

Pennsylvania Game Commission
Bureau of Wildlife Management

WILDLIFE DIVERSITY PROGRAM



2013

Managing Pennsylvania's wild birds, wild mammals
and their habitats for current and future generations

2013

BUREAU OF WILDLIFE MANAGEMENT

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osprey

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The Wildlife Diversity Program engages in a broad range of conservation initiatives, built upon a diverse framework of laws, policy, and strategic plans.

For me, the Game Commission’s Mission Statement is sufficient: “to manage all wild birds, mammals and their habitats for current and future generations.” This provides so many points of resonance: it’s *all* wild birds and mammals, and definitely *for people*. And, we actively manage; at least we aspire to. This fits well within the Commonwealth’s constitution, which charges that we “conserve and maintain” our public natural resources for the benefit of all the people.

Because the task of managing the 423 wild birds and mammals that are not hunted or trapped in Pennsylvania is daunting, we often focus on those species that are rare or found in specialized habitats, because they are most at risk. In short, the state’s 26 endangered and threatened species get most of the attention. That’s evident in this report. The preservation of the state’s endangered species traditionally has been a central part of the state’s program of *all* species conservation. In fact, enactment of the U.S. Fish and Wildlife Service’s Endangered Species Act helped to initiate these programs in many states, including Pennsylvania, to administer the modest Section 6 funds annually distributed through that Act. From those modest beginnings in the 1970s, programs have grown and species have changed. While challenges remain, we are gratified with the successes that we have contributed to, most notably the delisting of bald eagles.

Public support has always been strong for conservation of species at the brink of disappearing, even if only from the commonwealth. It just seems right to sustain the species entrusted to us, and the habitats that support them, for our children’s enjoyment. There is a tangible loss when species slip off the radar. The passenger pigeon’s departure from the planet, 100 years ago, highlights that fact, but also notably stands as the exception among the diversity of birds and mammals under our charge. As a result, recovery of bald eagles and efforts to save rare bats has always made up a significant part of “Wildlife Diversity” efforts. We are gratified to see other species such as osprey and peregrine falcons following the patterns of the eagle’s dramatic recovery. That success spurs us on to face daunting odds and work to protect and enhance populations for which obstacles remain.

The benefits reach beyond the target species. Redressed threats and improved habitats for listed species have corresponding benefits for communities associated with them. Improved water quality, banning of pesticides, prohibition against shooting hawks, protection of caves, and many other such actions directly contributed to endangered species recoveries, but in turn improved conditions for many other species and, in the end, provide untold benefits to ourselves. Endangered species provided the catalyst for action.

The victory of the bald eagle delisting, celebrated in 2013-14 with video production and ceremony, after so many years accomplished what seemed we had only dreamed. We properly celebrate that accomplishment. The silent departure of black terns from our northwestern marshes since 2000, and the earlier loss of the Delmarva fox squirrel from southeastern woodlands, remind us that much remains to be done. That vigilance takes the form of new analytical techniques for detecting and responding to White Nose Syndrome (page 7), sifting through thousands of bird reports, working with willing landowners, all of the activities described herein, and much more.

Dan Brauning

Wildlife Diversity Division Chief



Bald Eagle, now secure

The Board of Commissioners voted to remove the bald eagle from the state's list of endangered and threatened species in January 2014. This is the first time a bird or mammal has been delisted in Pennsylvania's history. Having achieved the recovery objectives specified in the state management plan, and with strong public support, this fulfills the three-decade initiative advanced by the Game Commission. The delisting is a milestone for conservation. Special protection of eagles and eagle nests continues under the Bald and Golden Eagle Protection Act of 1940 enforced by the U.S. Fish and Wildlife Service. The Game Commission will continue to provide the critical role of coordinating monitoring.

Monitoring this growing population has become a sizable task, only accomplished with the help of many volunteers. With 274 nesting pairs in 2013, the bald eagle population continued to grow unabated at a rate of 14% per year, and now includes 57 of the state's 67 counties. The 191 nests with known outcomes produced 317 fledglings. We suspect that these figures are an underestimation of the population size and geographic range. The burgeoning population continues "to grow its own success."

The Game Commission also coordinates winter eagle surveys as part of the nationally standardized Mid-winter Bald Eagle Survey. In January of 2013, a total of 171 eagles were found in 31 counties. The winter surveys also give our volunteers, partners and staff an opportunity to scout for new bald eagle nests since many pairs are building nests at this time and the nests are more easily seen than after spring leaf-out.



photo courtesy of Dana Nesiti

A volunteer who monitors the Hays-Pittsburgh nest captured one of the adults carrying eagle-sized nesting material. Live-stream video of the nest, available on the Game Commission website, www.pgc.state.pa.us, provides an incredible opportunity to learn about their lives in the wilds of Pennsylvania.



To improve and enhance public understanding, appreciation and viewing of bald eagles, the Game Commission website provides information and eagle-watching advice on pages that were downloaded 53,913 times during 2013. Topics include Identification Tips, Fast Facts, Nesting, Management Plan, Species Account, Recovery Project and much more.

These very popular pages promote "eagle etiquette," an approach that is increasingly needed with the expanding number of eagle nests and ability of the public to see the nests.

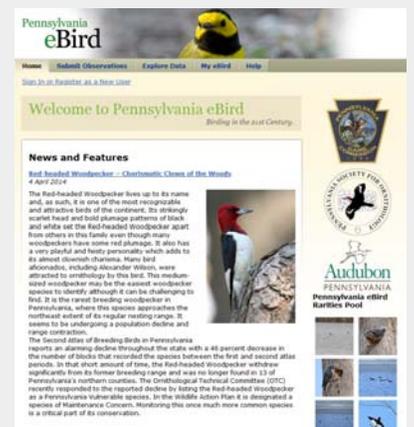
The future of our national symbol looks bright in Pennsylvania with the change in its conservation status because there is broad-based public support for its protection.

Pennsylvania eBird

The Game Commission supports the state's portal into eBird, the popular public bird database, and promotes the use of this tool among the large birding volunteer community. The birding community has embraced the process of entering their bird observations with location information. Volunteers entered 102,666 field trips into eBird for Pennsylvania locations during 2013.

Pennsylvania eBird also acts as a news source about important bird conservation initiatives and events. We posted 25 stories on the website during 2013, featuring projects like the Great Backyard Bird Count and conservation priority including golden-winged warbler.

www.pgc.state.pa.us, select **WILDLIFE** then **Birding and Bird Conservation**



Peregrine Falcon, *state endangered*



photo © Doug Wechsler, Vireo; used by permission

Peregrine falcon coordinator Art McMorris (left) bands nestlings on the Girard Point Bridge, Philadelphia.

Although the presence of a state-listed species on public structures provides challenges, landowners and building or bridge managers minimized disturbance to nesting peregrines while completing necessary maintenance of their structures. The extraordinary cooperation of PennDOT, in particular, in arranging access and providing specialized cranes that assist surveys is greatly appreciated!

To aid in monitoring population growth and dynamics, we banded peregrine nestlings at all accessible sites. Pennsylvania-banded peregrines have established nesting territories within the state or have dispersed as far away as Florida. Banded adults found nesting in Pennsylvania originated from Pennsylvania or other Mid-Atlantic states. Almost 20% of the peregrines banded in Pennsylvania during the recovery period have subsequently been found and identified, showing the value of banding as a population monitoring tool. In addition, the process of banding nestlings provides insights into nesting activity and success.

