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WISCONSIN DEPARTMENT OF NATURAL RESOURCES
2023 STATE REPORT
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BUREAU OF WILDLIFE MANAGEMENT

Staffing

During the course of the calendar year 2022, the Bureau of Wildlife Management experienced 21 positions being vacant or a 14% vacancy rate. These positions ranged from Wildlife Section Supervisors to Wildlife Technicians.

Across the Agency and specifically within the Wildlife Management program, a significant focus was put on filling vacant positions around the state over the last year. Specifically, within Wildlife Management, the following positions were filled:

- 3 Wildlife Section Supervisors
- 2 Statewide Staff Specialists
- 6 Wildlife Biologist positions
- 4 Wildlife Technician positions
- 2 Wildlife Conservation Educators

Although significant progress was made on filling vacant positions, the following positions were vacant during a portion of the calenda year with the goal of filling them during the 2023 calendar year:

- 1 Communications Specialist
- 1 Deer Herd Health Specialist
- 2 Wildlife Technicians

Wolf Management Plan

The department began efforts to update the state wolf management plan shortly after the January 4th, 2021, federal de-listing of gray wolves, which returned management authority of

gray wolves to the states and tribes. Gray wolves were subsequently federally re-listed on February 10th, 2022, however work continued unabated to update WI's Wolf Management Plan. Since February 2022 there has been much work to create a draft wolf management plan and the public comment period on that draft plan closed in early 2023, and the WDNR published the comments on our website. In total, we received around 3,500 comments. Staff are currently reviewing comments and considering edits to the proposed plan. A final plan will go before the Natural resources board for approval in the fall of 2023.

Sharptailed Grouse Management Plan

Sharp-tailed grouse are managed as a game species in Wisconsin and are listed as a Species of Greatest Conservation Need due to habitat loss, and other factors that may threaten the persistence of the species. Fragmentation of large blocks of open landscape, ecological succession, and conversion of habitats to other uses are likely the main factors contributing to this decline. Other potential factors include genetic degradation, over-harvest, and disease. In Wisconsin, sharp-tailed grouse exist primarily on a core group of six managed barrens public properties and scattered private lands. Long-term population declines and range contractions provide the greatest evidence of need for an updated conservation and management plan for sharp-tailed grouse. Conservation genetics research demonstrating that Wisconsin sharp-tailed grouse have significantly reduced genetic diversity, high levels of inbreeding, and genetic isolation provide additional urgency.

Therefore, the WDNR Sharp-tailed Grouse Working Group and Advisory Committee, was charged with revising and updating the Wisconsin Sharp-tailed Grouse Management Plan. Membership of both the working group and committee is comprised of DNR representatives as well as other state, county, federal, tribal, and non-governmental agencies and partners. This effort began in the winter of 2022 with the overarching goal to ensure a managed sustainable population of sharp-tailed grouse in Wisconsin, by implementing landscape level habitat strategies within the Northwest Focus Area. The plan to accomplish this goal is by focusing management and research efforts on the existing core range of sharp-tailed grouse in northern Wisconsin, specifically the Northwest Focus Area. Further, the vision for this overall management effort is to develop and facilitate a voluntary and cooperative partnership among public and private organizations to ensure the long-term viability of sharp-tailed grouse populations in Wisconsin through an ecological landscape and conservation area, or focus area, approach.

Greater Prairie Chicken Management Plan

Greater prairie chickens are one of the most unique and charismatic wildlife species in Wisconsin. Landscape-level land use changes have caused large shifts in the range and abundance of prairie chickens, finally resulting in their isolation in a small portion of central Wisconsin. In recent decades the range and population have shrunk even further, raising questions about, and generating new research regarding their long-term sustainability and viability in the state. The WDNR initiated an update to the 10-year Greater Prairie Chicken Management Plan in 2020 and after consultation with the public, numerous conservation organizations, researchers and the Natural Resources Board, the management plan was approved in June 2022. Information in this plan covers: Greater Prairie-chicken biology, threats to the

species, summary and assessment of the 2004-2014 management plan, current management, public use, monitoring, prior and future research, and finally a plan for future management based on a suite of four management alternatives that were presented to the public and Advisory Committee for consideration during the first draft phase of the plan. An implementation plan is currently in the process of being drafted and incorporated into on the ground management.

Elk Management Plan

There are currently two wild, free-ranging elk herds in Wisconsin established through reintroduction efforts. The northern elk herd (formally called the Clam Lake herd) originated in 1995 as an experimental release conducted by the University of Wisconsin – Stevens Point. Management of the herd was transferred to the WDNR in 2000 and has been guided by the Management Plan and Environmental Assessment for the Clam Lake Elk Herd (2000). A second reintroduction effort established the central elk herd (formally called the Black River herd) in 2015 and management is guided by the Black River Elk Herd Management Plan and Environmental Assessment (2001). The Clam Lake and Black River Elk Management Plan Amendment (2012) provided updates to the original management plans and has guided management efforts most recently. Significant changes to elk management have occurred since the original approval of these plans including interstate translocation efforts, establishment of an elk hunting season, and new research efforts. These changes and learned knowledge have led to the need for and development of this updated plan.

