

**PENNSYLVANIA GAME COMMISSION
WILD PHEASANT RECOVERY AREA MANUAL**

**Criteria, Procedures and Methodology
for Wild Pheasant Recovery Areas**



Photo by Hal Korber

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SECTION 1. INTRODUCTION

There are 6 strategic goals identified in the Pennsylvania Pheasant Management Plan (Klinger and Riegner 2008). Goal 1 calls for restoring self-sustaining ring-necked pheasant populations, which can be hunted, in suitable habitat by establishing Wild Pheasant Recovery Areas (WPRAs). These WPRAs shall be at least 10,000 acres in size and contain required breeding and wintering habitats. Habitat improvements will be implemented to meet habitat targets within WPRAs. Once met, approximately 900 wild-trapped pheasants will be released (300/year for 3 years) with the goal of establishing populations of at least 10 hens per mi² in the spring.

There are many organizations, individuals and tasks required to manage a WPRA. The WPRA Manual CD contains the WPRA manual, a WPRA application form, data forms, database files, project flyers, and checklists (Appendix 1).

The WPRA Manual contains:

1. Required steps for submission and review of a WPRA application form.
2. Criteria for identifying potential WPRAs
3. Scientific methodology that must be followed to monitor the wild pheasant population.
4. WPRA Timeline: Schedule of Activities, Responsible Parties, and Timetable (Table 1).

SECTION II. WPRO APPROVAL PROCESS

WPRO Application Submission and Review

Submitting a WPRO Application

The WPRO Application Form is available on the WPRO Manual CD. Filename: WPRO Application Form.docx. WPRO applications must include the following information: name of organization, contact person, cooperating partners, funding sources and amounts, county, location description, map of proposed area, and project goals.

WPRO Application Review Process

WPRO Applications must be submitted to the Bureau of Wildlife Management (BWM) at 2001 Elmerton Avenue, Harrisburg, PA 17110-9797. The BWM will review the application and distribute the application to the respective Regional Office(s) for review. The Regional Office staff will submit their recommendations to the BWM within 3 weeks of receiving the application. The BWM will request habitat analysis for the proposed area from the Bureau of Wildlife Habitat Management (BWHM). The BWM staff will complete the review of the WPRO application within 6 weeks of receiving the application. If additional information is needed to complete the application review, the applicant will be notified to provide the needed information. If the application is rejected, the applicants will be notified with an explanation of denial.

When an application is accepted by the BWM it is forwarded to the Executive Director for approval. Once approved by the Executive Director, it will be added to a PGC Board of Commissioners meeting agenda for their approval.

If a WPRO application is approved by the PGC Board of Commissioners, the BWM staff and the local WPRO management team will then begin working together on pre-trap and transfer requirements, trap and transfer, and monitoring of wild pheasants on the WPRO (see below).

WPRO Site Selection and Boundary Delineation

PGC Approved Areas for Potential Wild Pheasant Recovery Areas

The area of interest must first be evaluated to determine if it qualifies as a potential WPRO. WPROs may only occur in areas of Pennsylvania containing potential pheasant habitat. Areas of potential pheasant habitat are based on a pheasant habitat model requiring < 20% of the acreage in forest, >50% row crops, >20% hay land/pasture, and <10% developed land. A map showing areas of potential pheasant habitat was developed by the Bureau of Wildlife Habitat Management (BWHM) using satellite imagery (Figure 1). Because of constant changes in land use, this map will be updated annually by the BWHM.

BWHM will evaluate the area submitted as a potential WPRA to determine 1) if it fits the pheasant habitat model and 2) contains at least the minimum percentage of secure nesting cover. The BWHM will submit these results to the BWM for their information and review. If the area meets requirements for the habitat model and secure nesting cover and the WPRA application is approved by the Executive Director, BWM staff will schedule a meeting with the WPRA applicants and BWHM staff to tour the area and delineate a final proposed WPRA boundary.

WPRA Boundary and WPRA Study Areas

BWM and BWHM staff will guide final WPRA boundary delineation. WPRA boundaries must be easily identifiable marked roads, large streams, and rivers. If necessary, the BWHM will create a proposed WPRA boundary map based on the WPRA Application description.

The BWM will work with Regional, BWP and BWHM staff as well as WPRA applicants to review, ground truth and map the proposed WPRA boundary. After ground truthing and finalizing the boundary map, BWM staff will develop an agenda item for Board of Commissioners consideration that amends 58 Pa. Code, §141.28. If the proposed WPRA is approved by the Board, BWHM staff will prepare the final WPRA map for publication in the *Pennsylvania Hunting and Trapping Digest*, the PGC web site, and WPRA flyers.

WPRA study areas are further defined and are used for monitoring and research purposes by the BWM. BWM staff will determine the best placement for WPRA study area boundaries using the PGC pheasant habitat model and land enrolled in conservation programs, such as USDAs Conservation Reserve Program (CRP), the Conservation Reserve Enhancement Program (CREP), and PGC public access programs.

Habitat Analysis

Each WPRA must contain a minimum of 5% secure nesting cover **before** a WPRA can be approved. The first measurement of secure nesting cover in the study area is the acres and percent of CRP and CREP in the cropland, hay land, and pasture combined. CRP and CREP fields represent secure nesting cover.

Although other types of land use such as small grain fields or hayfields mowed after July 15 also represent secure nesting cover, a CRP/CREP database is used as the first evaluation step because it is the only large-scale database available representing the greatest amount of secure nesting cover. BWHM staff will conduct the analysis using GIS technology to determine 1) CRP and CREP percentages, 2) percentage of each major cover type in the study area, and 3) WPRA and study area acreages.

If the percentage of CRP and CREP is determined to be less than 5%, winter small grains can be counted at the rate of 3 acres of small grains to 1 acre of secure nesting cover using county-wide crop data obtained from USDA.

