FY 2023
Annual Report

July 1, 2022 – June 30, 2023

A wood turtle, considered threatened in New Jersey, navigating watery terrain.

State of New Jersey
Department of Environmental Protection
New Jersey DEP Fish & Wildlife

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FY2023 Annual Report

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New Jersey DEP Fish & Wildlife

New Jersey DEP Fish & Wildlife is 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 358,000 acres in the Wildlife Management Area System and manages all wildlife species in New Jersey. This includes game animals, freshwater and marine fish, shellfish, birds, amphibians, reptiles, and endangered and nongame species. New Jersey DEP Fish & Wildlife staff also educate the public about wildlife-related issues, and 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 between 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. New Jersey DEP Fish & Wildlife 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

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.

Table of Contents

Bureau of Freshwater Fisheries
Shawn Crouse, 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

Pequest Trout Hatchery

The Pequest Trout Hatchery turned 40! Completed in 1982, the first trout were stocked in 1983, and by 1986, the hatchery was in full production. Years later, the program is still going strong. In 2023, a total of 603,525 rainbow trout were distributed during the spring program. The total consisted of 595,290 production-size trout along with 8,235 broodstock. The 2022 Fall Trout Stocking Program in October consisted of 20,780 two-year-old production trout stocked along with 930 larger three-year-old broodstock. The 2022 Winter Stocking Program was completed in November with the release of 4,460 two-year-old rainbow trout averaging 14.8 inches and 1.64 pounds each.

Details on the Pequest Trout Hatchery's 40th anniversary are contained in the latest issue of the NJ Freshwater Fishing Digest.

Hackettstown State Fish Hatchery

The summer of 2022 was the 110th year of fish culture operations at the Hackettstown State Fish Hatchery. It was also the 23rd year of production in the much newer Intensive Recirculation Building. Since the very beginning, the hatchery's main goal was and continues to be, stocking quality fish that will survive and thrive in the wild, while providing anglers with countless hours of outdoor recreation.

Production highlights include muskellunge (14,854 at 10-12 inches), northern pike (26,286 at 7 inches), walleye (293,233 at 2" inches and 46,559 at 4 inches), hybrid striped bass (30,367 at 4 inches), landlocked salmon (2,870 at 14 inches), and channel catfish (12,546 at 6 inches, 9,683 at 15 inches and 572 at 22 inches). In addition, thousands of largemouth and smallmouth bass,

black crappie, bluegill, fathead minnow, and golden shiner were stocked in more than 100 waterbodies throughout the state.

Wild Trout Research and Management

Photo of a wild Brook Trout. Our only native trout species, populations are declining.

Human initiated landscape changes and adverse biological interactions have negatively impacted brook trout, New Jersey's only native trout species. Habitat alteration, stream fragmentation, diminished water quality, and competition with non-native trout (browns and rainbows introduced by humans) have contributed to the decline. So drastic has been the decline that wild populations now exist in less than half their original range. Climate change will exacerbate these impacts. New Jersey DEP Fish & Wildlife conducts population and habitat surveys to (1) determine presence/absence of various wild trout species, (2) classify and protect *Trout Production* streams under the Surface Water Quality Standards developed by DEP, (3) identify factors impacting these populations, (4) identify thermal impacts and thermal refuges for climate resiliency, and (5) identify potential restoration and improvement projects.

Ongoing monitoring of wild trout populations is critical as wild brook trout continue to disappear. In 2022, 103 electrofishing surveys were conducted in streams that support trout. Many surveys were conducted at (or near) sites that had been surveyed in the past. Brook trout were not found in 7 of the 22 locations that previously held both brook and brown trout. With the fate of New Jersey's native brook trout populations hanging in the balance, biologists will continue to study the environment and try to curtail the decline.

Bureau of Land Management

Jason Hearon, Chief

The Bureau of Land Management is responsible for administering New Jersey DEP Fish & Wildlife's Wildlife Management Area (WMA) System that encompasses more than 358,000 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 New Jersey DEP Fish & Wildlife office 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

Southern Region: Boat Ramp Restoration in Cape May County

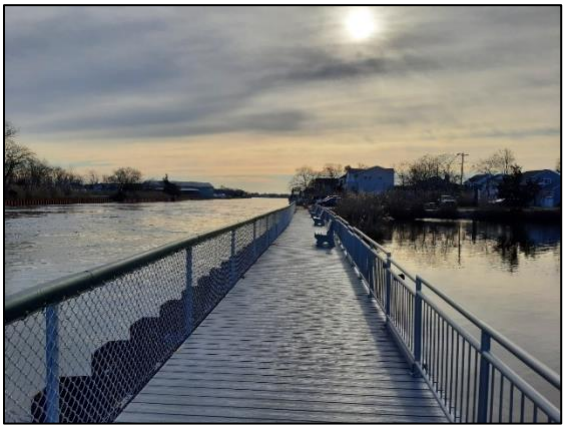
Completed ramp at "Mosquito Landing."

A major renovation was completed at the "Mosquito Landing" Boat Ramp, located on the Tuckahoe Wildlife Management Area in Cape May County. Improvements included replacement of the existing ramp, installation of a floating dock, a reconfigured parking lot, and wing walls that reduce the tidal influence to make trailer launches easier.

An additional boat ramp project in Cape May County is slated for 2024. The boat ramp at Jakes Landing within the Dennis Creek WMA will be renovated to provide access to Delaware Bay and its many tributaries.

Central Region: Point Pleasant Fishing Access and Boat Ramp Improvement

A major renovation was completed at the Point Pleasant Fishing Access and Boat Ramp Site in Ocean County. Improvements included replacement of fencing along the canal, a new concrete boat ramp, enhanced parking for boat trailers and a new extended fishing dock. A living shoreline utilizing native plantings was also established.



View of extended fishing dock at the Point Pleasant Fishing Access and Boat Ramp Site.

Dedicated to increasing and improving boating and fishing access throughout the state, New Jersey DEP Fish & Wildlife is also making

improvements to the boat ramps within Assunpink WMA for Rising Sun and Stone Tavern lakes in Monmouth County. In 2023, concrete ramps were installed at both lakes and in the fall, floating docks will be installed to complete the Assunpink project.

Northern Region: Reclaiming Fields at Columbia WMA

A major project involving field reclamation was completed at the Columbia Wildlife Management Area in Warren County. Previously, the fields in this area had become overrun with invasive vegetation such as mile-a-minute vine, autumn olive, and Oriental bittersweet. After a thorough land management review was completed, the area was selected to be stocked with quail for hunters, and a total of 18 fields (73.4 acres) were reclaimed. In these fields, plantings of grain, warm season grasses, and pollinator plants will continue alongside work to prevent the re-emergence of invasive vegetation. In addition to a large area of interconnected fields that will be managed for quail, the efforts to open these fields will benefit a host of other game and nongame species, including wild turkeys, field and grassland nesting birds, and insect pollinators.