We work broadly with the public via presentations and workshops, public banding events and one-on-one to educate them about the conservation of peregrines and other endangered species and the Game Commission's role in restoring species so that they are no longer endangered. Enormous public support for these efforts is reflected in the enthusiastic turnout at these events and the large number of favorable articles that appear in the print, broadcast and online media.

The goal of the Game Commission's peregrine falcon recovery and management program is to restore Pennsylvania's peregrine population to a stable and secure level so that the species can be removed from the state's endangered species list. Like ospreys, peregrines were extirpated in eastern North America in the mid-20th century as the result of DDT and other pesticides. They subsequently were released into the wild in Pennsylvania and elsewhere to restore the population. Population recovery during 2013 was excellent, bringing us closer to our goal. We monitored all known nesting sites and searched for additional sites with the assistance of more than 200 volunteer searchers and nest monitors and the involvement of over 30 cooperating agencies.

Peregrine falcons were found nesting at a record 40 sites in 2013, including 6 new sites, which together produced 73 young. Successful nests were found in 17 counties including all six Game Commission regions. The nesting success rate (70% of all nests produced young) and productivity (an average of 1.8 young produced per nesting pair) were within the ranges for a recovering population. Peregrine management is guided by a Peregrine Falcon Management Plan (2013-2022), which was accepted by the commission during the 2013 calendar year.

Osprey, *state threatened*

COVER STORY: Has the osprey recovered enough to be removed from the endangered and threatened species list in Pennsylvania?

The osprey was returned to the state through a series of successful reintroductions from 1980 through 1996 in which ospreys were released across the state at places like Pocono Lake, the Tioga County reservoirs, and Moraine State Park. The Game Commission continues to monitor the recovering nesting population. In 2013, staff, cooperators and volunteers found 99 nests in 19 counties. Clusters of nests were found in Tioga (23), Northampton (16), Mercer (10) and York (7) counties. The osprey's range now is statewide. Most ospreys nest near impounded waters and often build their nests on manmade structures, taking advantage of the human-altered landscape. Considering this attribute and the large number of nesting pairs, the osprey is a good candidate for upgrading from threatened to protected. In cooperation with East Stroudsburg University, we are drafting a new osprey management plan that will better inform our future plans for this charismatic raptor.

Jake Dingel, PGC



Colonial-Nesting Wading Birds, *three species are state endangered*

Wading birds are among of the most popular and easily viewed birds. They are particularly vulnerable because they “put their eggs in one basket” by nesting close together in colonies, making a large portion of their populations susceptible to natural disasters and human intrusion. We pay particular attention to these colonies, especially great egret, black-crowned night-heron, and yellow-crowned night-heron colonies, because these species are endangered in Pennsylvania.

The three endangered wading birds nest primarily in urban landscapes in Pennsylvania. Wade Island, near Harrisburg, is an important colonial-nesting bird location, where in 2013 we counted 181 great egret, 48 black-crowned night-heron, and 162 double-crested cormorant nests. Some black-crowned night-herons were still constructing nests at the time of the survey so their numbers may be underestimated. Great egrets seem better equipped than are black-crowned high-herons to deal with competition from double-crested cormorants, which are expanding aggressively at Wade Island.



Great egrets were recorded nesting in only two Pennsylvania locations in 2013, Wade Island and Kiwanis Lake in the city of York. The 181 egret nests on Wade Island represented an increase. At Kiwanis Lake, eight to ten individuals were observed in late July but the number of nests could not be determined because the trees had fully developed leaves.



Yellow-crowned night-herons are our most critically endangered colonial wading birds, with only one known colony of 13 nests in a Harrisburg residential neighborhood. There were no reports of nesting activity in former areas in Cumberland County in 2013.

The state’s black-crowned night-heron nesting population continued a decline to only four active colonies with a total of 178 nests. Their colonies are typically in urban or suburban settings in southeastern counties and are particularly vulnerable to human disturbance. This species formerly had a much larger nesting range in the state including more northern and western counties.

We do not conduct a statewide survey of great blue heron each year. It is not state endangered or threatened, but is a species of maintenance concern in the Wildlife Action Plan, so we emphasize larger colonies for surveys in most years. In 2013 we surveyed 55 active great blue heron colonies in 23 counties. The Barrows colony, Mercer County, is the our largest great blue heron nesting site. In 2013 there were 292 nests (21% of the state population), a big decline after a peak of 441 nests in 1999.

American Bittern, *state endangered*

Virtually all wetland birds have declined in recent decades, and several are listed as state endangered. Collectively, these are sometimes called “secretive marsh bird species” due to the difficulty in surveying them. We always are ready to accept new location data for these rare birds. Some records are opportunistic in nature or come from interested volunteers.

A new location for an endangered wetland bird resulted from a trip with volunteers. Doug Gross led a field trip for the annual Pennsylvania Society for Ornithology meeting on June 2 in Ricketts Glen State Park and State Game Lands 57. At the edge of a wetland, several birders spotted American bitterns from the road. Normally shy and well-camouflaged, the bitterns were easily viewed and put on a show for everyone lined up along the road. But that was not the end of the birding story. At the site in June, an adult American bittern was found feeding at least three dependent young, thereby confirming local nesting. This location, with only 38 acres of wetland, provides an example of how a smaller wetland can support a state endangered species and has potential for protection and management.



Rare Mountain Forest Birds, *two species are state endangered*

The yellow-bellied flycatcher and blackpoll warbler are among our most elusive and enigmatic birds, restricted to some of the wildest areas of the state. During 2013, these species, both state endangered, along with other rare mountain forest birds were found in boreal and northern conifer swamps in State Game Lands 57 of Wyoming and Luzerne counties.

This area of the North Mountain section of the Allegheny Plateau supports the only currently known nesting populations of yellow-bellied flycatchers and blackpoll warblers in Pennsylvania. The main population of yellow-bellied flycatchers continues in Coalbed Swamp where eight territories were found in 2013. Nesting was confirmed in four of these territories primarily by finding dependent young being fed by adults. A nest was found in one territory at the late date of July 29, likely representing a second brood. A new blackpoll warbler breeding site was confirmed in a remote boreal wetland called Boulder Run Swamp. Two territories of blackpoll warbler were found adjacent to each other with a yellow-bellied flycatcher territory found between. Blackpoll warblers nested successfully in nearby Tamarack Swamp, Luzerne County where an adult male was found feeding young. Nesting was confirmed there for both species. Successful nesting in these locations strongly suggests that the habitat is excellent in quality, if limited in quantity.

The cluster of boreal forested wetlands in SGL 57 provides a haven for these state endangered birds and a rarity hotspot. These swamps have a rich bird diversity including many species of northern affinities such as northern waterthrush and Canada warbler. So far, these areas are not disturbed by human activities. Mountain forests and headwater wetlands are under increased pressure by human disturbance, including energy development even on state and federal properties. Although the populations of these species are small, they have persisted since the early 1990's when they were discovered. Knowledge about populations of these rare species can afford them better protection and demonstrates that Pennsylvania has quality boreal conifer forests.



Golden-winged Warbler, *state high-level concern*



With one of the most severe declines of any songbird, conservation of the golden-winged warbler has been focused on filling the gaps in missing habitat. The Game Commission has been working with an array of partners, spear-headed by the Indiana University of Pennsylvania, to manage over 32,000 acres of habitat on state forests and state game lands as well as another 5,705 acres on private forest lands through the Natural Resources Conservation Service's Working Lands for Wildlife Program. Controlled burns are part of the management prescriptions that already have been implemented at SGL 38, Monroe County, and Nature Conservancy property near Long Pond. This is an example of the Wildlife Action Plan's objective of reducing declines of an imperiled species to avoid federal protection under the Endangered Species Act.