The implementation of habitat improvements needed to reach a minimum of 5% secure nesting cover is required before a proposed WPRA can be approved.

WPRA Management Team

Each WPRA must have a Management Team. The WPRA Management Team includes individuals involved in completing the WPRA Application, volunteering to help with wild pheasant releases and monitoring, and all aspects of managing a WPRA. The WPRA Management Team consists of local, state and federal agency staff and conservation group members who work on the WPRA. PGC BWM staff will direct all aspects of WPRA management.

Local Landowner Support for a WPRA

Local landowner support for a potential WPRA must be evaluated before an application is completed. Landowners of potential wild pheasant release sites must be contacted by local WPRA management team members to inform them about the potential project, determine level of interest, and secure commitments for wild pheasant release sites. Landowners should be advised that WPRA regulations restrict the propagation and release of game farm pheasants, dog training and pheasant hunting, so it is important landowners are aware of these requirements. In addition, new regulated shooting areas are not permitted within a WPRA. Without considerable local landowner support and participation, a WPRA cannot be successful.

Financial Responsibilities

Financial responsibilities for a WPRA are shared by the PGC, local PF chapters, and/or other groups who commit resources to the WPRA. Financial responsibilities are outlined and must be documented in the WPRA Application Form.

SECTION III. APPROVED WPRAs - TRAP, TRANSFER, RELEASE

Pre-Trap and Transfer Activities

When a WPRA is approved, there are a number of requirements that must be fulfilled **before** wild pheasants can be trapped and transferred to the site. BWM staff and local WPRA management team members will need to work together to accomplish all necessary tasks.

Outreach and Education

Community members must be informed about the WPRA as much as possible. Public workshops, TV, newspapers, radio, project flyers and one-on-one contacts should all be used to inform and educate community members about this new initiative. See “Outreach and Education” section below.

Obtaining Landowner Permission for Release Sites

Release sites are mainly farmlands enrolled in USDA’s CRP and CREP programs and containing grassland nesting and brood rearing cover, winter cover, and nearby grain fields or food plots. Additional sites containing good winter and nesting cover are also considered.

WPRA team members must contact landowners of potential release sites to obtain permission to release pheasants on their land. Pheasant release sites should be selected based on winter habitat (dense grasslands, wetlands, brushy thickets), adjacent to crop fields and nesting cover. The location relative to other release sites and the willingness of the landowners to work with the WPRA team must also be considered.

Cooperating landowners should be willing to do the following: perform appropriate habitat improvements, post WPRA signs (provided by PGC), allow access to the property for monitoring (including radio telemetry and flushing surveys), and to not place feeders for wild pheasants or remove any feeders that attract pheasants (see “Feeding Wild Pheasants” below).

Landowners in the WPRA must be made aware of the state WPRA regulations, which include: 1) No release of pen-raised pheasants, 2) No pheasant hunting, and 3) No dog training or small game hunting from first Sunday in February through July 31. The most current regulations are available in the current *Pennsylvania Hunting and Trapping Digest* at www.pgc.state.pa.us, and should be reviewed each year for revisions.

Habitat Improvements

A minimum of 5% secure nesting cover in the WPRA is required before a WPRA can be approved and wild pheasants can be released; however, to maximize success, up to 25% of farmland acreage in the WPRA should be in secure nesting cover by year 6 of the

project. Local WPRA team members are expected to work with local landowners throughout the life of the WPRA project to add secure nesting cover and other habitat components, such as winter cover, to the WPRA. NGO conservation members of the WPRA teams, such as Pheasant Forever Chapters, working in conjunction with PGC Food and Cover crews and local landowners, must achieve these habitat improvements. PGC staff will provide technical assistance.

Contacts with Midwestern and Western States

BWM personnel will make all contacts with state wildlife agency personnel in Midwestern and Western donor states for the trap and transfer of wild pheasants to Pennsylvania WPRAs.

Purchasing Necessary Supplies and Equipment

After a WPRA application is approved, equipment and supplies should be ordered as soon as possible (see also Financial Responsibilities above). Radio collars, telemetry equipment, pheasant transport boxes, and leg bands must all be on hand **before** wild pheasant trapping begins in January of each year.

Pheasant transport boxes and pheasant leg bands must be ordered a minimum of 6-8 weeks in advance of trapping and shipped to the trapping team. BWM staff will advise WPRA team members on acceptable types of radio collars, telemetry equipment, pheasant transport boxes and leg bands and will assist with ordering.

Fifty pheasant radio collars should be ordered 7-9 months prior to the first radio collaring date, which coincides with the first wild pheasant release. When ordering radio collars, necklace materials (wires, rubber coated tubing, and crimps) must also be ordered. Each summer, radio collars must be evaluated for battery life and damage and sent to the original company for refurbishing to re-use radio collars in future years. BWM staff will evaluate and place orders for refurbishing work.

Posting WPRA signs

WPRA signs provided by the PGC identify the area as a WPRA and list the WPRA regulations. Signs are posted inside WPRAs along roads on all release sites. More signs should be posted throughout the project as pheasants disperse and are confirmed on new properties. Signs should also be placed along the perimeter of the WPRA boundary. Signs should not be posted on private land without the landowner's permission.

Landowners who own land adjacent to release sites may be approached and asked if they will allow signs to be posted on their property. Neighbors who ask for signs may also have signs posted. The WPRA team must maintain a supply of signs to be used each year as pheasants disperse.

Acquisition of Wild Pheasants - Trap and Transfer Procedures

Pheasant Transport Boxes

As noted above, pheasant transport boxes must be ordered 6-8 weeks prior to trapping and shipped directly to the trapping team. WPRA management team members must coordinate with the trapping team leader for shipping of boxes. BWM staff will assist WPRA management team members with ordering appropriate pheasant transport boxes.

