

**STATEWIDE PARTNER PROJECTS**

- Pa.'s Second Breeding Bird Atlas
- Oases Along the Flyway
- From Birding to Environmental Review
- Database of Pa. Mammal Specimens
- County Inventories of Pa.
- Vertebrates of Special Concern Guide
- Invertebrates of Special Concern
- Web-Based Registry of Seasonal Pools
- Habitat Profiles for Terrestrial Forest Types
- Conservation Planning Polygons
- Little Brown Bat Genetics
- Allegheny Woodrat Genetic Catalog



**PGC STATE WILDLIFE GRANTS PROGRAM**  
**Conservation Partner Projects**  
**Private Landowner Assistance Program**  
**Multi-State White Nose Syndrome Response**

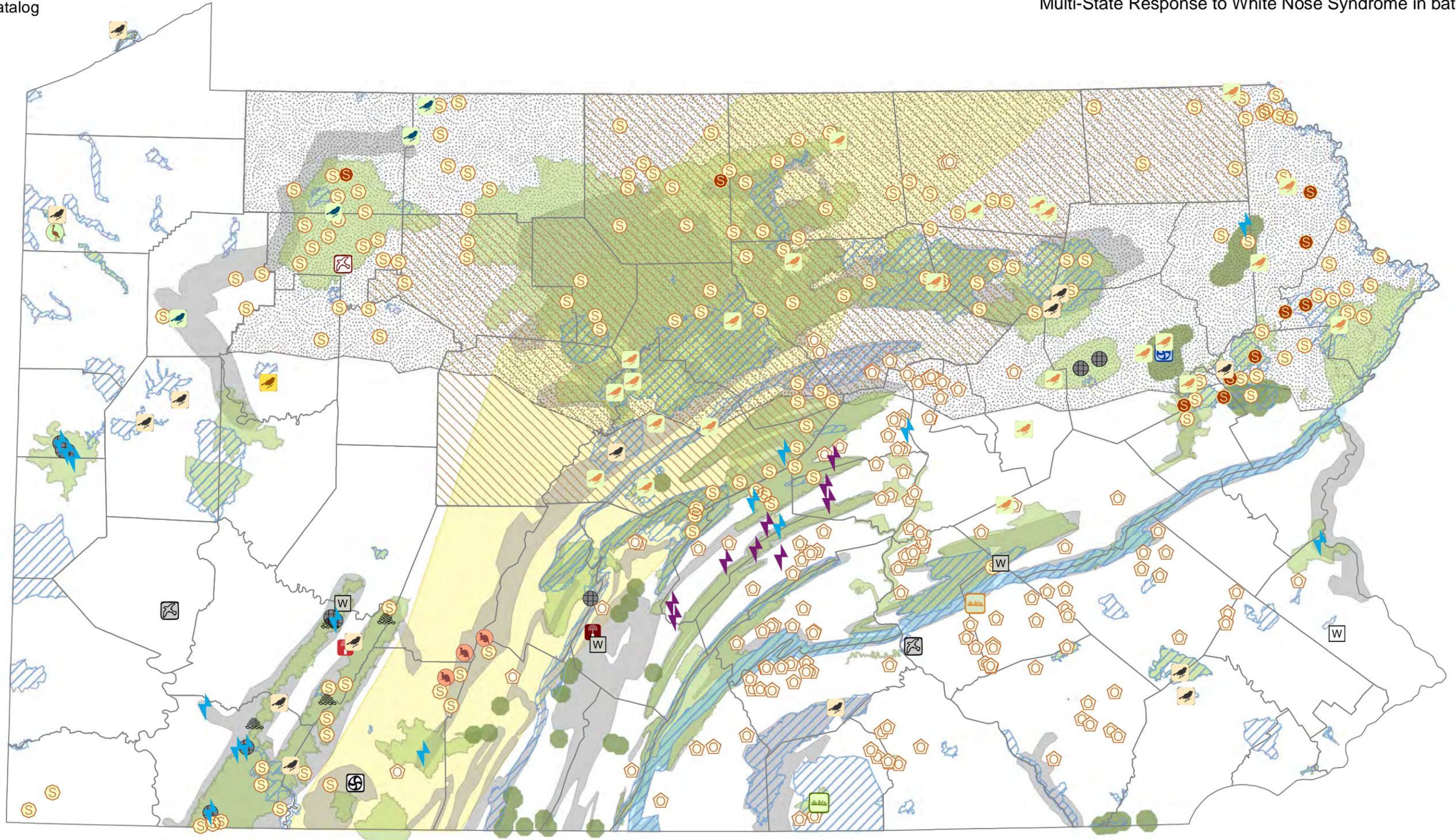
**PRIVATE LANDOWNER ASSISTANCE PROGRAM**  
**by PGC region through December 31, 2013**

