



YOUR STATE WILDLIFE AGENCY
2019 ANNUAL REPORT

OPENING MESSAGE

We are proud to present our 2019 Pennsylvania Game Commission annual report. Captured within these pages is just a snapshot of the agency's accomplishments in 2019. It is due to the passionate, hardworking, and dedicated staff of the Pennsylvania Game Commission that have made these accomplishments a reality.

It is important to look back on our accomplishments and celebrate the successes and strategize how to deal with emerging challenges. As an agency, we are always looking forward, tackling new issues, and making new plans to accomplish new goals. And, 2020 is shaping up to be a historic year for the Game Commission.

The year 2020 will mark our 125th year, another reason to celebrate. Looking back, the Game Commission has evolved dramatically to meet our wildlife management mission goals. Next year, we will have a new strategic plan in place, which lays out a road map of priorities for the agency.

Next year will also represent a new strategic approach to wildlife disease. When the agency was created in 1895, wildlife disease was not a major issue. However, throughout the past several decades, wildlife disease has become a threat to many species; West Nile Virus in grouse and many songbirds, Chronic Wasting Disease in deer and elk, and White-nosed Syndrome in bats. And these are just a few of the disease challenges facing wildlife.

To help us address the issue, the Game Commission recently launched a partnership with the University of Pennsylvania's School of Veterinary Medicine (Penn Vet) to develop the *Wildlife Futures* program. This innovative approach to dealing with wildlife diseases will help the agency more effectively manage wildlife diseases moving forward.

And there are many other new initiatives in play for 2020 and we look forward to reporting on these successes in the 2020 annual report. As an agency, we are proud of what we have accomplished, and we are even more excited about the new mountains we are about to climb.



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Red bud in April by Tracy Graziano



Board of Game Commissioners President
Timothy S. Layton, left, and
Game Commission Executive Director
Bryan J. Burhans

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Celebrating 125 Years of Conservation Leadership — a 7-minute film celebrating the agency’s 125 years. Established by law in 1895, the Game Commission quickly became a leader in wildlife conservation that attracted attention and requests for guidance from across the country. Depleted game populations were brought back, songbirds were protected, a state game lands system was assembled to provide habitat and hunting opportunities, and laws to ensure fair-chase and fair-share standards were enforced to enhance the experiences of all Pennsylvanians who cared about The Great Outdoors. These 125 years, the agency has held true to the same principles on which it was founded.



A .pdf of this document is available at www.pgc.pa.gov. Links to films viewable at www.youtube.com/pagamecommission are included where this symbol is located throughout the online report.

White-tailed deer on front and back covers by Jacob Dingel



Raccoon by Jacob Dingel

PUTTING WILDLIFE FIRST

managing 480 species of wild birds and mammals for current and future generations



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River otters by Jacob Dingel

Deer-Forest Research

Understanding the relationships between deer and forests is critical for deer and forest management in Pennsylvania. Deer affect forest management, and forest conditions affect deer management.

A study began in 2013 to evaluate existing deer impact measures (and identify new methods as needed), to evaluate effectiveness of the Deer Management Assistance Program (DMAP) in affecting deer populations on local areas, and to better understand the role of deer and other factors on forest conditions. Nearly 1,000 deer have been captured and marked on study areas in the Bald Eagle, Rothrock, and Susquehannock state forests. Despite use of DMAP permits by hunters on these study areas, harvest rates of antlered and antlerless deer remain low. Nearly 200 forested plots have been established to monitor conditions under different deer and forest management treatments. Early results indicate that soil chemistry shapes forest understory conditions, and that the interactions between deer browsing and environmental conditions are complex.

Communicating these research results continues to be an integral part of this study. The Deer-Forest Blog provides the public with regular updates on this project and other deer and forest topics. In fiscal year 2018, 66 blog posts were written. Since the beginning of this study, nearly 500 blog posts have shared information with the public. <https://ecosystems.psu.edu/research/projects/deer/news>

River Otters

River otters in Pennsylvania have expanded in range and abundance since their reintroductions in the early 1990s. Their recovery was sufficient to allow for a modest trapping season in Wildlife Management Units 3C and 3D in northeastern Pennsylvania beginning in February 2016. Since the otter season opened, trappers have harvested approximately 35 otters per year. In the 2018-19 season, 956 people held river otters permits, harvesting 28 otters.

The increase in otter numbers and subsequent trapping opportunity also warrants additional monitoring to ensure that otter populations remain sustainable. Over the next three years the Game Commission will conduct surveys throughout northwestern and northeastern Pennsylvania where the highest numbers of incidental otter captures and the most otter habitat occur. Biologists will survey those regions to document otter presence by looking for sign (otter tracks and scat at latrine sites), placing cameras where otters might be photographed, and recording sightings of otters by people who encounter them. In select locations, individual otters may be identified through genetic fingerprinting to estimate the numbers or densities of otters. This information will be used to track changes in the distribution and populations of otters and to make appropriate management decisions going forward.

Mourning Dove Banding

Each year, the Game Commission bands 800 to 1,000 mourning doves during July and early August. Most recoveries of Pennsylvania-banded doves occur within Pennsylvania during the early portion of the dove season; however, Pennsylvania-banded doves have also been harvested in at least 15 other states including Kansas, Louisiana, and Texas. Though survival rates are low overall, Game Commission staff occasionally recapture doves that are 7 or 8 years old.

Though survival rates are low overall, Game Commission staff occasionally recapture doves that are 7 or 8 years old.



Mourning dove by Jacob Dingel



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West Nile Virus Research Continues

Research has demonstrated that West Nile Virus is negatively impacting the populations of many bird species. Ruffed grouse are highly susceptible to West Nile Virus. Domestic turkeys, however, are not susceptible. The Game Commission partnered with the University of Georgia Research Foundation, Inc., the Southeastern Cooperative Wildlife Disease Study, National Wild Turkey Federation (NWTF) and Pennsylvania Chapter of NWTF to assess and measure the effects of experimentally infecting wild turkey poults with West Nile Virus in an effort to determine how it may be impacting wild turkey populations.

One hundred and thirty eggs from wild turkey nests in Pennsylvania were collected during April of 2019. The eggs were transported to and hatched at a biosecure facility in Georgia. Initial blood tests of 1- to 2-week-old poults revealed, unexpectedly, that 40 of 48 poults possessed maternal antibodies that help fight infection caused by West Nile Virus. A second blood test when poults were 5 to 7 weeks old, showed the maternal antibodies had waned, as they typically do, once poults are old enough to survive without the constant aid of the hen.

During the summer, poults were inoculated with West Nile Virus with no ill effects at 6 to 8 weeks old. Future research will require help from hunters submitting blood samples from harvested wild turkey to test for the presence of antibodies.

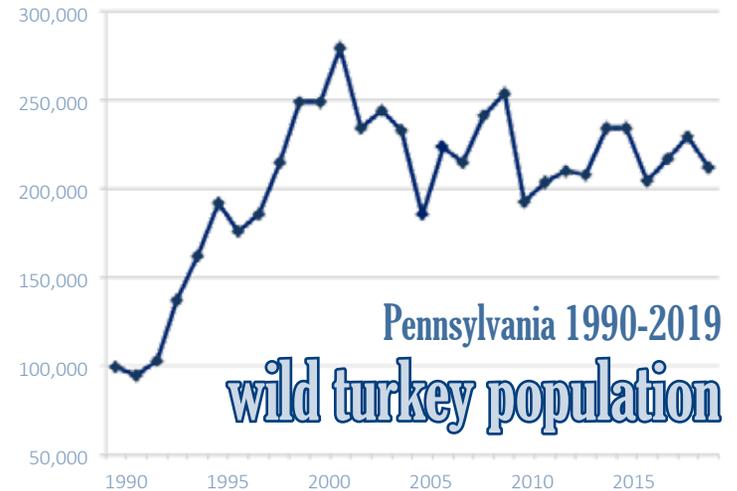


Watch episode 2 of #WildSciPA (1:53). Is West Nile Virus impacting Pennsylvania's wild turkey population? This is the first step in finding out. <https://youtu.be/9dWHWFzGiNg>

Wild Turkey Management

Although the estimated 2019 spring turkey population of 212,200 was 7 percent below 2018 (228,800) and slightly below the previous 10-year average (219,100) it remains within management goals. The goal to allow the population to increase is achievable through continued habitat and harvest management to improve survival and reproductive success.

The newly revised Wild Turkey Management Plan (2018-2027) can be viewed at <http://bit.ly/PGCWildTurkey>.