Trapping Wild Pheasants

The goal is to release a minimum of 300 wild pheasants each year for 3 consecutive years on the WPRA.

Wild pheasant trapping in donor states is directed by Pennsylvania's trapping team leader, and may involve locally hired trappers. The trapping team leader must work closely with local conservation groups and state pheasant biologists to determine the best trapping sites. Traps sites generally are pre-baited in mid-late January. Traps are checked every day for at least 30 days. Trapped pheasants are placed in holding facilities until enough birds are trapped for a shipment of 100-200 birds. While it is virtually impossible to control sex ratio in this environment, ideally between 10-25% of the birds should be male. Birds are provided with food, grit, water, medications and roosting structures in the holding pens.

The length of time required to trap 100-200 pheasants varies with weather and trapping success. The longest any pheasants should be held in the holding facility prior to shipping is approximately one week.

The trapping team leader must maintain weekly contact with the PGC pheasant transport team leader throughout the trapping period. The PGC transport team leader must keep the WPRA biologist and WPRA team members apprised so that release dates can be coordinated.

Leg Banding

The trapping team ensures that all pheasants are leg-banded before transport. Leg bands must be ordered in advance and printed with a PGC WPRA staff person's telephone number so that people who find bands can report those to the staff. Leg bands must be ordered a minimum of 6-8 weeks prior to trapping. BWM staff will assist WPRA management team members in ordering appropriate pheasant leg bands.

Disease Testing

Wild pheasants must be tested for avian influenza and parasites according to PA Department of Agriculture criteria before transport to Pennsylvania. At least 30 wild pheasants are tested for avian influenza and parasites before transport. The trapping team

ensures that pheasants are tested by a veterinarian and test results are negative before transport. Results of testing must be provided to PGC, BWM and PA Dept of Agriculture, Bureau of Animal Health.

Transporting Wild Pheasants

The PGC pheasant transport team must be identified and organized before trapping begins. Pheasants must be transported from the trap site to Pennsylvania WPRA by PGC staff in PGC trucks.

The PGC land manager must maintain weekly contact with the trapping team after trapping begins so that the pheasant transport team knows exactly when it must begin the trip to pick up the wild pheasants. The PGC land manager must notify the WPRA management team members when the transport team is leaving and when they will arrive in Pennsylvania so that all activities for the releases can be organized before the birds arrive.

After approximately 100-200 pheasants are trapped, the trapping team leader will make arrangements with the PGC land manager to transport the pheasants to Pennsylvania. Pheasants are loaded into pheasant boxes with grains and lettuce. After pheasant boxes are loaded onto the truck, the boxes are covered with a tarp.

New PGC pheasant transport teams should consult with previous PGC pheasant transport teams for details about the trip and necessary equipment and supplies. Refer also to the Wild Pheasant Transport Checklist on the WPRA Manual CD. Filename: Wild Pheasant Transport Checklist.docx

The trip to transport the pheasants to Pennsylvania takes approximately 3-4 days, depending on where the birds are trapped. To minimize the time the wild pheasants spend in the pheasant boxes, the PGC pheasant transport team consists of 3 people and drives to the meeting place as efficiently as possible by having team members take turns driving. Weather conditions can greatly affect the trip. The PGC pheasant transport team should maintain a local contact who checks weather reports for them as they drive. If weather conditions become dangerous, the PGC transport team should stop travelling and wait until travel conditions become safe again to resume the trip.

Necropsy of Dead Pheasants

Pheasants that die during transport must be taken to The Pennsylvania State University, Animal Diagnostics Laboratory for necropsy within 24 hours of arrival in Pennsylvania. Wildlife Disease Sample Submission Form (PGC-711-WM) and coolers for packaging dead pheasants are obtained from the PGC regional biologist. Completed forms must be attached to the containers delivered for necropsy. PGC biologists can assist WPRA management teams to correctly complete the forms.

Acquisition of Wild Pheasants - Pre-Release Requirements

Criteria for determining release sites

Release site criteria are outlined in the **Pre-Trap and Transfer Activities** section above. Release sites are mainly farmlands enrolled in USDA's CREP and CRP programs with grassland nesting and brood-rearing cover, winter cover, and nearby grain fields or wildlife food plots. GPS points of release site locations must be recorded.

Landowners of potential release sites must be contacted by WPRM management team members well in advance of anticipated releases to acquire permission to release pheasants on their land. The location relative to other release sites and the willingness of the landowners to work with the WPRM management team must also be considered. A minimum of 5 release sites should be identified within each WPRM.

Temporary Storage of Wild Pheasants

Because wild pheasants are released just prior to dawn, they often need to be held overnight after arrival in Pennsylvania. Refer also to **Wild Pheasant Releases** below. This depends entirely on the return time of the PGC pheasant transport team and whether or not radio collars must be attached. When pheasants arrive in Pennsylvania, they must be taken to a State Game Lands building or other secure facility near the release sites, where radio collaring and/or overnight storage can occur. If the PGC transport team arrival time coincides with pre-dawn release and radio collaring is not needed, pheasants may be taken directly to the release sites and released.

When pheasants are held overnight, the truck should be parked in a locked building with the pheasant boxes still loaded. Iceberg lettuce should be added to the boxes (this provides water to the pheasants overnight). Approximately one head of lettuce should be added to each box. After adding lettuce to the boxes, the pheasants should be left alone in a quiet environment until the morning.

Radio Collaring

Preparing radio collars prior to release dates

BWM staff will direct all aspects of radio collaring. Radio collars must be prepared **well in advance** of release dates. Sizing the radio collars correctly is critical to the success of the radio telemetry work; therefore, BWM staff biologists will direct WPRM management team members in preparing and sizing the radio collars, and provide training on radio-collar attachment. WPRM management team members must work closely with a member of the BWM staff in advance of release dates to ensure radio collars are prepared and can be attached correctly.