A field is restored to its natural state at the Columbia WMA.

Bureau of Law Enforcement

Frank T. Panico, Chief

The Bureau of Law Enforcement is perhaps the most publicly visible bureau of New Jersey DEP Fish & Wildlife. Conservation police officers (CPOs), first known as "*fish and game wardens,*" can trace their beginning back to 1871. This makes the Bureau of Law Enforcement one of the oldest law enforcement agencies in New Jersey. Conservation police officers are responsible for enforcing natural resource regulations statewide. Traditionally, their efforts concentrated on the enforcement of hunting, fishing, and trapping regulations. Over the years, these efforts have grown to include regulations covering commercial and recreational marine resources, pollution, dumping, and wildlife management areas. Today's officers are highly trained and have a wide variety of tools and advanced technologies at their disposal.

CPOs patrol New Jersey DEP Fish & Wildlife's Wildlife Management Area System, encompassing 358,000+ acres. These patrols address everything from illegal off-road vehicle use and dumping, to encroachment and pollution violations that affect public health and safety. CPOs play a crucial role alongside other programs within DEP enforcing aquaculture, clamming, and oystering regulations. New Jersey's aquaculture industry continues to grow each year and CPOs are a key component to its success.

Conservation Police Officers act as a force multiplier assisting the Bureau of Wildlife with efforts to control nuisance bears and mitigate bear-human interactions. They also provide relief to farmers by reviewing and issuing depredation permits for crop loss due to deer damage. CPOs are now involved in more community oriented policing initiatives than ever before. Recently, the Bureau of Law Enforcement increased its role in the DEP's Youth Diversity and Inclusion Camps. The program was expanded to five weeks this past summer and officers led camps introducing youths to careers in conservation law enforcement emphasizing wildlife trafficking, illegal dumping, and crime scene processing. In addition, CPOs spend time at all hunter education classes to assist with training the next generation of hunters and conservationists. As part of their commitment, CPOs also continue to partner with local law enforcement efforts to promote relationships within the communities they serve.

Highlights

Conservation Police Officer Recruits

In FY23, the Bureau of Law Enforcement hired ten conservation police officer recruits. The officers were hired in two separate recruit classes. The first class of three officers began their careers in July of 2022. They completed basic police training at the Cape May Police Academy

Chief Panico (second from left) poses with three of the ten CPO recruits recently hired.

in January 2023 and then completed a 10-week in-house training academy followed by 16 weeks of field training. The second recruit class began the intensive training process in July 2023. These young men and women will attend the Cape May Police Academy in August and are slated to finish all initial training in July of 2024.

Use of Body Worn Cameras and New CAD System

The Conservation police officers began using body worn cameras in late July 2023. The cameras are designed to integrate with a new Computer Aided Dispatch (CAD) system that is currently under construction. Slated to become operational in early 2024, the body worn cameras will record all law enforcement interactions with the public. Employing this new system will bring the Bureau of Law Enforcement into compliance with the New Jersey Attorney General's mandate that all law enforcement agencies use body worn cameras.

CPO Merritt shown wearing the new body camera.

Special Investigations Unit

The Bureau of Law Enforcement created and launched a Special Investigations Unit (SIU). This new unit is structured with a chain of command that includes a captain and lieutenant with the eventual addition of four field investigators. These officers will focus their efforts on the illegal collection and commercialization of native nongame and game species, as well as large-scale dumping and pollution cases. Although recently created, the unit is already involved with several criminal cases and indictments.

Marine Resources Administration
Joseph Cimino, Administrator

The Marine Resources Administration includes the Bureaus of Marine Fisheries and Shellfisheries. Staff supervise and coordinate the planning, organization, operation and management of the marine and estuarine finfish and shellfish resources of New Jersey, worth an estimated $3.2 billion. The Marine Resources 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

Recreational Fisheries Management Reform

Staff participated in an initiative to change the way recreational management measures are developed for several important species managed jointly by the Atlantic States Marine Fisheries Commission (Commission) and Mid Atlantic Fishery Management Council (Council). As a result, staff set out to establish a process for setting recreational bag, size, and season limits for summer flounder, scup, black sea bass, and bluefish that prevent overfishing, reflect stock status, account for uncertainty in the recreational data, take into consideration angler preferences, and provide as much stability and predictability as possible in changes from year to year.

Technical working groups from the Commission and Council worked jointly with staff to develop several different decision frameworks incorporating stock status, biomass trends and recent harvest. These methods were refined through public comment and simulation testing over an 18-month period. Subsequently, one of the methods was chosen for a three-year pilot program (2023-2025). In early 2023, managers used the model for the first time to set recreational measures for summer flounder, scup, and black sea bass. This revolutionary change in the rule making process is widely considered the most significant advance in recreational fisheries management in decades and should help stabilize regulations over time, leading to less confusion, higher participant acceptance, and improved compliance. In 2025, the framework will be re-evaluated and modified as needed.

Offshore Wind Update

In FY23, several offshore wind projects moved through various stages of the planning and permitting process, including *Ocean Wind 2* and *Atlantic Shores 1*.

Staff assisted the Commissioner's Office and Board of Public Utilities to revise and expand the *Solicitation Guidance Document* to include more comprehensive recommendations and requirements for environmental and fisheries protection. Like all of our offshore wind efforts, engaging stakeholders was an important part of drafting the document, and input was received from the fishing industry, Responsible Offshore Science Alliance (ROSA), Responsible Offshore Development Alliance (RODA), and state and federal partners. Meetings were also held with lease holders in the NY/NJ Bight area.

Staff worked closely with DEP's Division of Science and Research, New Jersey Bureau of Public Utilities, regional entities, and experts to develop the first phase of research projects for the Research and Monitoring Initiative for offshore wind. Under this phase of projects, Rutgers scientists successfully tested a novel surf clam research dredge and deployed ocean gliders (autonomous, unmanned underwater vehicles). In addition, Montclair researchers drafted and began testing their surveys for recreational fisheries. Other projects, include deployment of a broad network of acoustic telemetry receivers, extensive eDNA sampling, seal tagging, and acoustic monitoring of large whales, and are expected to begin later this year across the outer continental shelf. Sea turtle tagging, whale satellite tagging, and several other projects are also in developmental stages.