Pennsylvania Game Commission Wild Turkey Biologist Mary Jo Casalena prepares incubated wild turkey eggs for travel to the University of Georgia for research investigating the impact of West Nile Virus on the Commonwealth's wild turkey populations. Photo by Tracy Graziano

GPS Collars on Black Bear Sows

In 2002, a study of black bear reproduction was initiated in the Big Woods region of northcentral Pennsylvania to collect data on important parameters such as litter size, time between litters, and age of first cub production. Female bears are radio-collared during the summer months and then located weekly throughout the fall to determine timing of denning. Once denned, they are visited by biologists in March to ear tag any cubs that were born. This type of monitoring requires extensive ground work to track radio-collars and locate dens.

In recent years, radio-collar technology has advanced considerably. Collars with GPS satellite tracking are now affordable, durable, and sufficiently sized for multi-year use on bears. In 2019, we began replacing old radio-frequency-only collars with GPS collars. Because GPS collars collect locations every two hours, instead of once a week, we have the potential to learn much more. In fact, data already being collected by these collars will be used in a study examining how the new and earlier muzzleloader and archery bear seasons offered in 2019 affect female harvest. This type of layered use is more economical than initiating an entirely new study, and new technology provides much more insight into the life of study bears than traditional radio-collars ever did.

Tag along on a winter visit to a sow bear denned up with her three yearling cubs. <https://youtu.be/EASA2ZHEIVE> (2:20)



Elk biologists heading out into the field to gather data for the study on delayed breeding by Tracy Graziano

Delayed Breeding in Elk?



Watch episode 1 of #WildSciPA (1:24). Travel with Pennsylvania's elk biologists as they trap and dart cow elk in winter as part of a study on pregnancy rates. <https://youtu.be/aXyVpErXFsq>

Pregnancy rates in Pennsylvania's elk suggest some level of delayed breeding. From 2013 through 2018, blood samples from cow elk harvested during the general season were tested for pregnancy. Average pregnancy rate was 51 percent, which is substantially lower than the expected 90 percent.

This low pregnancy rate prompted more blood collection during winters of 2018 and 2019. Winter pregnancy rates averaged 89 percent — a notable increase from the fall average. Higher pregnancy rates in winter indicate that many reproductive-age females are conceiving later than expected. Late conception leads to late-born calves, which can in turn result in lower calf survival. Reduced calf survival could ultimately slow or prevent population growth.

The agency is building on this research with Penn State University and the USGS Pennsylvania Cooperative Fish and Wildlife Research Unit to capture cow elk and fit them with GPS radio collars and vaginal implant transmitters. The collars and transmitters will identify the location and time of birth so technicians can locate, capture, and collar elk calves. Calf survival will be monitored daily. This research is the next step in unraveling the late breeding mystery.



Elk biologist preparing to gather data from darted cow elk by Tracy Graziano



Muskrat by Jacob Dingel

Waterfowl Wingbee

Each year waterfowl hunters are randomly selected to voluntarily submit one wing of each duck they harvest, and the wing tips and tail feathers of each goose. The items are mailed in prepaid envelopes to one of four locations, one in each flyway, depending on where the birds were harvested. The Atlantic Flyway collection point is in Laurel, MD. Biologists from across the flyway, including Pennsylvania, then spend a week at the “wingbee” identifying the species, age, and sex of the harvested birds based on the wings and tails submitted. In February of 2019, 14,494 duck wings and 4,859 goose tail fans were evaluated at the Atlantic Flyway Wingbee. These data help to estimate the total duck and goose harvests for each state. An estimated 1.6 million ducks, and 977,000 geese were harvested in the Atlantic Flyway during the 2018-19 waterfowl seasons including 63,700 ducks and 90,500 geese in Pennsylvania. Data from the wingbee help managers set and evaluate waterfowl seasons as well as inform waterfowl population models, and better understand population dynamics.



Join one of our biologists as they check duck traps at Middle Creek Wildlife Management Area in Lancaster County to learn how and why we band waterfowl (8:23). <https://youtu.be/luRq3K7OLRs>

Wood duck brood by Jacob Dingel



Measures of Muskrat Health

There is consensus among wildlife professionals and fur harvesters that muskrat populations in the eastern United States and Canada have declined substantially during recent decades. In Pennsylvania, trappers harvested more than 200,000 muskrats annually throughout the 1980s; muskrat harvests started to decline in the early 1990s. Muskrat harvests during the last two seasons have been the lowest on record, with slightly more than 33,000 muskrats harvested last year.

Research during the past year has focused on potential impacts of disease and environmental contaminants. Nearly 200 trappers across the Commonwealth volunteered to provide muskrat carcasses for examinations during this past trapping season. Necropsies were conducted on 606 muskrats to evaluate overall health and reproductive condition and to collect biological samples from the liver, kidneys, and intestinal tracts. Samples were tested for diseases, parasites, and contaminants. Tyzzer’s disease, thought to impact muskrat populations, was detected at low prevalence. No tularemia was detected. Approximately 20 percent of the samples exhibited lesions or cysts on the liver, and 40 percent of muskrats had intestinal parasites. Analyses of heavy metals and other toxicants is ongoing.

Snowshoe Hares

Snowshoe hares have evolved to camouflage themselves throughout the seasons by transitioning from a brown color phase in summer to a white phase in winter. This color change, stimulated by the change in day length, takes about 10 weeks in the fall and spring. Recent research has shown that hares are experiencing more “mismatch” scenarios in which the snow arrives late, melts early, or never comes at all, causing hares to be unable to blend into their surroundings. Higher predation rates result when hares do not have the advantage of camouflage. Interestingly, a recent study showed that hares in Pennsylvania displayed a varying level of white pelage in winter, and some hares did not transition to a white coat in winter at all. A reduction in available suitable habitat, increased habitat fragmentation, and warmer winters have caused a decline in the Commonwealth’s hare populations. Focused habitat management for hares will become increasingly important for the conservation and management of this species as the climate continues to change.

In upcoming fiscal years, the Game Commission plans to attach GPS collars to snowshoe hares in the Pocono region to monitor the response of hares to current habitat management practices including prescribed fire, commercial timber harvest, and conifer propagation.



Learn about snowshoe hare research in Pennsylvania. Where do they live? How do they compare with other hare populations? What color are most of them in winter? (8:19). <https://youtu.be/9Y7-h4TrWtM>

Pennsylvania Residents Trust and Support the Game Commission

Through May and June of 2019, the Game Commission contracted Responsive Management to evaluate Pennsylvania residents’ attitudes toward various wildlife management issues. A telephone survey of 6,441 Pennsylvania residents was conducted. In general, 86 percent of residents supported hunting; 9 percent opposed. In general, trapping was approved of by 66 percent, with support increasing to 76 percent for trapping done with traps tested to make them more humane.

Deer populations where survey respondents reside were considered just right by 51 percent, too high by 28 percent, and too low by 14 percent. Generally, citizens in urban/suburban areas said deer populations were too high; those in rural areas (particularly hunters) said too low. Less than half (46 percent) of Pennsylvanians were aware that the Commonwealth has wild elk.

Canada geese, wild turkeys, and elk were considered a nuisance by 23, 3, and 1 percent of Pennsylvanians, respectively. In the past year, problems or damage from bears, Canada geese, and wild turkeys was experienced by 5, 4, and 1 percent of Pennsylvanians, respectively.

Conservation actions, such as habitat protection, for nongame species that are at risk of becoming endangered were considered important by 93 percent of Pennsylvanians. Pennsylvania Game Commission’s performance in managing and conserving nongame wildlife was rated as excellent or good by 43 percent, fair or poor by 11 percent, and 47 percent did not know enough to say.

More Pennsylvanians were familiar with West Nile Virus (60 percent) than White-nose Syndrome (13 percent).

Survey findings will be used in the antlerless allocation process for white-tailed deer management and will help guide management planning for other species, and identify areas where additional outreach and education efforts are needed.