We also coordinated a statewide monitoring program as part of a national program, by completing 180 point counts in 36 quadrants of the state matrix of survey points, in which 24 golden-winged warblers were detected. Our surveys demonstrate that the warblers tended to be found at higher elevations in large forested blocks; scrub oak barrens and some forested wetlands also serve as suitable habitat. Ongoing monitoring will help target habitat restoration for this species. These basic facts inform us that our best opportunities for golden-winged warbler management are in the forested landscape of higher elevations, perhaps because agricultural development and forest fragmentation at lower elevations favor the blue-winged warbler.

Snowy Owls—a Spectacular Irruption

The snowy owl is the heaviest and most striking of North America’s owls. The “white owl” breeds in the Arctic tundra around the world, and sometimes moves south in large numbers. Pennsylvanians were treated to the biggest irruption of these Arctic visitors in modern memory. More snowy owls were seen in Pennsylvania and across the northeastern states during the winter of 2013-14 than in any year of the last century, reaching as far south as Florida.

The unprecedented number of owls seen during the fall of 2013 spurred David Brinker of Maryland Department of Natural Resources and Scott Weidensaul of Project OwlNet to form a new coalition, “Project SNOWstorm,” to document this extraordinary event across the eastern states. With modest Game Commission support and private donations, this coalition rapidly built the infrastructure to combine photographic documentation by the public with high-tech satellite and cellular technologies to learn about the size and scope of this remarkable irruption.

Birders reported snowy owls in at least 44 Pennsylvania counties by mid-March, primarily in the large agricultural areas of southeastern counties (especially Lancaster and Lebanon), the Erie beaches, and the open farmland of Montour and Northumberland counties. Unfortunately, the owls also were attracted to airports with their expansive short grass and handy perch points.

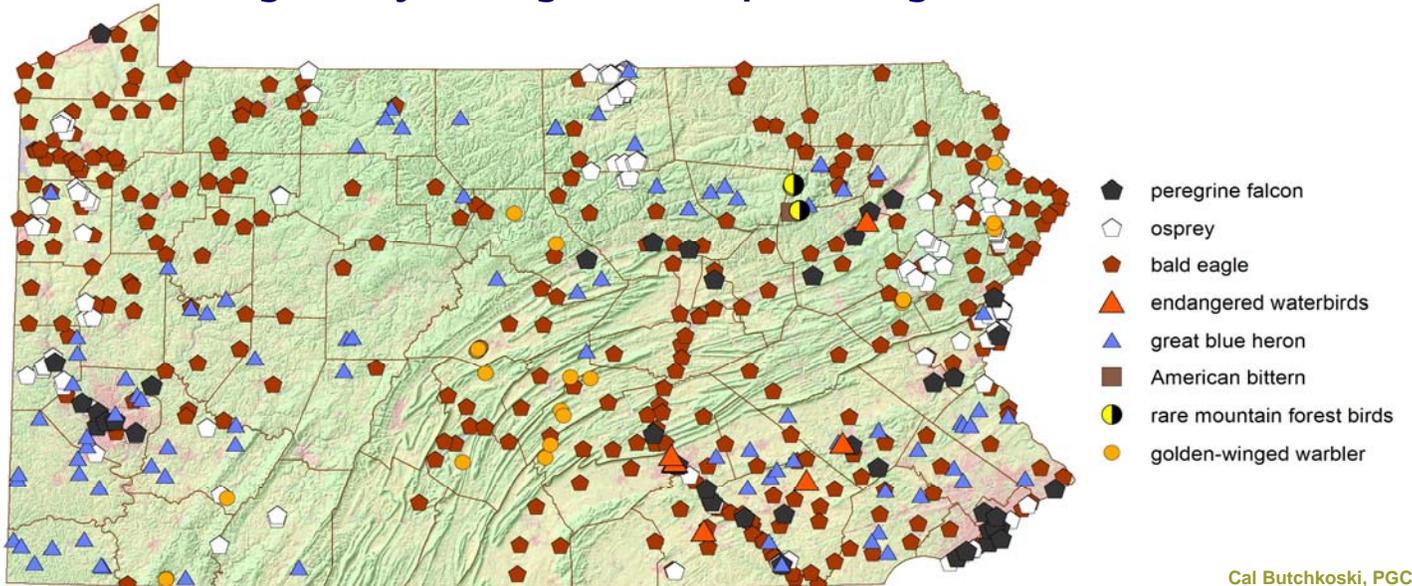
Pennsylvania played a pivotal role in Project SNOWstorm both geographically and strategically. The Game Commission sponsored the projectsnowstorm.org website and assisted with capturing owls for transfer and removal from airports, and for the banding and tagging project. Through a flurry of activity, owl researchers caught and marked 22 owls in eight states, six of which were captured in Pennsylvania. Maps of the owls’ travels were made available on the project website so anyone interested in the snowy owls could learn about their movements. Those movements provided a lot of information about how they react to the resources available, how they migrate, and how they hunt ducks on the ice of the Great Lakes. By following owls with transmitters, and checking regularly used locations, the project also learned that several snowy owls succumbed to storm events, especially those owls close to water. Many lessons were learned about snowy owls from this effort and the cooperative attitude shared among the many contributors made it an even more rewarding experience.



Jake Dingel, PGC

SNOW, the field abbreviation for snowy owl, is made up of the first two letters of the two words of its common name. Nothing could be more appropriate. SNOW also provided the perfect project name for an unusual research opportunity.

2013 breeding activity for targeted bird species of greatest conservation need



Cal Butchkoski, PGC

YOU CAN HELP! Watch for announcements about opportunities to assist bird surveys on:

www.facebook.com/PennsylvaniaGameCommission and www.twitter.com/PAGameComm

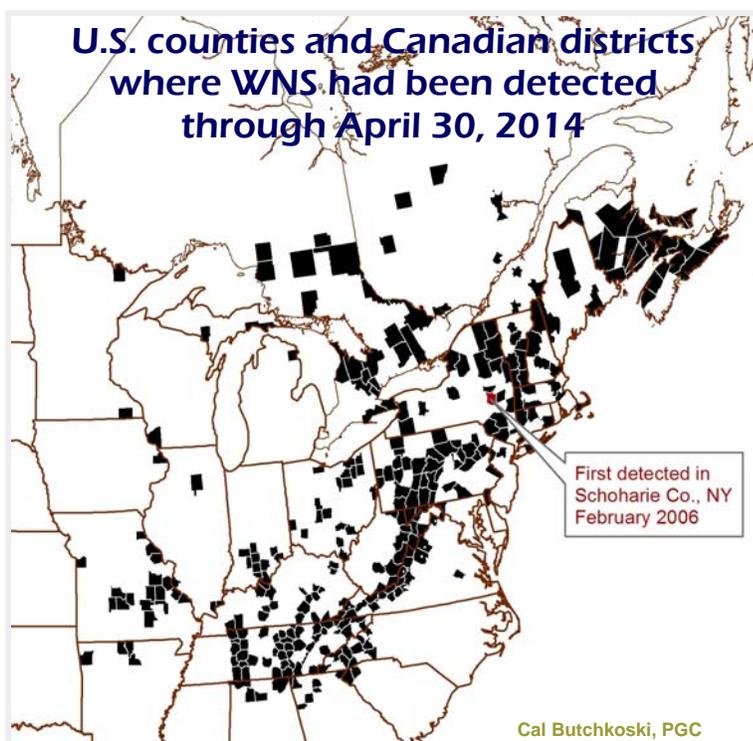
White Nose Syndrome in Bats

Presumed to originate from Europe, the disease called White Nose Syndrome (WNS) started its North American journey of destruction at single site near Albany, New York in 2006. In three years it had become part of Pennsylvania's history, with infection documented at multiple bat hibernation sites. Tallying 25 U.S. states and five Canadian provinces by the end of the 2013-2014 hibernation season, WNS leaves unprecedented mortality in its wake. It took just five years for this pathogen to become ubiquitous across Pennsylvania's winter bat sites; in so doing it has claimed an overall total of 98% of Pennsylvania's cave bats.