- Northwest: over 175 plans for more than 21,400 total acres
- Northcentral: over 250 plans for more than 32,700 total acres
- Northeast: over 160 plans for more than 33,200 total acres
- Southwest: over 175 plans for more than 43,100 total acres
- Southcentral: over 155 plans for more than 25,300 total acres
- Southeast: over 270 plans for more than 26,500 total acres
- STATEWIDE: over 1,185 plans for more than 182,200 total acres

**NORTHEAST & MID-ATLANTIC STATES + WISCONSIN**  
**Multi-State Response to White Nose Syndrome in bats**

**LEGEND**

- WNS Response Research Sites
- WNS Maternity Colony Monitoring
- Important Bird Areas
- Marcellus Shale; Quantifying Effects
- Kittatinny Ridge Habitat Use by Birds
- Golden Eagle Migration Corridor
- Peregrine Falcon Telemetry
- Goshawk Status and Response
- Golden-winged Warbler Habitat Management
- Cerulean Warblers & Silviculture
- Scrub/Shrub Habitat Use by Priority Birds
- Piney Tract Grassland Restoration
- Pymatuning Wetland Restoration
- Important Mammal Areas
- Allegheny Woodrat Habitat
- High Quality Woodrat Habitat
- Allegheny Woodrat Workshops
- Allegheny Woodrat Captive Breeding
- N. Flying Squirrel Search Sites
- N. Flying Squirrel Active Sites
- Bat Mortality & Wind Farms
- Bat Wind Mortality Solutions
- Small-Footed Bat Telemetry
- Red Bat Telemetry
- Bat Hibernacula Gating
- Fisher Population Study
- Least Shrew Grasslands
- Fort Indiantown Gap Grassland Restoration
- Snowshoe Hare Study Area
- Priority Barrens Habitats
- PLAP Barn Owl Conservation Initiative



## PGC STATE WILDLIFE GRANT CONSERVATION PARTNER PROJECTS for FEDERAL FISCAL YEARS 2002 - 2013

### BIRD PROJECTS

#### Important Bird Areas Conservation Project

##### *Audubon Pennsylvania*

This project plans and implements community-based habitat protection and management of identified Important Bird Areas statewide to benefit state-listed and declining birds through partnerships with landowners, land trusts, and government entities.

#### Peregrine Falcon Satellite Telemetry

##### *Canadian Peregrine Foundation*

Satellite telemetry units placed on fledgling peregrines from nests in Pittsburgh and Harrisburg tracked their activity to gather information on dispersal, wintering grounds and establishment of territories. Viewers followed the progress through web-based outreach.

#### Pennsylvania's Second Breeding Bird Atlas

##### *Robert Mulvihill, Carnegie Museum of Natural History*

STATEWIDE

The atlas employed the volunteer birding community in a 5-year survey effort to provide an updated database presenting the modern distribution of all nesting bird species. Data analysis resulted in a comprehensive assessment for conservation and management.

#### Migrant Raptor & Songbird Habitat Use Along the Kittatinny Ridge

##### *Hawk Mountain Sanctuary Association*

The Kittatinny Mountain has a unique concentration of raptors and songbirds along its slopes during fall. Extensive data on habitat use was gathered using telemetry and ground surveys.

#### Oases Along the Flyway:

##### Preserving Critical Stopover Habitat for Migrating Songbirds

##### *New Jersey Audubon*

STATEWIDE

Radar analysis identified important stopover habitats used by songbirds migrating through Pennsylvania so that management strategies could be developed to conserve those habitats.

#### From Birding to Environmental Review:

##### Developing Data for Conservation Use

##### *Western Pennsylvania Conservancy*

STATEWIDE

This project developed data from Game Commission collectors into a format for entry into the Pennsylvania environmental review system, part of the state's permitting process.

#### Silvicultural Impacts on Cerulean Warblers

##### & Other Priority Forest Birds

##### *Clarion University of Pennsylvania*

The cerulean warbler is a species of high-level concern because of range-wide decline and potential threats to its mature forest habitats, where timber production is often the primary land use and dominant sector of local economies. Results inform foresters and land managers.