Necklace materials are provided with the radio collars. Wires and rubber necklace tubing must be cut, and attached to one end of the radio collar with crimps. Collars should be

taped to pieces of cardboard and labeled with frequency number. Approximately 10 radio collars should be assigned to each release site; however, numbers of radio collars assigned to each release site will depend upon the total number of release sites, number of pheasants in the shipment, and number of pheasants being radio-collared.

Transmitter frequencies must be tested with the receiver prior to actually radio-collaring birds to ensure transmitters are working. Frequency numbers should be loaded into the receiver and scanned to ensure each signal is audible. Following testing magnets must be reattached to turn off the transmitters and preserve battery life until transmitters are attached to pheasants.

Radio collaring wild pheasants

Plenty of time must be provided for radio collaring. Ideally radio collars will be attached in the afternoon or evening prior to the release day. Radio collars may also be attached in the pre-dawn hours prior to release. Radio collaring can take 1-4 hours, depending on how many pheasants are being collared.

Radio-collared pheasants must be placed in boxes in an organized fashion so that the radio-collared pheasants are distributed to the correct release sites. Boxes should be labeled with release site names during radio-collaring to keep releases well organized.

Wild Pheasant Releases

Annual Wild Pheasant Release Dates

Wild pheasant release dates vary somewhat from year to year. Dates of trapping and transport are determined by weather. On existing WPRAs, most pheasant releases have occurred from early February – early March.

Releasing Wild Pheasants

Approximately 300 pheasants are released each year in each WPRA for 3 years. If there is more than one study area, pheasants will be allocated based on suitable habitat in each study area. BWM staff will determine pheasant allocations per study area.

A minimum of 50 wild pheasants must be released at each release site. Additional birds (~30) should be released at existing release sites in the following year to help supplement the existing group. New release sites, if available, are also selected each year to expand the area where birds are released. Release sites should be within 2-3 miles of each other, whenever possible. Keeping the pheasants close in proximity so they can find other groups of birds if they do fly away from their original release sites is believed to improve survival. Hens travel at the beginning of the nesting season in search of nest sites. The distance hens have to travel from release sites to nesting cover should be minimized.

A soft release technique is employed when freeing wild pheasants on WPRA's. Pheasants are released into or very close to protective winter cover in dense, upright native warm season grass fields, brushy stream buffers, or shrub thickets. In daylight and/or windy conditions, pheasants tend to fly, especially with wind, and can travel far away from suitable habitat so releases must take place just before dawn to minimize birds being separated from the group as they leave the boxes.

One truck to carry the pheasant boxes and a 1-2 person crew are required for each release site. If there are radio-collared pheasants being released, the WPRA biologist must supervise the loading of the pheasant boxes to ensure the radio collared pheasants are released on the correct sites.

Crates are placed at the release site in or within 10 feet of suitable winter cover – such as brushy thickets, dense, upright stands of warm season grasses, brushy hedgerows, or food plots – and crate flaps are quietly opened. Personnel then walk away as quietly as possible and wait in the truck, without running the engine, until 20-30 minutes after daylight. The birds typically will come out of the boxes without assistance before and at daylight. Numbers of people releasing pheasants should be minimized (e.g., 2 people per site) to minimize noise. In conditions with crusty snow, which can be common in February, footsteps walking to and from the boxes can be extremely noisy. Keep noise and lights away from the pheasants as much as possible.

After waiting for 20-30 minutes of daylight, slowly approach the boxes and check for pheasants. Slowly and quietly check the boxes for any remaining pheasants. Tilt each box forward gently until all pheasants leave the boxes. If any of the pheasants fly any distance, report locations and numbers to the WPRA biologist on your team.

After release, pheasant boxes are collected and burned to prohibit growth and transfer of harmful organisms. New boxes must be used for each release.

Feeding Wild Pheasants

Trapped and transferred wild pheasants should not be fed. Food is not generally a limiting factor for pheasants in Pennsylvania, particularly in suitable habitat. Concentrating pheasants at feeders or feed piles encourages the spread of disease and predation. If the WPRA's are to be successful, the wild pheasants need to survive on their own. Landowners in the WPRA should be strongly advised not to feed, especially using feeders or feed piles.

Habitat is the key to success for wild pheasants, not feeding. If landowners want to do something to “help” the wild pheasants, WPRA management team members should encourage them to implement habitat improvements and provide technical and/or financial assistance to them.

SECTION IV. POPULATION MONITORING

Standardized Protocols

Survival and dispersal of wild pheasants are monitored on each WPRA to determine if released wild pheasants establish a sustainable population.

Pheasants are monitored using radio telemetry, crowing counts and flushing surveys. Also, brood survey data are submitted by volunteers, landowners and community members. Community members may also call in reports of pheasant sightings to the PGC staff and other members of the WPRA Management Team.

Data forms and databases for all monitoring are provided to each WPRA management team on the WPRA Manual CD. Instructions for data collection will be provided to volunteers by BWM staff.

Radio Telemetry

Methods

Radio telemetry is used to collect data on hen survival, causes of mortality, habitat use, movements, and nesting of radio-collared hens. Radio tracking is conducted by BWM staff.

Necklace-style radio collars, portable Telonics and ATS telemetry receivers, hand-held yagi antennas, H-antennas and vehicle-mounted antennas are used for radio tracking. BWM biologists will assist WPRA Management Teams in ordering required telemetry equipment.