Regional coordination has been an important component of offshore wind work and is critical to making informed decisions in this rapidly advancing field. We have formed cooperative relationships with scientists from academia, the Bureau of Ocean Energy Management, National Oceanic and Atmospheric Administration (NOAA), Greater Atlantic Region Fisheries Office, NOAA Northeast Fisheries Science Center, New York State Research and Development Authority, ROSA, RODA, Woods Hole Oceanographic Institution, and various states' fisheries offices as well as the input of commercial and recreational anglers.

BUREAU OF MARINE FISHERIES

Jeffrey Brust, Chief

The Bureau of Marine Fisheries is responsible for developing and implementing management programs to 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 then 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

American Eel Research

In 2015, the Bureau of Marine Fisheries (Bureau) developed and conducted an annual survey on yellow eels (i.e., young American eels) in their nursery habitat to collect data on abundance. This study complements the Bureau's existing glass eel (post-larval) survey by sampling multiple life stages and determining suitable adult habitats. Sampling takes place in Great Bay for two months each year during spring and fall. Pots are baited and left undisturbed for 48 hours before an average "count per catch" is determined. This data is then used to calculate overall abundance. Since survey efforts began eight years ago, population numbers have varied without trend except for FY23's above average estimate.

Now that the survey framework is well established, staff have recently expanded research objectives to include a tagging program. By tagging individuals, biologists can collect information about growth rates and movement as well as document recaptures. Passive Integrated Transponders, or PIT tags, are inserted into the belly of each eel before release. Each eel caught is scanned first to determine whether or not a tag is present and then measured, weighed, and released. To date, 172 yellow eels have been tagged and released.

A small sample of eels captured are used to collect age information. After the sex of each is determined, biologists examine the swim bladder for the presence of *Anguillicola crassus*, an invasive parasite. The need to assess the health of the swim bladder is extremely important because damage to this organ is considered a threat to the sustainability of the population. Impaired swim bladders reduce the likelihood of silver eels (mature yellow eels) reaching their

spawning site in the Sargasso Sea (a region of the Atlantic Ocean off the eastern United States). To date, 17% of all yellow eels examined were infected. Studies will continue to monitor eel health in Great Bay.

Biologists trap, measure, weigh, and tag eels before releasing them back into the water. The data collected is vital to making state and regional management decisions for American eel.

Striped Bass Tagging Program

The U.S. Fish & Wildlife Service's Atlantic Striped Bass Cooperative Tagging Program is a partnership between state and federal agencies from North Carolina to Massachusetts. Through the combined efforts of these member states, striped bass are tagged and released to gather information on migration, growth, and survival. The information collected is vital to sustainably managing striped bass along the coast.

New Jersey DEP Fish & Wildlife's Bureau of Marine Fisheries (BMF) has participated in the program since 1989 tagging over 35,000 fish, mostly in Delaware Bay. The program relies on the public to report any tagged fish they catch and to date, nearly 9,000 fish tagged in New Jesey have been reported recaptured from as far south as Cedar Island, North Carolina and as far north as Thomaston, Maine.

Biologists generally use drifting gill nets to catch striped bass in Delaware Bay during March and April. Over the past 10 years, there has been a steep decline in the numbers of striped bass caught and tagged in the survey as compared to relatively stable, high catches in the 1990s and early 2000s.

A number of factors are likely at play here, but milder winters and warmer water temperatures in Delaware Bay seem to correlate with higher catches shifting to earlier in March and trailing off as the waters warm in April. Taking this into consideration, staff decided to start the 2023 tagging survey a month earlier in February. The results were significant. In 2023, BMF staff tagged the second highest number of striped bass (276) since 2011.

Similar shifts in the temporal and spatial distribution of striped bass have been experienced by other agencies participating in the coastwide tagging program highlighting the importance of continuing these efforts to monitor any variations due to climate change. The earlier shift in migration is just one way climate change is muddying the waters for fishery managers, but modifying the survey to capture the peak migratory period will provide valuable information that will help managers discern population changes due to fishing and other influences.

The catch, tag, and release of striped bass.

Bluefish Stock Assessment

NJ Marine Fisheries staff served as chair of the ASMFC Bluefish Stock Assessment Committee, the entity responsible for reviewing the status of bluefish populations along the mid-Atlantic coast. The committee is comprised of state, federal, academic, and non-governmental organizations, as well as several chair-invited analysts. Due to pandemic concerns, the full group met virtually for more than 20 meetings between July 2021 and November 2022 before the draft assessment passed peer review and was updated in June 2023.

During the course of these meetings, several changes were made to the way data and population modelling is handled. Modifications were made to better characterize population dynamics as well as calculate natural mortality estimates, commercial and recreational discard mortality, and abundance. Committee members also dedicated much time and effort to engage the fishing public and build consensus on the importance of healthy, sustainable bluefish stocks along the coast.

The committee also explored the relationship between forage fish and the availability of bluefish as a fishery (both commercial and recreational). The results were remarkably similar to anecdotal reports from anglers indicating that bluefish are available to the fishery for several years at a time, then unavailable for several years on a cyclical basis. While this work was not formally adopted for management, it may find potential use in future conservation efforts.

BUREAU OF MARINE HABITAT AND SHELLFISHERIES
Russ Babb, Chief

The Bureau of Marine Habitat and Shellfisheries (BSF) directs shellfish harvest and propagation programs along the Atlantic Coast and in Delaware Bay. Biologists work with other New Jersey DEP Fish & Wildlife bureaus as well as various state and federal agencies on marine habitat conservation and shellfisheries management activities. Staff members also work closely with the New Jersey Shellfisheries councils (Atlantic Coast and Delaware Bay) on these issues. In addition, the Bureau is 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

Delaware Bay Oyster Management Program

The Bureau of Marine Habitat and Shellfisheries' staff continued to manage the 2022 direct market oyster harvest in Delaware Bay. In February, staff participated in a workshop at Rutgers University to assess the health of the oyster population. Stock status was determined *good* with the fishery considered *sustainable* by the Stock Assessment Review Committee (SARC), which consists of scientists, DEP biologists and managers from around the region. As a result of this meeting, the SARC recommended an oyster transplant and that Bureau staff continue their population enhancement efforts. After a 29,500-bushel seed transplant, the final harvest quota for 2022 was set at 104,157 bushels. As the season progressed, staff coordinated a 110,000-bushel shell planting across two natural oyster reefs. By the end of the year, 104,157 bushels were harvested with extremely high daily catch rates. This overall healthy oyster population led to a quality harvest season for the direct market industry.

Oyster dredge vessel moving seed for New Jersey DEP Fish & Wildlife as part of an oyster reef enhancement project.

Shell Recycling Program

Unloading recycled shell collected from Atlantic City restaurants.

