

FY 2019 Annual Report

July 1, 2018 – June 30, 2019



State of New Jersey
Department of Environmental Protection
Division of Fish and Wildlife

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Department of Environmental Protection
Division of Fish and Wildlife
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Message from DEP Commissioner Catherine R. McCabe



I am pleased to present the Fiscal Year 2019 Annual Report for the Department of Environmental Protection's Division of Fish and Wildlife covering July 1, 2018 to June 30, 2019. Each section of the report begins with an overview of the work of each of the Division's bureaus and offices along with several highlights from the year.

New Jersey is an amazingly diverse and beautiful state. Its varied landscapes and abundant wildlife and natural resources provide seemingly endless opportunities for outdoor enthusiasts to participate in their favorite activities year-round. From mountains in the north to the vast southern pinelands and the famous Jersey shore, there is so much to see and do in our great outdoors.

This incredible diversity does not end with our states natural beauty however. It is extremely well represented in the diversity of our people as well. As the Department of Environmental Protection uses the best science available to protect, conserve and manage New Jersey's abundant and diverse natural resources, we are also deeply committed to safeguarding public health and nurturing environmentally just, vibrant, and sustainable communities for all our residents.

Division of Fish and Wildlife staff dedicate their careers to fostering healthy fish and wildlife populations and protecting the habitats on which they depend. The critically important work they do managing our wildlife brings species back from the brink of extinction, protects wildlife habitat and provides outstanding wildlife-oriented recreation. They are also committed to providing educational programs about our natural resources to all residents throughout the state and are continually expanding outreach efforts to reach more people directly in their communities.

I encourage you to read this report and learn about the great work the Division of Fish and Wildlife does. I also encourage you to get outside and experience what New Jersey has to offer. You can get the information you need and stay up to date on everything related to fishing, hunting, and wildlife oriented outdoor recreation, as well as educational programs and events by visiting the fish and wildlife website at www.njfishandwildlife.com and by following and interacting with division staff on Facebook and Instagram.

New Jersey Division of Fish and Wildlife

The New Jersey Division of Fish and Wildlife is a professional, environmental and scientific organization dedicated to the protection, management and wise use of the state's fish and wildlife resources. It is responsible for the oversight of more than 355,000 acres in the Wildlife Management Area System and is the lead agency managing all wildlife species in New Jersey. This includes game animals, freshwater and marine fish, shellfish, birds, amphibians, reptiles, and endangered and nongame species. Fish and Wildlife staff also educate the public about wildlife-related issues, and its conservation police officers enforce the laws that protect wildlife.

This report contains the many accomplishments of an experienced and dedicated staff. These accomplishments are often made possible through cooperative efforts of our federal, state and non-government agency partners, and are primarily funded by the license fees of hunters, anglers and commercial fin and shell fishermen as well as the federal grants derived from excise taxes on their equipment and marine fuel. The Division also relies on a portion of the State General Appropriation to support marine fisheries and endangered species conservation as well as the many associated services provided to the public.

Our Mission

To protect and manage the state's fish and wildlife to maximize their long-term biological, recreational and economic value for all New Jerseyans.

Our Goals

- ❖ To maintain New Jersey's rich variety of fish and wildlife species at stable, healthy levels, and to protect and enhance the many habitats on which they depend.
- ❖ To educate New Jerseyans on the values and needs of our fish and wildlife, and to foster a positive human/wildlife co-existence.
- ❖ To maximize the recreational use and economic potential of New Jersey's fish and wildlife for both present and future generations.

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Bureau of Freshwater Fisheries

Lisa Barno, Chief

The Bureau of Freshwater Fisheries is responsible for the propagation, protection and management of the state's freshwater fisheries resources as well as promoting their recreational use. In addition to raising and distributing several million fish annually, the Bureau conducts research and management surveys, classifies the state's waterways, provides technical input on a variety of watershed and habitat-based issues, facilitates habitat restoration projects, serves as a liaison to a variety of conservation groups, and provides information to the public in a variety of forums concerning the management of New Jersey's freshwater fisheries. The Bureau also administers more than 600 permits annually to effectively manage and protect these important aquatic resources.

Highlights

Hackettstown State Fish Hatchery

The Hackettstown State Fish Hatchery in Warren County raised a total of 3,818,786 fish representing 15 species. Of these, over 533,000 fathead minnows and gambusia were reared for the state's mosquito control needs under the direction of the State Mosquito Control Commission.

Maintaining the critical infrastructure needed to produce this variety of fish species continues. Several pumps were rebuilt, filters replaced, and ponds dredged to enhance production.



Staff holds an egg-laden female walleye at the Hackettstown State Fish Hatchery.

Pequest Trout Hatchery

The Pequest Trout Hatchery in Warren County raised 592,000 rainbow trout averaging 11" in length for the 2019 Spring Trout Program. The trout were distributed by Bureau of Land Management staff and released in over 170 waters throughout the state, with most waterbodies stocked a minimum of 3-4 times. An additional 21,330 two-year-old rainbow trout averaging 14" were reared for the fall stocking program and 5,390 rainbows averaging 14.5" were earmarked for the winter program. Larger broodstock ranging in size from 16 – 21" were divided between the three programs and stocked throughout the state.

To increase energy efficiency at the Pequest Hatchery, more than 20 high-wattage lights previously lining the raceways were replaced with LED substitutes. New LED wall pack lights were also installed on the garages and vehicle storage buildings. A plan to replace the hatchery's aging pump-back system, which returns water from the nursery building back to the main raceways was also initiated.

Freshwater Fisheries Surveys

Bureau staff conducted 242 fisheries surveys at 176 waterbodies throughout the state to address a variety of current recreational and resource management needs as well as newly emerging ones. In addition, 87 rivers and streams, and 89 ponds and lakes were surveyed. In all, fisheries biologists captured, identified, and counted more than 50,000 fish representing 73 species.