The Wisconsin Elk Management Plan, 2023-2033 was developed by members of the WDNR elk advisory committee which includes representation from WDNR staff with various expertise and a diverse team of stakeholder organizations and tribal partners including the WI Conservation Congress, WI Wildlife Federation, Rocky Mountain Elk Foundation, Great Lakes Indian Fish and Wildlife Commission, Ho-Chunk Nation, University of Wisconsin, US Forest Service, USDA APHIS Wildlife Services, WI State Cranberry Growers Association, WI Farm Bureau Federation and others. This committee met frequently from 2018-2022 to evaluate past management plans, identify previous successes and challenges, and establish management objectives and strategies to guide elk management through the next decade using the best available ecological and social science, public input, and expertise of committee members.

The Elk Advisory Committee reviewed the updated plan in November 2022 and supported seeking NRB approval of the plan. The recommendations in this plan attempt to balance the desires of all residents in Wisconsin and within the elk management zones where support for the elk herds remain high. Approval of the Wisconsin Elk Management Plan 2023-2033 will allow the Department and their elk management partners to most effectively manage our state's growing elk herds through the completion of the management objectives and strategies found within the plan.

Chronic Wasting Disease – Surveillance and Management Efforts

A four-year statewide chronic wasting disease (CWD) surveillance sweep was completed in 2021. Following this sweep, 2022 CWD surveillance targeted counties in the state where CWD was known to be established as well as localized surveillance areas surrounding more recent wild and/or captive CWD positives. As a result, 17,179 deer were tested with 1,491 CWD-positive samples detected. CWD continues to be detected in new areas of the state with

initial wild deer CWD positive detections occurring in Buffalo, Langlade, Waupaca and Winnebago counties during the 2022 surveillance year.

The Wisconsin DNR's CWD automation effort, allowing hunters to submit data associated with CWD samples through their Go Wild account, continued for the third year. Utilization of the electronic data submission option continued to increase with approximately 17% of all sampled deer in 2022 having data submitted through the online form compared to 13.4% in 2021. Efforts to increase hunter usage will continue.

During the nine-day gun deer season, there were 238 total CWD sampling locations available to hunters, including 175 self-serve kiosks (20 enrolled in the adopt-a-kiosk program), as well as many businesses and Wildlife Management staff statewide that provided CWD sampling by collecting lymph nodes or the entire head of a hunter-harvested deer.

In addition to CWD sampling opportunities, the WDNR advertised a total of 160 carcass disposal locations statewide, including 69 dumpsters in the adopt-a-dumpster program, 48 dumpsters hosted by the department, and the remaining disposal options administered by private companies or municipalities.

Conservation Agriculture

Significant efforts are underway by field staff to implement a revised farming agreement and neonicotinoid policy to educate cooperating farmers on what the new requirements are and why there is now a neonicotinoid prohibition on public lands. Key requirements in the farming policy include soil sampling, nutrient management, soil conservation plans, and cover cropping. Demand for conservation farming, haying and grazing agreements continues to grow as pressure from urban expansion continues to tighten land resources available to rent. A WI DNR Conservation Grazing Strategy is being finalized for implementation in CY2023. Additional grazing plans and agreements are under development with cooperating farmers who are investing equity in public land sites.

Deer Management Assistance Program (DMAP)

Wisconsin's Deer Management Assistance Program (DMAP) aims to foster relationships with land stewards by partnering to implement sound habitat and herd management practices to meet landowner goals. To accomplish this, DMAP staff provide site visits, site-specific management plans, and education and outreach events, amongst other benefits, to its members. In 2022 alone, DMAP conducted over 200 site visits reaching more than 27,000 acres. The team also provided 15 education and outreach opportunities including writing a monthly newsletter which averaged over 1,500 readers. Despite limited marketing, the program continues to grow - enrollment as of April 2023 is 3,040 members spanning 499,700 acres. The program's popularity has necessitated the need to review its objectives and operations to ensure it stays relevant and beneficial to its members while accounting for staff capacity. To guide this process, we've hosted a series of focus groups with DMAP staff and members as well as external partners to help identify the program's future direction.

Habitat Strategy

The Wildlife Management program is dramatically revising how habitat work is prioritized and funded statewide. Historically funding to work areas was relatively static with smaller funding pools competitively allocated via submitted projects. Starting in July 2022, the program allocated nearly all funding based on project submissions in a semi-competitive format. Projects are developed by field biologists and evaluated based on newly developed Habitat Management Guides and Priority Maps. The Guides delineate the primary management goals and techniques utilized on several high priority cover types: Barrens, Bottomland Hardwoods, Grasslands, Oak Forests, Wetlands, and Young Forests. The Priority Maps spatially delineate High, Medium, and Low priority areas for each of these cover types statewide. Funding is preferentially allocated to High Priority geographies for a given cover type first, whereas Low Priority areas are generally not considered for funding. The implementation of this prioritization process will be refined, additional cover types included, and habitat quality evaluation metrics will be developed in the coming year. Long-term, High Priority areas will have habitat goals developed that are tied to measurable, time-explicit objectives. The goal of this process is to focus increasingly limited resources towards areas where gains can be made for the greatest overall ecological and social benefit.

