – Although much research on pheasant habitat needs exists for the Mid-west and West, little has been researched on the needs of a self-sustaining population within a predominantly forested landscape. Working closely with the Pennsylvania State University Cooperative Fish & Wildlife Research Unit, researchers conducted habitat surveys at randomly selected, random point crowing count locations and identified each habitat patch within a 0.34-mile radius circle. Using this information, a model was developed showing that the two best predictors of pheasant population density were the proportion of idle grass (positive influence) and proportion of forest (negative influence). As an example, a mean proportion of 16.7% forest and 6.8% idle grass predicts a density of 1.26 female pheasants/mi². A 1%

1% ↑ Idle Grass = 2.6% ↑ ♀
 1% ↑ Forest = 1% ↓ ♀

increase in proportion of idle grass produces a 2.6% increase in female density. With a 1% increase in proportion of forest, there is a 1% decrease in female density. A spatial model was developed to determine future areas where pheasant restoration has potential. Once a specific area is chosen, managers can estimate the proportion of idle grass (and therefore acres) needed to achieve a specific density.

It's important to understand that this model is based on the breeding/nesting period in areas with landscapes similar to WPRAs and the areas represented, excepting the CS WPRAs, would require a significant amount of idle grass establishment to become suitable. As an example, with the overall average proportion of forest at 16.7% and idle grass 6.8% we can expect a density of 1.3 hens/mi². To reach the goal of 10 hens/mi² a proportion of 52% idle grass is needed which in a 30 mi² study area translates to just shy of 10,000 acres of idle grass.

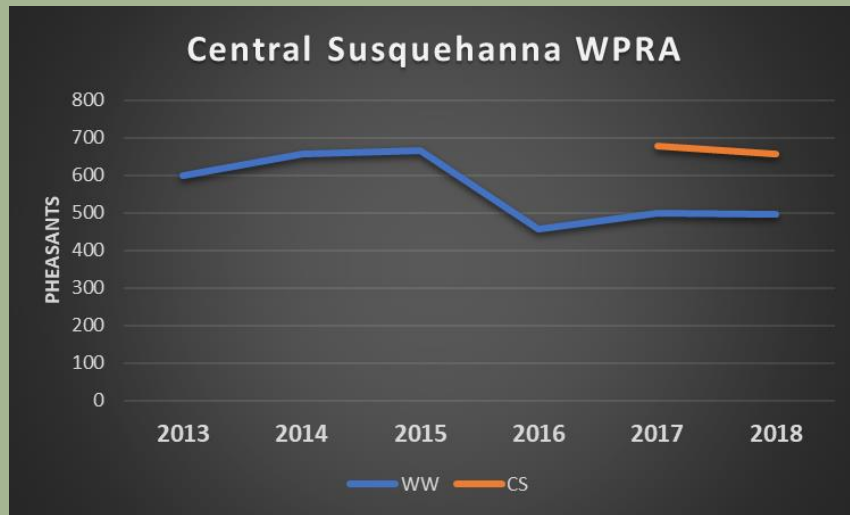


 **Population Estimates** – Two common population survey techniques were used to track population trends. The roadside male crowing survey routes (routes driven with stops at specific intervals) was used to establish population index trends of males as an indication of population level for each WPRAs. The second technique was male crowing random point surveys which were randomly placed survey locations throughout each WPRAs to curb bias of routes along roads that may not be representative of the entire area. Random point surveys were conducted 2013-2018 and provide a tighter confidence interval while surveying a greater proportion of the study area and better delineating clustered populations spatially. Flushing surveys during late winter were conducted annually to provide sex ratios to accurately calculate female densities from the male densities estimated from crowing count surveys. Working closely with the Pennsylvania State University Cooperative Fish & Wildlife Research Unit, researchers developed a population density estimator that incorporated multiple detection probabilities, to account for the finding that crowing frequency and audibility are more variable than is often assumed. This cutting-edge research increased the accuracy of estimating relatively small populations.

Using this estimator, researchers were able to track population levels from 2013 to 2018. Most WPRAs populations were determined at the study area level to allow finer scale management decisions.