#### Assessing Risks of Wind Energy Development for

##### Conservation of Eastern Golden Eagles I & II

##### *National Aviary (initially), University of West Virginia (later)*

Golden eagles are a species of conservation concern with protected status. The eastern U.S. population passes through a migration corridor in an area that is also important to wind power. These studies provided data to inform responsible decisions.

#### Northern Goshawk Status & Response to Forest Management

##### *Slippery Rock University of Pennsylvania*

##### *Jointly funded by DCNR's Wild Resource Conservation Fund*

This project assessed populations and evaluated responses to forest conditions to improve population modeling for a large but secretive accipiter of extensive woodlands.

#### Utilization of Wet Scrub/Shrub-Dominated Habitat Types by

##### Willow Flycatchers and Other Priority Birds

##### *Western Pennsylvania Conservancy*

The willow flycatcher is identified as a species of concern in Pennsylvania's Wildlife Action Plan and at the continental scale. This project determined willow flycatcher and other priority species use of specific wet thicket habitat types to identify potential breeding areas crucial to management.

#### Piney Tract Important Bird Area Grasslands Management

##### *National Audubon Society*

This project improves habitat at the Piney Tract, a site of global significance to several grassland-obligate bird species of conservation concern. Invasive trees and shrubs are removed and bird population response is monitored to inform additional restoration efforts at similar habitats.

#### State Game Lands 214 (Pymatuning) Wetland Restoration

##### *Ducks Unlimited*

Restoration and enhancement of 113 acres of emergent and scrub/shrub wetlands benefit Wildlife Action Plan species of high concern, including American and least bitterns, Virginia and black rails, and marsh wren.

#### Implementing BMPs for Golden-Winged Warbler Breeding Habitat

##### *Indiana University of Pennsylvania*

This project expedites implementation of breeding habitat Best Management Practices on state game lands for one of the most imperiled birds in the eastern U.S.

#### Marcellus Shale Exploration and Development; Quantifying Effects

##### *Penn State University*

Surveys of forest bird species at 14 well-pad sites and 36 Breeding Bird Atlas blocks in an 11-county study area track whether their populations increase, decrease or stay the same in relation to differing levels of gas exploration and changes to habitat.

### MAMMAL PROJECTS

#### Important Mammal Areas Program

##### *National & Pennsylvania Wildlife Federations*

This project used a proactive, voluntary and science-based approach to identify essential habitat for mammal conservation. Scientists, conservationists, sportsmen, and the general public cooperated to develop management plans.

#### Northern Flying Squirrel Projects:

##### Statewide Monitoring & Management

##### *Wilkes University & Penn State University*

Because the northern flying squirrel was proposed for threatened or endangered status in Pennsylvania, 160 historic locations and potentially suitable habitat were evaluated and a long-term nest box survey was established.

#### Eastern Hemlock & Mixed Coniferous Forested Ecosystems:

##### Distribution & Use by Sciurid Communities

##### *Penn State University*

The survey effort was expanded and radio telemetry used to identify habitat preferences in forests threatened by the hemlock wooly adelgid.

#### A Comprehensive Database of Pennsylvania Mammal Specimens

##### *The Nature Conservancy*

STATEWIDE

This project created a centralized reference database containing all known Pennsylvania mammal specimens, both historical and recent.

#### Distribution & Large-Scale Habitat Associations of

##### Snowshoe Hares in Pennsylvania

##### *Penn State University*

This project delineated the distribution and large-scale habitat associations of snowshoe hares across northern Pennsylvania by extracting DNA from rabbit and hare fecal pellets.

#### Bat Hibernacula Gating

##### *Sanders Environmental Inc.*

When disturbed, hibernating bats burn part of their limited fat resources and may not survive until spring. Gates were installed on caves and mines with temperatures preferred by rare bat species or used by large numbers of bats.

#### Allegheny Woodrat Projects:

##### Conservation Management Plan

##### *Jerry D. Hassinger*

A conservation-management plan developed for this species lists Best Management Practices to integrate conservation with activities and plans used by state agencies.

#### Identifying & Predicting High-Quality Habitat

##### *Indiana University of Pennsylvania*

This planning project developed a model for predicting population viability, tested supplemental feeding, characterized habitat, and determined age-specific demographics.

#### Conservation Workshops for Resource Managers

##### *Jerry D. Hassinger*

Over 90 resource managers and biologists received instruction in adaptive management of insular woodrat sites and mitigation techniques to help reverse this species' decline.