Hen Survival

BWM staff will provide pheasant capture and telemetry training. In order to determine survival of trapped and transferred hens and resident hens, hens will be monitored using radio telemetry in years 1-3 for trapped and transferred hens and years 4-6 for resident hens. Trapped and transferred hens will be radio collared prior to release. Resident hens will be trapped on the WPRA in December and January with an objective of capturing and radio collaring 30 hens in the WPRA. After radio-collaring, hens will be released back into suitable habitat. Radio-collared hens will be tracked every day for 3-4 weeks. After consistent locations are determined, hens will be tracked 3-5 days per week, through the nesting season, and continuing until all radio collars are recovered or the batteries fail. Transmitters are equipped with mortality sensors activated after 4-8 hours of inactivity. Transmitters emitting mortality signals are located as quickly as possible and cause of death (mammal, avian, unknown) is determined.

Nesting Habitat

Hens tracked into the nesting season will be monitored to determine nesting habitat. Hens will be tracked every day during nest site selection until telemetry results indicate they are incubating eggs. After that, hens will be monitored every other day until they leave the nest. Hens will continue to be monitored after nesting until the hen or the transmitter battery dies. Triangulated nest site locations will be mapped along with other data.

Submitting Data

Original telemetry field data forms and the updated telemetry database must be submitted by the first of each month to BWM biologist/bio aide on the WPRM management team throughout the tracking period. Data forms should be copied so that a copy remains in the field when originals are submitted. Refer to the files provided with the WPRM Manual CD. Filename(s): Telemetry data form.xls; Telemetry Database.xls; Telemetry Transmitter Fate.xls

Crowing Counts

Methods

Spring crowing counts are conducted to establish relative population indices of males for each area. Crowing count data and sex ratios determined from flushing surveys are used to determine population density. Crowing counts are carried out from 20 April –15 May in the year prior to releases (baseline data) and for 6 years during and after release years. Pheasant crowing counts are conducted according to the guidelines established by the Midwest Pheasant Council (Anon. 1974). Crowing counts are conducted by both PGC staff and volunteers.

Crowing counts will be conducted along randomly selected routes that are representative of the study area. In addition, a control route will be established outside the study area in an agricultural landscape. Crowing surveys are conducted at permanent survey points located at 1-mile intervals along 9-mile survey routes with 10 permanent survey points. A 3-minute listening period is used to count the number of individual males crowing. Counts of the number of males crowing are recorded for the first 2-minute listening period and for an additional 1-minute listening period.

Surveys will begin 45 minutes before sunrise and will be replicated five times from 20 April-15 May. One valid survey should be conducted during each of the following periods: 20-24 April, 25-29 April, 30 April-4 May, 5-9 May, and 10-15 May. Field instructions and data sheets will be provided by the BWM staff.

Weather conditions for conducting surveys will follow the Midwest Pheasant Council guidelines. These are air temperature $\geq 32^{\circ}$ F, wind < 10 mph, absence of or only patchy fog, and no precipitation. Data collected will include weather conditions, total number of

males crowing during the first 2 minutes and additional males (individuals not heard during the first 2 minutes) heard during the third minute.

GPS points of crowing count routes/survey points will be mapped along with other data.

Detailed instructions, field data forms, and the crowing count database are provided on the WPRA Manual CD. Filename(s): Crowing count instructions and field data form.docx; Crowing count database.xls

Submitting Data

Original crowing count field data forms must be submitted to designated BWM biologist/bio aide by June 1 each year. BWM staff will enter data into the crowing count database.

Flushing Surveys

Late-winter flushing surveys are conducted to determine pre-nesting season sex ratios based on the sample of pheasants flushed during the surveys. Crowing count and sex ratio data are used to determine population density.

Planning and Organization

Permission from landowners

It is essential that permission for flushing surveys be requested and confirmed from each landowner well in advance of flushing survey dates, e.g., in autumn before the holidays. Each landowner should be asked for permission to access their land and invited to participate in the flushing surveys. An approximate or exact date for the flushing surveys on their land should be provided to each landowner. Details of the flushing surveys, including approximate numbers of people and dogs, and how birds are flushed and counted should be explained to the landowners so they know what to expect. Arrangements should be made with the landowner for a place to park flushing survey volunteer vehicles.

Group leaders

Flushing survey group leaders must be selected well in advance. PGC staff, Pheasants Forever Chapter members, and local bird dogs enthusiasts should be asked to volunteer to be group leaders for flushing surveys. Group leaders must learn the location and property lines of the farm that they will be responsible for surveying and develop a plan for conducting flushing surveys on the site efficiently and effectively. Before the surveys begin, group leaders must review the flushing survey volunteer checklist with their group members. Refer to the WPRA Manual CD for the checklist. Filename: Flushing Survey Volunteer Checklist.docx

Advertising flushing surveys and organizing volunteers

Volunteers and well-trained bird dogs are essential to conducting wild pheasant flushing surveys. It is important to have enough volunteers to complete the surveys in a given area of the WPRA in a single day and to inform the local community that flushing surveys are taking place.

Organizing volunteers takes time and good organization. Advertise for help with flushing surveys through the local Pheasants Forever Chapters, bird dogs groups, hunting clubs, and by placing flyers on local bulletin boards. Before advertising flushing surveys, obtain permission from a local business owner for a large parking area to use as a meeting place.

Refer to the example flyer in the files provided with the WPRA Manual CD. Filename: Flushing Surveys Flyer.docx. This flyer can be used as a template for your WPRA's flushing surveys. Provide dates, times and meeting places.

Volunteer pre-registration also is important. There is great interest in flushing surveys from the hunting community. Pre-registration allows for assignment of groups ahead of time and minimizes confusion and time spent at the meeting place. Try to keep flushing dogs and pointing dogs in separate groups. However, keep in mind that some people will travel together and have both flushers and pointers in their groups. It is fine to have some pointing groups, some flushing groups and some mixed groups consisting of people who travel together and have both types of dogs. Keeping people who travel together with their dogs in the same vehicle in the same group keeps travel to the farms for flushing surveys uncomplicated.