Bureau of Land Management

Jason Hearon, Chief

The Bureau of Land Management is responsible for administering the Division's Wildlife Management Area (WMA) System that encompasses more than 355,000 acres on 122 separate areas. These areas are managed for a diversity of fish and wildlife species through a variety of habitat improvement projects. Public access for wildlife-associated recreation is encouraged through the development of visitor facilities, maintenance of roads and bridges, and the construction of parking areas and boat ramps. The Bureau is also responsible for the maintenance of Division buildings, shooting ranges, dams and water control structures, and offers technical assistance to DEP's Green Acres Program in the acquisition of open space and critical habitat.

Highlights

Columbia Lake Dam Removal Project



The 18-foot high, 330-foot long dam constructed in 1909 had become an impediment to migrating fish.

In partnership with The Nature Conservancy, American Rivers, U.S. Fish and Wildlife Service and DEP, the Bureaus of Land Management and Freshwater Fisheries launched a major dam removal project (the largest in state history) at Columbia Lake in Warren County. The dam, located ¼ mile upstream of the Paulins Kill River's confluence with the Delaware River, was constructed more than a century ago to supply energy. It is no longer in operation and has become an impediment to the upstream migration of American shad driven to reach to

their historic spawning grounds. It has also been hampering the movements of American eel, particularly juveniles that are unable to navigate the dam. As part of the 1,098-acre Columbia Wildlife Management Area, the dam had ultimately become the Division's responsibility. Due to the impacts on existing fisheries, coupled with the immense cost to maintain a 109-year-old structure, removal was deemed necessary to restore the river's natural flow and allow fish to migrate unhampered. Demolition efforts began in August 2018 and by January 2019 removal of

the dam was complete. Six weeks after it was removed, American Shad were once again navigating the waterway and documented 9 ½ miles upstream.

Plans to demolish the adjacent power house are next. Eventually the riverbanks will be stabilized and planted with young trees, and a trail will be constructed to allow access for anglers and others hoping to enjoy the site.

Tuckahoe Wildlife Management Area Water Control Structure and Impoundment Restoration

The multi-year Tuckahoe Wildlife Management Area Impoundment Restoration Project was completed during this report period. Located in Atlantic and Cape May counties, the Tuckahoe WMA comprises more than 17,500 acres of tidal marsh, woodlands, fields and coastal impoundments. Designed by former Division Director Lester G. MacNamara, the impoundments (six of them in all, totaling 941 acres) were constructed in the 1940s. Due to age, the structures were no longer able to drain or adjust water levels accurately.

To salvage and restore the impoundments to an operational state, the Division first partnered with Ducks Unlimited in 2013. Thanks to these efforts the Division was able to obtain a \$1 million North American Wetlands Conservation Act grant for the project. The funds were used to transform the impoundments from stagnant lakes to a healthy mix of tidal and wetland areas rich with emergent vegetation. This vegetation is vital to providing the habitat and forage necessary for migratory waterfowl and shorebird populations to thrive. To enhance the area, the



Map of the Tuckahoe WMA (note that several of the impoundments are referred to by their vernacular names).

Division replaced eight water control structures and added one more.

Construction began in the winter of 2017-18 and was completed with assistance from the Cape May County Department of Mosquito Control.

During the final phase of the project, 400 acres of mud flats were seeded with grasses. Invasive vegetation was also removed from the existing impoundment berms and stands of aggressively spreading phragmites were destroyed.

The mud flat area is extremely important since it teems with invertebrates and seeds that provide valuable nutrients for ducks and shorebirds. During the growing season, the flats are drained to promote plant growth and flooded in the fall when the birds need the water coverage most.

Bureau of Law Enforcement

Sean Cianciulli, Acting Chief

The Bureau of Law Enforcement is responsible for enforcing regulations that protect wildlife species and their habitat. As one of the oldest organized law enforcement agencies in New Jersey (created in 1871), conservation police officers have enjoyed a storied history. Originally tasked solely with fish protection in the Delaware River, officers now delve into every area of fish, wildlife and natural resource protection. They now enforce pollution laws involving New Jersey's woods and waterways, impose bans on the harvest of crabs from polluted waters, enforce clamming and oystering regulations designed to safeguard public health, assist with efforts to control nuisance bears, enforce commercial and recreational saltwater fishing regulations, protect state lands from illegal timber sales and off-road vehicle usage, and ensure the lawful handling of exotic wildlife and the sale of legally procured marine resources.

Conservation police officers are also the primary law enforcement personnel in New Jersey who are authorized to investigate hunting accidents or hunting-related fatalities. These highly trained officers possess full law enforcement authority and patrol the state and its waters using the latest in law enforcement technology.

Conservation police officers are among the Division's most visible representatives, interacting with thousands of individuals each year. In the field, they educate and redirect the actions of recreationists to ensure compliance with Division policies, the Fish and Game codes, marine conservation measures and other land use regulations to protect the environment as well as ensure that people enjoy natural resources in safe and ethical ways.

Each year, conservation police officers provide countless hours of public outreach at educational facilities, outdoors shows and through the course of their daily patrols. Educating hunters, anglers and the public about the environment and all that makes it beneficial is a paramount assignment that conservation police officers are proud to perform.

Highlights



The untidy scene at a residence containing numerous potentially dangerous reptiles.

Northern Region

In March, a Bloomingdale Borough Animal Control Officer (ACO) contacted the Bureau regarding the possession of potentially dangerous species in Butler Borough, Morris County. While assisting Butler police officers with removing dogs from a residence, the ACO observed a rattlesnake and an alligator. Following up, conservation police officers contacted the Butler Police Department for further details and upon obtaining a

search warrant, were able to inspect the residence. After conducting an extensive search, several potentially dangerous species were seized, including three American alligators, two caimans, a prairie rattlesnake, monocled cobra, gaboon viper and puff adder. In addition, numerous exotic species (kept without proper documentation) were also confiscated. A total of 55 summonses were issued with monetary fines and restitution totaling \$12,460, plus forfeiture of all illegally possessed wildlife. The individual was placed on probation for two years and banned from the possession, purchase or sale of any animals during that time.