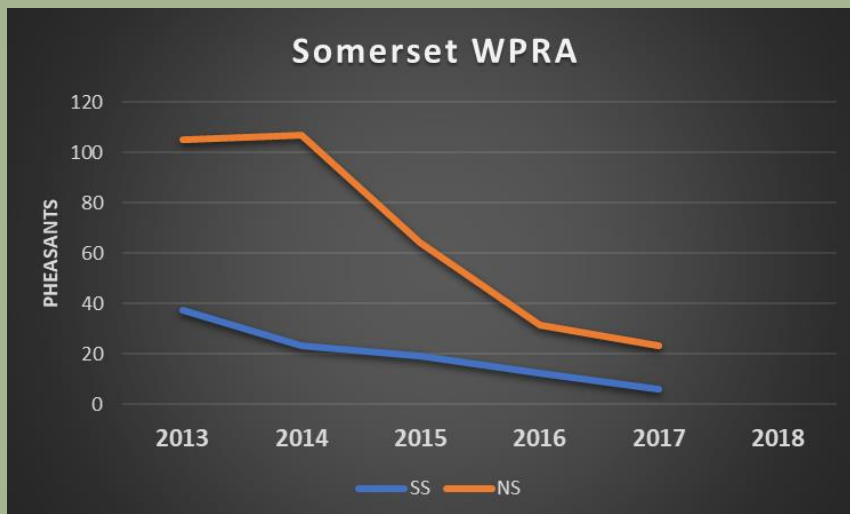
Central Susquehanna WPRA

Central Susquehanna WPRA was downsized in 2017 so estimates were based on the current WPRA and one of the original study areas that was not affected by the boundary reduction. This study area, Washingtonville West (WW), has been the only area within all 4 WPRAs to meet the minimum target of 10 hen pheasants/mi² achieved in 2015. It has since dropped slightly below that target. The Central Susquehanna WPRA is currently showing a stable population trend over time.



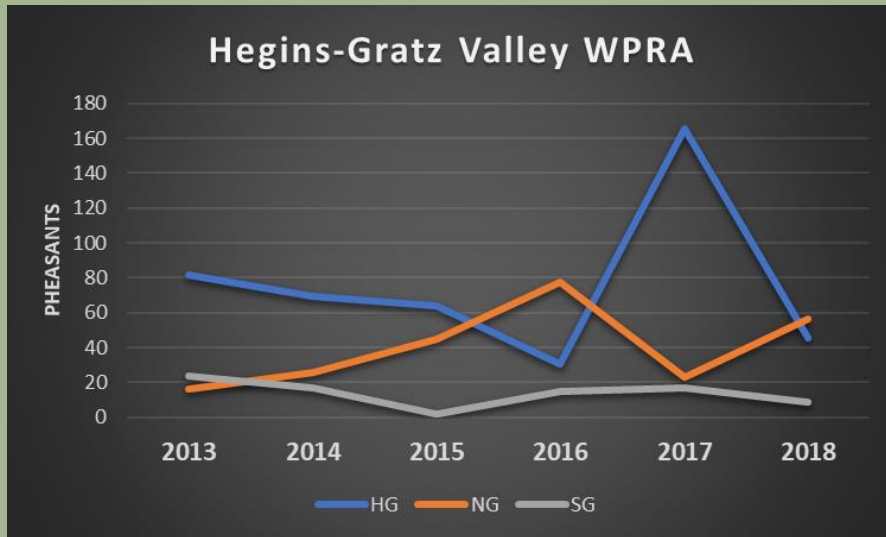
Somerset WPRA

Somerset WPRA contained two study areas, North Somerset (NS) and South Somerset (SS). The survey period saw a dramatic decrease in population starting in 2015 within NS and a slow decline within SS since beginning the survey. Due to minimal habitat and population establishment, Somerset WPRA was dissolved in 2018.