Biologists gathering data from a black bear by Hal Korber

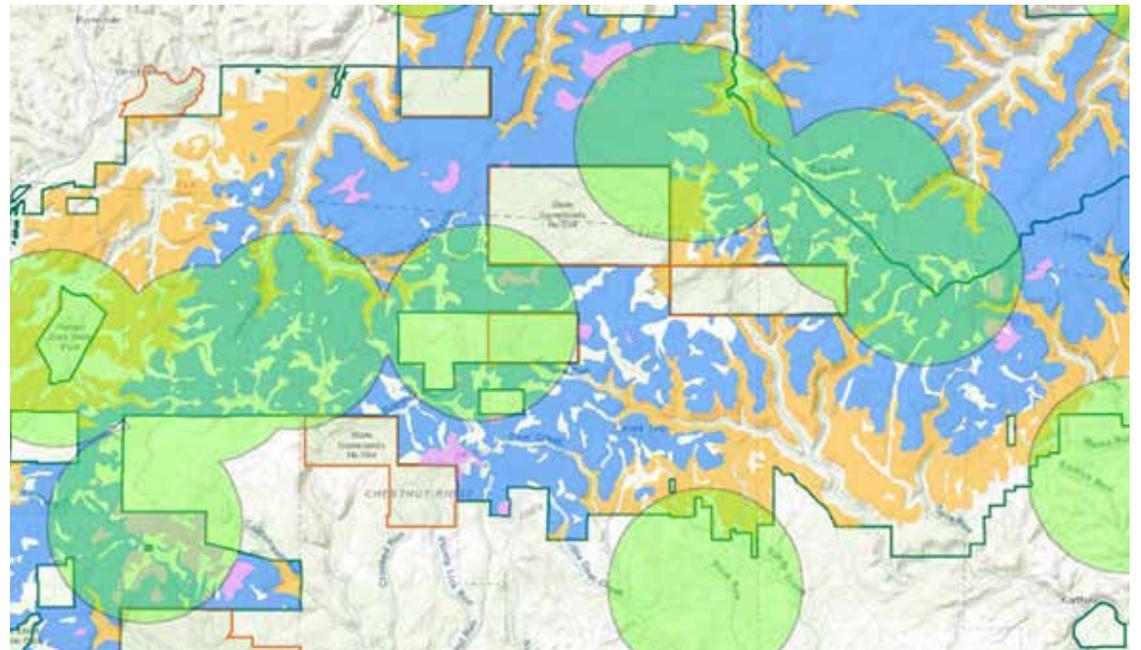


Ruffed grouse by Jacob Dingel

Grouse Priority Area Siting Tool

The Game Commission recognizes that we all must “work smarter, not just harder” to restore rapidly-declining grouse populations. The agency has created a ground-breaking tool to make that happen. Referred to as the Grouse Priority Area Siting Tool (G-PAST), this GIS-based analysis and mapping application combines landscape factors that are protective against West Nile Virus with information on nearby grouse populations to guide grouse habitat creation. With G-PAST, habitat managers can identify priority sites where disease risk is low and probability of grouse benefit is high. G-PAST can be used by habitat partners to develop grant proposals, initiate cooperative projects at priority sites, enlist private landowners in high-priority areas, and guide local clubs and chapters about where to undertake habitat projects. By identifying potential grouse focus areas, G-PAST furthers a half dozen habitat objectives in the Pennsylvania Ruffed Grouse Management Plan and serves as a model for other Eastern states. Priority mapping puts habitat managers back in the driver’s seat, enabling wildlife habitat managers to proactively focus grouse restoration efforts where it makes the most sense. The agency is very excited to use G-PAST to help grouse get “past” current disease and habitat loss threats.

Areas of known grouse occurrence (green circles) overlaid on likelihood of West Nile Virus risk based on elevation, soil type, etc. Areas in blue and purple have lower disease risk. Locations where grouse occurrence and low disease risk overlap are high priorities for habitat creation.



Managing the Spread and Prevalence of Chronic Wasting Disease

As part of the agency's ongoing Chronic Wasting Disease surveillance, the Game Commission collects samples from deer harvested across the state to test for Chronic Wasting Disease (CWD). Within the state's disease management areas (DMAs)—areas where CWD has been detected in captive or free-ranging deer—intensified sampling occurs. Additional surveillance efforts include sampling road-killed deer, clinical suspects, and escaped captives.

During the 2018-19 deer hunting seasons, the Game Commission offered free CWD testing for hunters harvesting deer within DMAs. This provided the Game Commission with more samples to better understand the extent of the disease.

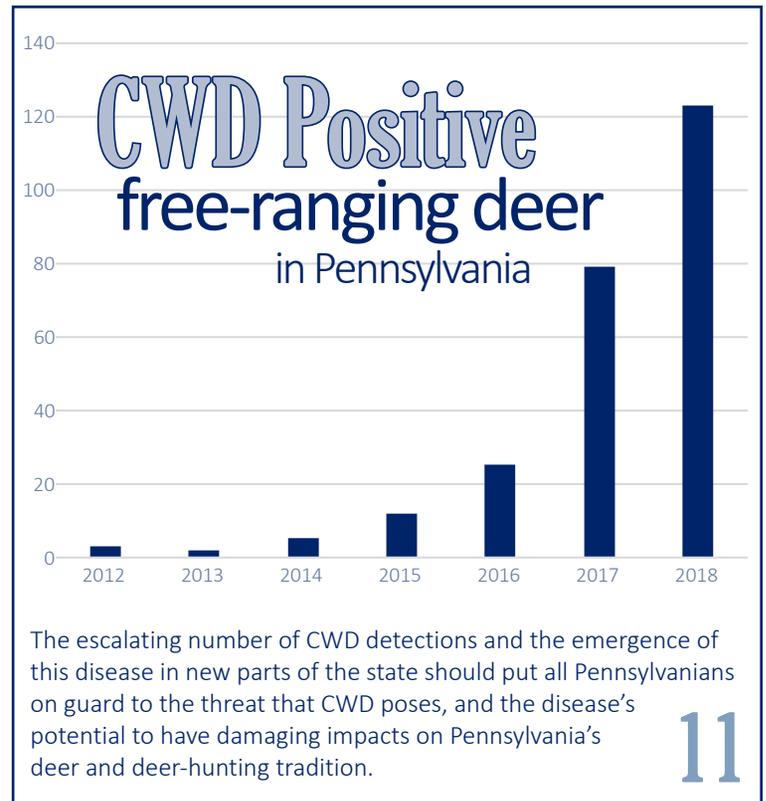
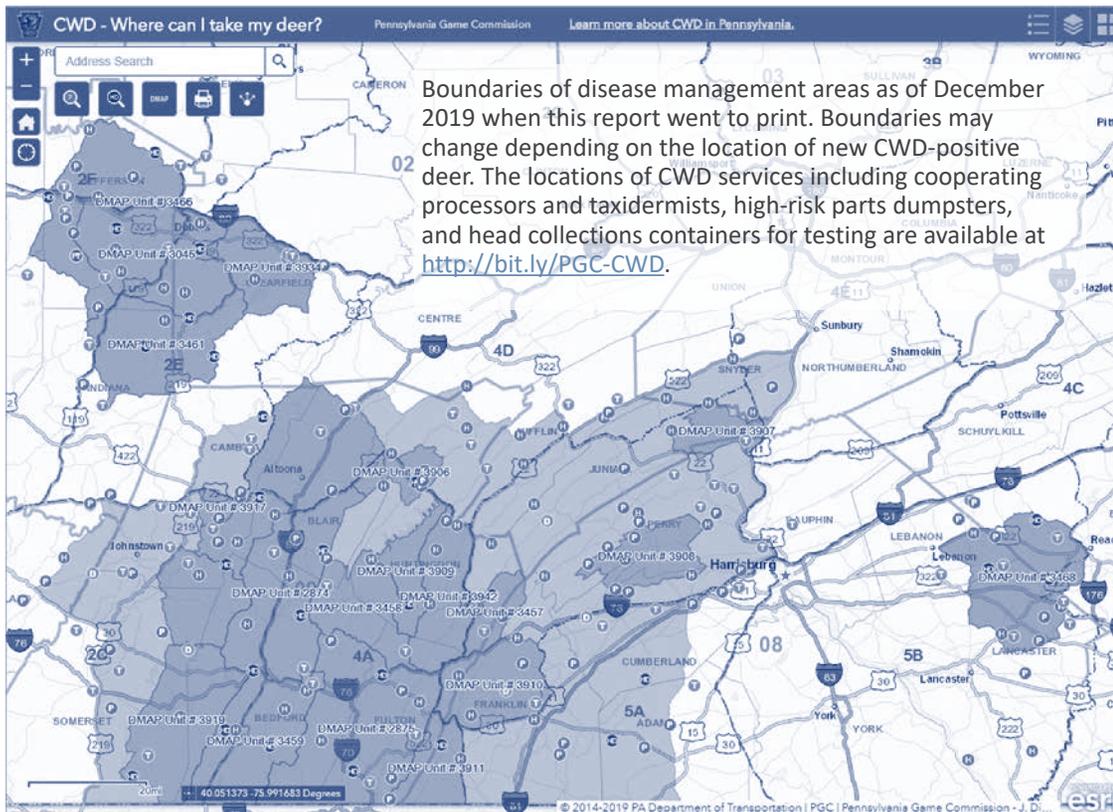
In 2018, the Game Commission tested 9,631 deer for CWD, of which 123 tested positive. The majority of these positives were detected within DMA 2, however, the discovery of two new cases—outside of DMA 2—in Juniata and Perry counties, resulted in a 2,101-square-mile expansion of DMA 2. In addition, one positive was detected in wild deer in DMA 3, which resulted in the expansion of DMA 3.

CWD is not a new disease; it is currently detected in 26 states and three Canadian provinces. It was first detected in Pennsylvania in 2012 in a captive deer facility in Adams County. Shortly after, it was detected in three free-ranging deer in Bedford and Blair counties.

The Game Commission continues to monitor CWD throughout the Commonwealth to find and manage the disease where it exists.