Central Region



Theft of personal property, such as trail cameras and tree stands, is a serious and widespread complaint conservation police officers routinely hear from hunters. Because it is so prevalent, officers have begun utilizing a decidedly unconventional approach. Surprisingly, Facebook has turned out to be a successful tool to resolve such cases. By working with the public, a theft crime that previously could have taken days or even weeks to resolve, can produce critical information within hours. Thanks to social media and public involvement, the Bureau of Law Enforcement has built an extremely effective partnership.

Southern Region



One of the massive dump sites at the Peaslee Wildlife Management Area.

Southern Region conservation police officers investigated reports of a large solid waste dump site at the Peaslee Wildlife Management Area in Cumberland County. The pile, estimated to be over 50 cubic yards, consisted mostly of construction debris. Based on the area's appearance, officers suspected that the perpetrator had made several trips and that the individual's return would be imminent. Subsequently, officers planned to set up a surveillance camera, but before it could be placed another report was received that even more trash had been dumped on the pile.

Upon inspection, officers discovered an additional 30 contractor-sized trash bags, some containing asbestos shingles. After interviewing several people, the officers were able to locate a suspect who eventually admitted to dumping the trash. As luck would have it, the investigating conservation police officer received a call during the interrogation from a fellow officer who believed the suspect was connected to a larger construction company and may have dumped material in other locations. When confronted with the additional information, the suspect admitted to dumping debris in another section of the Peaslee Wildlife Management Area in Atlantic County. The man was

charged with the “*dumping of solid waste*” and the “*dumping of solid waste on a WMA.*” He plead guilty and was fined \$20,000.

Marine Region



The Patrol Vessel Integrity on duty.

In November 2014, the federal American Lobster Fishery Management Plan was amended to include a seasonal closure for Lobster Management Area (LMA) 4 from April 30 through May 31 to achieve a 10% reduction in the harvest. As might be expected, the seasonal closure was met with opposition from some commercial lobstermen. To make the situation even more challenging, the ability of the Marine Enforcement Unit to enforce these measures had been difficult due to lack of funding and material resources necessary to adequately patrol the areas where lobsters were commercially harvested before the closure was imposed. However, all that changed in late October 2017 when the Marine Enforcement Unit obtained a 36-foot Patrol Vessel (P/V) named Integrity. The P/V Integrity has proven to be a game changer by giving conservation police officers the ability to effectively enforce the regulations pertaining to all offshore fisheries, especially American lobster.

Working around the weather, officers in the P/V Integrity conducted multiple patrols during the 2019 LMA 4 season closure. During these trips, lobster gear illegally left in the water was removed and six vessels (three from New Jersey and three from New York) were found in violation of the seasonal closure. In one instance, a Shark River-based commercial lobsterman was apprehended actually tending his gear during the closure. Upon inspection of the vessel, officers found two barrels of fresh bait and two lobster pens intended to hold harvested lobsters until the season opened. All cases were referred to the National Marine Fisheries Service for prosecution.

Marine Fisheries Administration

Joseph Cimino, Administrator

The Marine Fisheries Administration includes the Bureaus of Marine Fisheries and Shellfisheries. It supervises and coordinates the planning, organization, operation and management of the marine and estuarine finfish and shellfish resources of New Jersey, estimated to be worth more than \$2 billion. The Marine Fisheries Administration also coordinates New Jersey's fishery management activities on a coastwide basis with the Atlantic States Marine Fisheries Commission and the Mid-Atlantic Fishery Management Council.

Highlights

Vital Assistance

During Fiscal Year 2019, the Marine Fisheries Administration was granted a much-needed State Appropriation to hire additional staff to assist with implementing new and ongoing management plans. The last ten years have had an enormous impact on the administration with the loss of many senior staff members through retirement, and the increased management responsibilities of federally assigned compliance requirements for an ever-expanding list of species. The types of positions supported by this funding include fisheries technicians, biologists, analysts and marine conservation police officers. Although received as supplemental funding in FY2019, the subsidy will be incorporated into the Governor's fiscal budget for FY2020 to help ensure the future of these vital positions.

BUREAU OF MARINE FISHERIES

Jeffrey Brust, Chief

The Bureau of Marine Fisheries is responsible for developing and implementing management programs that protect, conserve and enhance New Jersey's marine fisheries resources. To formulate sound state management plans, the Bureau conducts studies to gather information about New Jersey's marine species as well as the user groups that rely upon them. This research is combined with information from other Atlantic states and federal management agencies to support coastwide management plans.

Since many marine fisheries species are migratory in nature, they are managed on a coastwide basis by the Atlantic States Marine Fisheries Commission and/or the Mid-Atlantic Fishery Management Council. The Bureau of Marine Fisheries plays a vital role in representing New Jersey's fisheries and fishermen, both commercial and recreational, through these organizations.

Federal legislation mandates that states implement every fishery management plan approved by the Atlantic States Marine Fisheries Commission. Each plan requires that states employ the required management measures, enforce those rules and monitor the status of the fishery population. States failing to comply with the requirements of the plan risk a federally imposed moratorium in their state for those species covered.

Highlights

Striped Bass Management



A successful fishing trip for stripers on Raritan Bay.

Striped bass, one of New Jersey's most prized recreational fisheries, underwent an in-depth stock assessment where life history, research results and management strategies were re-evaluated and presented for an Atlantic Coast interstate peer review. Bureau of Marine Fisheries staff members were instrumental in analyzing data, developing/evaluating population models and formulating projections for the future. The overhaul was necessary after examination of the existing management plan revealed that striped bass were experiencing a high mortality rate caused by overfishing. In response to the population decline and as a first step toward recovery, biologists developed an online survey for approximately 125,000 registered saltwater anglers. The brief questionnaire sought their opinions on a variety of proposed management measures, including New Jersey's Striped Bass Bonus Program (SBBP). Unlike other states, New Jersey does not

allow the commercial harvest or sale of striped bass. Consequently, the commercial allocation is transferred to recreational anglers through the SBBP. Initiated in 1990, program participants are required to submit valuable data regarding their striped bass fishing activities and in so doing, help shape the management strategies necessary for a healthy population. Regulations based on the information will be finalized in the coming months and will continue well into the future as managers modify New Jersey's Striped Bass Fishery Management Plan in response to population health, sustainability and the needs of recreational saltwater anglers.