Staff continued developing the Shell Recycling Program (SRP), adding two new partners in FY23 – the Atlantic County Utilities Authority and the Casino Reinvestment Development Authority, while maintaining partnerships with the Jetty Rock Foundation, Stockton University, and the Rutger's Cooperative Extension. Additionally, the program expanded to collect shell from five casinos and three local restaurants in the greater Atlantic City area and is currently in discussions with additional venues. Before this program, clam and oyster shell from these establishments were sent to area landfills. Through the SRP, the shell is now beneficially used as cultch material planted on the Mullica River oyster reefs, which are one of the last self-sustaining oyster reefs on the Atlantic coast of New Jersey. The planted shell will allow for the expansion and continued growth of this resilient oyster population. Bureau staff currently pick up shell from participating locations once a week on a mutually agreed upon schedule. Bureau staff also continue to seek grant opportunities to expand the program, including additional participants, increased outreach and education opportunities, and public drop-off sites. The SRP provides New Jersey DEP Fish & Wildlife with an excellent platform to engage and educate the public on the importance of marine environmental stewardship. To date, the program has recycled nearly 250 tons of shell and planted an estimated 350 tons of recycled/purchased shell on area oyster reefs.

A barge and water cannons are used to plant recycled shells onto New Jersey's oyster reefs.

Shellfish Aquaculture Lease Committee Finalizes Report

Over the course of two years, the Atlantic Coast Section of the New Jersey Shellfisheries Council (Council) reconvened its Shellfish Council Lease Policy Committee (ACLC) to discuss the Bureau's concerns regarding the proper management of shellfish leases, especially in light of the rapid changes taking place within the shellfish aquaculture industry.

In March of 2020 and in an effort to address outstanding issues as well as current changes within the industry, the Council tasked the ACLC to focus on the following topics: developing effective utilization criteria for leases, an efficient allocation process for new leases, procedures for transferring existing leases and the need for lease expansion as well as regulatory amendments applicable for shellfish leasing. The ACLC was also asked to update the current shellfish lease agreement, integrate public notification and associated comments during the lease application process and consider the creation of new leases.

The ACLC met a total of seven (7) times and over the course of these meetings were able to achieve important consensus with the Bureau on some minor topics as well as healthy and constructive discussions on broader issues, but were just not able to reach a mutual agreement on changing policy regarding lease utilization and some of the other challenging concerns raised by the Bureau.

The Bureau views a number of these issues as critical to improve the State's and Council's shared responsibility in managing these leases. In short, the two parties were at an impasse on a number of important subjects. As a result, the Bureau hopes to reconstitute a new committee and try to tackle these issues again in 2024 because if not addressed adequately, industry development will most certainly be hampered.

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 New Jersey DEP Fish & Wildlife's pheasant and quail stocking operations and advises the public on ways to reduce 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 which relies on it to determine New Jersey's annual hunting and trapping regulations.

Highlights

Staff Training

Several new staff members were hired through a $1.5 million appropriation from Governor Murphy for black bear research, and wildlife control and response efforts. Each employee was required to successfully complete specialized training that included two weeks at the Morris County Police Academy for intensive self-defense and firearms training as well as a week-long intensive first aid course. They also completed chemical immobilization training from the San Diego Zoo Wildlife Alliance Academy.

During research efforts, metal ear tags are inserted to identify individual bears.

SARS-CoV-2 in Cervids Study

Staff participated in a nationwide cooperative study with the U.S. Department of Agriculture's (USDA) Animal and Plant Health Inspection Service to sample wild white-tailed deer for the SARS virus. Biologists took 715 blood and 749 nasal swab samples from hunter-harvested deer collected by participating game butchers throughout the State. Of the total, 12 blood and 54 swab samples tested positive.

New Jersey was one of 16 states to find positive results in deer. Currently, the USDA has no plans to extend SARS-CoV-2 deer surveillance into the 2023-24 deer season. A final report of the findings will be published in the future.

Deer Hunting Regulation Simplification

After extensive data analyses vetted through the Fish and Game Council, the Bureau has formulated suggested changes to New Jersey's complicated, and often-times confusing deer hunting regulations. The proposed changes would make hunting in New Jersey easier to understand and less costly. Preliminary conversations with constituents are in progress for regulatory changes that would occur during the 2025-26 deer hunting season.

Endangered and Nongame Species Program

Kathleen Clark, Acting Chief

The Endangered and Nongame Species Program (ENSP) was created in response to the New Jersey Endangered Species Conservation Act of 1973, which is celebrating its 50th anniversary! More than 80 endangered and threatened species inhabit the Garden State and the ENSP is committed to conserving this biological diversity by working to maintain and foster endangered and threatened populations as well as protect the unique habitats on which they depend. The program is also responsible for administering the State Income Tax *Check-Off for Wildlife*, which benefits this important work.

Highlights

New Jersey Wildlife Tracker, Online Now!

In FY23, ENSP launched the New Jersey Wildlife Tracker (NJWT) system which allows the public to easily report rare wildlife sightings online. These modern capabilities have allowed ENSP to transition from cumbersome paper files to a completely electronic flow of information – from an individual's observation report to a biologist's review, and eventual entry into the Biotics Rare Species Database. Once entered into the database, the sightings are used for critical habitat mapping that helps our agency monitor population trends over time, guiding the recovery of rare wildlife species across the state.

The NJWT also accepts observations of wildlife on roadways (dead or alive), which is important for the Connecting Habitat Across New Jersey (CHANJ) project to identify road barriers and target solutions that will improve wildlife corridors. The new NJWT system can also accept photos, videos, and PDF documents associated with a sighting record. Once the information is submitted, it is reviewed by biologists before it is entered into a database. The ability to report road-killed wildlife is consistent with a new national standard currently being developed as part of the federal Infrastructure Law. Learning where wildlife is trying to cross roadways informs agencies of problem areas and heightens awareness of the need for wildlife habitat connectivity.

Freshwater Mussels

Freshwater mussels are one of the most imperiled wildlife groups in the nation and are suffering significant declines, mainly due to degradation of aquatic habitats. In New Jersey, seven species are listed as endangered or threatened, including the federally endangered dwarf wedgemussel.

Freshwater mussels as a group are sensitive to changes in water quality and flow, but also rely on specific fish that serve as hosts to young larval mussels called glochidia. Each mussel species has a unique connection to the freshwater fish community and specific stream sediment characteristics, but they all function to filter and improve water quality. In 2022, ENSP intensified surveys for the brook floater, a candidate for federal listing, and ended up discovering two new populations.

ENSP biologists are active in regional working groups to build conservation programs for the brook floater, yellow lampmussel, dwarf wedgemussel, and mussels occupying the Delaware River Basin. In addition to identifying and protecting mussel habitat and water quality, biologists are on the lookout for invasive species like the silty pondmussel and are working to prevent their spread in the state.