Public Lands

In 2022, Wildlife Management acquired 1,127 acres within 11 property project boundaries (42 of which were easement acres) for almost $1.9 million. We are on deck to acquire approximately 1,800 acres in conjunction with an NRCS wetland reserve enhancement program easement. The Voluntary Public Access & Habitat Incentive Program and the Turkey Hunter Access Program provide almost 40,000 acres of public access on private lands through leases with 200 + Wisconsin landowners. This program is made possible by the Federal Farm Bill. WDNR has received grant funds 3 times in the last 10 years to continue this vital program for public hunting, fishing, trapping and wildlife observation. The current grant will expire in 2024; we are hoping the next Farm Bill provides significant funding for this program across the nation. In 2022, over 30 Adopt a Wildlife Area groups collectively logged almost 800 hundred hours to help Wildlife Area property managers control invasive species, manage litter, maintain property infrastructure, restore habitat (on land and in stream) and more on 30 properties.

Wetland Habitat

Wildlife Management currently manages approximately 1,000 impounded wetlands across the state. Resources and staffing capacity are limited to adequately manage all of them to meet today's standards. The program is currently conducting a review and prioritization of wetland infrastructure to divest in low priority infrastructure and focus available resources on the highest priority impounded wetlands. To increase capacity, the WM Program has established new contract partnerships with Ducks Unlimited (DU) and Wisconsin Waterfowl Association (WWA) to assist in engineering and biological services for wetland infrastructure and wetland restoration design. These partnerships are meeting the missions of the state and these organizations. DU and WWA are bringing funding and resources to the table for this work. Spatial wetland Infrastructure and restoration priorities are guided by the Wisconsin

Waterfowl Habitat Conservation Strategy, a plan stepped down from the Upper Mississippi River and Great Lakes Region Joint Venture and North American Waterfowl Management Plan NAWMP waterfowl plans.

Highly Pathogenic Avian Influenza

The department monitors for avian influenza in free-ranging wild birds in Wisconsin throughout the year through investigations of wild bird mortality events involving five or more birds. In 2022, due to the detection of Highly Pathogenic Avian Influenza (HPAI) in North America, the DNR, in cooperation with the USDA-Wildlife Services, USFWS and a few licensed wildlife rehabilitators, enhanced surveillance efforts based on apparent species susceptibility, reported clinical signs and proximity to any reported mortality events in wild or domestic birds. The circulating strain of HPAI was detected in numerous domestic and wild birds from 54 of the 72 counties within Wisconsin (51 counties had wild bird detections). The largest mortality event from HPAI occurred during June in and around nesting colonies of state-endangered Caspian terns on islands in Door County. Mortality estimates included >1000 Caspian terns, >800 double-crested cormorants, >90 herring gulls, and >60 American white pelicans. Additionally, a few cases of HPAI in Wisconsin mammals were detected including red fox kits, bobcats, , fisher, otter and a mortality event of 11 skunks. All of the affected mammals observed alive showed neurological signs.

BUREAU OF FISHERIES MANAGEMENT

Adaptive Management Plan for Panfish

In 2016, Wisconsin began an experiment to study the effects of 3 reduced bag limits on bluegill and black crappie size structure on 94 lakes where overharvest was a concern. From 2020-2022, biological data were collected, and stakeholder evaluations were conducted. Size structure improvements were most dramatic and consistent in lakes that were assigned the most restrictive regulation of the 3 tested: a daily bag limit of 15 panfish with no more than 5 of any species. Stakeholders included those who participated in focus groups on a subset of study lakes, those who received surveys while visiting a study lake, and a random sample of all Wisconsin anglers – all groups generally supported the use of reduced bag limits to improve size structures, although a notable number of anglers still would prefer liberal bag limits. Evaluations will continue through 2023 and the Wisconsin DNR will be proposing updated rule packages that follow from study results in 2024, which if approved would take effect when the experimental regulations end in 2026.

Brook Trout Reserves

Brook Trout are an integral part of Wisconsin's natural legacy, culture, and identity. Climate and stream models (FishVis, A regional decision support tool for identifying vulnerabilities of riverine habitat and fishes to climate change in the Great Lakes Region) project a decline of 68% of the stream habitat for Brook Trout by the mid-century. Using information from the Wisconsin Department of Natural Resources (WDNR) Fisheries Information System and Climate Science