Artificial Reef Sampling

Marine fisheries biologists are continuing a multi-year colonization study of New Jersey's artificial reefs. The original survey, a three-year contracted effort with Rutgers University, recently concluded and Division biologists will now continue the work on three reef sites (Sea Girt, Manasquan Inlet and Little Egg reefs) chosen for their midway location along New Jersey's coast. Scientists are particularly interested in identifying the seasonal and spatial changes in reef community composition. Through the study, biologists will also be able to evaluate differences in colonization between two of the most commonly used reef structure materials: concrete (i.e., reef balls, castings and demolition debris) and metal (tanks, ships, barges and subway cars). Though the survey focuses on several species of recreational and commercial importance, including black sea bass, tautog (blackfish) and lobster, it will also provide significant data on many other species inhabiting the reefs.

Long-term Sampling

The Delaware Estuary, New Jersey's largest estuary system, is a semi-enclosed body of water where fresh water from the Delaware River mixes with salt water from Delaware Bay. The expanse is an important migratory route and provides critical feeding, spawning and nursery grounds for many recreational and commercial fish species, such as striped bass, weakfish, menhaden, shad and river herring. Because this is such an important area for the growth and survival of juvenile fish, monitoring populations here is essential to estimate abundance and evaluate the health of various fish stocks. To obtain the necessary data, marine fisheries biologists conduct several surveys each year.

One of the most important is the Delaware River Seine Survey. Initiated 40 years ago when striped bass stocks were severely depleted, it is currently the Division's longest running survey. Data over such an extended period of time is fundamental in helping biologists develop and modify a comprehensive fisheries management plan that will ensure a sustainable harvest over the long-term.

Another principal survey, the New Jersey Ocean Trawl, is celebrating its 30th year of sampling. Primarily focused on collecting abundance data for near-shore (less than 30 miles off the coast) groundfish species like flounder and sea bass, the information is used to monitor and formulate fishery stock assessments vital to ensuring long-term sustainability. Each year, samples of more than 100 species are obtained via a huge trawl net. The contents are identified, weighed and measured down to the smallest identifiable organism. Since 1989, the survey has sampled 186 sites each year spanning the 141 miles of New Jersey's coastline.

The long-term survey data biologists have gathered throughout the decades is extremely valuable. Not only does it show how many fish there are from year to year, but also paints a picture of trends over time. Biologists analyze these trends and use the information to develop management plans for healthy, sustainable fisheries.

BUREAU OF SHELLFISHERIES

Russ Babb, Chief

The Bureau of Shellfisheries directs shellfish harvest and production programs along the Atlantic Coast and in Delaware Bay. Biologists work with other Division bureaus as well as various state and federal agencies on marine habitat conservation and shellfish management. Staff members work closely with the New Jersey Shellfisheries councils (Atlantic Coast and Delaware Bay) on issues related to the protection and enhancement of New Jersey's shellfisheries. The Bureau is also committed to fostering aquaculture development and reviewing coastal development activities to protect critical habitat. Staff members manage surf clams in the Atlantic Ocean and oysters in Delaware Bay as well as examine the impacts of offshore sand mining. In addition, they are responsible for administering a licensing program for recreational and commercial shellfishermen as well as the state's Shellfish Aquaculture Program.

Highlights

Direct Market Oyster Harvest Still Historically High



An oyster boat sets out at sunrise.

Bureau of Shellfisheries' staff participated in the 21st Stock Assessment Workshop for the Delaware Bay oyster resource and fishery. At the workshop, members of the Stock Assessment Review Committee (SARC) deemed the stock status good with a sustainable fishery. This year, the SARC recommended that prior to transplanting any oysters, the total allowable landings would be 86,293 bushels. Once biologists coordinated the transplant program, the quota increased

to more than 110,000 bushels. This allocation ranks among the highest in the last 20 years. The shift in harvest size to larger, marketable oysters is evident with significant increases in the daily harvest per vessel. In addition, staff noted the amount of time fished per day has decreased over the last several years suggesting that market-sized oysters are easier to catch. Along with Rutgers University, staff continues to monitor long term trends in oyster size and health to continue managing this important resource sustainably.

2018 New Jersey Surf Clam Stock Assessment Update

Bureau staff completed sampling for the 2018 New Jersey Surf Clam Inventory Project. A total of 202 stations were sampled from Cape May to Shark River Inlet. The estimated stock was calculated at 51,764 bushels, the lowest ever recorded. Small surf clams continue to be documented at a number of stations in harvest zones located between the Little Egg Harbor and Shark River inlets, but large surf clams have been conspicuously absent. The total estimated surf

clam stock continues to decline and is at an all-time low despite current regulations to prevent the harvest from exceeding 10% of the estimated stock.

DEP's Commissioner, based on advice from the Atlantic Coast Shellfisheries Council, establishes the season quota each year. The quota is the total amount of surf clams (excluding bait clams) that can be harvested from New Jersey territorial waters by license holders during a season. For the 2018-19 season, the council recommended a minimum quota of 32 bushels per license and though a minimum was established, biologists do not anticipate a harvest at this time.