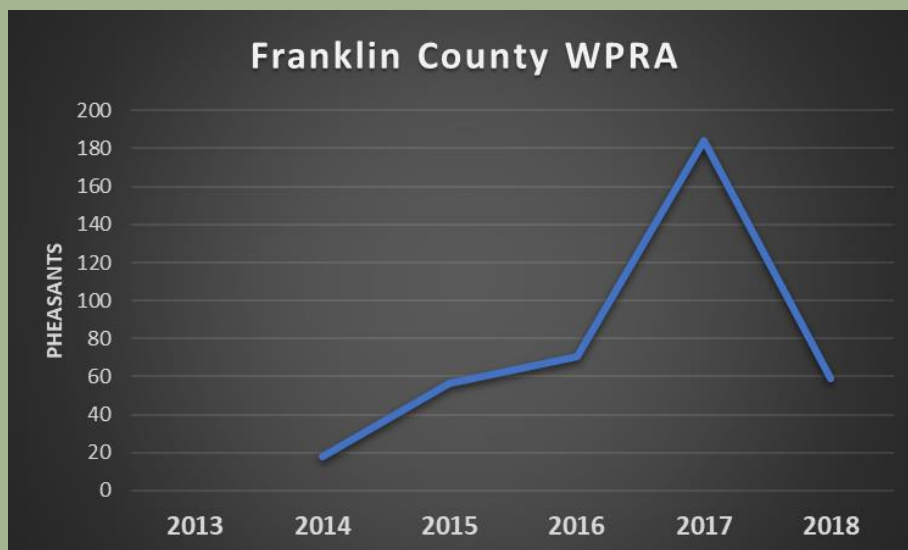
Hegins-Gratz Valley WPR

The Hegins-Gratz Valley WPR is broken into 3 study areas with Hegins to the east, North Gratz to the northwest and South Gratz to the southwest. South Gratz has maintained a very low population level but in recent years is trending downwards towards zero. The Hegins study area has the most habitat within the WPR but has shown a slightly decreasing trend with a sharp rise in 2017 and fall in 2018. North Gratz was showing a steady increase until 2017 where it saw a decline and then slight rebound in 2018.



Franklin County WPR

Although Franklin County WPR contains 3 study areas (North Franklin, Central Franklin, and South Franklin), only the South Franklin area received wild pheasants and the remaining two study areas have not seen dispersal from South Franklin since the advent of this study. South Franklin populations have increased despite receiving the fewest number of pheasants of any WPR.



Evaluation:

After reviewing the research and monitoring data from this project, it's important to determine whether the original goal has been met for each WPRA. Every WPRA except Somerset does indeed have a persisting pheasant population. Looking at long term trends in both population and habitat, however, some of these sub-populations will likely fade in time. Several questions should be kept in mind as each WPRA is evaluated compared to the management plan goals.

- What is a 'hunnable' population of wild pheasants in Pennsylvania?
- Is the population density threshold set forth in the pheasant management plan an appropriate measurement of success for Pennsylvania?
- Are the suitable habitat goals set forth in the pheasant management plan appropriate for Pennsylvania and what are feasible goals within the current agricultural landscape to sustain a huntable population?

Hegins-Gratz: Of the three study areas within this WPRA, the South Gratz population is nearly at zero. Due to the high proportion of forest within and surrounding the Hegins study area, it is unlikely to ever realize a huntable population although it continues to support pheasants at low densities. North Gratz is continuing to persist as well and prior to 2017 was showing an increasing trend in population. With low proportion of forest, the limiting factor in success is a lack of idle grass. This WPRA did not receive its full complement of translocated birds. No study area within this WPRA has reached a huntable population of wild pheasants, the suitable habitat goals, or the minimum density threshold set forth within the plan.

Franklin County: The South Franklin study area is the only study area within this WPRA that received and continues to have wild pheasants persist. Current populations are existing in an area where proportion of forest is low, but there is also a lack of adequate idle grass which is limiting expansion and density. It should be noted that this WPRA received the fewest

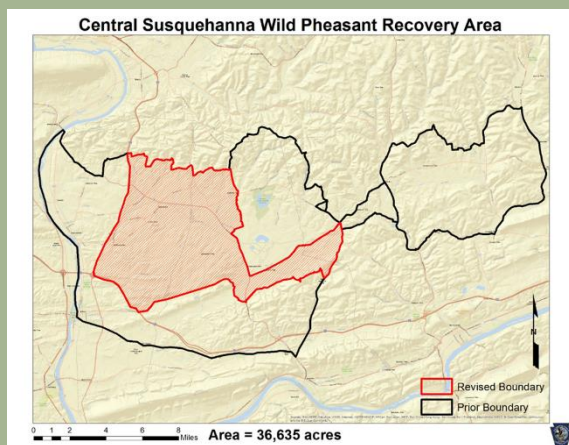
translocated birds. No study area within this WPRA has reached a huntable population of wild pheasants, the suitable habitat goals, or the minimum density threshold set forth within the plan.

Somerset: From the outset of translocation completion within Somerset WPRA, populations never saw a strong increase and within several years began a precipitous decline. Habitat disappeared at an alarming rate, and harsh winters with above average snowfall and persistence also seemed to play a role in pheasant disappearance. This WPRA received its full complement of translocated birds. No study area within this WPRA had reached a huntable population of wild pheasants, the suitable habitat goals, or the minimum density threshold set forth within the plan.

Central Susquehanna: This was largest of the 4 WPRA's at the beginning of the project and has had both success and failure among its 5 study areas. The Greenwood Valley study area to the east proved to have too much forest despite a large amount of idle grass. The pheasants slowly disappeared

over time. The PPL study area followed a similar pattern and habitat is being lost because of recent ownership changes. The Washingtonville South study area was used as a control with no wild birds stocked within its boundaries. Despite this, some pheasants did move in despite a small amount of habitat.