modeling tools, the WDNR Fisheries Management identified 54 sub-watersheds at the HUC 12 level where Brook Trout have the best chance of enduring the effects of climate change and other environmental perturbations. These HUC-12 sub-watersheds were designated as Brook Trout Reserves. The selection process utilized riparian land use and cover via the newest release of Wiscland2; contemporary (2007-2014) brown and brook trout catch per effort data from 2007-2014; modelled stream temperatures and brook trout occurrences-Fish Vis (https://ccviewer.wim.usgs.gov/FishVis/#)l; WDNR managed lands and project boundaries; and Fishtail, an index characterizing stream fish response to urban and agricultural land use as characterized by the 2006 National Land Cover Dataset: https://ccviewer.wim.usgs.gov/FishTail/#. Assembled data were group into the following themes: 1) Contemporary conditions and resilience to climate change; 2) Riparian and sub-watershed land use quality; 3) Degree of current protection and level of management opportunity; 4) Competition from non-native salmonids; and 5) conservation genetics. The designation of reserves enables the WDNR and its partners to focus their specific tools to ensure that Brook Trout remain viable in the state. The resulting BTRs cover 205 sub watersheds and represent the most resilient 33% of statewide brook trout habitat under 2050 climate change projections. In 2022 the Fisheries Program pursued additional State and Federal funding for streambank easement acquisitions and riparian reforestation in the BTRs. Additionally in 2022 the Fisheries Program acquired 4 Streambank Protection Program easements within the Brook Trout Reserves totaling 2.46 stream miles of riparian and instream habitat protected. The Fisheries Program is currently pursuing additional State and Federal funding for streambank easement acquisitions and riparian reforestation in the BTRs.

Inland Trout

From July 1st, 2021, to June 30th, 2022, fisheries management staff completed 127 trout stream habitat improvement projects on 76 streams totaling just over 64 miles. Of the 112 projects completed, 6.5% restored aquatic connectivity, 8% involved maintenance and repair to existing projects for damaged caused material decay or recent flood events, 18.5% were intensive instream habitat projects, and 67% were vegetation management projects along the riparian corridor. Staff also completed trout habitat work on 3 spring ponds totaling 3 acres. Many of these habitat projects are completed with the assistance from volunteers and external partnerships.

Staff also conducted 474 rotational trout surveys on 90 streams and 273 trout trend surveys on 164 streams to assess Wisconsin's inland trout populations.

Great Lakes

Lake Michigan staff worked with staff from the Office of Applied Science to update the Lake Whitefish stock assessment model for Lake Michigan and Green Bay during the course of 2022. New data were added and other structural improvements were made to the stock assessment model. Using the model output, staff applied the total allowable catch (TAC) recommendations to the regulation framework to develop commercial fishing zone specific quotas. Both the TAC and zone specific quotas will be finalized in late spring/early summer 2023.

The Lake Michigan Commercial Fish Board has expressed interest in opening a commercial fishery for lake trout in Lake Michigan. Fisheries department staff initiated a Lake Michigan Lake trout stakeholder group to provide input on the request. This stakeholder group and other interested public met four times to hear presentations and ask questions about the lake trout population, movement and biological data based on the mass marking program, and the stock assessment model. Staff also worked with partners in the Lake Michigan basin to develop TAC recommendations for lake trout based on a method developed, used, and reviewed by other partners.

A new electronic charter reporting application for reporting effort and catch information on Lake Michigan and Lake Superior was developed during 2022 and will be rolled out to Charter captains in May 2023. This regulation change will help reduce staff time required to enter data from paper forms and may help collect more accurate and timely data.

In 2022, we completed our fishing assessments for both Lake Superior and Lake Michigan.,

Fish Contaminants Program and Consumption Advisories:

The Fisheries Management Program continues to monitor contaminant levels in fish from waterbodies across the state and are currently focusing on locations with known or suspected contamination issues. While monitoring for mercury and PCBs is still occurring at a baseline level, sampling for PFAS (per- and polyfluoroalkyl substances) has become more prevalent. As we understand more about the impacts of this class of contaminants on human health through consumption of contaminated fish, the Program has been dedicating the majority of the funds allocated for contaminants monitoring to PFAS.

Between January 1, 2022 and December 31, 2022, the Fisheries Management Program, in consultation with the Department of Health Services, have issued multiple fish consumption advisories across the state (see list below). Online versions of the Choose Wisely publication are updated with each new advisory, and the printed version is updated every 2 years. An updated printed version of the Choose Wisely publication is planned for summer (2023).

Waterbodies with PFAS-related advisories issued since January 1, 2022:

- La Crosse River at Angelo Pond, Monroe County
- Green Bay (rock bass)
- Wisconsin River at Lake Mohawksin
- Wisconsin River at Castle Rock Lake

Stocking:

Fisheries staff raised and stocked over 6 million fish during 2022. We are working with private aquaculture facilities to both purchase and make available surplus fish for stocking on the landscape. Our newest facility at Kettle Moraine Springs Hatchery in Sheboygan County, Wisconsin is experiencing continued wastewater equipment issues and pretreatment procedure issues for critical equipment. Our new facility will have the capacity to rear 340,000 steelhead for stocking into Lake Michigan waters as well as starting half of our Coho salmon production

during the year. We will be utilizing recirculation aquaculture technology to efficiently use the available ground water.

Walleye Plan:

The update to the statewide Walleye management Plan is complete and final and the DNR's Walleye Team is now in the implementation phase of the new Plan.

- We have already made progress by setting up a GovDelivery list to stay in touch with stakeholders to provide updates, additionally we have generated a list of Walleye fishing guides that we can consult with
- We are currently in the process of setting up a workshop to discuss walleye restoration strategies with key partners.
- We plan on conducting a regulation toolbox review and possible update in 2023.