Shellfish Aquaculture Working Group

The Shellfish Aquaculture Working Group (SAWG) was reconvened and held a meeting (the first in several years) to proactively address new and pending issues associated with shellfish aquaculture in New Jersey. Consisting of various state and federal agencies, the SAWG was created in 2014 to serve as a forum to discuss the complicated matrix of permitting and regulatory issues affecting the aquaculture industry. That first workshop included an "open-exchange session" where guests from the industry were invited to speak with SAWG representatives to offer input on developing simpler ways to navigate official procedures and the associated paperwork. The SAWG intends to meet regularly as a group and plans to hold a similar workshop for industry representatives in the future.

Bureau of Wildlife Management

Carole Stanko, Chief

The Bureau of Wildlife Management provides the scientific information and recommendations necessary to develop conservation plans for New Jersey's game species. It also assists with pheasant and quail stocking operations and advises the public on ways to reduce the damage caused by wildlife. Biologists work with other agencies and local governments to develop cooperative management programs throughout the state. These professionals also monitor wildlife population numbers and health conditions. The information collected is of critical importance to the Fish and Game Council that relies on it to determine New Jersey's annual hunting and trapping regulations.

Highlights

Rockport Pheasant Farm

Since 1923, the Division has raised more than 2 million ring-necked pheasants at its Rockport Pheasant Farm within the 1,380-acre Rockport Wildlife Management Area in Warren County. Following the federal government's recent decision to impose stringent regulations for the prevention of Avian Influenza, the Division determined that keeping the facility open was no longer feasible due to the enormous costs of upgrading existing infrastructure, implementing required protocols and hiring the additional staff needed to carry out these procedures. As a result, the 2018 stocking season marked the end of pheasant production at the farm.

The existing full-time employees (4) have been transferred to other areas of the Division and adult pheasants will now be purchased for a significant savings. Future plans for the facility include repurposing the newer structures, demolishing the unsalvageable ones and returning most of the property back to productive wildlife habitat.

Bobwhite Quail Restoration

Staff continues to explore the feasibility of developing a Bobwhite Quail Restoration Project in partnership with the New Jersey Audubon Society and the Landis Sewerage Authority in Vineland. Four locations were analyzed to see if any would be suitable for a full-scale restoration effort. Biologists determined that the Dix Wildlife Management Area in Cumberland County had the most potential and all partners agreed to move forward by submitting a proposal to the National Bobwhite Conservation Initiative as well as requests to several states that might be willing to provide New Jersey with the wild birds needed to build a new population.



A male bobwhite and chick.

Ruffed Grouse Season Closed

During this report period, a decision was made to close the statewide hunting season for ruffed grouse. By nature, grouse prefer to occupy young forested areas and have experienced a significant decline in population numbers over the years due to the lack of suitable habitat. In fact, immature forests comprise less than one percent of New Jersey's woodlands. Noticing the decline, the Division reduced the season length and daily bag limit in 2005. However, grouse and their habitat continued to decline as forests aged and forestry management practices no longer focused on maintaining early successional areas (i.e., grasslands, old fields or pastures, shrub thickets and young forests). Until the species recovers, biologists intend to implement habitat enhancement projects in the northern part of the state where existing grouse populations are located. Staff is also working with other scientists to determine if West Nile Virus is playing a role in the population decline.

Research

In FY19, staff members' research was included in the following publications:

Human-Black Bear Conflicts: A Review of Management Practices. Carl W. Lackey, Stewart W. Breck, Brian F. Wakeling, Bryant White. Human-Wildlife Interactions Monograph Number 2. A publication of the Jack H. Berryman Institute Press, Wildland Resources Department, Utah State University, Logan, Utah, USA (2018).

Canada Goose Gosling Survival of the Atlantic Flyway Resident Population. Katherine G. Watts, Christopher K. Williams, Theodore C. Nichols, Paul M. Castelli. Journal of Wildlife Management 82(7):1459-1465 (2018).

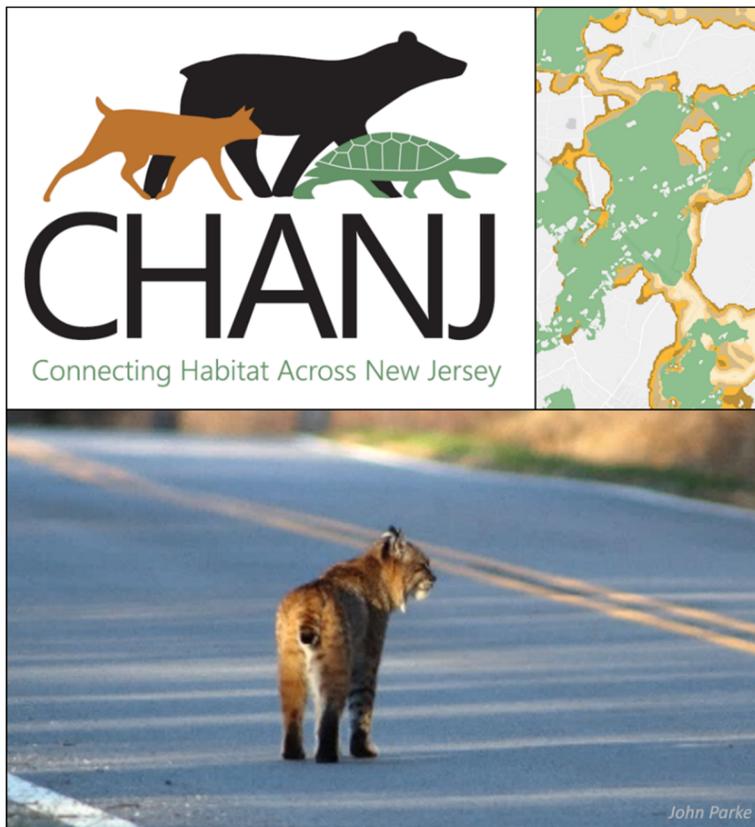
Endangered and Nongame Species Program

John Heilferty, Chief

The Endangered and Nongame Species Program was created in response to the New Jersey Endangered Species Act of 1973. More than 80 endangered and threatened species inhabit the Garden State. The program is committed to conserving New Jersey's biological diversity by working to maintain and foster endangered and threatened populations as well as protect the unique habitats on which they depend. It is also responsible for administering the State Income Tax Check-Off for Wildlife, which benefits these species.