From the beginning of the WNS saga, the Pennsylvania Game Commission has played a central role in both research and education. Because it was a new, unknown pathogen much of the early response to WNS was centered on research. Now our focus has shifted to survivors and perpetuating affected species. The good news is that we have documented survivors of all six of our hibernating species. Current investigations are also yielding some interesting preliminary results. One such finding is that the weight of adult bats going into hibernation is up 35% from just a couple years ago, possibly a response by adult bats to the increased energy demands inflicted by this illness. Also, with collaborators, we pioneered a new, non-lethal technique that provides immediate field diagnosis of WNS and allows us to measure levels of infection (see UV Diagnosis of WNS, below).

Our efforts do not stop there. We are constantly searching for survivors and protecting them by any means possible. These include purchasing lands proximate to known core areas of our endangered bat species, working with landowners to erect bat boxes where survivors persist and monitoring changes in colonies. We continually educate and partner with the professional cave exploration community to locate and protect surviving colonies. We protected two sites that still support hibernating bat populations by building gates to prevent disturbance by non-organized and less-informed recreational enthusiasts. Two additional sites will be gated during the summer of 2014.

Thanks to a generous contribution to Pennsylvania's White Nose Syndrome Fund by CONSOL Energy, three studies were initiated in 2013. Two investigate possible biological controls; one will help to us better understand the effects of WNS on statewide bat populations. See page 14 for additional information.



UV Diagnosis of WNS



Greg Turner, PGC

The Game Commission pioneered a new diagnostic technique using ultraviolet light to identify bats infected by WNS that provides a significant advance for surveillance of the disease. It is the only method that does not require euthanizing bats to confirm infection and provides immediate diagnosis.

This technique allows examination of bats as they emerge naturally from hibernation sites, without risks posed by internal disturbance - additional stress to hibernating bats and accidental spread of the WNS fungus. By simply capturing an emerging bat, photographing

its wing, then releasing it, we can confirm presence of the fungus in the site and measure the amount of fluorescent lesions per bat. Because the technique is harmless, we can now investigate the rare survivors without harm and potentially follow individuals across years.

By using this technique for several years, we have documented that all little brown bats become infected annually, but that survivors are getting significantly less infection each year. While this is somewhat heartening, optimism is tempered because we have not yet documented juveniles surviving their first encounter with this disease and we have not seen any conclusive evidence of stabilization or increases in populations to date.

Appalachian Bat Count

As WNS continues to severely impact the state's bat populations, the Appalachian Bat Count will provide valuable information on the location and size of surviving summer colonies. Monitoring of summer roosts is an essential tool to measure impacts of WNS on summer bat populations. Volunteers provide our largest source of data – 51% of sites in 2013. Unlike hibernacula surveys, Appalachian Bat Count surveys require no specialized equipment or expertise. Surveyors observe a known bat roost at dusk and count the bats emerging from the roost between late May and August. Volunteers, PGC staff and partners from other natural resource agencies counted bats at 197 sites across the state in 2013. These surveyors counted little brown and big brown bats at bat boxes and bat condos, houses, barns, churches, bridges and other structures.

We continue to see declines in summer bat populations, with large declines most recently evident in western counties as the disease spreads. Compared to historical high counts, a statewide decline of 88.7% was observed in summer bat colonies in 2013. Little brown bats declined by 91% while big brown bats remained more stable with a 21% decline from historic highs. The movement of bats between adjacent states and the later arrival of WNS in Pennsylvania's western counties are factors in the difference between the 88.7% decline in summer colony counts and the 98% decline in winter hibernation counts.

Bats have always dealt with eviction from summer roosts, structure deterioration, disturbance, landscape changes and changing food resources. However none of these is as dramatic as the effect of WNS on our bat population.

YOU CAN HELP! Go to www.pgc.state.pa.us. Click the **Wildlife** tab at the top of the homepage, then click **Little Brown Bat** under Wild Mammals, then **Appalachian Bat Count**.

Mitigation for Mammal Conservation

Cal Butchkoski, PGC



Appalachian Bat Count Coordinator Nate Zalik (on ladder) installs a durable 14-chamber bat box to provide a comfortable alternative roost for bats displaced by a bridge replacement project.

Mitigation, as it applies to wildlife, means action taken to alleviate an existing or potential threat directly to a species or, more often, to its habitat. Minimizing threats often means education and providing guidelines in the form of best management practices. Mitigation can take many forms, such as creating new habitat, enhancing adjacent habitat or protecting currently unprotected habitats. Mitigation often looks at available resources on-site to determine if they can be used to provide enhancements for wildlife at minimal cost. Win/win situations develop as a result of one-on-one contact between conservation agencies and the land-use community. These partnerships have developed successful management techniques for state-listed species such as the eastern small-footed bat and Allegheny woodrat, both state threatened species.

Examples of mitigation in 2013 include installation of a large aluminum-shell bat box where summer bat colonies were displaced when buildings were demolished to make way for a new highway bridge. Because a federally endangered Indiana bat was found in an inactive portion of an extensive limestone mine, the mining company agreed to gate the mine's portals and excavate to improve cold air retention for that cold-loving species while improving ventilation in the active portion of the mine. Thanks to an energy developer, a cluster of sandstone caves on state game lands was gated to protect the hibernacula used by the eastern small-footed bat and northern long-eared bat, reduce visitation stress to bats already affected by WNS, and improve public safety. On another game land, an abandoned railroad tunnel used by bats was gated through a mitigation agreement with an expanding industrial park. On the edge of the industrial park itself, the developer built rock structures to provide summer roosts for small-footed bats. Similar structures were part of mitigation near a ridge-top wind farm. Red spruce plantings to increase habitat quality for the state endangered northern flying squirrel were proposed as mitigation for a power line right-of-way. Within months of completion of habitat enhancements for the Allegheny woodrat in a state forest, funded by an energy developer, food resources increased as the result of daylighting that encouraged growth of forbs, creation of low-growing grape arbors, and broadcast seeding that produced grasses and raspberry canes. Such examples enabled industry to move forward with projects while enhancing habitat for wildlife.

Indiana Bat, *federally endangered*



Cal Butchkoski, PGC

The Indiana bat has been listed as a federally endangered species since 1967. The Game Commission defers to the U.S. Fish and Wildlife Service for its protection while consulting and cooperating on research and management within Pennsylvania. In 2006 our research included tracking a female Indiana bat from a Luzerne County coalmine to a woodlot in Berks County. We installed two bat boxes along the edge of the woodlot. Fast-forward to August 2013. A Game Commission and Western Pennsylvania Conservancy crew mist-netting for bats at the Berks County maternity site captured five female Indiana bats emerging from one of the boxes and a sixth along a nearby creek. All were adults with the exception of one juvenile captured at the bat box. All the Indiana bats were tagged with identification bands and released.

On to March 2014. Our colleagues in New York State found the juvenile bat hibernating in an iron ore mine in Ulster County, 130 miles from where she was born. That mine is one of the few remaining sites in the Northeast that still has a significant number of hibernating bats despite WNS. Is there something different about this mine that helps bats survive? Are bats searching out other WNS survivors? Those questions remain unanswered at this time. Regardless, we hope that our young Berks County bat will return to spend her summers in Pennsylvania for many years to come.