Methods

Late winter flushing surveys are conducted to determine pre-nesting-season sex ratio. Sex ratio information obtained from flushing surveys has proved indicative of population status in past studies (Hardisky et al. 2001). A sample size of 100 birds per year per study area is optimal to obtain the most accurate estimate of sex ratio. Surveys are conducted prior to the first wild pheasant releases on planned release sites (baseline data) and for 6 years after the first release. During wild pheasant release years, flushing surveys must be conducted in January before the release of wild pheasants in February. Flushing surveys may not be done after new birds are released each year. After all wild bird releases are complete, flushing surveys must be done from the second Saturday in February through the second Sunday in March.

Special conditions for conducting flushing surveys apply after the first Sunday in February. Regulations protecting WPRA's prohibit dog training from the first Sunday in February through July 31. Flushing surveys - for PGC data collection purposes only - are allowed after the first Sunday in February only if a PGC employee is directing and coordinating the effort each day, and responsible group leaders are assigned to each farm being flushed. BWM staff will ensure that a PGC staff person is coordinating the flushing surveys each survey day.

PGC regional office staff, including Wildlife Conservation Officers, Law Enforcement Supervisors, Biologists and Regional Directors, should be informed of flushing survey dates and locations each year.

Areas of thick cover, which typically serve as winter habitat, must be uniformly surveyed on foot with bird dogs. Flushing surveys are conducted in pheasant concentration areas, which are identified during telemetry fieldwork, roadside inspections, and from reports from landowners and community members. The goal is to have teams of 5-10 people with 4-8 dogs survey all the cover in a uniform manner. An area of 80-100 acres of grasslands requires approximately 2-3 hours to survey thoroughly. Thicker cover, including shrub thickets and dense native grass stands that slow down both people and dogs, takes more time.

All wild pheasant release sites should be surveyed first. Then nearby sites, where radio telemetry data and reports indicate the presence of pheasants, should also be surveyed. Additional sites with suitable winter cover where the presence of pheasants is unknown can also be flushed if there is time. Each site should be surveyed only once per year. Adjacent sites should be surveyed at the same time, and group leaders must confer with each other after the surveys to avoid double counting birds that may cross the boundary between properties during surveys. Locations of successful flushing survey sites will be recorded along with other data.

All pheasants observed are recorded as male, female, or unknown if sex cannot be determined. Other data collected include general weather conditions, number of observers and dogs, and location and size of survey area. Group leaders compile a list of volunteers email/ mail address and numbers of dogs. All data are submitted to the WPRB biologist at the end of the day for each survey date.

Avoiding double counting birds

Each pheasant flushed is counted only once. If a bird flushes to an area surveyed later, group leaders must use their best judgment to determine if it is the same bird that was flushed earlier. It is important to “err on the side of caution” and not count a bird that may have already been counted. The point of flushing surveys is to survey a representative sample of the area to determine the sex ratio of the birds on the area.

Dog handler responsibilities

Well-trained bird dogs are essential to successful flushing surveys. Dog handlers must keep dogs under control at all times. Dogs must be kept close during flushing surveys to ensure the group is able to see birds flush and determine sex. Handlers must keep all dogs under especially close control when near buildings and roads. Leashes may be necessary to walk dogs from parking areas to fields. Dogs aggressive to other domestic pets are not allowed to participate.

Flushing Survey Checklist – A checklist to organize flushing surveys is provided on the CD with the WPRM Manual. Filename: Checklist Flushing Surveys.docx

Submitting Data

Flushing survey data forms must be submitted to the WPRM biologist at the end of each survey day. Refer to the files provided with the WPRM Manual CD. Filename(s): Flushing survey field data form.docx; Flushing survey database.xls;

Non-Standardized Protocols and Observations

Brood Observations and Reports

Methods

The BWM staff will provide data forms and chick aging charts. Brood reports are used to estimate average brood sizes. Brood report forms will be distributed to residents in the WPRM study areas and asking them to report pheasant brood sightings from June – September. The date of observation, location and habitat, and age estimate based on a chick aging chart, will be recorded for each brood observed. Landowners should be informed of the danger of double-counting broods. We may invalidate some reports if we suspect pheasant broods are being double-counted.

If pheasant populations increase enough in future years, standardized routes will be developed by BWM staff to conduct brood surveys.

Submitting Data

Original brood report data forms must be submitted to the BWM staff by November 1 each year. Refer to the files provided with the WPRM Manual CD. Filename(s): Brood survey field data form.docx; Brood survey database.xls; Brood survey average brood size.xls

Pheasant Sightings

Project flyers should be placed on local bulletin boards and handed out to landowners and other WPRM residents with phone numbers where people can call to report pheasant sightings. Refer to the example project flyers in the files provided on the WPRM Manual CD. Filename: WPRM flyer.docx; Pheasant sightings wanted poster.docx.

Because of the great interest in wild pheasant recovery, many people will call in with reports of pheasants. Sightings reported by community members help provide information about dispersal and potential new farm locations for flushing surveys. This information will be recorded and mapped along with standardized data to help provide a visual picture of pheasant locations over time. Information to be collected from volunteers reporting pheasants should include date, pheasants seen (number of roosters,

hens, chicks), locations (an intersection or address), habitat (e.g., crop field, stream buffer). Sightings should be reported to BWM staff, and reports should be organized in a file each year. Locations of pheasant sightings will be mapped along with other data.

Reporting Data to PGC BWM

All data must be submitted to the BWM staff during and/or at the end of each data collection period (e.g., telemetry data due the 1st of each month, crowing count data due June 1 each year). An annual report summarizing the activities and results in a WPRA must be provided to BWM staff by June 30 of each year. Table 1 includes data submission dates and deadlines.