#### Genetic Catalog

##### *Indiana University of Pennsylvania*

STATEWIDE

Development of a genetic catalog of the state's woodrat metapopulations will guide management actions and eventual release of woodrats from the captive breeding program.

#### Captive Breeding Program

##### *Delaware Valley College*

A woodrat breeding program originated at Purdue University relocated to Pennsylvania. Release of progeny will improve the genetic diversity of the state's wild population.

#### Small-Footed Bat Telemetry and Population Assessment

##### at Lake Raystown

##### *Sanders Environmental, Inc.*

Radio telemetry produced first-of-its-kind data enhancing our ability to successfully manage this state threatened species, thus decreasing the likelihood of it becoming endangered.

#### Examination of Bat Mortality at Penobscot Mountain Wind Farm

##### *East Stroudsburg University of Pennsylvania*

Protocols were developed to assess the effect of wind industry development through pre-construction monitoring and post-construction mortality surveys at a new wind farm.

#### Habitat Requirements of the Least Shrew

##### in the Grasslands of Southcentral Pennsylvania

##### *The Nature Conservancy*

This project investigated range, dispersal corridors, and threats to the habitat of a state endangered species.

#### Estimating Fisher Population Size & Distribution in Pennsylvania

##### *Indiana University of Pennsylvania*

Fishers were extirpated by 1900 and reintroduced in the 1990s. This project developed a model to measure their abundance and assess genetic, reproductive, and dietary attributes.

#### Red Bat Telemetry

##### *Mountain Watershed Association*

The migratory red bat is one of the species most affected by wind development. This project identified weather conditions that trigger movement.

#### Testing Solutions to Bat Fatalities by Wind Turbines

##### *Bat Conservation International*

A wind power facility participated in testing deterrent and curtailment options that reduced the threat of wind turbines to bats and increased our understanding of bat activity patterns.

#### Genetic Structure of Pennsylvania's Little Brown Bat Population

##### *Penn State University, Beaver Campus*

STATEWIDE

Genetic evaluation of the statewide population of the little brown bat may identify geographic areas with high genetic diversity that could provide survivors of a once-common species suffering catastrophic White Nose Syndrome mortality.

### OTHER PROJECTS

#### Initiation & Completion of County Inventories of Pennsylvania

##### *The Nature Conservancy*

STATEWIDE

Developed by The Nature Conservancy and Western Pennsylvania Conservancy, county inventories provide location information and management recommendations for natural areas and rare species to state, county, and local officials, the public, developers and land managers.

#### Terrestrial Vertebrates of Pennsylvania:

##### A Complete Guide to Species of Conservation Concern

##### *Wilkes University*

STATEWIDE

This edited technical volume on the state's rare, threatened, and endangered vertebrates provides detailed species accounts, maps, and research and management recommendations for those species. It is, in part, a published version of Pennsylvania's Wildlife Action Plan.

#### Pennsylvania Invertebrates of Special Concern:

##### Comprehensive Assessment Essential to

##### Pennsylvania's Wildlife Conservation Plan

##### *Carnegie Museum of Natural History*

STATEWIDE

This project provided basic information on Pennsylvania's invertebrates needed to complete the state's Wildlife Action Plan, providing diverse and direct benefits to the conservation and management of Pennsylvania ecosystems and their biota.

#### Web-Based Registry & Study of Seasonal Pools in Pennsylvania

##### *Western Pennsylvania Conservancy*

STATEWIDE

This project developed a seasonal (vernal) pools registry and research program that brings scientists from academic institutions, non-profit organizations, and state and federal agencies together with public volunteers to identify, locate, characterize, monitor, and study the pools.

#### Multi-Species Management Guidelines for

##### Priority Barrens Habitats in Pennsylvania I & II

##### *The Nature Conservancy*

Habitat management and decision-making tools were developed to help public and private land managers of the state's barrens habitats identify barrens communities, understand long-term viability of barrens systems, and discuss management options. Best Management Practices are provided for wildlife species dependent on barrens systems.

#### Multi-Species Habitat Profiles for

##### Four Major Terrestrial Forest Types in Pennsylvania

##### *The Nature Conservancy*

STATEWIDE

This project developed multi-species habitat profiles for northern hardwood, dry white pine-oak, dry oak-heath, and red oak-mixed forest types, including community and successional characterizations, current and best potential site analysis, and small mammal surveys and habitat profiles.

#### Conservation Planning Polygons

##### *Western Pennsylvania Conservancy*

STATEWIDE

Resource managers and planners are assisted by this project that uses geographic information systems (GIS) to map critical habitats used by species of greatest conservation need.