Wood Turtle

New Jersey has two species of endangered/threatened turtles (excluding sea turtles): the bog turtle and wood turtle. As relatively secretive species, they can be difficult to find, let alone measure their population abundance and trend. Over the last ten years, ENSP biologists have worked on collaborative conservation for the wood turtle – state ranked as threatened and a species of regional concern in the Northeast. This collaboration has resulted in guidance for conservation planning and implementation, including the Status and Conservation of the Wood Turtle in the Northeastern United States (2014) and the Conservation Plan for the Wood Turtle in the Northeastern United States (2018) studies.

Photograph of the elusive wood turtle seen here traversing some watery terrain.

The latest standardized population monitoring protocols now allow biologists to detect positive or negative trends in turtle populations, including response to management, such as the creation or enhancement of nesting areas. Biologists are also using a new conservation approach known as Conservation Area Networks to identify and rank important wood turtle populations where wildlife managers can focus their work. In FY23, ENSP biologists used the standardized protocols to collect baseline demographic data at four priority Conservation Area Network sites. The information collected will be used to establish new and individualized management plans for each site.

The power of our regional collaborations for wood turtle and other turtle species has multiplied the value of federally funded grants, and helps track our conservation work in a quantitative way that facilitates and informs adaptive management. We can, and are, making progress on conservation objectives for the wood turtle here at home, and throughout the species' entire range.

Office of Fish and Wildlife Health and Forensics

Dr. Jan Lovy, Research Scientist
Dr. Joseph Groff, 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 New Jersey DEP Fish & Wildlife'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.

During the fall of 2022, New Jersey DEP Fish & Wildlife said goodbye to Dr. Jan Lovy and Dr. Nicole Lewis. In June 2023, the agency welcomed Dr. Joseph Groff as New Jersey's new fish pathologist.

Highlights

Annual CWD and EHD Surveillance

Annual surveillance continued for Chronic Wasting Disease (CWD) in New Jersey's white-tailed deer population. CWD is a fatal neurological condition found in white-tailed deer and other members of the deer family. Rapidly transmissible between animals, it is vitally important that the presence of CWD remains outside of New Jersey's borders. This year, 1,048 samples were collected and tested from harvested deer. All were found negative, and New Jersey continues to be a CWD-free state.

In late FY22 and early FY23, Epizootic hemorrhagic disease (EHD) was confirmed in three counties: Atlantic, Gloucester, and Cumberland. Classified as serotype 2, it was the same strain as last year's outbreak. EHD is a viral disease of white-tailed deer transmitted by biting midges (commonly known as no-see-ums). Unlike CWD, EHD is not spread directly from deer to deer. Although this outbreak appeared less significant than the preceding year, it affected more deer than in previously recorded years.

Atlantic Menhaden Study

A manuscript was completed and submitted for publication by Dr. Jan Lovy on the results of a study to understand the cause of seasonal Atlantic menhaden mortalities off the New Jersey coast. Three separate events associated with dead and dying fish were related to a bacterial infection of the brain and other body systems. The bacterium was identified as *Vibrio anguillarum*. Further collaboration with the U.S. Geological Survey and the U.S. Department of Agriculture determined that the bacterial strain was potentially lethal to Atlantic salmon and was being spread by the menhaden population.

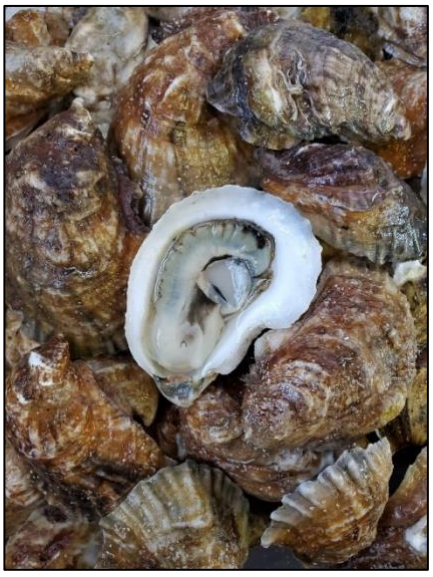
Fish Hatcheries

Annual health inspections of the state's two fish hatcheries were completed, and both facilities tested negative for all pathogens tested. The fish were screened for viral diseases, including Viral Hemorrhagic Septicemia Virus (VHSV), Infectious Hematopoietic Necrosis Virus (IHNV), Infectious Pancreatic Necrosis Virus (IPNV), Spring Viremia of Carp Virus (SVCV) and Largemouth Bass Virus (LMBV). Fish were also tested for several bacterial agents, including Aeromonas salmonicida, Yersinia ruckeri, and Renibacterium salmoninarum (bacterial kidney disease in salmonids). Salmonids were also screened for the parasitic agent Myxobolus cerebralis, the source of whirling disease.

Black Sea Bass Surveillance

Surveillance for Viral Nervous Necrosis Virus (VNNV) in Black Sea Bass continued in FY23. A total of 304 fish were collected in collaboration with staff from the Bureau of Marine Fisheries' Artificial Reef Program. Positive samples were verified, and progress was made on sequencing the genetic composition of the virus. Attempts to isolate the virus through cell culture will be performed at Seattle-based Western Fisheries Research Center in the future.

Shellfish Pathogen Surveillance



The Office of Fish and Wildlife Health and Forensics regularly monitors oyster populations for a variety of diseases.

New Jersey DEP Fish & Wildlife's Shellfish Pathogen Surveillance program along the New Jersey coast was coordinated in collaboration with the Bureau of Shellfisheries. Oyster sampling focused on four sites with 60 oysters evaluated from each. Screening for Dermo disease (*Perkinsus marinus*) revealed 55 cases with infection rates ranging from rare to heavy. Most of the infected cases (41) were classified at the rare level, which poses low biological significance to the organism. Another course of testing was also performed to identify Dermo, MSX (a gill disease caused by *Haplosporidium nelsoni),* and SSO (an infection caused by *Haplosporidium costale).* The results indicated 32 cases of dermo, 26 cases of MSX, and 57 cases of SSO. The inconsistency in Dermo case numbers could be attributed to varying results between testing methodologies which has occurred in years past and variable distribution of the parasite within oyster tissue.

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

New Jersey DEP Fish & Wildlife Receives Four Awards

New Jersey DEP Fish & Wildlife's Wildlife Habitat Supporter Program received two awards at the annual

In FY23, New Jersey DEP Fish & Wildlife received four awards at the Association for Conservation Information's (ACI) annual conference in Lake Tahoe, California. The agency took third place in the *Communication Campaign – Educational* category for its Black Bear Outreach Campaign; third place in the *Communication Campaign – Marketing* category for the 2022 Wildlife Habitat Supporter Program; third place in the *Website* category; and third place in the *Graphics: Advertising/Display* category for Wildlife Habitat Supporter Program Signs.