CWD is spread through direct or indirect contact, with prions (misfolded proteins) shed in saliva, urine, and feces of infected animals. This disease attacks the brains of infected deer and elk inevitably leading to death. There is no approved live-animal test for CWD and there is no known cure. While there is no evidence that CWD can be transmitted to humans, it is recommended humans avoid consuming meat from CWD-infected animals.

For more information on CWD, regulations pertaining to CWD, and options for hunters to get their deer tested, visit the Chronic Wasting Disease page of the Game Commission's website, <http://bit.ly/PGC-CWD> or call 1-833-INFOCWD.



MANAGING WILDLIFE HABITAT

state game lands — more than 1.5 million acres dedicated to wildlife



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State Game Lands 280, Blue Marsh, Berks County
by Hal Korber

State Game Lands

State game lands continue to be one of the Commonwealth's most-valued assets. The 1.5 million-acre system provides habitat for wildlife, hunting and trapping opportunities for license buyers, and opportunities for wildlife viewing on 308 game lands in 65 of the Commonwealth's 67 counties.

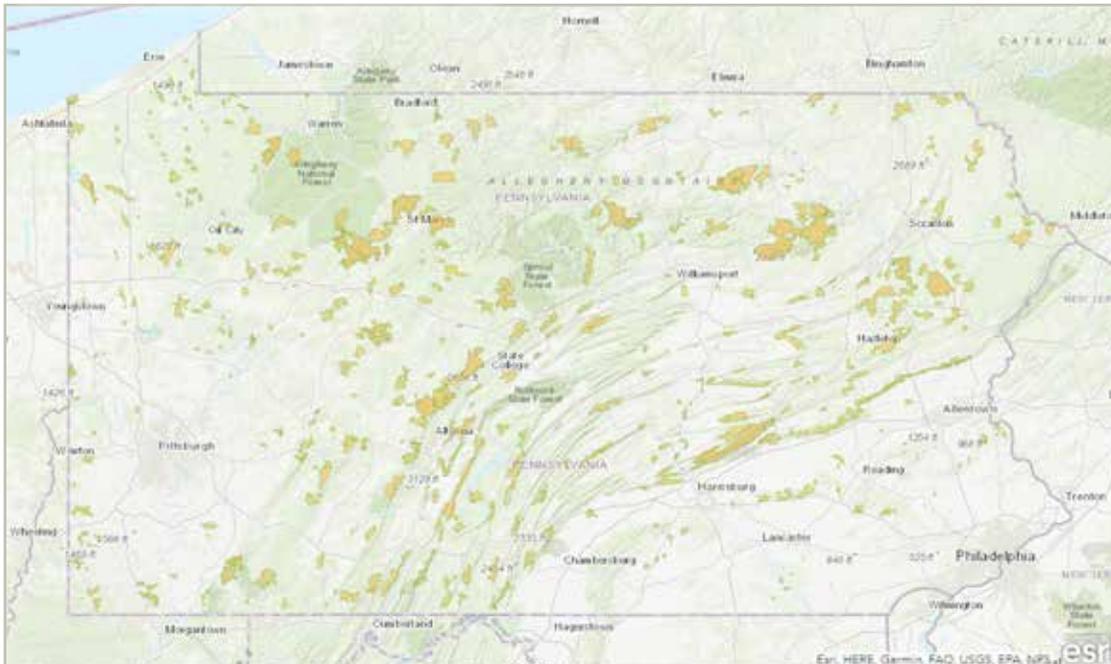
In addition to lands purchased with the revenue of generations of license-buying hunters and trappers and many partners, beginning in 1937 as a federal excise tax of sporting arms and ammunition, Pittman-Robertson federal funding has helped finance the acquisition of roughly 190,000 acres of state game lands.

The Game Commission has a staunch commitment to conserving Pennsylvania's open places. During the fiscal year, 6,151 acres were added to the game lands system including three indentures, seven acquisitions to improve access into existing game lands, and two properties with sensitive habitats for species of special concern; PA-endangered short-eared owl and PA-threatened eastern small-footed bat.

The agency works with many conservation partners to acquire land, the following partners were instrumental in adding acreage to the state game lands system during fiscal year 2018: Hawk Mountain Sanctuary Association, Natural Lands Trust, Inc., The Conservation Fund, Western Pennsylvania Conservancy, and Wildlands Conservancy, Inc..



Local governments received \$1,805,823 in payments from the Game Commission to counties, school districts, and townships in-lieu-of taxes on state game lands during fiscal year 2018.



Black bear, State Game Lands 95, Butler County by Jacob Dingel



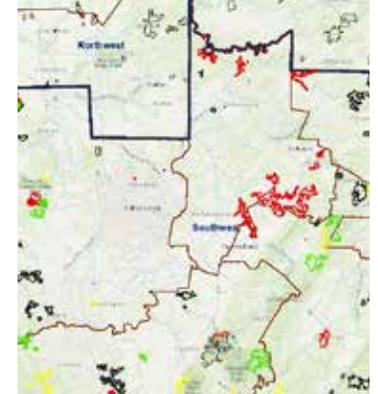
May apple post burn,
State Game Lands 176, Centre County
by Tracy Graziano

Howard Nursery

More than 14,400 nesting structures and 469,800 seedlings — including 167,650 seedlings for schools — were distributed from the agency’s Howard Nursery to improve wildlife habitat statewide during fiscal year 2018.

Hunter Access Property

More than 12,400 landowners took advantage of the mutual benefits provided by the agency’s Hunter Access Program. The properties cover more than 2.2 million acres of private lands located in 65 counties. Since this program’s creation more than 80 years ago, participating landowners have found relief from the damage game animals and furbearers can cause and protection from game law violators. The program is appealing to both hunters and property owners; hunters have more lands to hunt, and landowners have more options to manage their property’s game populations through hunting, trapping, and habitat enhancements.



The agency is utilizing improving GIS technology to increase staff efficiency and effectiveness. A game lands boundary line maintenance application is being piloted. The application displays the work load and progress of habitat management crews electronically instead of compiling the data from paper forms. This allows crews to identify areas that need attention and share project status digitally with all team members.

Controlled Burns on State Game Lands

Controlled burning is an important and cost effective tool to manage game lands and Hunter Access properties. It is a management tool useful in a variety of habitats from grasslands to oak forests. During fiscal year 2018, trained personnel used controlled burns on nearly 8,400 acres of state game lands, roughly 60 percent of which was forested habitat.

Controlled burns improve wildlife habitat and hunting opportunity by increasing soft-mast production in shrubs such as blueberry, huckleberry, and blackberry; rejuvenating succulent browse plants preferred by deer and elk; promoting oak habitats and their vitally important acorns; and maintaining grasses and broad leaf plants sought by brooding turkeys and grouse.

Controlled burns are conducted under specific weather and “fuel” conditions to ensure fires of low to moderate intensity. Fuel refers to the dried leaves, grasses, and brush that are consumed in the fire. Burns often reduce the risk of wildfires. Controlled burns are conducted by crews that are highly trained to ensure safety, both for themselves and the public.

Ignition patterns are designed to provide wildlife with escape routes as the burn progresses. From fawns to turtles, even the slowest wildlife can reach safety. Before the smoke clears, animals often are seen returning to burned areas. Because the most controlled burns occur in spring, people are often concerned about impacts to ground-nesting birds such as turkeys and grouse. While burns may disrupt a few nests, hens often re-nest and some nests in the burn area may not be harmed. Most importantly, burns occur on less than 10 percent of the landscape. Direct impacts are quite small and the benefits to wildlife from using controlled burns as a management tool far outweigh potential negatives.

Habitat Protection

The Game Commission's environmental review staff evaluate projects submitted through the Pennsylvania Natural Heritage Partnership and screened using the Pennsylvania Natural Diversity Inventory for impacts to species and resources under the agency's jurisdiction.

The agency reviewed 949 proposed projects during fiscal year 2018: 175 oil and gas, 98 agriculture, 97 timber harvest, 82 residential development, 58 in-stream/riverine activities, 57 habitat conservation, 56 commercial development, 43 maintenance to existing facilities, 43 mining, 42 waste transfer, 37 recreation, 23 hazardous waste clean-up, 22 transmission, 21 water extraction, 19 pest control, 17 communication, 13 forest stewardship plan, 12 transportation, 8 development, 7 wind energy, 5 community development, 5 power plant, 4 telecommunication tower, 2 military/law enforcement, 1 hydro, 1 solar, and 1 Act 537.

Average review time was 23 work days. One hundred eighty one of the projects were determined to have potential impacts to species or resources under Game Commission jurisdiction. Avoidance measures were required or recommended for 94 of those projects. Surveys were requested for 18 to accurately determine potential impacts to bat hibernacula, PA-threatened eastern small-footed bats, PA-threatened northern harrier, PA-endangered least bittern, and/or PA-endangered black tern.