Finally, we are completing a stocking evaluation for the Wisconsin Walleye initiative. In 2021 and 2022 fisheries staff completed their first two rounds of making population estimates in lakes that have been part of the Wisconsin Walleye Initiative. Data collection efforts will continue over the next several years. Individual lake data may be used to adjust or discontinue stocking in that particular lake, but full evaluation and recommendations from the effort are not expected until 2026-27.

The fisheries program will be examining how much contribution the fall fingerling walleye have to adult populations, assessing why stocking is successful in some places and not others, and endeavoring to determine optimal stocking rates based on the type of lake receiving stocked walleye. The program will also be looking to identify those adult populations that were created from stocking that are now successfully naturally reproducing at a level that could sustain the population without additional stocking.

OFFICE OF APPLIED SCIENCE (Wildlife and Fisheries Research)

The Office of Applied Science (OAS) provides original research and consultation services on priority fish and wildlife management and conservation needs. The OAS team of research scientists, biologists and technicians work to supply the agency and stakeholders with objective, applied science to support decision making. The scientific information provided by OAS is used by the Fish, Wildlife and Parks Division and its management programs to inform decision making, manage fish and wildlife populations, determine harvest frameworks and inform conservation policy. OAS staff lead multiple research projects and leverage resources through collaboration with universities and other government agencies. These collaborations extend the scope and breadth of our research portfolio. OAS research is published in peer-reviewed scientific journals, in DNR technical reports and provided through customized products to support the work of agency committees and decision makers. Below are some highlights of current research projects and initiatives within OAS. In 2022 OAS filled 3 key research scientist positions (Waterfowl, Furbearer, and Inland Fisheries) and are now at a full complement of 10 fish and wildlife research scientists. In addition, we created a Decision Science unit and launched several new research projects and research consultation efforts that support key future conservation decision points. Examples of some of the OAS portfolio of projects are described below. Additional information about OAS projects can be found on the WDNR website by searching for the keyword "research".

Decision Science

OAS provides tools and resources to assist FWP programs in making conservation and management decisions through our decision science sub team. Decision science draws from multiple scientific fields, including economics, psychology and mathematics, providing a framework to support transparent, robust decision making. Using decision science tools, such as Structured Decision Making, we can evaluate how well outcomes will meet objectives and help decision makers weigh options. In 2022, OAS completed two decision science consults in collaboration with the Wildlife Management Program (CWD response plan update) and Fisheries Management Program (Fisheries Strategic Plan).

Reassessing the Predator-Prey Balance on Lake Michigan

Maintaining balance between predator and prey populations is critical for successful salmonine fisheries management in Lake Michigan. Control of stocking rates is likely the most important tool available to the managers of Lake Michigan salmonine fisheries. Stock assessment modeling has been used to estimate Lake Michigan salmonine and prey abundances and evaluate predator–prey balance. Alewives (and to a lesser extent rainbow smelt) have historically been the major prey fish for salmonines, but lately prey abundance has shifted for some species. Thus, the predator–prey interactions and balance need to be reevaluated. Data inputs include annual stocking numbers and annual biological/fishery data for salmonines. Annual relative abundance from bottom trawl and hydroacoustic surveys and up to date diet data are also used as model inputs. To be useful in the future, fishery models require updating in light of new data, changes in the prey community and associated shifts in salmonine feeding ecology and population dynamics.

Ecological Factors That Influence Walleye Recruitment in Ceded Territory Lakes

Over the last few decades, walleye have been declining in certain northern Wisconsin lakes, but not across all northern lakes. It is unclear what characteristics of a lake determine whether the walleye population will remain stable or decline. In an effort to understand what factors determine a lake's success, researchers are comparing the characteristics of successful walleye lakes to lakes that are in decline. Staff are sampling lakes across the Ceded Territory of Wisconsin. All of these lakes have had historically stable walleye production. However, some have recently gone into decline. Comparing lakes that used to be productive to lakes that remained productive will be powerful for identifying the characteristics of successful and unsuccessful lakes. We will be characterizing habitat availability (aquatic vegetation, depth, woody habitat and shoreline development), lake productivity (phytoplankton and chlorophyll), primary forage availability (zooplankton) and relative abundance of fish species in the lake (forage, predators, competitors). In 2022 data from this project supported the statewide walleye management plan and in quota setting for walleye harvest in the ceded territory.

Snapshot Wisconsin

Since its statewide launch in 2018, Snapshot Wisconsin has grown to the largest trail camera network in the nation. This people-powered research project relies on volunteers to host trail cameras that take "snapshots" of wildlife as they pass by. Volunteers classify the species

from their trail cameras with help from crowd-sourcers on the online platform, Zooniverse. The data help DNR understand the distribution of wildlife populations around the state and make important wildlife management decisions. The project continues to grow, with outreach efforts focused on reaching diverse and non-traditional audiences. The project partners with nature centers and educators, connecting the public to the project and to the activities of the department. In addition to supporting management decisions, data from Snapshot Wisconsin has been made publicly available through an interactive Data Dashboard. This online tool offers both volunteers and the public a new way to explore our Wisconsin wildlife species. Currently, the data for 19 wildlife species is freely available. Anyone can discover how species are spread across the state, when they are most active, and how many sightings Snapshot has observed in each county.