SECTION V. OUTREACH, EDUCATION AND COORDINATION

Because of the considerable interest in wild pheasant recovery, it is essential to keep community members and media outlets informed.

Wild Pheasant Recovery Areas Meetings

An Annual Statewide Pheasant Working Group Meeting is held each year. This meeting brings together PGC personnel, WPRAs management team members, Pheasants Forever Chapters, and other partners to review the status of the implementation of the Ring-necked Pheasant Management Plan for Pennsylvania, 2008-2017. All partners and interested parties are encouraged to attend this meeting.

Local WPRAs management team meetings should be held on an as needed basis for organizational purposes throughout the time frame of the WPRAs.

WPRAs Public Workshops

Public workshops should be held as the WPRAs Application is developed as well as following WPRAs approval to inform the local community before pheasants are released and new hunting and dog training regulations go into effect.

Dates, locations and speakers for public workshops must be planned in advance and advertised locally using media outlets, flyers, etc. BWM staff will assist with public workshop flyers and help by presenting slide shows and details about WPRAs and results from other WPRAs. Refer to the example public workshop flyer on the WPRAs Manual CD. Filename: Public Workshop Flyer.docx.

Media

Local newspapers, outdoor writers, television and radio stations will help with outreach efforts. Local media also should be invited to conduct interviews and to attend activities on WPRAs where volunteers are welcome, such as flushing surveys. Flushing surveys provide a good opportunity to invite media along to see a WPRAs activity, take photographs and conduct interviews. Interviews can also be conducted by phone.

Because wild pheasant releases are done in the dark at pre-dawn, and minimizing disturbance to the pheasants is critical during releases, photo opportunities are limited. Meeting with reporters before or after releases to discuss the releases and the details of the project is prudent.

Flyers and Newsletters

Flyers and newsletters are provided by BWM staff and should be distributed throughout the WPRAs. Flyers and newsletters should be posted on local bulletin boards, and

distributed during one-on-one contacts, at workshops, in PGC Regional offices, in USDA service centers, etc. Refer to the WPRAs Manual CD for an example WPRAs flyer. Filename: Example WPRAs Flyer.docx. BWM staff will customize a WPRAs flyer for each WPRAs.

One-on-One Contacts

Many contacts are made between WPRAs management team members and local community members. It is important to explain the project and current results. It is important for WPRAs management team members who are working on the project in the WPRAs to keep themselves informed about the project results. BWM staff will provide details of the research results to local WPRAs management teams.

WPRAs Web Pages

Web pages providing details on each WPRAs and WPRAs maps will be made available at www.pgc.state.pa.us. PF Chapters and other partners may also have information about WPRAs available on their web sites.

SECTION VI. LIST OF TABLES, FIGURES AND APPENDICES

Table 1. WPRA Timeline: Schedule of Activities, Responsible Parties, and Timetable

Figure 1. Pheasant Habitat Model Map

Appendix 1. Files contained on the Wild Pheasant Recovery Area Manual CD

Table 1. WPRA Timeline: Schedule of Activities, Responsible Parties, and Timetable

Year 0 = before any wild pheasant releases

Years 1,2,3 = Years of wild pheasant releases

Years 4,5,6 = Years of monitoring after last wild pheasant release

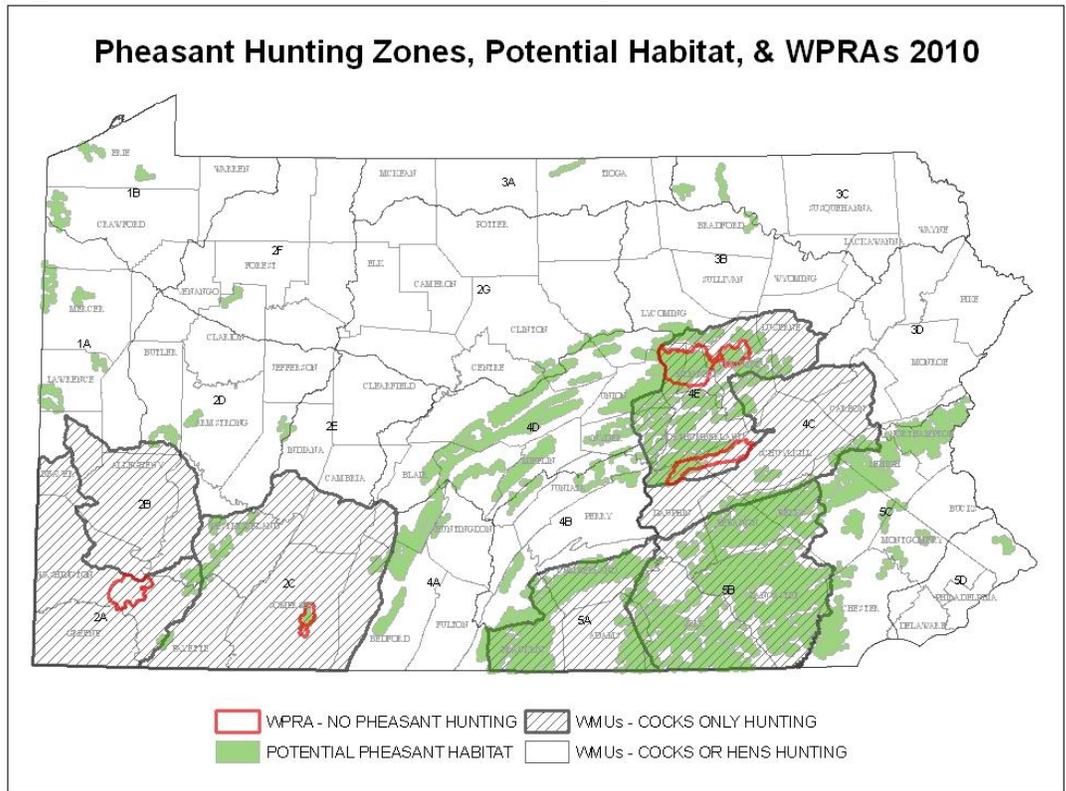
Date	Years	Activity	Responsible parties
Annually /more often as needed	0-6	WPRA management team organizational meetings	PGC staff/PF members/ Partners
Any Season	0	Develop WPRA Application and define WPRA/Study Area boundaries	PGC staff/PF members/ Partners
Summer – Fall	0-6	Obtain permission from landowners for access for release sites, monitoring, posting signs and habitat improvements	PGC staff/PF members
Summer – Fall	0-3	Select wild pheasant release sites/ obtain landowner permission	PGC staff/PF members
Summer – Fall (and throughout project as needed)	0-6	Post WPRA signs	PGC staff/PF members/landowners
Summer	1	Purchase transmitters/telemetry equipment/leg bands/transport boxes	PGC orders equipment PF funds equipment
Summer	2-5	Evaluate radio collars for battery life and damage; Order refurbishing supplies and materials	PGC staff
Summer – Fall	0-6	Prepare radio collars for use	PGC staff
Summer – Fall	0-6	Contacts with donor states for pheasant trapping	PGC staff
Jan	1	Radio telemetry training for staff/WPRA management team (as needed for new personnel)	PGC staff
Jan –Mar	1,2,3	Wild pheasant trapping in western states (including disease testing)	PGC/PF - Western trapping teams
Jan –Mar	1,2,3	Wild pheasant transport to WPRA	PGC staff/PGC trucks
Jan –Mar	1,2,3	Radio collaring and wild pheasant releases	PGC staff /PF volunteers