Highlights

Connecting Habitat Across New Jersey (CHANJ)



This spring, Endangered and Nongame Species Program staff publicly unveiled the Connecting Habitat Across New Jersey (CHANJ) project plan. The collective effort of a multi-partner, multi-disciplinary working group representing more than 40 different agencies/organizations across the state, CHANJ was created to address the importance of connecting habitat fragments by developing safe corridors for migrating wildlife. To introduce people to this concept, an interactive mapping tool was created (available for download or on the Division's website) to identify New Jersey's remaining intact habitats and the best

opportunities to link them across the state. A companion guide is also linked to the mapping tool to help users make strategic choices about preserving land, restoring habitat and mitigating the impacts of roads on wildlife. Additional resources are available to assist with prioritization and decision-making, including a list of preserved lands, culvert inventories and a road/wildlife mitigation database. With the appropriate tools available, CHANJ allows land managers, transportation planners, conservation groups, and the public to better visualize how they fit into the overall connectivity matrix. By understanding these connections, we can ultimately improve

the future for wildlife in our state. To further public education, a short video was created for the Division's website and a special CHANJ listserv was established in March 2018.



The surface of a roadway on the Assunpink WMA in Upper Freehold Township. Underneath the grating are tunnels to prevent wildlife from crossing the asphalt.

A recent example of a CHANJ project in the Garden State is the construction of a wildlife passageway at the Assunpink WMA in Monmouth County. Through this project, biologists are trying to reconnect fragmented patches of wetland habitat while providing a safe passageway for wildlife to move between these areas. The project consists of two under-road tunnels and specialized fencing that will guide animals to and through the channels to prevent them from entering the roadway.

2019 Piping Plover Update

The 2019 field season for piping plover (a New Jersey endangered and federally threatened beach nesting bird) proved successful with the addition of several new breeding pairs. Although 2017 and 2018 saw an unexpected decline to 96 pairs, early estimates for this year indicate the presence of at least 110. In addition to that hopeful news, plovers at Island Beach State Park experienced their most productive year yet, meeting federal recovery goals for the first time ever. Populations have also returned to Corson's Inlet State Park, where the last documented nesting took place in 2009. In fact, biologists recently recorded two nesting pairs and although they fledged only one chick between them, both sets of parents were able to at least hatch offspring. Currently, Corson's Inlet State Park is only the second active site in Cape May County.



Photographer Jesse Amesbury captures a tiny plover chick stretching its wings.

Bog Turtle Monitoring and Management



The palm-sized, elusive bog turtle makes its home in wet meadows and bogs.

Since 2013, in a collaborative effort with New Jersey Audubon, program staff have been partnering to improve wetland habitat in South Jersey. By removing invasive plant species, more than 30 acres of uplands have been managed to serve as travel corridors between these wetland areas. In addition, land formerly used for agricultural purposes is now being changed back to marsh. Biologists can achieve the transformation by restoring water to the area and installing a series of small check dams to control the flow.

Endangered and Nongame Species Program biologists are also working with the Division's Bureau of Land Management to design and install a

modern under-road bog turtle passage system. Extensive road surveys were conducted, and telemetry was used to track individual turtle movements throughout all phases of the project. Culverts were installed and guide fencing was placed during the 2018-2019 fall and winter seasons. In addition, specially designed motion-trigger cameras were positioned to detect any movement of wildlife through the culverts.

Office of Fish and Wildlife Health and Forensics

Dr. Jan Lovy, Research Scientist

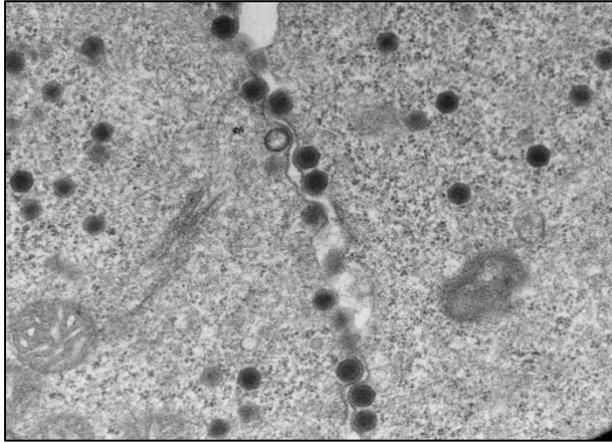
The Office of Fish and Wildlife Health and Forensics conducts surveillance and research on diseases and chemical contaminants that affect New Jersey's fish and wildlife. Scientists in this office also recommend measures to combat diseases in the Division's fish hatcheries and in free-ranging fish and wildlife populations. These scientists are the only available experts in New Jersey state government to specialize in wildlife pathology, fish pathology, and fish and wildlife toxicology. As a result, when fish and wildlife are dying in the Garden State, the public and other government agencies turn to the Office of Fish and Wildlife Health and Forensics to determine the cause and develop a response strategy.

Highlights

Freshwater Fish Health

Annual health inspections of the state's two fish hatcheries were completed. The fish were tested for numerous bacterial agents, including *Aeromonas salmonicida*, *Yersinia ruckeri*, *Edwardsiella ictaluri* and *Edwardsiella tarda*. Testing was also conducted for several viral diseases, including

Viral Hemorrhagic Septicemia, Infectious Pancreatic Necrosis, Infectious Hematopoietic Necrosis, Spring Viremia of Carp and Largemouth Bass Virus.



LMBV as seen through a transmission electron microscope.
The virus replicates and bursts out of the cell membrane,
causing serious damage.