ACI is a non-profit organization of natural resources communicators dedicated to furthering natural resource conservation and the exchange of ideas and information. The organization is made up of professionals representing state, federal and Canadian natural resource agencies as well as private conservation organizations.

The annual awards contest recognizes excellence and promotes craft improvement through competition, with professionals from the public and private sector evaluating all entries and offering written, constructive critiques. Staff from the Bureau of Information and Education attended the conference and accepted the awards on behalf of the agency.

NJFW's website also received an award.

Breaking Barriers with the Sisters Afield Program

In 2022, New Jersey DEP Fish & Wildlife ran a six-session pilot program to engage women and their children through a variety of skill building fishing workshops. Evaluations from the pilot were overwhelmingly positive, and New Jersey DEP Fish & Wildlife has added this new initiative for women and their children, now entitled *Sisters Afield*. Part of the Hooked on Fishing program, *Sisters Afield* strives to remove perceived barriers for women with children who come from ethnically diverse backgrounds, particularly women of color.

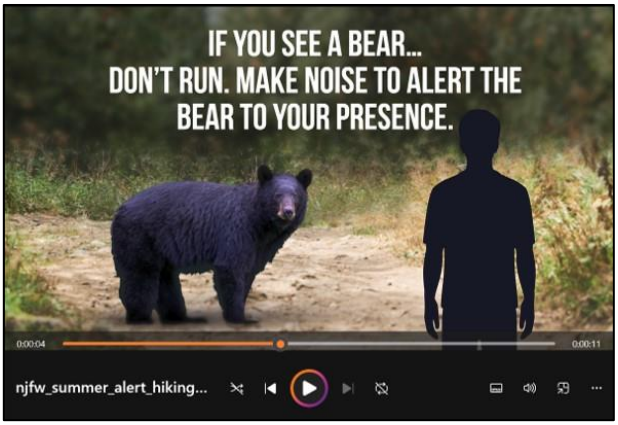
Sisters afield introduces women with children to the outdoors providing a foundation for future recreational opportunities and an ongoing community of support.

As recent national and state research suggests, today's mothers are frequently looking for healthy, outdoor activities to engage their children. However, many do not have enough of a foundation and meaningful comfort level with the outdoors, particularly fishing, to overcome the seemingly intimidating barriers to participate. While this program targets women of color, it is designed so that all interested women with children are welcome to learn the art of angling as a life skill, and build an ongoing community of support for outdoor recreational activities. A Sisters Afield program was offered in July 2023 at the Sedge Island Natural Resource Education Center off Island Beach State Park in Ocean County. The weekend program offered women and their children an opportunity to explore the nearby salt marsh through fishing, clamming, and kayaking. Feedback was extremely positive, and more sessions will be scheduled in the future.

FY23 Black Bear Outreach

In FY23, the DEP allocated $288,000 to black bear public outreach enabling New Jersey DEP Fish & Wildlife to continue contracting with a marketing firm and expand upon the success of the previous fiscal year's statewide multimedia outreach campaign. The current campaign launched in March 2023 with promotional efforts scheduled to run through November. The

campaign was strategically timed to coincide with peak bear activity periods during the spring, summer, and fall seasons. New media messages were developed to raise awareness among residents and communities about the importance of reducing bear attractants in their surroundings (i.e., trash, pet food, animal feed and bird seed) and providing key safety tips for successfully coexisting with black bears. The campaign's media mix included ads targeting bilingual communities utilizing social media, video, radio streaming, PSAs and e-mail blasts on multiple platforms and devices.



This year's revised campaign includes a study of changes in human behavior resulting from outreach efforts.

A new component of the FY23 campaign was the implementation of a behavioral analysis study to assess the changes in residents' behaviors resulting from the marketing campaign, including the adoption of bear-proofing techniques based upon the campaign's messaging. The study consisted of two key phases. A pre-campaign survey was conducted during the spring marketing segment to establish a baseline understanding of residents' behaviors and attitudes related to bear attractants and safety. A post-campaign survey will be conducted to evaluate changes in behavior and awareness, which may result in mitigating potential conflicts between humans and black bears in New Jersey.

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 (OMCC) is based in New Jersey DEP Fish & Wildlife's Trenton office. The OMCC coordinates state-funded programs that provide aid to county mosquito control agencies and serves as a public face on all state mosquito control matters. Actively collaborating with New Jersey DEP Fish & Wildlife's various bureaus and across DEP is a priority, as is maintaining existing professional standards and developing new methods of mosquito control. These efforts ensure that county-based mosquito control agencies throughout the state are improving the public's quality of life by reducing mosquito populations in environmentally sensitive ways.

Highlights

Addressing Operational Challenges

Public health mosquito control operations have yet to fully recover from the impacts of COVID-19. County programs around the state continue to feel the strain of balancing the need to protect the public from mosquito-borne illnesses with the complications caused by longer breeding seasons, increased costs, reduced staff, and unchecked mosquito production following tropical storm activity.

Retaining staff willing to perform field work following this post COVID-19 remote working environment has become extremely challenging for some programs. Employees want more flexible working conditions and the ability to work from home, but unfortunately, these opportunities are limited within professional mosquito control operations. In addition, replacing properly credentialed staff lost through attrition continues to be an issue.

In FY23, the Commission was committed to addressing these local program needs as well as providing scientific support as staff slowly transitioned back to fulltime work in the office, laboratory, and field settings. Emergency services and assistance was also provided to address the significant amount of flooding that occurred following several tropical storm events. The state's arboviral data system *JerseySurv* (which tracks virus infections caused by insects such as mosquitoes and ticks) continues to assist in safeguarding public health and safety in the Garden State.

Screening Samples

Throughout the summer, staff continued to partner with several state, county, and university laboratories to screen mosquito samples as well as equine and avian blood samples for mosquito-borne viruses. Ongoing surveillance provides a critical early warning system for county mosquito control response efforts.

Sampling results indicate that FY23 was a relatively normal year for West Nile Virus (WNV) in New Jersey. The season got off to a late start and extended well into the fall. Because the sampling process tests pools of similar mosquito species and not individuals, the numbers are best understood when broken down into groups. Out of the 7,693 pools submitted for analysis, 609 tested positive for WNV.

Statewide testing for Eastern Equine Encephalitis (EEE) virus revealed a relatively inactive year. A total of four positive mosquito samples were detected out of a sampling of 7,532 mosquito pools.