#### Fort Indiantown Gap Grassland Habitat

##### *Penn State University*

An ecosystem-based restoration plan improves native warm-season grassland habitat by rehabilitating former grasslands and expanding current grasslands, impacting cohesiveness and connectivity for the benefit of 19 Wildlife Action Plan priority species.

### WILDLIFE CONSERVATION & RESTORATION PROGRAM FY2001 PROJECTS

This program preceded State Wildlife Grants; the projects are not illustrated on the map.

#### Susquehanna River Birding & Wildlife Trail

##### *Audubon Pennsylvania*

#### Building a Biodiversity Conservation Movement in Pennsylvania

##### *Pennsylvania Biodiversity Partnership*

#### Appalachian Cottontail Distribution in Pennsylvania

##### *Lock Haven University of Pennsylvania*

#### Distribution and Abundance of Reintroduced River Otters

##### in the Allegheny River Drainage

##### *Frostburg State University, Maryland*

#### Canoe Creek Indiana Bat Property Acquisition

##### *Western Pennsylvania Conservancy*

## PRIVATE LANDOWNER ASSISTANCE PROGRAM

In 2013, Private Landowner Assistance Program (PLAP) biologists wrote 83 plans for 13,448 acres, bringing the cumulative total to more than 1,185 plans for over 182,200 acres since program inception. Because nearly 80% of Pennsylvania is privately owned, the Game Commission created the program in May 2004 to provide a technical resource for landowners who wish to manage their properties for nearly 100 bird and mammal species of concern. PLAP relies largely on federal State Wildlife Grants Program (SWG) funds. Six biologists, strategically located throughout the state, evaluate properties of interested landowners and write plans to enhance habitat for wildlife. There is no charge or public access requirement. PLAP biologists also assist landowners in finding resources to help implement habitat improvements, often working with the USDA Natural Resources Conservation Service's Wildlife Habitat Incentives Program and Environmental Quality Incentives Program.

PLAP biologists created a Barn Owl Conservation Initiative in 2005. Once called "the farmer's friend" for its control of small rodents, the barn owl's declining population and contracting range in Pennsylvania made it a species of conservation concern. Where barn owls are found biologists assess habitat, install nest boxes, and make grassland management recommendations. A banding program studies dispersal and survival. Thanks to the efforts of landowners and PLAP biologists, the future now looks brighter for Pennsylvania's barn owls.

PLAP biologists also participate in comprehensive planning for the state's more than 1.4 million acres of game lands, contributing information on general ecology, habitat relationships, and habitat treatments for species of concern. They also conduct Pennsylvania Natural Diversity Inventory reviews for Marcellus shale pipeline and well pad projects.

## NORTHEAST & MID-ATLANTIC STATES + WISCONSIN RESPONSE to WHITE NOSE SYNDROME in BATS

Ten states partnered with Pennsylvania in a Multi-State White Nose Syndrome (WNS) Response funded by a SWG Program Competitive Grant: Connecticut, Delaware, Maryland, New Hampshire, New Jersey, New York, Virginia, Vermont, Wisconsin, and West Virginia. Non-state partners included: Metro Parks, Summit County, Ohio; Bat Conservation International (BCI); and the Western Pennsylvania Conservancy (WPC).

The PGC endangered mammal specialist led a multi-state team that developed a method using ultra-violet fluorescence to accurately diagnose WNS in the field. The National Wildlife Health Center incorporated the technique into a protocol for collection of field samples.

Other Multi-State WNS Response research conducted in Pennsylvania by the PGC Wildlife Diversity Division, often in collaboration with in-state academic and professional partners, as well as volunteers, included (but was not limited to):

- Multi-year study using dataloggers to record arousal patterns of hibernating bats, *Bucknell University*
- Datalogger recording of hibernation site microclimate variables to investigate the role of temperature and humidity in survivorship, *Bucknell University*
- Study of the affect of neurological symptoms on bat behavior, *Bucknell University*
- Study of fungal development and treatment of bats, *Bucknell University*
- Acoustic monitoring of bat activity at entrances to Indiana bat hibernation sites, *BCI*
- Statewide evaluation of fungal damage to wings of captured or observed bats, *multiple professional partners*
- Statewide bat maternity colony surveys, *volunteer and professional partners*
- Monitoring of maternity colonies linked to a WNS-affected hibernation site, *PGC*
- Live-trapping at hibernation site entrances to track bat population trends, *PGC & WPC*