The Pequest Trout Hatchery tested negative for all of these pathogens, plus Whirling Disease, which is caused by the parasite *Myxobolus cerebralis*. However, Largemouth Bass Virus (LMBV) was detected at the Hackettstown Fish Hatchery for the first time. LMBV is a DNA-related virus that has spread northward from the southeastern U.S. and infects both largemouth and smallmouth bass. Once discovered at the hatchery, actions were immediately taken to eradicate the virus from the environment. This included draining ponds, removing affected bass and leaving areas empty for several months. In addition, further surveillance of the state's natural waters will be conducted to understand the

prevalence of LMBV in New Jersey. Other than LMBV, no other pathogens were found at the Hackettstown Hatchery.

Staff completed a research project in Assunpink Lake (Monmouth County) to understand the seasonal prevalence of parasites and their potential role in spring mortality of bluegill sunfish. Three species of parasites known to infect the intestinal tracts of bluegills were studied. Based on the findings, biologists believe fish with these abdominal parasites are more susceptible to bacterial infection in the early spring, because their intestinal tracts have already been comprised. An effort to publish the results of this study in the *Journal of Fish Diseases* is underway.

Marine Fish Health

A parasitic copepod (microscopic crustacean) has been identified in the gills of black sea bass. This species is typically not a host for this parasite. In fact, the parasite has never been documented in this region before. Once attached to the gills, the copepods compromise their function. Although specific impacts on the health of sea bass populations are still unknown, Office of Fish and Wildlife Health and Forensics staff are collaborating with the Division's Bureau of Marine Fisheries and the Rutgers University Marine Field Research Station to survey juveniles and adults from various locations to understand the prevalence of this parasite and consequences associated with these infections.

Terrestrial Wildlife Health

An annual survey for Chronic Wasting Disease, a neurological disease affecting the brains and nervous systems of white-tailed deer, was successfully completed. Samples were taken from a record number of 700 deer and submitted to a certified laboratory for testing. Once analyzed, results will be made available.

Office of Environmental Review

Kelly Davis, Principal Biologist

The Office of Environmental Review studies fish, shellfish, wildlife and endangered species concerns related to state and federal permitting programs. Data is gathered on development projects that could potentially cause negative impacts on these resources and their habitats. Biologists also review and provide recommendations for the DEP's Land Use Regulation Program as well as the Bureau of Dam Safety and Flood Control, and the Solid and Hazardous Waste Program. In addition, the Office of Environmental Review offers input to federal agencies including the United States Army Corps of Engineers, Federal Energy Regulatory Commission, United States Department of Interior's Bureau of Ocean Energy Management, Federal Aviation Administration and the Department of Defense.

Highlights

During this reporting period, staff conducted a total of 313 environmental review assessments and attended 184 meetings on proposed projects in-state and off the coastline.

In support of the state's new goal to generate 7,500 megawatts of offshore wind energy by the year 2035, OER staff assisted in reviewing three large-scale wind projects in federal waters off the coast of New Jersey. The DEP has also created the Offshore Wind Working Group to solicit feedback from commercial and recreational fishing industries, conservation organizations, maritime industry, and fisheries councils regarding the impacts to marine fisheries, including potential issues posed by the extensive cable system leading to shore.



New Jersey's offshore wind goal: 7,500 megawatts by 2035.

Another far-reaching proposal affecting the state's coastal zone is the Army Corps of Engineers' Back Bay Flood Reduction Study. Multiple scenarios employing structural, non-structural and nature-based solutions are being examined. From the Division's perspective, any measures agreed upon must ensure that the hydrodynamic processes at play will have minimal to no lasting impacts on the state's fish and wildlife resources. The review is expected to continue into 2021.

Staff continued to update the *Guidance Manual for Processing Land Use Regulation Permits & Protection of Fish and Wildlife Resources*. This is a highly referenced DEP document and the revision is anticipated to be completed within the next year.

Bureau of Information and Education

Al Ivany, Chief

The Bureau of Information and Education educates New Jerseyans about the needs and value of fish and wildlife. To do this, staff interprets information on biology, ecology and conservation to help the public better understand the unique needs of each species, as well as their environmental, recreational, aesthetic and economic values. Outreach efforts also promote the wise use of these resources and the need to safeguard them for future generations.

Highlights

Mobile Conservation Outreach Trailer Debut



The Mobile Conservation Outreach Trailer was unveiled at the NJ WILD Outdoor Expo.

The new Mobile Conservation Outreach Trailer was completed in the fall of 2018 and made its debut at the New Jersey WILD Outdoor Expo September 8-9. More than 900 attendees explored the trailer and viewed displays highlighting the unique partnership between the Division of Fish and Wildlife and the U.S. Fish and Wildlife Service's Wildlife and Sportfish Restoration programs. A comprehensive interpretive plan for use of the trailer is being finalized, and companion items for distribution to visitors are also being developed.

Hooked on Fishing - Not on Drugs Youth Fishing Challenge

The Hooked on Fishing - Not on Drugs (HOFNOD) program held its 4th annual statewide Youth Fishing Challenge on Free Fishing Day Saturday, June 8, 2019. This year, there were 32 challenge locations in 18 counties rendering it the largest Youth Fishing Challenge event in New Jersey to date. The yearly challenge is organized to promote fishing as a way for spend quality time together.



A happy angler shows off her catch during the Youth Fishing Challenge.

The HOFNOD program was designed to encourage school-aged children to avoid tobacco, drug and alcohol use by participating in healthy, alternative activities. By learning to fish, youngsters build an appreciation for our aquatic and environmental resources as well as many other positive life skills.

Take Me Fishing First Catch Center

In collaboration with Fishing's Future and the Recreational Boating and Fishing Foundation, New Jersey established a Take Me Fishing First Catch Center at the Division's Hackettstown Fish Hatchery in Warren County. This family-oriented program was created to cultivate the next generation of anglers through a comprehensive beginner's fishing experience. Participants are offered enough education and practical skills as well as actual hands-on fishing action to go out and begin fishing on their own. Three additional programs are scheduled for 2019. Equipment and registration are provided through Fishing's Future with classes taught by Division Wildlife Conservation Corps volunteers.