Susceptibility of Ruffed Grouse Populations To Past And Projected Impacts of Rapidly Changing Winter

Because of ruffed grouse's popularity as a gamebird, it is a relatively well-studied species. However, much of this research focuses on aspects of habitat management, and less is known about how winter conditions influence their population dynamics. Recent research suggests that declines in snow cover and increased winter variability could lead to increased stress in the population and lower overwinter survival. At the same time, winter weather conditions are predicted to warm and have diminished snow cover. Additionally, an increased likelihood of extreme events is predicted to occur in the coming years. All of these changes represent an impending threat for the winter-adapted ruffed grouse. Our objective is to investigate the susceptibility of ruffed grouse to projected changes in winter variability and vulnerability of aspen and early-successional forests to increasing temperatures. We plan to use climate metrics like snow depth and weather severity to assess winter impacts on ruffed grouse occurrence, survival and population distribution. Field-based survival estimates and cause-specific mortalities will be recorded by staff and used to determine how the ruffed grouse population may react to future winter conditions.

Using Waterfowl Productivity And Movement Metrics To Assess Priority Watersheds In Wisconsin

The 2020 Wisconsin Waterfowl Habitat Conservation Strategy (WWHCS) provides guidance for targeted conservation of waterfowl habitat in Wisconsin. The strategy is informed by a spatial model that incorporates data on wetland proximity, ecosystem services, seasonal waterfowl distribution and relative abundance of waterfowl. These inputs are weighted heavily towards the distribution of waterfowl in Wisconsin, but no formal assessment of waterfowl productivity is included in the model. The WWHCS recognized the need to fill in research gaps and validate its decision support tool. This study aims to examine variability in breeding pair densities, nest densities and brood densities. It also will investigate habitat use and selection across the range of priority breeding habitats identified in the 2020 WWHCS. Simultaneously, the study will examine how robust the priority watershed designations are to variation in model weights and potential biases in the datasets.

BUREAU OF NATURAL HERITAGE CONSERVATION

Last year marked 40 years since the bureau was first created. The bureau is responsible for conserving Wisconsin's biodiversity, including a system of State Natural Areas that has grown to nearly 700 sites, thanks in large part to partners from agencies, universities, counties, local governments, and land trusts. One of the newest sites proposed for inclusion in the system will be called *Waazija Haci State Natural Area* - a name selected by the Ho-Chunk Nation, meaning "lives amongst the pines." This natural area represents a very small portion of what was formerly millions of acres of Ho-Chunk Nation's ancestral lands. The Ho-Chunk Nation currently owns land adjacent to the site, and bureau staff have collaborated with Ho-Chunk Nation on burning and other land management for several years.

The bureau recently completed a strategic plan. The bureau's mission remains centered around biodiversity conservation with a focus on non-game animal species, rare plants, high-quality examples of natural communities, and State Natural Areas. The biodiversity crisis and the increasing challenges to declining species will require continued adaptation and continued focus on the highest priorities. We will continue to look for new ways to fund this work and continue to build and maintain partnerships. We want people from all backgrounds to be involved in, and benefit from, our efforts, and we are working on ways to be more welcoming and inclusive. We want to help develop the next generation of conservation professionals, and we want our staff to better represent the state's more diverse population. Finally, we will need to do all of this while staying true to our mission of conserving the natural heritage of Wisconsin.

In 2022, like other years, our work was centered around on-the-ground habitat management and conservation efforts, documenting locations of rare species and high-quality habitats, data analyses, a variety of consultations, conducting research, and collaboration with many programs, agencies, industries, and individuals across the state. We also continued to facilitate the highly important efforts of many volunteers. Here are a few examples from 2022 that were included in a recent edition of Wisconsin Natural Resources Magazine.

Black-Necked stilt

The black-necked stilt (*Himantopus mexicanus*) was considered an "accidental" species in Wisconsin until the state's first confirmed breeding record occurred at the Horicon National Wildlife Refuge in 1999.

In 2019, the DNR and U.S. Fish and Wildlife Service began monitoring black-necked stilt nesting pairs in Horicon. Biologists documented 43 pairs this year. Now, Horicon may contain the largest concentration of nesting black-necked stilts in the Midwest and perhaps one of the largest of any site east of the Mississippi River.

Connecticut warbler

Connecticut warblers once numbered in the thousands in Wisconsin. Today, recent DNR surveys indicate only a handful of breeding pairs remain. In response, the DNR's Natural Heritage Conservation program is acting on several fronts. Work is underway with private and

public partners like the Bayfield County Forest to protect and enhance breeding habitat in mature jack pine stands. The DNR also has increased its investment in the Neotropical Flyways Project. This project works to identify and conserve critical migratory bird habitats in Central and South American wintering areas, where deforestation may be driving declines. Related to this work, we are participating in discussions to accelerate bird conservation across South America's Gran Chaco biome, the core wintering area for this species and other North American migrants.