Mammal Atlas Project

Not all mammals are equal but all are important. Their diversity presents a serious challenge for the Mammal Atlas.

YOU CAN HELP in 2015!

Watch for announcements on:

[www.facebook.com/
PennsylvaniaGameCommission](http://www.facebook.com/PennsylvaniaGameCommission)
and

www.twitter.com/PAGameComm

**Project Manager
Lindsey Heffernan**



Greg Turner, PGC

The Mammal Atlas is a multi-year project that will have Game Commission staff and volunteers scouring the state for 66 mammal species. Mammals are important from the perspective of recreational viewing and hunting opportunities to wildlife artwork and tourism. Mammals have a lot to offer. Therefore, as humans we should do our best to understand these animals that help shape our environment. Where do they live, what threats do they face, who are their neighbors (well, animal neighbors), and what are the best locations in the state to find them? For some animals, like deer, these questions can be answered easily. For a mammal like the water shrew, it's not as clear. Over the next ten years many survey techniques will be used to answer these questions. Trail cameras placed at various heights above ground should document medium and large sized mammals. Photographs of animals resting in the woods, visiting a bird feeder or found as road-kill will be submitted by volunteers. Traps will determine the location of nocturnal or elusive critters such as the southern red-backed vole. Fur collected on wire brushes will leave DNA for a lab to analyze. Bat calls will be recorded using acoustic devices. Tracks in the dirt will be identified. The list of survey options is extensive; however cost, time, manpower, and effectiveness will help determine which surveys are most worth it.

To determine these top-notch surveys, a pilot study will be implemented in central Pennsylvania during summer and fall of 2014. Survey options that look good on paper may turn out not to be worth anyone's time. The best way to find out is to put boots on the ground. Is the equipment easy to use? How many people does it take? How many trips will you have to make? With the results of the pilot in hand, we're off to tackle the entire state using a mapping grid to ensure no area is left behind. Over the span of the project, there will be many opportunities for universities, wildlife groups, and individuals to help out. The data we gather will guide future management, identify mammal "hotspots," and maybe even document new locations of species of greatest conservation need. The Mammal Atlas will be a great project, and provide very important information. So dust off your cameras, pull out your hiking boots, and get ready!

Allegheny Woodrat, *state threatened*

The Allegheny woodrat, a small rodent about the size of a gray squirrel, lives in talus slopes, boulder fields and cliffs in hardwood forests along the Appalachian Mountains. It has suffered a steep population decline throughout its range attributed to a combination of factors: loss of mast crops, forest fragmentation, increased predation and a parasite spread by raccoons.

Allegheny woodrat habitat was enhanced during winter 2012-2013 at five locations on three state game lands in Huntingdon County, administered by the Game Commission's Southcentral Region. Treatments to increase food production included release of soft mast-bearing shrubs like greenbrier and blueberry, and release of hard mast-producing trees like oaks, hickories and sassafras. To reinforce more desirable trees species, black birch, striped maple and red maple were controlled. Management also promoted forbs and other herbaceous plants for forage and grape vines to increase fruit production. A total of 19.5 acres were treated, with up to six small treatment areas within each game land site. Efforts to control non-native invasive plant species required follow-up in 2014 on two game lands. PGC personnel conducted all treatments on one game land, a contractor conducted treatments on another, and both agency and contractor worked on the third game land.

To track changes in Allegheny woodrat populations at habitat sites receiving forest management treatments, researchers from Indiana University of Pennsylvania (IUP) live-trapped woodrats during the summer months before and after the implementation of habitat management. In addition to the five locations receiving treatments, five additional locations were trapped in the same vicinity for comparison. Over two years, IUP captured a total of 77 Allegheny woodrats. Implementation of habitat management at woodrat habitat sites did not immediately affect the populations when compared to untreated habitat sites. This lack of an immediate impact was not surprising. Researchers expected a lag in the population response as woodrats could not immediately reap the benefits that should arise from the management activities. Habitat management did result in strategically placed openings in the forest canopy allowing additional sunlight for food producing plants in the understory. Additionally, management activities increased coarse woody debris on the forest floor that should help provide additional food and cover for woodrats. Researchers will continue to monitor populations at these habitat sites into the future to document the response and assess these forest management techniques as a tool for helping the recovery of Allegheny woodrat populations. This IUP project is supported by a grant from Pennsylvania's Wild Resource Conservation Program.



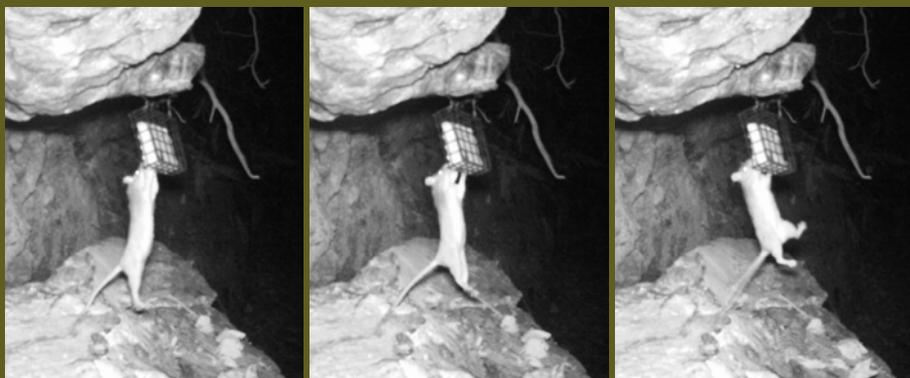
Reg Hoyt, Delaware Valley College

Two projects by conservation partners, supported by federal State and Tribal Wildlife Grants Program funds, will help us build on earlier projects that produced the adaptive habitat management practices described at left.

Delaware Valley College now maintains the Allegheny woodrat captive breeding program originally at Purdue University. Six woodrats, four females and two males captured by PGC staff, were added to the colony in late summer and fall 2013. One female was pregnant when captured, but not visibly so. In late August she gave birth to the colony's first pup. The goal of the breeding program is to supplement genetic diversity of the state's isolated populations by introducing new woodrats to viable colonies occupying suitable habitat.

Indiana University of Pennsylvania is developing a genetic catalog of the state's Allegheny woodrat population to inform future management and guide reintroductions from the breeding program. During the genetic catalog project's first field season, researchers visited 110 habitat sites to survey for signs of activity, conducted extensive live-trapping at 66 sites resulting in 116 woodrat captures and collected 115 samples for genetic testing.

Trail-cams were deployed in 2013 in and around a remote area of Fayette County where an eastern spotted skunk was captured in fall 2012. Peanut butter suet used as bait attracted a lot more than skunks. Allegheny woodrats were photographed at several locations — some doing chin-ups. Other species included raccoon, opossum, long-tailed weasel, fisher, bobcat, coyote, black bear and red-tailed hawk. Unfortunately, no spotted skunks were captured on film.