Forests, Oil, Gas, and Minerals on State Game Lands

Forests require regular attention to ensure the best habitat for the greatest variety of wildlife. During the past fiscal year, 8,582 forested acres were harvested to improve habitat on state game lands. Weather and volatile market forces reduced operations resulting in lower revenues and acres harvested than the previous year. Associated services in lieu of cash from timber sales included 5 miles of new haul roads, 118 miles of improved roads, 157 culverts placed, 3 new stream crossings, 11 new or improved parking lots, 13 new gates, and 68 acres of new manageable openings of non-woody plants.

Herbicides were used to treat 6,117 acres, and non-commercial habitat improvement projects occurred on 4,795 additional acres, including regeneration treatments, crop-tree releases, and pre-commercial thinning. Deer fencing was removed from 828 acres.

The agency manages 140 active oil, gas, and mineral agreements encompassing approximately 177,322 acres for development of oil, gas, coal, and minerals on state game lands. Since 2010, a total of 90 well pads for unconventional well drilling operations have been developed on state game lands creating a surface impact of approximately 1,150 acres. Of those well pads, 49 have been developed on acreage where the Game Commission does not own the oil and gas rights.

During the most recent fiscal year, the Game Commission received royalty from 695 gas wells of which 293 are unconventional. Of those unconventional wells, 220 have been drilled from adjoining properties with zero impact to the game land surface, thereby maintaining the use of the state game lands for the intended purpose of managing wildlife and habitat.

Eight oil, gas, and mineral development projects were approved by the Board of Game Commissioners this fiscal year. Seven projects were for agreements totaling 2,917 acres with no impact to the surface of state game lands. The eighth project was for a 1.6-acre coal refuse pile reclamation project.

The agency reviewed and evaluated 181 applications to provide measures for avoiding or minimizing potential impacts to wildlife and wildlife habitats affected by mining operations. Reviews also provide input on site reclamation plans to enhance or create wildlife habitat. Bond release requests for more than 800 acres of reclaimed surface mined areas on state game lands were received, once again opening these lands for public hunting.



Indigo bunting on sunflower,
State Game Lands 95, Butler County
by Jacob Dingel

PROTECTING OUR WILDLIFE

Pennsylvania's wildlife is a worthy investment



Wildlife Protection

During fiscal year 2018, game wardens issued 9,543 warnings for a ratio of almost two warnings per citation. A total of 6,824 prosecutions were initiated within the Pennsylvania court system. This is an increase from the 6,617 initiated during the last fiscal year. The agency successfully prosecuted 5,895; 244 were unsuccessful, and 685 were withdrawn or dismissed, providing a prosecution rate of 96 percent. Eighty five misdemeanor and 14 felony charges were prosecuted. Thirty seven of 88 appeals were successful.

A total of five citizen complaints against game wardens and deputy game wardens were received and adjudicated during the 2018 fiscal year. After investigations, two complaints were not sustained, one was founded, and one resulted in a finding of exonerated. Additionally, one complaint was founded, in-part, and not sustained, in-part. Those complaints that were founded or founded, in-part, were minor in nature and related to violations of agency standard operating procedure.

State Game Wardens



Game Wardens-Serving Beyond the Season (10:06)

Game wardens are sworn peace officers with statewide law-enforcement authority. They are highly trained and equipped as well as any police officer. They are expected to know and follow standards for protecting civil rights, gathering evidence that will hold up in court, and prosecuting violations of many different laws. There is no “off” season. Being a game warden requires a very unique person willing and able to develop a diversity of skills.

While wildlife law enforcement is a core responsibility, fulfillment of a warden’s full range of duties requires significant training and responsibility. Their duties extend into wildlife surveys, wildlife trap-and-transfer, field research, Hunter-Trapper Education, and providing conservation and education programs for civic groups and public schools. Wardens also represent the agency at conservation and sportsmen’s club meetings, and respond to nuisance wildlife complaints, reports of injured wildlife, and calls about wildlife suspected to be diseased.

During fiscal year 2018, 284 part-time deputies (down from 317) assisted 116 full-time state game wardens (up from 108). Two districts were combined and at the end of the year, 16 of the agency’s 134 districts were vacant. Around 110 wardens were covering all 134 districts throughout the fiscal year. The average district encompasses 338 square miles.

In September 2018 cadets in training to become state game wardens at the Ross Leffler School of Conservation began 10-week field assignments. Field assignments takes place under the supervision of salaried game wardens and provides valuable on-the-job training. Twenty-seven cadets graduated in February 2019, and were assigned to serve vacant districts.

Application for the 32nd class of state game wardens opened during January 2019. Interviews have been conducted and a new class of cadets is scheduled to report to the Ross Leffler School of Conservation in Harrisburg during March 2020.



Pennsylvania State Game Warden by Hal Korber

Top 10 Violations

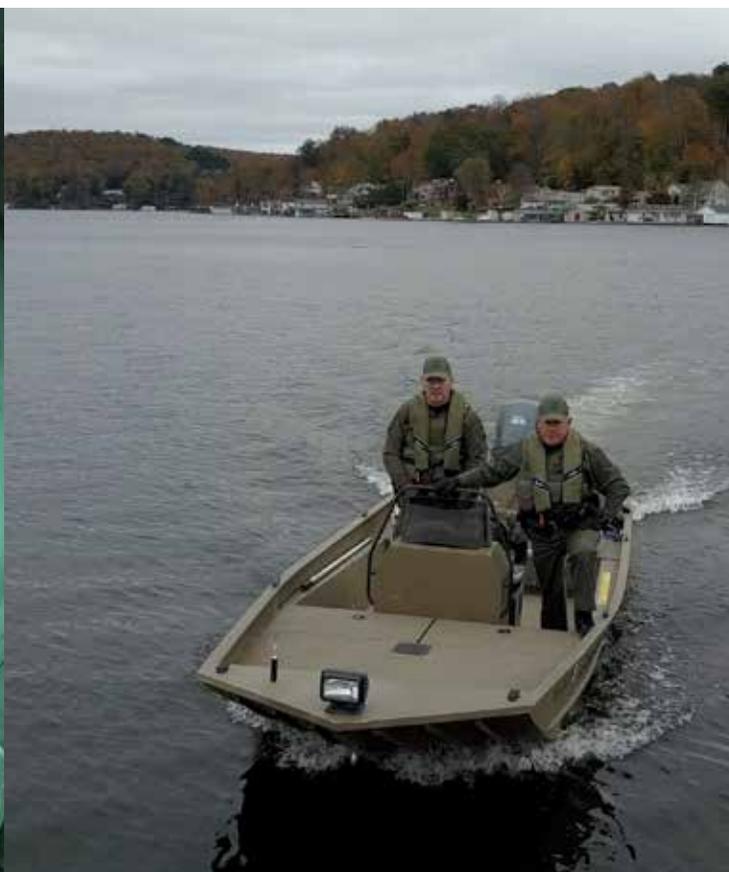
The Top 10 wildlife crime violations during fiscal year 2018 were similar to those of the previous year, with these exceptions. Back in the Top 10 were spotlighting and range permit violations. Falling from the Top 10 were littering and using drugs or alcohol on game lands.



Top 10 violations 2018-19



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Pennsylvania State Game Wardens by Hal Korber

Woodland Tracking Team

During the past year, the Tracking Team responded to numerous calls for assistance from game wardens and other agencies, several of which were for lost or missing persons. One request from the Southcentral Region needed assistance locating an “at risk” juvenile who ran away from home. State Police witnessed the juvenile on foot prior to him entering woods surrounding state game lands. The Tracking Team and several other game wardens geared up and were able to locate the juvenile and safely return him to his father.