Rainbow Mussel

Rainbow mussels, a rare species observed in only two Wisconsin streams since 2009, have been confirmed in one new southeast Wisconsin stream. Researchers from Carroll University were sampling a site on the White River, recording several mussels of various shapes and sizes, when students uncovered the buried treasure.The discovery of the rainbow mussel (*Villosa iris*) is part of a larger effort by the Wisconsin DNR, Illinois Natural History Survey and other federal, state and local partners to examine mussel populations and identify the most significant remaining mussel assemblages in the Fox River watershed. Genetic sampling and propagation activities also are underway to aid in rainbow mussel conservation.

Climate Adaptation Work: Wild Rice

The Spur Lake Working Group of DNR and partner stakeholders, including representatives from several local tribal nations, is continuing efforts to address climate change and hydrology impacts and bring back wild rice (*Zizania palustris*), also known as manoomin, to Spur Lake in Oneida County. Spur Lake, a Climate Adaptation Demonstration Site of the Northern Institute of Applied Climate Science, historically hosted a robust wild rice bed of biological and cultural significance, but that declined in the early 2000s.

This past summer, the Spur Lake Working Group took on a pilot restoration experiment, removing perennial vegetation from identified plots and seeding wild rice. The plots will be monitored for the next three to five years, with results informing future management efforts.

Wood Turtle

The DNR and West Virginia University are teaming up for turtles with a USFWS Great Lakes Fish and Wildlife Restoration Act grant. In 2021 and 2022, standardized population monitoring of the wood turtle (*Glyptemys insculpta*) was completed at 41 sites on tribal, state and federal lands in Wisconsin’s Great Lakes Basin, with environmental data also collected. Ongoing work with this crucial data will help predict species occurrence and guide future habitat restoration actions.

Eastern Prairie Fringed Orchid

The federally threatened eastern prairie fringed orchid (*Platanthera leucophaea)* reappeared in a state natural area near Oshkosh in 2022 following DNR and volunteer management at the site. It’s another shining example of what can be accomplished when DNR staff and volunteers unite.

After orchid numbers dwindled at the site, DNR and volunteers began habitat restoration, hoping the orchids would return. When volunteers discovered a single plant, a local conservation partner

was able to cross-pollinate it with a nearby population to improve genetic diversity and long-term viability of the species.

BUREAU OF PARKS AND RECREATION MANAGEMENT

Visitation and Annual Admission Sales

The Wisconsin State Park System (WSPS) continues to experience elevated visitation and camping reservations in 2022 compared to 2019 (pre-covid) levels, with an increase of 12% and 30% respectively. Parks and Forests remain instrumental for public health and wellness; the WSPS strives to provide opportunities for visitors to engage in outdoor activities and make our properties accessible and welcoming to all visitors.

Sales of Annual Admission passes have risen 36.7% since 2019 (pre-pandemic) to 2022, with a total of 474,553 Annual Passes sold during the 2022 season.

	2022	**2021**	**2020***	**2019**	**2018**
Sticker Type	Quantity Sold	Quantity Sold	Quantity Sold	Quantity Sold	Quantity Sold
Resident Annual	263,658	297,070	294,392	200,149	190,260
Resident Reduced Rate Annual	66,574	70,997	39,735	50,229	49,751
Non-Resident Annual	62,862	77,226	103,326	43,502	37,865
Senior Annual	81,459	81,935	63,845	53,271	48,658
Total Annual Stickers Sold	**474,553**	**527,228**	**501,298**	**347,151**	**326,534**
*Reduced admission pass sales season due to COVID restrictions					

Electronic Payment Kiosk Expansion

A prototype electronic kiosk was installed at Devil's Lake State Park, in March 2021, that dispenses an actual Resident Annual Vehicle sticker. The electronic payment kiosk program will be significantly expanded during the 2023 season, with the purchase of 28 more units. Like the unit at Devil's Lake, the new electronic kiosks will be able to dispense a Resident Annual sticker at the time of purchase. Existing kiosks will also be retrofitted to dispense stickers. Both the new and retrofitted kiosks will provide an enhanced customer service experience to customers throughout the State.

Camping Program

Interest in camping remained high in 2022. Camping occupancy increased during the pandemic despite system-wide closures necessitated by COVID-19. Occupancy dropped slightly in the current period but remained 30% higher than pre-pandemic.

	Calendar Year 2019	Calendar Year 2020	% Change, 2019-2020	Calendar Year 2021	% Change, 2019-2021	Calendar Year 2022	% Change, 2019-2022
# of Camping Nights Occupied	447,614	478,878	7%	611,250	37%	584,087	30%

- Occupancy rates were high, particularly during the peak season of Memorial Day to Labor Day, standard electric campsites were particularly in demand at 84% occupied. Standard electric campsites saw 97% occupancy on the weekends, meaning that any weekend vacancies were likely last-minute cancellations.

- Peninsula State Park had the most camping nights purchased and brought in the most revenue from camping. Devil's Lake State Park had the highest number of bookings

- The 2023 peak season is likely to be equally as busy, with more than 65,000 reservations (300,000 nights) already made for 2023. System-wide inventory is already 34% booked for the 2023 season.

Hiring

The WSPS continues to vigorously fill vacancies as opportunities arise. Starting in January 2022, the program had 62 hiring actions. This included seven property superintendents, 12 park managers, 33 park rangers, two educators, a statewide naturalist, a district supervisor, and two recreation operations supervisors.