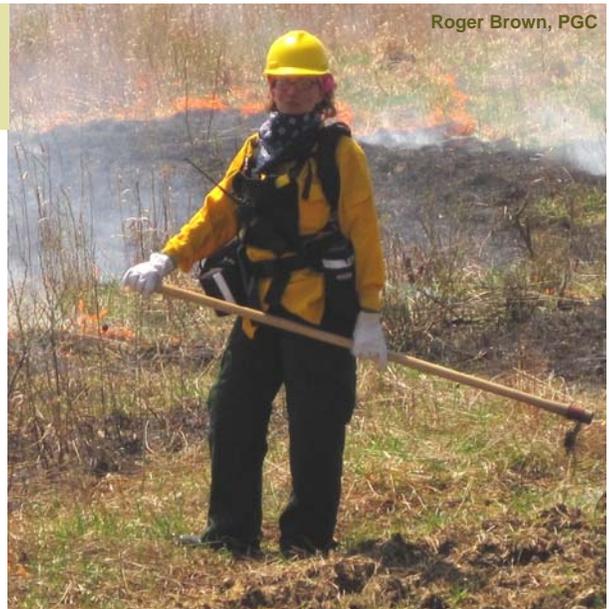
Private Landowner Assistance & Regional Wildlife Diversity Biologists

The Private Landowner Assistance Program (PLAP) specifically targets conservation of species of greatest conservation need on private lands. In 2005, the Game Commission established a network of six regional wildlife diversity biologists (RWDBs) whose primary responsibility is to provide technical assistance to private and public landowners. The biologists conduct habitat assessments, write management plans, and assist and monitor implementation of those plans. There is no cost to landowners and no public access requirement for participation in the program. PLAP continues to grow through consultation with landowners and managers of both private and public land. In 2013, RWDBs consulted 108 private properties totaling 22,662 acres and produced 93 written management plans providing recommendations for 14,195 of those acres.

RWDBs coordinate with USDA staff on Farm Bill programs to ensure that species of greatest conservation need are considered in private lands programs administered by the USDA. In 2013 at least 29 projects were approved through Farm Bill programs as a result of technical assistance provided by RWDBs. Approved projects included control of invasive plant species, early successional habitat management and creation, tree and shrub establishment, forest stand improvements, riparian buffer establishment, rotational grazing, deer enclosure fencing, warm season grass establishment and hedgerow plantings.

RWDBs also coordinate with the Game Commission's Bureau of Wildlife Habitat Management to improve habitat on Public Access Cooperator properties. In 2013, eleven projects were implemented or planned on cooperator land through federal funding. Additionally, they assisted Wildlife Habitat Management with Pennsylvania Natural Diversity Index reviews for gas development, conducting 35 reviews and 3 field surveys to evaluate potential impacts to threatened, endangered and special concern species and habitats.

The commission's Comprehensive Game Lands Planning process takes advantage of interdisciplinary expertise to create long-term management plans for approximately 1.48 million acres in the commonwealth. In 2013, RWDBs contributed to planning for 34 state game lands comprising 234,805 acres by determining likely use by species of greatest conservation need, providing guidance on habitat management, and assisting with marking and conducting treatments. RWDBs write Wildlife Resources and Management Priorities narratives, provide modifications for forestry prescriptions and identify opportunities for research linking biological research to land management practices. Species benefitting from their involvement in game lands planning include golden-winged warbler, American woodcock, cerulean warbler, Swainson's thrush, great blue heron, American bittern, yellow-bellied flycatcher, eastern small-footed bat and Allegheny woodrat.



Roger Brown, PGC

Southwest Region Wildlife Diversity Biologist Tammy Colt participated in a prescribed fire on SGL 262, Indiana County to remove thatch and kill invasive autumn olive. Controlled burns are used by the Game Commission on game lands statewide to improve plant and wildlife habitats, and to reduce the chance of wildfire. RWDBs participated in nine prescribed fires on game lands and conservancy and municipal properties during 2013.



purple martin

Jake Dingel, PGC

Public outreach is an important part of every RWDB's job. The six biologists set a goal of conducting at least five workshops and 22 presentations during 2013 to promote the conservation of wildlife species of greatest conservation need. Surpassing their goal, they conducted five workshops and 55 presentations. Venues included Penn State's first Forest Landowners Conference, Ag Progress Days, Clarion Forest Landowners Conference, Women and Their Woods, Jaffa Sports Show, Hawk Mountain Sanctuary, universities, public schools, conservancies, watershed organizations and bird clubs.

RWDBs also serve on boards or committees of conservation organizations including the Pennsylvania Chapter of The Wildlife Society, Wildlife Incentives for Nongame and Game Species, the Loyalhanna Watershed Association and the Purple Martin Working Group.

Barn Owl Conservation, maintenance concern

Biologists, landowners and volunteers collaborate on a Barn Owl Conservation Initiative originated by regional wildlife diversity biologists (RWDBs) in 2005. Each year RWDBs visit sites where barn owls nested in earlier years, habitat where they might occur and locations where possible sightings are reported. Presence or absence is determined by searching for barn owls and fresh sign, mostly in the form of pellets and “whitewash.” Breeding activity is determined by confirmation of eggs, nestlings or recently fledged young.

Landowners with active nest sites or potential for providing habitat are given information on barn owl conservation status, habitat requirements, threats, cause of decline, habitat management recommendations and proper nest box placement. Boxes provide nesting sites safe from predators and hazardous ledges. Confirmed nests are concentrated in agriculturally dominated valleys of the central and southeastern parts of the state. In 2013, as in 2012, we found evidence that several nesting pairs can successfully raise clutches in fairly close proximity to each other. In Union County, three active nest sites were found in barns and a silo within 1,000 feet of each other, with a fourth active nest less than a mile from the cluster. One of these sites was active in previous years while the other three nest sites were new.

Barn owls are banded to provide information on longevity, dispersal and causes of mortality. Banding began in 2005; since then 64 banded barn owls have been recovered. Seven recoveries were birds banded in states other than Pennsylvania. Nine recoveries were barn owls banded within Pennsylvania and recovered out of state. The remaining 48 were owls banded and recovered within Pennsylvania. The furthest recovery to date was a bird recovered in the Bahamas, 926 miles from the banding site at State Game Lands 145, Lebanon County. The median recovery distance is 21 miles.

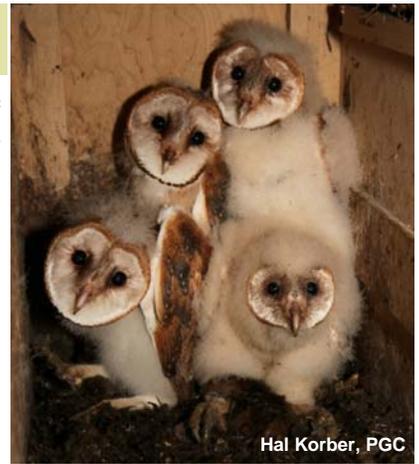
Notable numbers in 2013

75 confirmed active barn owl nests (of which 15 were new sites) in 19 counties

40 barn owl nest boxes distributed, and in most cases installed, by RWDBs

57 of the 75 confirmed active nest sites were in nest boxes

195 barn owls were banded at 55 sites



Northeast Region Wildlife Diversity Biologist Rich Fritsky led students in building barn owl boxes and dissecting owl pellets as part of Woodland Resource Adventure Camp at Camp Lackawanna, Wyoming County. Children ages 12 to 16 learn about the environment through hands-on, outdoor experience. The four-year rotation of themes includes Wildlife, Aquatics, Soils/Geology, and Forestry.

What is an owl pellet? When an owl eats it tears its prey into pieces but eats the entire animal—meat, bones and fur. In the stomach, nutritious portions are absorbed and indigestible matter is formed into a pellet and disgorged. By examining pellets we can tell exactly what the owl has been eating.

A graduate student from East Stroudsburg University dissected and analyzed pellets and loose remains from a barn owl nest in Northumberland County. Analysis found 162 skulls. The majority of remains were meadow voles (76%), assorted mice (12%) and short-tailed shrews (10%). Two unidentified bird skulls and one skull from a star-nosed mole also were found.