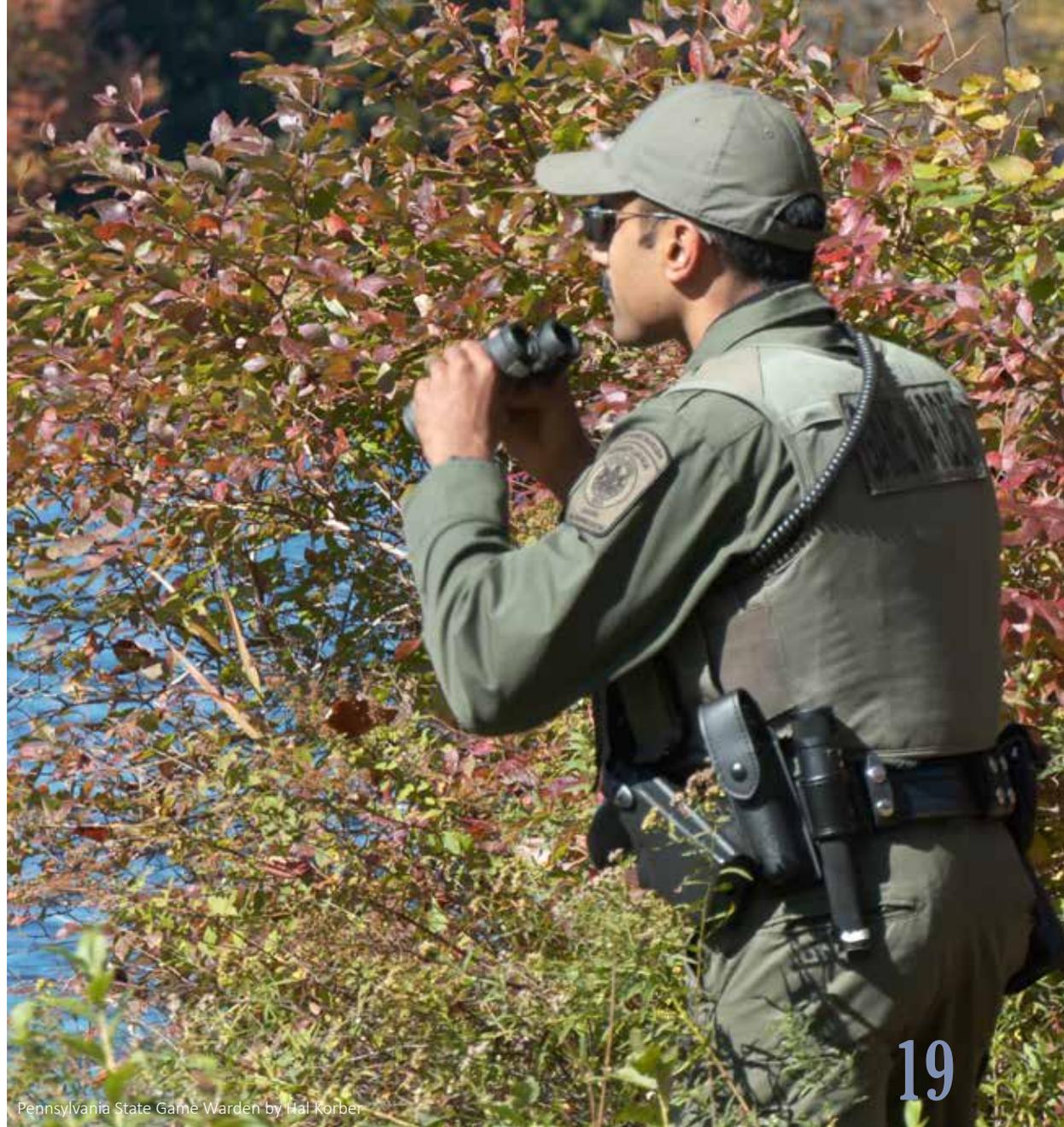
Another call came from The U.S. Marshals Service requesting the Tracking Team and K9 teams for assistance in the search for an armed fugitive in the Northeast Region. The Tracking Team recovered evidence and assisted in clearing several wooded areas and buildings. The U.S. Marshals Service issued a certificate of appreciation to all who aided in the apprehension of the fugitive.

The Tracking Team provides statewide assistance to game wardens in daily investigations, search and rescue operations and evidence recovery. The team receives and conducts regular training throughout the year. The team also participated in several mock search and rescue operations with Department of Conservation and Natural Resources and Department of Corrections.

Operation Game Thief

Operation Game Thief provides a way for people to efficiently and confidentially report tips about wildlife crimes. During the 2018-19 fiscal year, 1,493 calls were received. The hotline continues to resonate well with the public and maintains an average time of around 20 minutes from when a tip comes in until an officer is dispatched to the incident.

Anyone can report wildlife crimes by calling Operation Game Thief toll-free at 1-888-PGC-8001 or filling out an online form available from the Game Commission’s home page at www.pgc.pa.gov or from the Operation Game Thief page at <http://bit.ly/PGCOGT>.



Pennsylvania State Game Warden by Hal Korber

PROMOTING OUR HERITAGE

proven leaders in conservation, hunting, and trapping

Wild turkeys by Jacob Dingel



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Expansions in Dove Hunting

Mourning dove hunting opportunities were expanded during the 2018-19 hunting seasons.

The U.S. Fish and Wildlife Service authorized compensatory hunting days for webless migratory game birds in states where Sunday hunting is closed by state law, allowing all states to measure season length in actual hunting days. Hunting hours now begin one-half hour before sunrise for the entire dove season rather than beginning at noon during the September portion of the season. Managed dove fields became authorized statewide, and a lottery-based managed dove field hunting opportunity opened at the Middle Creek Wildlife Management Area in Lebanon and Lancaster counties.

Dove banding data and total harvest estimates demonstrate that dove populations in the eastern U.S. are capable of sustaining harvest above the current rates of around 5 percent of the population each year, suggesting that new hunting opportunities will not be detrimental to dove populations. Banding also provides information on harvest timing, migration patterns, survival, and longevity—information that could not be gathered without the cooperation of the dedicated and passionate hunters who report banded doves in their game bags.

Learn about dove hunting opportunities in Pennsylvania, dove habitat requirements, and managing fields for dove hunting.
<https://youtu.be/bjOFWZX4ZUw> (5:27)



Bountiful Black Bears

Pennsylvania's 2018 black bear harvest came in at 3,153 bears, including 2,017 bears in the firearms season, 699 in the extended season, 424 in the archery season, and 13 in the early season. A harvest closer to 4,000 bears was expected, but a snowstorm on the day before the firearms season and rain during parts of the extended season affected the outcome. Bears were taken in a record 60 counties and the harvest ranked 11th all-time.

Although the overall 2018 harvest was down, it was an exceptional year to harvest large bears. Seventy bears (2.2 percent of the total harvest) weighed in at 500 pounds or more. No other year beats that percentage; the previous high was in 2011 when a record harvest of 4,350 bears occurred, of which 2.0 percent weighed 500 pounds or more. The largest bear harvested in 2018 had an estimated live-weight of 780 pounds. It was taken with a rifle in Forest County on the second day of the firearms season.

Wild Turkey Hunting

The fall 2018 harvest of 9,219 was similar to 2017 (9,266) but 21 percent below the previous 3-year (2015-17) average of 11,709. Fall turkey seasons have been shortened in most wildlife management units during the past decade. Other factors contributing to lower harvests include an abundant mast crop in many parts of the state, which made birds more difficult to locate; decreased hunter participation; and carryover effects of below average reproduction.

The preliminary 2019 spring wild turkey harvest of 37,300 was similar to the previous 3-year average (38,100) and included 4,800 second harvests. Hunter success for their first bird—21 percent—was second only to a slightly higher success of 21.4 percent in 2001. The special spring turkey license continues to grow in popularity since its inception in 2006 with another record sale in 2019 of 22,517—13 percent of all spring turkey hunters. Sales have exceeded 20,000 annually since 2017. Of those who hunt for a second bird, on average 44 percent are successful. This year, second bird success increased to a record 65 percent.

Dove hunter on state game lands by Hal Korber





Brock Dittman, 9, with his Butler County Buck

Hunter-Trapper Education

A person wishing to purchase a license to enjoy hunting or trapping in Pennsylvania must first successfully complete Hunter-Trapper Education. A training certificate, recognized throughout North America, is awarded after passing a test. A person must be at least 11 years old to enroll in a class. The program is designed to produce safe, responsible, knowledgeable outdoor enthusiasts. The results have been remarkable. Since 1959, hunting-related shooting incidents have declined nearly 80 percent.

During the fiscal year, 22,998 students graduated from 764 Basic Hunter-Trapper Education classes held statewide by 1,969 volunteer instructors. Another 7,875 students graduated from the Basic course online. Additionally, 270 graduated with a Cable Restraint Certificate in person and another 427 online. Thirty-one people opted to complete the Furtaker course without the cable restraint training and 355 completed Successful Bowhunting. Remedial Hunter-Trapper Education is required for some hunters to reacquire a license; 36 completed a remedial course.

Total number of graduates from all Hunter-Trapper Education classes was 31,992.

A hunting-related shooting incident (HRSI) occurs when a person's injury results from the discharge of a sporting arm while hunting or trapping. Incidents often result from failure to follow basic firearm and hunting safety rules. A total of 20 HRSIs occurred during fiscal year 2018-19: 12 were self-inflicted (1 fatally), 8 were inflicted by others. Nine occurred during deer seasons (5 rifle, 3 crossbow, 1 muzzleloader), 8 during small game seasons (3 pheasant, 2 rabbit, 2 squirrel, 1 woodchuck), 2 during bear season, and 1 during goose season. Causes included 15 unintentional discharges, 3 victims in the line of fire, 1 ricochet, and 1 hunter slipped and fell.

Hunting-Related Shooting Incidents, 1959-2018

Big Game Scoring Program

Though many of us do not go hunting for the purpose of taking a record-book trophy, record-book animals bring to attention the excellence of habitat and wildlife-management practices that help produce healthy wildlife populations.