Date	Years	Activity	Responsible parties
Jan –Mar	1,2,3	Telemetry on trapped and transferred wild pheasants	PGC staff
April 1	1-6	Submit all radio telemetry data up to and including March to PGC BWM staff	PGC staff
April – May	0	Baseline Crowing Count surveys	PGC staff/PF volunteers
April – May	1-6	Crowing count surveys	PGC staff/PF volunteers
June 1	0-6	Submit all original crowing count survey forms to PGC BWM staff	PGC staff/ PF volunteers
April – May	1-6	Crowing count reliability surveys	PGC staff
April – May	1-6	Crowing count detection surveys	PGC staff
June 30	1-6	Submit Pheasant Annual Report to PGC BWM	PGC staff
June – Sept	1-6	Habitat Composition and Quality surveys	PGC staff/PF volunteers
June – Sept	1-6	Brood survey data form distribution and data collection	PGC staff/PF volunteers
September 30	1-6	Submit all brood survey data to PGC BWM staff	PGC staff /PF volunteers
Throughout	0-6	Distribute project handouts and information, Public meetings, outreach, interviews with journalists	PGC staff/PF members
Jan	0	Baseline Flushing Surveys	PGC Staff/PF members/volunteers
Oct – Dec	1-6	Advertise flushing survey dates and preregister volunteers	PGC staff
Jan 2 up to 1 st Sat in February	1-3	Flushing Surveys (pre release period)	PGC Staff/PF members/ volunteers
2 nd Sat in Feb – 2 nd Sat in Mar	3-6	Flushing Surveys (post release period)	PGC Staff/PF members/ volunteers
Jan – Mar	0-6	Submit all flushing survey data to PGC BWM staff by the end of the day of each flushing survey date	Flushing survey groups leaders - PGC staff & volunteers
Annual	1-6	Annual Pheasant Working Group Meeting	PGC/PF/Partners
Dec – Jan	4-6	Trapping of resident hens	PGC staff
Dec – Dec	4-6	Telemetry on resident hens	PGC staff

Date	Years	Activity	Responsible parties
Throughout	0-6	Pheasant habitat improvements	PF/PGC
	*	Hunter Surveys	PGC staff

*Year in which pheasant season is opened on wild pheasants, if applicable.

Figure 1. Pheasant Habitat Model Map



SECTION VII. LITERATURE CITED

- Anonymous. 1974. A review of pheasant census methods and suggested guidelines for standardization of census techniques. Midwest Pheasant Council committee report. 37pp.
- Hardisky, T. S., M. J. Casalena, B. D. Wallingford, J. H. Palmer, S. R. Klinger, C. L. Thoma. 2001. Experimental pheasant restoration program. PGC Bureau of Wildl. Manage., Research Division, Final Report, Job 43307. 55pp.
- Klinger, S. R. and C. F. Riegner. 2008. Ring-necked Pheasant Management Plan for Pennsylvania (2008-2017). PGC Bureau of Wildl. Manage., 121pp.

APPENDIX 1. FILES CONTAINED ON THE WILD PHEASANT RECOVERY AREA MANUAL CD

MANUAL AND APPLICATION

WPRM Manual.docx

WPRM application form.docx

TRANSPORT

Wild Pheasant Transport Checklist.docx

RADIO TELEMETRY

Telemetry data form.xls

Telemetry Database.xls

Telemetry Transmitter Fate.xls

CROWING COUNTS

Crowing count instructions and field data form.docx

Crowing count database.xls

BROOD SURVEYS

Brood survey field data form.docx

Brood survey database.xls

Brood survey average brood size.xls

FLUSHING SURVEYS

Flushing Surveys Flyer.docx

Flushing Survey Volunteer Checklist.docx

Flushing survey field data form.docx

Flushing survey database.xls

OUTREACH FLYERS

Example WPRM flyer.docx

Pheasant sightings wanted poster.docx

Public Workshop Flyer.docx