Statewide Acoustic Survey for Bats—new in 2013

Pennsylvania's bat populations have changed dramatically because of WNS. As bats fly they echolocate to help navigate and find food. Different bat species have unique call patterns which, using special acoustic detectors, help us identify the species and their abundance. RWDBs ran a pilot study in 2013 to prepare for a long-term project to assess distribution of bat species and detect the presence of endangered, threatened, rare and previously undocumented bat species. In the pilot year, eighteen 20-mile survey routes were randomly selected across the state and driven at a rate of 20 miles per hour in July. Data exceeded expectations for the number of calls recorded, calls identifiable to species, and levels of complexity, providing the opportunity to refine data collection protocols, route selections and analyses for 2014.

The State Wildlife Action Plan: Beyond the Emergency Room

The Game Commission holds Pennsylvania's wild birds, wild mammals and their habitats in the public trust for this and future generations. With nearly 500 species of wild birds and mammals within our borders, this is a tall order. Moreover, 88% of these species are not hunted or trapped. Limited resources are allocated to ensure their sustainability. Congress enacted legislation in 2001 creating the State and Tribal Wildlife Grants Program (SWG) which provided funding to states to go beyond the emergency room for species already in need of critical care and to proactively manage species most at risk of endangerment. An obligation of that funding was the development of a comprehensive Wildlife Action Plan (WAP) for each state. Pennsylvania launched our first WAP in 2005, jointly with the Fish and Boat Commission, after approval by the U.S. Fish and Wildlife Service. The plan categorizes the species in greatest need of conservation, identifies those for which Pennsylvania has a great responsibility for population persistence, and prioritizes conservation actions. The goal is preventing additional federal endangered species listings.



Cal Butchkoski, PGC

The Wildlife Society—Pennsylvania Chapter 2014 annual conference featured field trips to sites with management made possible by federal State and Tribal Wildlife Grants. PGC Southcentral Region Wildlife Diversity Biologist Clay Lutz explains Allegheny woodrat habitat improvements implemented on state game lands to field trip participants.

Since then, through SWG funds and essential partnerships, we have supported nearly 60 projects to address knowledge gaps and on-the-ground management needs for species of greatest conservation need identified in the plan. These projects have increased understanding of the distribution and abundance of species, developed best management practices, and accomplished habitat management and restoration activities on thousands of acres of public and private lands in Pennsylvania. In addition, since 2006 the northeastern states (Maine to Virginia) have pooled 4% of their SWG apportionments to tackle region-wide priorities, resulting in more than 50 additional projects to conserve and protect regional species of greatest conservation need.

In 2013, the Game Commission and Fish and Boat Commission began revising the 2005 plan, in concert with an advisory committee of statewide conservation partners, in preparation for submitting the congressionally required 2015 WAP update. Species status was re-evaluated using results of SWG projects. A transparent and repeatable process for updating the list of Pennsylvania species of greatest conservation need was adopted. Factors for selection include global, regional and state imperilment; state responsibility for the species within its range; and short-term (10 year) severe threats to a species or its habitat. We will also be drawing on two northeast regional projects as we revise the WAP – the synthesis of regional projects and a common lexicon that will ultimately enable a region-wide compilation of priority species, threats and conservation actions. Framing our state-level WAP within a regional context should greatly advance proactive conservation rather than waiting until a costly reactive solution is needed.

State and Tribal Wildlife Grants Projects

State and Tribal Wildlife Grants support the work of the Wildlife Diversity Program's endangered bird and mammal specialists, regional wildlife diversity biologists, Private Landowner Assistance Program, Barn Owl Conservation Initiative and Acoustic Survey for Bats. Equally important, the Game Commission works with conservation partners across the state and region to bring special expertise and local commitment to projects and maximize the impact of these federal dollars.

PROJECT COMPLETED in 2013

White Nose Syndrome: Development of a Multi-State Response, Indiana University of Pennsylvania – IUP coordinated the many research efforts and advancements by 11 states, and three non-state partners, in the effort to combat the expanding health threat to North America's bats. This project was essential in coordinating the initial response by state agencies to White Nose Syndrome as it swept through the northeastern U.S.

State and Tribal Wildlife Grants Projects *continued*

ONGOING PROJECTS

Implementing Forestland Best Management Practices for Golden-winged Warbler Habitat on Public Lands in Pennsylvania, *Indiana University of Pennsylvania* – This project expedites implementation of breeding habitat management for one of the most imperiled birds in the eastern U.S. on thousands of acres of state game lands. Through 2013, 2,673 acres have been prepared for habitat management across 12 state game lands and one Nature Conservancy property.

Marcellus Shale Exploration and Development, Quantifying Effects, *Pennsylvania State University* – This project is working to quantify local and landscape level effects of energy development on the forest bird community. Surveys of forest birds track whether their populations increase, decrease or stay the same in relation to differing levels of gas exploration and changes to habitat. Currently, there are over 3,000 Marcellus gas well pads in Pennsylvania. A preliminary analysis has shown that 31% of well pads are located in forest that is more than 100 meters from a pre-existing opening or edge, and so would be within core forest. Preliminary results show that abundance of forest interior species, such as black-throated green warbler and Acadian flycatcher, is reduced around well pads, while human-associated species generalists, such as American robin and brown-headed cowbird, are more common near the edges created by the pads. Moreover, well pads are not beneficial to the young-forest species, since pads are surrounded by abrupt forest edges, with little shrubby habitat.

Genetic Catalog of Allegheny Woodrat Metapopulations in Pennsylvania, *Indiana University of Pennsylvania* – Management solutions have been identified for many Allegheny woodrat population pressures. However, loss of genetic diversity due to declines and isolation may inhibit woodrat recovery. An atlas of genetic diversity among woodrat populations will identify populations that require genetic restoration to achieve long-term recovery goals.

Allegheny Woodrat Captive Breeding Program, *Delaware Valley College* – The goal of this project is to maintain a breeding colony to supplement the genetic diversity of the state's isolated woodrat populations and allow reintroduction efforts in suitable habitat in the hope of averting federal listing of the Allegheny woodrat.

Pennsylvania Wildlife Action Plan 2.0 – Prioritization and Mapping Enhancements, *multiple professional partners* – This Competitive State Wildlife Grant, awarded in 2013, will aid in updating species priorities, evaluating habitat condition and extent, and delineating conservation focal areas for the revision of the state's Wildlife Action Plan.

Northeast Regional Conservation Needs, *Wildlife Management Institute* – Through the regional conservation needs partnership, the northeastern states are able to utilize resources, techniques, expertise and funding to achieve a scale and scope of ecosystem conservation that would not be possible for any single state to deliver.

White Nose Syndrome Fund Projects

Thanks to a contribution by CONSOL Energy to the Pennsylvania White Nose Syndrome Fund, three projects by conservation partners began in 2013 for research into WNS control methods and analysis of the state's bat population trends in response to WNS.

Biology of *Pseudogymnoascus destructans (Pd)* and evaluation of a biological control agent, *Lock Haven University* – *Pd*, the fungus that causes WNS, will be collected from caves and mines and isolated in the lab. A different fungus, isolated from eastern hemlock, is a known biological control agent against fungi used by the fruit industry in Europe. This fungus will be tested in the lab for its effectiveness at controlling *Pd*. If proven effective, trials of the bio-control fungus may take place in caves where *Pd* is found.

Mycoviruses in White Nose Syndrome, *Pennsylvania State University* – *Pd* collected from bats and caves will be cultured in the lab to look for viruses that infect the fungus. Any viruses found will be tested to investigate their effects on *Pd*.