Mosquitoes were also tested for Jamestown Canyon Virus (JCV), another type of encephalitis. Testing for JCV began in 2019 following activity seen in adjacent states. FY23 testing revealed three positive mosquito samples from 7,343 pools. Positive samples were detected in Bergen (2) and Sussex (1) counties. Having only been testing for JCV for a few years, we are still analyzing the annual virus activity in New Jersey. To date, there are no clear patterns in the data.

By far, of all mosquito-borne viruses in our state, WNV and EEE present the greatest risk, although the travel-associated introduction of Zika, Chikungunya and Dengue viruses also pose concerns. These exotic viruses are detected here in global travelers each year, but fortunately, local mosquito-borne transmission has not occurred in our state. As part of DEP's continued Zika Virus Initiative, public awareness and outreach activities continue to prepare residents for the potential introduction of this disease. Since the federal grants earmarked for Zika virus support have expired, these educational efforts as well as the surveillance and control of exotic mosquito species are now supported through the State Mosquito Control Commission.

Biological Control

The Office of Mosquito Control Coordination continued its collaboration with New Jersey DEP Fish & Wildlife's Bureau of Freshwater Fisheries to supply multiple species of mosquito larva-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. This past season was impacted by the availability of fish at the time county programs were able to stock them. As a result, county programs stocked 170,979 fish in FY23, a decrease from the previous year, and considerably lower than recent trends over the past five years.

Source Reduction

Managing mosquitoes using the manipulation of water (preventing stagnant pools and/or creating water bodies that support predacious fish populations) remains the most cost effective and permanent means of safeguarding public health. The Office of Mosquito Control Coordination continues to provide support for these important efforts. Likewise, the State Mosquito Control

This brand new Kubota excavator is the latest addition to the Commission's Equipment Use Program.

Commission supports these activities through its Equipment Use Program. Securing, testing, and providing specialized mosquito abatement equipment to county programs in need is a top priority. To further these efforts, the Legislature approved a $3 million supplemental appropriation in FY23 to allow the Commission to make significant investments in the program (i.e., critical funding for new equipment, repairs, etc.).

Targeting Mosquitoes from Above

In FY23, the State Airspray Program experienced a relatively slow season with 19 state contracted missions. This program is primarily focused on controlling immature mosquitoes in expansive fresh and saltwater habitats exposed to heavy rains and tidal activity. When conditions warrant, however, special operations directed at adult mosquitoes (especially when the rate of transmission is greatest) are offered to county programs in need of assistance. This year, six county mosquito control programs requested aerial services.

Office of Business Administration

Kim Springer, Chief

The Bureau of Business Administration is comprised of five units, all supporting the mission and daily operations of New Jersey DEP Fish & Wildlife: Office of Accounting, Grants and Contracts Unit, Office of Fish and Wildlife Information Systems, Office of Environmental Review, and Licenses and Permits Unit.

The Office of Accounting and the Grants and Contracts Unit are responsible for all financial accounting of New Jersey DEP Fish & Wildlife's revenue and expenditures. The agency relies primarily on funds derived from the sale of hunting and fishing licenses and related stamps and permits. It also receives substantial federal funding from the Wildlife and Sport Fish Restoration Program. These dedicated-use funds, distributed as grants by the U.S. Fish & Wildlife Service, are a combination of manufacturer excise taxes on firearms, ammunition, archery and fishing equipment, motorboat fuels and small boat motors. Through their purchases, shooters, anglers and boaters participate in a unique "user-pays/user-benefits" system.

The Office of Fish and Wildlife Information Systems develops and maintains geographic data, conducts geospatial analyses, creates web mapping applications, and provides GIS assistance to guide important habitat conservation strategies, and support fish and wildlife management throughout the state. All of these web applications are accessible on New Jersey DEP Fish & Wildlife's website and much of the data published is available on DEP's Open Data site.

The Office of Environmental Review (OER) evaluates and coordinates the review of various projects, plans and policies to ensure that New Jersey's fish and wildlife resources are protected. These projects can include flood control and dredging, the construction/expansion of highways, sanitary landfills and water supplies, and residential/commercial development. OER routinely participates in DEP's permit coordination process and uses the Permit Readiness Checklist to help identify potential issues related to the protection of fish and wildlife resources. In addition, OER is responsible for reviewing and issuing letters of support for projects that align with New Jersey DEP Fish & Wildlife's mission and goals.

The Licensing and Permits Unit is responsible for managing the New Jersey Electronic Licensing System (NJELS) and overseeing licensing agents. New Jersey DEP Fish & Wildlife uses NJELS to issue hunting and fishing licenses and permits available for purchase online and at participating license agents.

The following chart illustrates revenue, appropriations, and expenses for FY23.

FY23 DFW ANNUAL REPORT

RESOURCES	
General State Fund Appropriation Hunters & Anglers	4,852,000
General State Fund Appropriation Shellfish and Marine Fisheries	4,154,000
General State Fund Appropriation Endangered Species	227,000
Subtotal GSF Appropriations	**9,233,000**
Hunters & Anglers Licenses/Permits	13,320,309
Lease Revenue	1,304,668
Endangered Species Revenue (License plates and Tax checkoff)	369,645
Waterfowl Stamp Revenue	123,080
Miscellaneous Dedicated Account Revenue (Exotics, Sedge Island, Hooked on Fishing, Pump Out)	375,056
Shellfish and Marine Licenses/Permits	702,877
Subtotal Revenues	**16,195,635**
Federal Salary & Fringe Reimbursements	4,858,976
Federal Operating Funds	7,616,837
Carryforward funds available from prior years- Recurring Non-Federal accounts	4,590,929
Funds reserved or reverted by Treasury	(663,349)
Non-Federal reimbursements and transfers	5,375,581
Subtotal Federal & Other funding	**21,778,974**
TOTAL RESOURCES	**47,207,609**
EXPENDITURES	
Hunters & Anglers Salaries (Includes seasonals, overtime, clothing allowances)	13,437,101
Shellfish and Marine Fisheries Salaries (Includes seasonals, overtime, clothing allowances)	4,972,050
Endangered Species Salaries (Includes seasonals, overtime, clothing allowances)	1,081,804
Hunters & Anglers Fringe Benefit costs assessed by Treasury Office of Management & Budget	10,386,989
Miscellaneous Dedicated Expenditures (Exotics, Sedge Island, Hooked on Fishing, Pump Out)	591,754
Waterfowl Stamp Expenditures	110,000
Hunters & Anglers Operating (equipment, repairs, fuel, utilities, licensing vendor…)	4,428,162
Shellfish and Marine Operating (equipment, repairs, fuel, utilities...)	1,077,667
ENSP Operating (equipment, repairs, fuel, utilities...)	43,574
Federal Operating Expenditures	7,514,904
DEP Assessments (Deputy Attorney Generals, DEP Division of Information Technology, Office of Administrative Law, Environmental Research Library, Office of Information Technology, Rent, Training Office)	1,104,302
TOTAL EXPENDITURES	**44,748,307**
***BALANCE**	**2,459,302**

*Reflected balance includes funds in recurring nonfederal accounts dedicated for specific purposes. Information as of 8/14/23.