While these hiring actions help put staff in vacant positions, many of these fills were internal transfers or promotions, so the program intends to continue to request additional authorization to fill vacancies as soon as funding becomes available. There are currently 20 vacant positions out of 201 total authorized FTE, representing a 9.95% vacancy rate. Due to spending authority, the WSPS is unable fill all authorized positions.

Administrative Code Updates: Management of Department Lands

The Wisconsin State Park System is in the process of making updates to Administrative Code NR 45. The Public Lands Team (PLT), which includes representatives from all land managing programs, Legal, and the Division of Public Safety and Resource Protection, is leading the initiative.

The initial request for comment resulted in over 400 proposal submissions from staff. Survey work on public sentiment towards select topics took place in 2021, in anticipation of this rule package, which included property opinionnaires and other staff and visitor topic-specific survey work. Topics covered in the rule package include camping, reservations and fees; drones; animals/pets; vehicles; noise; alcohol; and removal/damage to flora and fauna. General housekeeping modifications have also been made, along with adjustments to language to improve readability and understanding. The public input period is anticipated for late summer of 2023 and enactment of the revised Code is anticipated for Summer 2024.

Biennial Budgets and Capital Development Backlog

The WSPS's 21-23 biennial budget is wrapping up, along with previously funded projects in the 19-21 budget. The proposed 23-25 biennial budget was submitted and largely supported and included in the Governor's proposed budget. Budget requests total approximately $120 million, and this figure will likely increase as projects are updated and emergency projects arise.

The total backlog of outstanding Capital Development projects is estimated at about $1.2 billion and includes all unfunded projects from all bienniums, with the exception of the currently funded 21-23 biennium. Projects are broken down into the following categories: trails, roads, buildings, utilities, and recreational amenities. High priority projects to be completed in the next three years total $419 million, with an estimated additional $100 million need annually for at least 10 years. This cost does not account for fees, inflation, remote location or adjustments in materials pricing, so the figure is likely to increase. Projects are always being adjusted and added to the backlog as the need arises; this is a living document that will be forever changing.

Statewide Accomplishments

- Phase 1 of the Check Out Wisconsin State Parks at Your Library was very popular, and the program continues to grow with the 2023 Phase
- A partnership was established with Black Folks Camp Too to increase diversity among WSPS visitors and staff. By utilizing the "Unity Blaze" campfire symbol, the WSPS will show its commitment to "treating everyone, everywhere equally"
- The North County Trail triad agreement was signed by the Wisconsin Department of Natural Resources, National Park Service, and North Country Trail Association. This is the second such National Scenic Trail triad agreement in the state.
- Operation Fresh Start Conservation Academy crews honed their skills at Wisconsin State Park System properties. Participants in this program train alongside industry professionals to prepare for careers in conservation, land management, parks, forestry, etc.

- Open the Outdoors – the WSPS is dedicated to enhancing the experiences of our visitors by providing a variety of resources available to users of all abilities including accessible equipment, sensory experiences, and inclusive playgrounds
- Action Trackchair All-Terrain wheelchair at Peninsula State Park – in collaboration with the Kinect M1 Access to Adventure program, expanded mobility opportunities will be provided on designated hiking trails within Peninsula State Park
- Ownership and operation of Lizard Mound State Park was returned to the WSPS from Washington County. The 32-acre property, which is on the National Register of Historic Places, is home to 28 effigy mounds. The property is one of the largest and best-preserved collection of mounds in southern Wisconsin.

DIVISION-LEVEL ROADMAP INITIATIVE

In 2023, the Wisconsin DNR continued work on the Roadmap Action plan by establishing division-level teams tasked with providing recommendations to agency leadership in three key focus areas: Relevancy; Diversity, Equity, and Inclusion; and Employee Engagement. The Fish, Wildlife, & Parks Roadmap serves as an umbrella from which the six programs can collectively work to advance the three focus areas. The Fish, Wildlife, & Parks Division remains committed to science-based conservation and recreational work while also addressing priority emerging needs such as climate change. Those key priorities remain and are addressed in each program's strategic direction or plan. The Fish, Wildlife, and Parks Division has adopted six vision statements to support the roadmap goals and future desired state:

- We foster a sense of community and become a provider of choice for the outdoor opportunities and recreational resources that Wisconsin's diverse citizens and visitors value and seek.
- Our programs anticipate, recognize, adapt, and respond to changing societal trends, customer preferences, and "here and now" demands; continue to use the best available science and technology for effective decision making.
- Wisconsin citizens understand, value, and support what we do through ongoing political advocacy, diverse partnerships, sustained volunteer efforts, donations, and sustainable financial support.
- Our traditional user group and constituents take pride in their relationship with and support of our core activities and responsibilities, while also supporting efforts for growing our customer base through existing and future programs.
- Our staff recognize, understand, and reflect the diversity of our customers, Wisconsin's citizens and visitors.
- We interact in culturally appropriate ways with a diverse range of customers who are comfortable participating in Department programs, providing input for decision-making, accessing Department properties, and enjoying the recreational opportunities we provide.