Statewide statistical analysis to understand WNS impacts and inform management of hibernating bat species, *Temple University* – Statistical modeling of Pennsylvania Game Commission bat survey data will help to better understand the effects of WNS on bat populations on a statewide basis. Additionally, the project will examine factors related to the susceptibility of bats to WNS.



In the Public's Interest

The Game Commission's mission is to manage Pennsylvania's wild birds, wild mammals and their habitats for current and future generations.

Engaging the Public's Interest

In 2013, the number of Pennsylvanians engaged in wildlife conservation through Wildlife Diversity Program citizen science, outreach and education continued to grow.

- **3,800 citizens attended 85 presentations** by Wildlife Diversity Program biologists statewide.
- **400 volunteers assisted Game Commission surveys** of eagles, peregrine falcons, osprey, colonial waterbirds, golden-winged warblers and other bird species statewide.
- **65 highly skilled birders completed 103 Breeding Bird Survey routes** for the U.S. Geological Survey. At least 20 have surveyed their routes for 20 years or more.
- **101 of 197 Appalachian Bat Count summer colony reports were submitted by volunteers**, a 23% increase over 2012 in public participation in monitoring the effects of White Nose Syndrome.
- **102,666 field trip reports were entered on PA eBird**, a 62% increase over 2012 for our state portal to this free, real-time, web-based bird checklist.
- **202,528 views of Wildlife Diversity web pages** included both educational materials and annual reports on PGC research projects. Top "vote-getters" were the northern flying squirrel, bald eagle and peregrine falcon.

A Message to All Volunteers

A longstanding strength of wildlife conservation is volunteer participation in monitoring, conservation and protection of Pennsylvania's many wildlife species, involvement that benefits all state residents.

As evidenced on many pages of this report, citizen-scientists are involved in monitoring of bald eagles, peregrine falcons, osprey and water birds. They contribute many thousands of records for a wide diversity of bird species through Pennsylvania eBird. Landowners and volunteers participate in the Barn Owl Conservation Initiative. Participants in the Private Landowner Assistance Program benefit both birds and mammals through habitat management on their properties. Birds benefit from nesting boxes and bats benefit from roosting boxes built and installed by volunteers. Appalachian Bat Count volunteers provide data essential to tracking trends in bat populations in the wake of White-Nose Syndrome. New public participation opportunities will begin with the launch of the Mammal Atlas project in 2015.

Thank you for the dedication and expertise that bring greater depth to our studies of species of greatest conservation need.

photo courtesy of Jill Showalter



Lower Susquehanna Eagle Team

And the award goes to . . .

There are many champions of wildlife on the national, regional, state and local levels. We are happy to report on awards presented to some Pennsylvania Game Commission partner organizations, partnerships and individuals who are champions of wildlife species of greatest conservation need.

U.S. Congressman Jim Gerlach—The Teaming With Wildlife Coalition selected Congressman Gerlach for their **2013 Congressional Award** in recognition of his outstanding leadership to safeguard imperiled species and their habitats. Mr. Gerlach, who represents Pennsylvania's District 6 in the U.S. House of Representatives, also has been a consistent voice for preserving open space in the state's southeastern counties. Participating in the presentation to Congressman Gerlach (holding the award) were representatives of (left to right) Audubon Pennsylvania, PGC Bureau of Wildlife Management (BWM), Pennsylvania Fish and Boat Commission, Teaming With Wildlife, The Nature Conservancy and PGC BWM Wildlife Diversity Division.



Lauryn Schothorst, Congressman Gerlach's Staff



Cathy Haffner, PGC

The Research Institute at Indiana University of Pennsylvania (IUP)—Teaming With Wildlife selected IUP for their **State Wildlife Action Plan Partnership Award**. PGC BWM Wildlife Diversity Division nominated IUP for their long-term dedication to implementing Pennsylvania's Wildlife Action Plan through projects ranging from research to action – answering critical questions, developing management plans, and implementing on-the-ground management for bird and mammal species of greatest conservation need. The award recognizes both a state fish and wildlife agency and its partner for their outstanding collaboration in the implementation or revision of the state's Wildlife Action Plan. IUP's Jeff Larkin (right) and PGC's Cal DuBrock (left) spoke during the award ceremony.

Cal DuBrock, PGC Bureau of Wildlife Management Director—The national Association of Fish and Wildlife Agencies (AFWA) presented a **Special Recognition Award** to Cal for his efforts as a groundbreaker in achieving wildlife diversity conservation and funding in the early 1990s, and his continuing support through two decades. Cal also helps to lead revision of the state's Wildlife Action Plan and initiated a Wildlife Diversity Forum focused on conservation issues and actions needed to conserve Pennsylvania wildlife and their habitats.

Bob Wasilewski—PGC's Northeast Region presented a **Senior Wildlife Conservation Award** to Bob in recognition of 15 years closely monitoring peregrine falcon nesting activity in the region. Since 1998, Bob has devoted many volunteer hours to discovering new peregrine nesting locations, observing nests to determine incubation and hatching dates, assisting banding operations, and identifying previously banded birds. His extensive public relations activities have helped the public gain a greater appreciation of peregrine falcons and their protection.



PGC Northeast Region

Eastern Golden Eagle Working Group—The U.S. Forest Service selected the group for its **Wings Across America Research Management and Partnership Award**. This international collaboration of biologists and wildlife managers from more than 20 institutions in the U.S. and Canada is dedicated to studying the eastern golden eagle and improving its management. Their efforts are led by Todd Katzner of West Virginia University, principal investigator of a past golden eagle research project selected by PGC for State Wildlife Grants funding. Pennsylvania organizations in the working group include PGC, Hawk Mountain Sanctuary, Penn State, Duquesne University and Cellular Tracking Technologies, LLC.

Pennsylvania Young Forest Council's Golden-winged Warbler Habitat Initiative—The North American Migratory Bird Joint Venture presented the **Conservation Champion Award for a Regional Partnership** to the council in recognition of golden-winged warbler habitat management on Pennsylvania's public lands as well as privately owned forestlands. Partners include PGC, IUP's Research Institute, USDA-Natural Resources Conservation Service, Pennsylvania Department of Conservation and Natural Resources, U.S. Fish and Wildlife Service, American Bird Conservancy, National Fish and Wildlife Foundation, Pheasants Forever, National Wild Turkey Federation, Wildlife Management Institute, Western Pennsylvania Conservancy and The Nature Conservancy.

PENNSYLVANIA'S
ENDANGERED and THREATENED
BIRDS and MAMMALS

ENDANGERED BIRDS

American bittern⁵
black-crowned night-heron⁴
blackpoll warbler^{4,5}
black tern⁵
common tern^{4,5}
dickcissel⁴
great egret⁴
king rail⁴
least bittern^{4,5}
loggerhead shrike^{4,5}
peregrine falcon⁴
sedge wren^{4,5}
short-eared owl^{4,5}
upland sandpiper^{4,5}
yellow-bellied flycatcher^{4,5}
yellow-crowned night-heron⁴

ENDANGERED MAMMALS

Delmarva fox squirrel¹
Indiana bat¹
least shrew
northern flying squirrel

THREATENED BIRDS

long-eared owl^{4,5}
northern harrier^{4,5}
osprey⁴

THREATENED MAMMALS

Allegheny woodrat
small-footed bat
West Virginia water shrew

EXTIRPATED

piping plover²

¹federally endangered

²Great Lakes population federally endangered

³protected under federal Bald and Golden Eagle Protection Act

⁴protected under federal Migratory Bird Treaty Act

⁵USFWS Migratory Bird of Conservation Concern