Office of Fish and Wildlife Information Systems

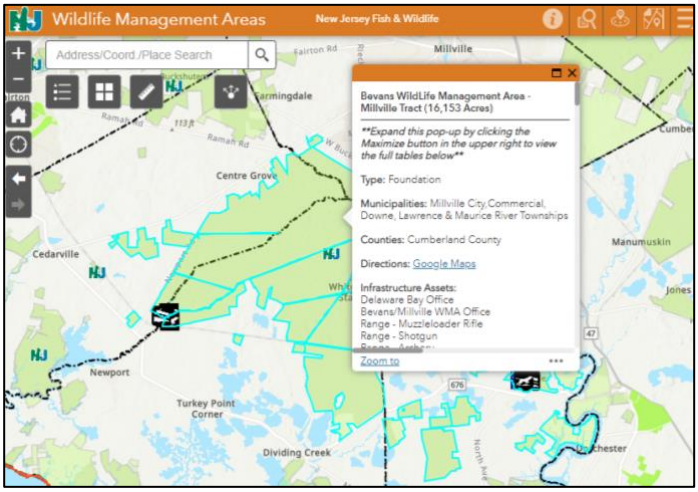
Patrick Woerner, GIS Specialist

The Office of Fish and Wildlife Information Systems (OIS) develops and maintains Geographic Information Systems (GIS) data, provides geospatial analyses, designs web mapping applications, and provides vital assistance to help guide strategic habitat conservation decisions and support fish and wildlife management throughout New Jersey.

Highlights

Wildlife Management Area Explorer

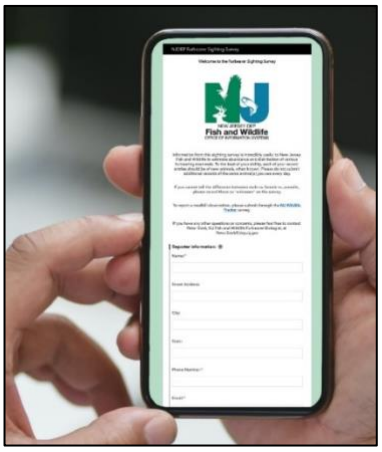
In September 2022, OIS enabled the Wildlife Management Area Explorer, a tool that allows outdoor enthusiasts to identify the natural resources found on a specific wildlife management area (WMA). Through the Explorer tool, users can select an area and learn about the endangered and threatened wildlife and plant species present, existing habitat types, and hunting and trapping zones as well as state and regional habitat conservation priorities. The WMA Explorer tool also provides users with interactive maps identifying amenities such as shooting ranges, dog training areas, boat ramps, fishing access sites, roads, parking lots and more.



The Wildlife Management Area Explorer is an interactive mapping tool that allows users to identify the natural resources found on an area along with other detailed information.

Wildlife Sighting Tools

In November 2022, OIS developed Furbearer Sighting and Upland Game Bird Sighting Survey reporting forms so that the public can submit their observations online. Nature enthusiasts are encouraged to share their information on beavers, otters, coyotes, gray foxes, fishers, muskrats, and weasels. Upland game species sightings of interest include American Woodcock, Northern Bobwhite, and Ruffed Grouse.



Location and other details collected from the survey help biologists estimate the abundance and distribution of populations to inform key wildlife management initiatives.

Drone Applications for Fish and Wildlife Conservation

Designed primarily for agriculture, this particular drone model is ideal for habitat/vegetation analysis.

Small Unmanned Aircraft systems (sUAS), commonly referred to as drones, have played an increasingly important role in geospatial data collection and analysis. In FY23, OIS established an New Jersey DEP Fish & Wildlife Drone Program with two FAA-Certified drone pilots using a high precision, multispectral drone with state of the art location accuracy.

To gain proficiency, OIS staff worked with the DEP Bureau of GIS (GIS) on flight training and safety awareness. OIS also partnered with GIS, the Division of Science and Research, and Rowan University on its first project focusing on salt marsh vegetation health. OIS staff also collected imagery at ten sites within the Greenwood Forest WMA Quail Area before forestry management activities were conducted as part of a stewardship conservation plan.

Staff practice their drone operating skills.

Office of Environmental Review
Kelly Davis, Principal Biologist

The Office of Environmental Review (OER) 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 species and their habitats. Biologists also review and provide recommendations for 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 provides input to federal agencies including the United States Army Corps of Engineers, Federal Energy Regulatory Commission, United States Department of the Interior's Bureau of Ocean Energy Management, Federal Aviation Administration, and the Department of Defense.

Highlights

The OER works closely with DEP's Bureau of Climate Resiliency Planning and the New Jersey Office of Planning Advocacy in reviewing municipal applications for Plan Endorsement approval status. Through the Plan Endorsement process, staff assesses a municipality's existing conditions, demographic trends, and resources as well as the consistency of its planning and zoning documents in relation to the overall state plan. Such endorsement is critically important when reviewing proposed development plans to carefully plan growth where possible and limit development in environmentally sensitive areas as well as preserve fish and wildlife resources and the habitat corridors that connect them.

During FY23, concerns over the Gloucester County Landfill Solid Waste Complex Expansion Project in Gloucester Township and the Combe Fill South Remedial Design Project in Chester (Morris County) led to conversations with DEP's Bureau of Solid Waste Permitting regarding the protection of grassland bird and pollinator habitat on these former landfill sites. The sites will eventually provide grounds for solar panels that can generate carbon-free electricity for New Jersey's power grid.

As a result of these discussions, OER in consultation with New Jersey DEP Fish & Wildlife's Endangered and Nongame Species Program, provided comments on the DEP Division of Solid

Former landfill sites can provide suitable areas to place solar panels.

and Hazardous Waste's framework document *"Guidance for the Permitting of Solar Energy Systems on Landfills in New Jersey."* Through its involvement, OER provided valuable counsel to assist in the protection of grassland bird and pollinator habitat during landfill closure, post closure care, and solar energy installations. The guidance document is intended to positively influence the design of future installations, field maintenance operations, and ultimately enhance the use of these areas by grassland bird and pollinator species throughout the state.