Office of Mosquito Control Coordination

Scott C. Crans, Administrator

Created in 1974, the New Jersey State Mosquito Control Commission's Office of Mosquito Control Coordination is based in the Division's Trenton office. The office coordinates programs funded by the New Jersey State Mosquito Control Commission and serves as a public face on all state mosquito control matters. Actively collaborating with different bureaus in the Division and across DEP is a priority, as is maintaining existing standards and developing new methods of mosquito control. These efforts ensure that county-based mosquito control agencies across the state are improving the public's quality of life by reducing mosquito populations in an environmentally sound manner.

Highlights

Throughout the summer, the Office of Mosquito Control Coordination continued to partner with several state, county and university labs to screen mosquito, equine and avian blood samples for mosquito borne viruses that are of veterinary importance and of risk to public health. The office is funding and overseeing the collaborative effort, which involves labs from the New Jersey Department of Health, New Jersey Department of Agriculture, Cape May County Department of Mosquito Control and New Jersey Agricultural Experiment Station at Rutgers University.

Ongoing surveillance provides an early warning system for local mosquito control programs. Local transmission of West Nile Virus and Eastern Equine Encephalitis Virus pose the greatest risk in New Jersey, although the travel-associated introduction of Zika, Chikungunya and Dengue viruses is also a significant concern. To date, there has been no local transmission of these three exotic viruses in the state.

Sampling efforts indicate that FY19 was the most active year for West Nile Virus on record. The season started early and extended well into the fall. Extremely warm and wet weather conditions predominated, creating favorable conditions for mosquito production. Out of 217,515 mosquitoes examined (comprising 17 species), 1,331 samples tested positive.

Testing for Eastern Equine Encephalitis Virus revealed an average year with 14 positive samples. Since the unusual North Jersey occurrences of the virus in 2016, additional surveillance of

mosquito populations suspected of transmitting the disease has been ongoing. Intensive monitoring efforts will continue to screen for the presence of the virus in the future.

As part of the DEP's continued Zika virus initiative, public awareness and various outreach activities were continued to prepare residents for the potential introduction of this disease. These educational efforts, as well as the surveillance and control of exotic mosquito species like *Aedes albopictus*, are being supported through a series of federal grants specially earmarked for county use.

The Office of Mosquito Control Coordination continued its collaboration with the Division's Bureau of Freshwater Fisheries to supply multiple species of mosquito larvae-eating fish to county mosquito control agencies throughout the state. Biological control of mosquito populations is part of the state's Integrated Vector Management Plan and helps limit mosquito larvicide and adulticide use in certain areas.



Gambusia affinis, one of several mosquito larvae-eating freshwater species raised to supply county mosquito control agencies.

The State Airspray Program experienced one of the busiest years on recent record. The program is primarily directed at controlling immature mosquitoes on large flooded areas. When conditions warrant, however, operations directed at adult mosquitoes -especially during periods when the spread of viruses is greatest - are offered to county programs. This year, the office received requests from seven county mosquito control programs. As a result, 27,185 acres were aerially treated in 31 separate state-contracted missions.

Office of Business Administration
Paulette Nelson, Assistant Director

The Office of Business Administration is responsible for the Division's licensing, accounting, budgeting, purchasing and billing functions. This office has three primary elements:

- *Licenses and Revenue*
- *Permits*
- *Budget and Procurement*

These three sections work together to provide fiscal services for the entire Division.



Electronic license sales are an important source of revenue for the Division.

The chart on the following page illustrates revenue, appropriations and expenses for FY19.

FY19 DFW Annual Report

RESOURCES

General State Fund Appropriation Hunters & Anglers	3,212,000
General State Fund Appropriation Shellfish and Marine Fisheries	3,668,000
General State Fund Appropriation Endangered Species	206,000
Subtotal GSF Appropriations	7,086,000
Hunters & Anglers Licenses/Permits	13,429,685
Lease Revenue	1,224,216
Endangered Species Revenue (License Plates and Tax Check-off)	434,135
Waterfowl Stamp Revenue	65,600
Miscellaneous Dedicated Account Revenue (Exotics, Sedge Island, Hooked on Fishing, Pump-Out)	367,855
Shellfish and Marine Licenses/Permits	657,368
Subtotal Revenues	16,178,859
Federal Salary & Fringe Reimbursements	4,464,479
Federal Operating Funds	5,038,583
Carry-forward funds available from prior years -- Recurring Non-Federal accounts	5,691,117
Non-Federal reimbursements and transfers	251,728
Subtotal Federal & Other funding	15,445,907
TOTAL RESOURCES	38,710,766

EXPENDITURES

Hunters & Anglers Salaries (includes seasonals, overtime, clothing allowances)	11,670,868
Shellfish and Marine Fisheries Salaries (includes seasonals, overtime, clothing allowances)	3,445,529
Endangered Species Salaries (includes seasonals, overtime, clothing allowances)	1,173,659
Hunters & Anglers Fringe Benefit costs assessed by Treasury Office of Management & Budget	6,173,637
Miscellaneous Dedicated Expenditures (Exotics, Sedge Island, Hooked on Fishing, Pump-Out)	493,597
Waterfowl Stamp Expenditures	71,260
Hunters & Anglers Operating (equipment, repairs, fuel, utilities, licensing vendor...)	2,869,898
Shellfish and Marine Operating (equipment, repairs, fuel, utilities...)	1,575,345
ENSP Operating (equipment, repairs, fuel, utilities...)	188,029
Federal Operating Expenditures	4,932,329
DEP Assessments (Deputy Attorney Generals, DEP Division of Information Technology, Office of Administrative Law, Environmental Research Library, Office of Information Technology, rent, training office)	863,746
TOTAL EXPENDITURES	33,457,897
*BALANCE	5,252,869

*Reflected balance includes funds in recurring Non-Federal accounts dedicated for specific purposes. Information as of 8/12/19.