During the past nine years, nearly 1,100 deer entries—134 last year alone—have been added to Pennsylvania's Big-Game Records listings. Bradford County again was the top producer of record-book bucks, a distinction the county has held for some time. The largest whitetail added to the 2019 record book was a 2018 buck taken in Tioga County that scored 187-3/8 inches and ranked 18th in the nontypical archery category. Six new Pennsylvania record-book whitetails also qualified for the Boone & Crockett Club record book. There's little doubt antler restrictions have paved the way for the addition of these immense bucks to the deer herds that roam the hills and forests of our Commonwealth.

Twenty-seven bears, including five taken with archery gear, were added to Pennsylvania's Big Game Records book in 2019. All but 10 of those bears also qualified for entry into Boone & Crockett Club records. The largest new bear entry in Pennsylvania's records was taken in Clinton County during the 2018 statewide firearms season. Its skull measured 22-7/16 inches to tie in the No. 20 spot in the firearms category.

Eight bull elk taken in 2018 were added to the state's records. A trophy elk scoring 388-1/8 inches taken in Elk County is a new No. 1 in the typical firearms category. The inaugural archery elk season held Sept. 14-28, 2019 brought about the harvest of five bulls that will rewrite the archery categories in the Pennsylvania records. With only two entries currently listed in the elk archery category, all five of the bulls harvested in the 2019 archery season, if officially scored, will make the Pennsylvania record book.

Exceptional Elk Hunting

In 2018, 125 hunters harvested 99 elk. Each year, large bull elk are taken in Pennsylvania. In 2018, 13 bulls were estimated to weigh more than 700 pounds. Two bulls weighed more than 800 pounds with the largest weighing 894 pounds. Several bulls had impressive antlers including a 10 x 7 bull taken in Clearfield County.

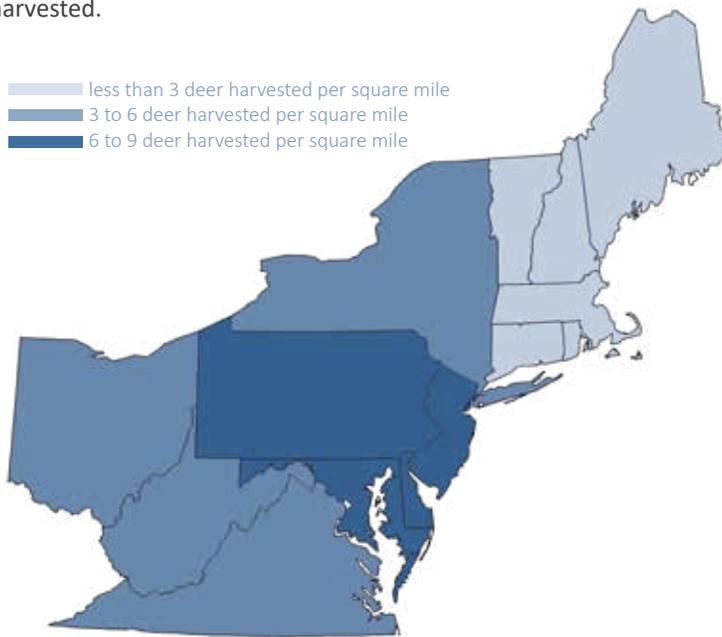
Premier White-tailed Deer Hunting

Pennsylvania is one of only five states in the U.S. to harvest more than 300,000 whitetails annually. During the 2018-19 deer seasons, hunters took an estimated 374,690 deer, an increase from the 2017-18 harvest of 367,159. In 2018-19, 17 percent of all licensed hunters took a buck, while 28 percent of antlerless licenses were used to take an antlerless deer. These success rates are similar to recent years.

During the 2018-19 seasons, 37 percent of the state's overall buck harvest of 147,750 was harvested with archery equipment. Hunters using crossbows took 64 percent of the archery bucks harvested. This demonstrates the increased popularity of crossbows. More hunters now are using crossbows than vertical bows.

Deer Harvest Density

Deer harvest densities in Pennsylvania and nearby states remained similar to last year. Nationally, Pennsylvania ranked in the Top 5 nationally for number and density of antlered and antlerless deer harvested.



Elk by Jacob Dingel



INVESTING STRATEGICALLY

building infrastructure for better business and long-term financial stability



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A habitat management crew member mows a sunflower field prepared for dove season, by Hal Korber

Pheasant Program Redesigned

Pheasant hunting is popular, and in Pennsylvania, it is almost totally dependent on the Game Commission's production and release of pheasants each fall. With current farmland habitat inadequate to support large-scale huntable populations of wild pheasants, stocked pheasants fill an important recreational niche contributing to hunter recruitment, retention, and reactivation. About 34,000 hunters spent more than 218,000 hunter-days pursuing pheasants during the 2018-19 seasons.

Under the new propagation business model implemented in 2017, the agency's two pheasant farms produce pheasants at similar quantity and quality as previously, but at a much lower cost and with a higher proportion of roosters (75 percent versus about 50), improving hunter satisfaction. Nearly 200,000 ring-necks were released statewide during fiscal year 2018, including 16,372 for youth hunters, 153,580 for the regular fall season, and 22,130 for the late small game season. Now that breeder and hatchery operations have been eliminated, propagation personnel can be available to provide valuable assistance with habitat improvement and biological data collection projects.

On the revenue side, the pheasant hunting permit implemented in 2017 is providing more than \$1 million annually toward offsetting costs of the propagation program and improving infrastructure on game farms. The additional brooder house and holding field capacity allows for further increases in production and greater flexibility in stocking locations and timing, with minimal increase in annual operational costs.

Managing Infrastructure

There are approximately 3,900 miles of road, 360 buildings, 29 public shooting ranges, 38,000 bridges and culverts, and 1,500 ponds and dams on state game lands. Renovation, repair, and replacement of this infrastructure is a challenge. Most projects are funded through Pittman-Robertson grants and grants from state and federal agencies, some are allocations from the Game Fund budget.

Two shooting range renovations were conducted during this past fiscal year, one at the pistol range on State Game Lands 230 in Cumberland County and another at the rifle range on State Game Lands 43 in Chester County. A new archery range was built on State Game Lands 176 in Centre County.

Game lands access was improved with 13 new bridges throughout all six regions and nine major road projects in Fayette, Lycoming, Monroe, Union, Cambria, Huntingdon, Blair, and Juniata counties.

Three dam projects were completed. A new inlet structure was installed at Hartstown Marsh Dam and a new wetland dike system for waterfowl was completed, both on State Game Lands 214 in Crawford County. And the control structures at two small ponds on State Game Lands 46 in Lancaster County were replaced.

Twelve building renovations took place. The largest project replaced the front viewing window and patio at the Middle Creek Visitor Center on State Game Lands 46 in Lancaster County. Other renovations replaced roofs on two buildings, the septic system at one building, garage doors on one building, and the HVAC system at one building. Additions were constructed on to two storage buildings and lighting and electrical systems were upgraded at five buildings.

Eighteen buildings were demolished and removed. Some were removed to make room for more effective and efficient buildings. New habitat management crew buildings were constructed in Washington and Elk counties. New storage buildings were built in Carbon, Lebanon, and Perry counties, and at the Loyalsock Game Farm. Three new pheasant brooder houses were constructed at the Southwest Game Farm in Armstrong County.



Pheasant Program Fall 2018

Free Mobile App

In October of 2018 the agency pushed a new free mobile app to both the Google Play and Apple stores to better serve hunters in the field. From the app, hunters can refer to the entire digest, search what's in season and where, view hunting hours and fluorescent orange requirements. Hunters and trappers can look up check station locations for bear and elk and find a processor where they can donate venison through the Hunters Sharing the Harvest program. Hunters can alert friends and family to their exact location while hunting and driving directions to the nearest points of interest. With a cellphone signal or network connection, hunters and trappers have nearly everything they need to plan the next hunt from home or camp.