The Turbotville North study area along with the Washingtonville West study area have shown the greatest promise of all study areas within the WPRAs project. The Washingtonville West study area was the only area to meet the minimum threshold of population densities in 2015. Since then, it has dropped slightly below that threshold.



The new reduced boundary of the WPRAs reflects the highest densities of pheasants within the area as of 2016. This WPRAs received its full complement of translocated birds. Besides the Washingtonville West study area, no other area reached the management plans minimum density threshold. No study area within the WPRAs reached the suitable habitat goals set forth within the plan. However, this WPRAs has reached a 'hunnable' population.

In 2018, the Central Susquehanna WPRAs celebrated its second year of a limited draw wild pheasant youth hunt. Over 80 youth hunters have had the opportunity to pursue wild pheasants on the private lands of the WPRAs. The dedication of private landowners, PF chapters, PF farm bill biologists, and Commission personnel have succeeded in realizing the goal of this project. Even without reaching the suitable habitat goal or currently the population density threshold of the management plan, researchers believe that this WPRAs should be considered successful and that thresholds and goals for success from the original plan should be revised based on this example.

Summary of Prior Changes:

In 2017, several changes were made to the overall regulations as well as several specific WPRAs. They are as listed:

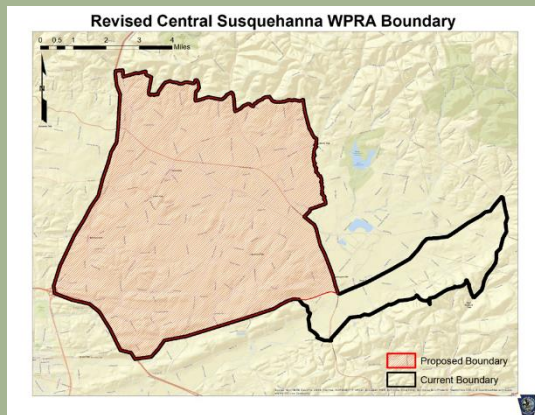
- Somerset WPRAs dissolved and opened to either sex pheasant hunting.
- Central Susquehanna WPRAs reduced from 97,645 ac to 36,635 ac.
- Small game hunting opened within WPRAs (except pheasant hunting).
- Dog training period extended with restricted period moved to 3/1 – 7/31.
- Youth Hunt initiated in CS WPRAs.

Recommendations:

With the research portion of this project completed, it is important to take the valuable information gleaned and apply towards moving this program into the future.

Central Susquehanna

This WPRAs is an example of the importance of collaborating with private landowners to maintain and restore farmland wildlife populations. With a healthy population of wild pheasants found within the core portion of the WPRAs, continuation of the WPRAs with maintenance of current restrictions on pheasant hunting and propagated pheasant releases is recommended. Annual permit-based youth hunts should continue, and consideration should be given to expanding eligibility for permits to other age classes. It's recommended to remove the dog training restriction from this WPRAs as this regulation is no longer necessary to protect the wild pheasant population. Due to extremely low existing densities in the



southeast panhandle (5,429 acres) it's recommended to remove this portion of the WPRAs, reducing the WPRAs to 31,206 acres.

Continued emphasis should be placed on protecting and creating pheasant habitat. Currently there are approximately 1,480

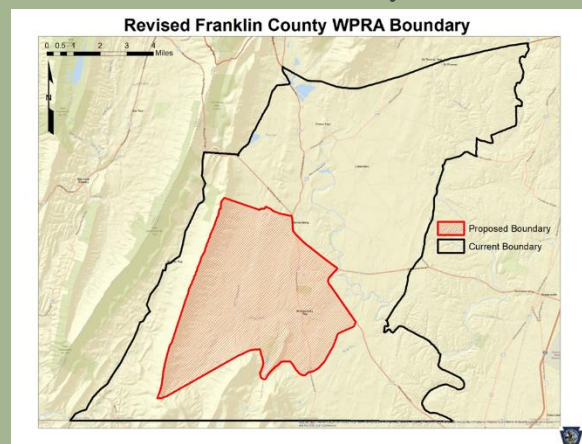
acres of CREP and 78 acres of DUG within this revised boundary. By the expiration of the 2018 Farm Bill in 2023, it's recommended that an additional 500 acres of idle grass be enrolled for establishment through assistance programs administered by the local PF farm bill biologist to return to idle grass acreage similar to 2015 when population goals were achieved in the Washingtonville West study area.

Hegins-Gratz

Due to low pheasant densities found throughout the WPRAs and seemingly unattainable habitat needs considering current available resources, it's recommended to dissolve the Hegins-Gratz Valley WPRAs and opening this area to propagated bird stocking.