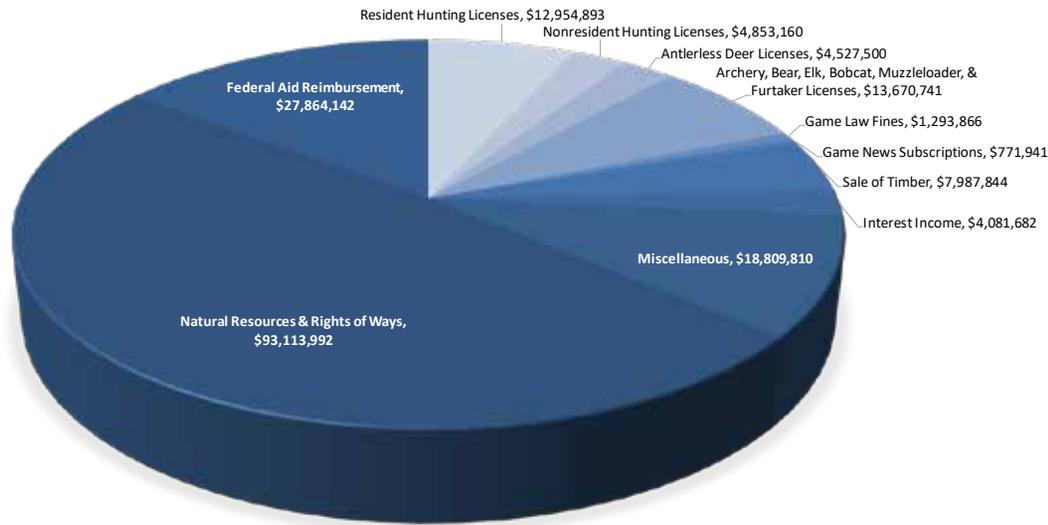


Game News Magazine subscriptions were provided to 26,166 new Hunter-Trapper Education graduates during fiscal year 2018-19.

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GAME FUND REVENUES & EXPENDITURES—July 1, 2018-June 30, 2019

Revenues—\$189,929,571



Included in the current fiscal year financial statement report were revenues and expenditures from escrow accounts. These revenues and expenses were associated with acquired land transactions that were not included in prior financial statement reports. The escrow accounts increased revenue by \$51,167,197 and expenses by \$45,545,674.

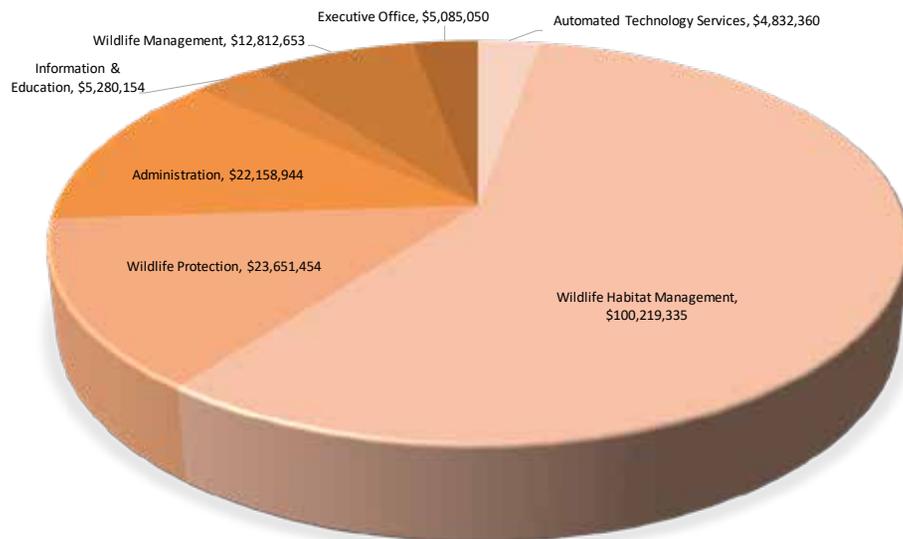
Total revenues were \$189,929,571, an increase of \$72,781,963 (62.1%) over the prior year's revenues. Most of the increase can be attributed to the revenues related to prior period escrow transactions as explained above. Revenue from adult resident hunting licenses fell \$454,494. Adult nonresident hunting licenses also saw a slight decrease — \$8,593. Sales from the Federal Duck Stamp were \$623,492 a slight decrease (3.23%) from last year's \$644,296.

Total expenditures were \$174,039,950. An increase of \$73,617,367 (73.3%) over the prior year's expenditures. Most of the increase can be attributed to the expenses related to prior period escrow transactions as previously explained. Payments to other state agencies for specialized services were \$9,660,732, an increase of \$7,474,614 over the prior year and include commitments to the Department of General Services for future construction of the Pymatuning Wildlife Education Center and an addition to the Headquarters building.

The Game Fund's Restricted Fund Balance was \$88,666,123. An increase of \$15,889,621 (21.8%) from last year is attributable to revenues exceeding expenditures during the period by the same \$15,889,621.

The Game Code stipulates that a minimum of \$4.25 from each resident and nonresident license, and a minimum of \$2.00 from each antlerless deer license issued for which the full fee has been paid, is to be used for habitat improvement, development, maintenance, protection, and restoration. The Game Commission reported that during fiscal year 2018-19, the number of resident and nonresident licenses sold totaled 1,428,744, and the number of antlerless deer licenses sold totaled 818,531. This mandated that a minimum of \$7,709,224 be expended and appropriated into a separate restricted account for the above-mentioned habitat improvement provision. Actually, \$11,001,279 was expended and \$7,500,000 was appropriated to the restricted account. The \$209,224 deficit will be added to the appropriations request for the 2019-20 fiscal year.

Expenditures—\$174,039,950



Game Fund Statement of Revenues, Expenditures, & Changes in Fund Balance

REVENUES	
Licenses and Fees	\$ 50,713,570
Intergovernmental	27,864,142
Charges for Sales and Services	104,073,468
Investment Income	4,081,682
Other - Donations	3,196,709
TOTAL REVENUE	189,929,571
EXPENDITURES	
Recreation and Cultural Enrichment	123,010,390
Capital Outlay	50,741,560
Operating Transfer Out	288,000
TOTAL EXPENDITURES	174,039,950
NET CHANGE IN FUND BALANCE	15,889,621
FUND BALANCE JULY 1, 2018	72,776,502
FUND BALANCE JUNE 30, 2019	\$ 88,666,123

Game Fund Balance Sheet — June 30, 2019

ASSETS	
Cash	\$ 5,707,935
Temporary Investments	51,112,687
Long Term Investments	43,172,822
Accounts Receivable	194,546
Due from Federal Government	14,211
Due from Other Funds	334,400
TOTAL ASSETS	100,536,601
LIABILITIES AND FUND BALANCE	
Liabilities	
Accounts Payable and Accrued Liabilities	\$ 8,341,763
Securities Lending Obligations	285,378
Due to Other Funds	2,600,896
Due to Political Subdivisions	6,961
Due to Other Governments	123,425
Due to Fiduciary Funds	512,055
Total Liabilities	11,870,478
Fund Balance	
Restricted Fund Balance-Environmental Protections	88,666,123
TOTAL LIABILITIES AND FUND BALANCE	\$ 100,536,601

Third Party Obligations

The Game Commission is the beneficiary of several third-party obligations to mitigate damages or otherwise provide funds for projects or research. In the majority of these instances, the obligation is for land. The obligation listed below as “White Nose” was an account set up by and between the United States Fish and Wildlife Service and Consol Coal Company to provide funds for research into White Nose Syndrome. All funds remain under the control of US Fish and Wildlife Service. The obligation listed as “Duck Marsh” was to complete a specific project on Duck Marsh, State Game Lands 25, which was completed and the draw down of the funds took place in fiscal year 2018. Finally, three obligations, PSU, IBAT and White Nose, are specifically subject to USFWS control and approval. P&N and FNB obligations reported last year are now reported in the Game Fund balance sheet.

OBLIGATION:	Balance as of June 30, 2019
PSU	\$161,016.72
IBAT	\$3,201,001.12
White Nose	\$19,753.40
Duck Marsh (Account closed August, of 2018)	\$0.00
Rice Poseidon (LOC)	\$929,887.75
Regency Marcellus Gas Gathering, LLC (Parent Guaranty)	\$600,000.00
Appalachia Midstream	\$115,000.00
TOTAL	\$5,026,658.99



Roosting wild turkeys by Jacob Dingel

Strategic Goals

The Pennsylvania Game Commission exists to manage the Commonwealth's wild birds, wild mammals, and their habitats for current and future generations, a mission it has followed faithfully since 1895. Although its focus has remained static since the agency was created, the suite of challenges and opportunities facing the agency are fluid and dynamic. The agency is focused on the work ahead — adapting to challenges it faces using innovation to accomplish the task of protecting and promoting wildlife in Pennsylvania in the most efficient manner possible.

1. *Put Wildlife First*
2. *Improve Wildlife Habitat*
3. *Follow Sound Business Practices*
4. *Serve the Pennsylvania Public*
5. *Improve Support for Hunting/Trapping*

Mission

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

Vision

Champion all wildlife resources and Pennsylvania's hunting and trapping heritage



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Richard Palmer, *Deputy Executive Director*
Thomas P. Grohol, *Deputy Executive Director*

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PARTNERS MAKE IT POSSIBLE:
The agency is committed to being connected with its constituents and engages with its partners in actively conserving Pennsylvania's wildlife resources. While they are too numerous to name and only a few are mentioned in this report, we thank all the volunteers and organizations who help, for their persistent support and generosity in protecting and promoting the state's wildlife. Partners make it possible.