Franklin County

Due to low pheasant densities found within much of the WPRAs it's recommended the size be reduced. Using the previously mentioned 1.98 miles dispersal distance, it's recommended a new boundary centered on



the existing populations within the South Franklin study area be adopted. This new boundary envelops 19,818 acres within the previously existing WPRA boundary. Continuing with current restrictions on pheasant hunting and propagated pheasant stocking are recommended. Removing dog training restrictions from this WPRA is also recommended.

Currently there are approximately 55 acres of CREP and 172 acres of DUG within this

new boundary, although the assumption can't be made that all of this is considered idle grass or suitable habitat. The presence of a low but generally increasing pheasant population suggests that the proportion of forest is below the threshold that would suppress population growth; with an increase in idle grass this area could see a significant increase in population density and occupation.

What was Learned:

At the beginning of the WPRA project, some expected spectacular success, others complete failure. In the end, neither extremes proved correct. With the success of the Washingtonville West study area reaching population density goals, it has been proven that wild pheasants can be restored to huntable levels through intense habitat management within a landscape containing a low proportion of forest cover. Conversely the other 11 study areas did not see this success although several are continuing to see a population that is steady to increasing at lower densities. Clearly, wild birds are more successful than pen-raised pheasants at maintaining themselves on the landscape in the absence of stocking, but they can only truly thrive where extensive suitable habitat is available. The mixed results speak to the reality of providing habitat in working lands of Pennsylvania. It is unlikely that Pennsylvania will ever support the wild pheasant numbers it did in the late 1960's and early 1970's. However, with continued dedication from private landholders, Pheasants Forever, and state and federal agencies it is possible to maintain localized populations of wild pheasants providing unique, valuable hunting and viewing opportunities.



It's important to emphasize the need for improved incentive programs for private landowners to enhance habitat not only for wild ring-necks but for all farmland wildlife. The CREP and DUG program have had some success as both long and short-term set aside programs, increasing rental rates and decreasing restrictions and the burden of paper-work that accompanies these programs

would enhance the landowner initiative to participate. There are many other programs available that should be considered, and the Commission is currently working on revising not only the DUG program, but developing others that have the potential to create new wildlife habitat within the Commonwealth. This project has shown that maintaining habitat within private lands is challenging and is impacted by commodity prices or ownership changes. For future restoration projects it's recommended to focus on having a core public lands component or permanently protected private lands that will provide a bulwark of habitat amongst surrounding private lands.

The importance of idle grass within the northeastern U.S. cannot be overstated. This project showed that warm season grass stands, and more specifically, varieties of switchgrass, planted as nesting and brood cover are also actively used for winter cover due to its structure and ability to stand up to PA's sometimes harsh winters. A large percentage of switchgrass within a seeding mix was crucial to provide continued vertical structure in the face of heavy or persistent snow cover. It appears that this dual purpose of cover utilization is crucial to sustaining populations throughout the year.

This was undoubtedly the most comprehensive research project ever to be conducted on translocated wild ring-necked pheasants in the Northeast. A herculean effort took place to create habitat, collect data, and analyze findings. This summary highlights the most crucial findings to improve the WPRA program. Individual scientific manuscripts focusing on various portions of this research will be submitted for publication in the future.



Acknowledgements:

The sheer width and breadth of this pivotal research project indicates there are many groups and individuals that must be acknowledged for their important contributions. Thanks to a very supportive Pennsylvania Game Commission Board of Commissioners both past and present as well as executive office staff. Thanks to past and present Commission Bureau of Wildlife Management staff including the game farms as well as staff from the Southwest, Southcentral, Southeast, and Northeast Regions. Thanks to Pheasants Forever, Inc. staff as well as the Central Susquehanna, Somerset, Schuylkill County, and Cumberland Valley chapters. Thanks to all the cooperating private landowners within the WPRAs. Thanks to the Pennsylvania State University Pennsylvania Cooperative Fish and Wildlife Research Unit, specifically Lacey Williamson, Dr. Duane Diefenbach and Dr. David Walter. Thanks to the Richard King Mellon Foundation, Pennsylvania Power and Light Company, Fort Peck Indian Reservation, Lower Brule Indian Reservation, South Dakota Department of Game, Fish and Parks, California University of Pennsylvania, USFWS Partners for Fish and Wildlife, and Habitat Forever, LLC. Thanks to the hundreds of volunteers who donated their time. Last but certainly not least, special thanks to Colleen Delong, Megan Rake, Brandon Black, Ray Grater, and Wyatt Knepp along with many other technicians who were the backbone of this project.

