

Wisconsin Department of Natural Resources



Fish, Wildlife and Habitat Management Plan

Guidance and direction for the Department of Natural Resources fish and wildlife conservation, management and recreation related activities funded under the Federal Aid in Sport Fish Restoration Act and the Wildlife Restoration Act.

October 1, 2015 – September 30, 2025

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I. PURPOSE, SCOPE AND DEFINITIONS

The Fish, Wildlife and Habitat Management Plan (FWHMP) establishes strategic direction for the Wisconsin Department of Natural Resources' fish and wildlife conservation, management and recreation related programs administered and funded under the Federal Aid in Sport Fish Restoration Act (SFR) and the Wildlife Restoration Act (WR) grant programs. This strategic plan satisfies federal requirements of 50 CFR Part 80 and Chapter 4 of the Fish and Wildlife Service Manual for States administering their SFR and WR grant programs under a Comprehensive Management System (CMS) grant, and will be used as decisions are made on the use of funds from those grant programs.

The scope of the FWHMP is on work funded by SFR and WR, along with funding used to provide the required 25% match for these funds. State match is primarily from state hunting and fishing license funds, land acquisition stewardship funds, and hunter education safety volunteer hours. In addition to providing direction for the specific aspects of the Wisconsin DNR's fish and wildlife programs under the CMS grant, the plan may also serve as guidance and as a resource for other related fish and wildlife programs, initiatives and projects.

The FWHMP is part of a portfolio of plans and reports that provide strategic direction and guidance regarding Wisconsin's biological communities and ecosystems. Other Department plans provide additional direction and serve as resource as fish and wildlife programs are administered and as projects and initiatives are developed and implemented. As appropriate, those plans were used as resources and references in the development of this document – and together with the specific direction provided in this plan – serve as the comprehensive guide for the activities funded under the CMS grant.

The FWHMP establishes Goals, Objectives and Strategies to support fish and wildlife conservation, management and recreation associated with:

- Sport fish, associated habitat, aquatic education and boating access,
- Wild birds and mammals and their associated habitat, and
- Hunter education and shooting range construction.

The FWHMP also describes some of the major Trends, Challenges, Opportunities and Strategic Issues that shaped the development of – and will influence the accomplishment of the Goals and Objectives.

For purposes of this plan, the term 'fish and wildlife' is defined as sport fish, wild birds and wild mammals. The goals, objectives and strategies that make up this plan are directed at species meeting that definition, and the habitat that supports those species. Many of the approaches in this plan recognize that to be successful it's important to focus at the ecological landscape scale in designing and implementing fish and wildlife conservation strategies – and therefore successful implementation of this plan will also benefit many fish and wildlife species and outdoor recreational activities that are not specifically covered under these grant programs.

In addition, the term 'hunting', includes all forms of lawful hunting under s. 29.001(42), Wis. Stats., and includes shooting with guns, cross bows, or bows, or capturing with traps. The term 'fishing' includes all forms of lawful fishing under s. 29.001(27) Wis. Stats., and includes fishing with lines and spear fishing and other lawful means.

2. DEPARTMENT MISSION, VISION AND VALUES

The Fish, Wildlife and Habitat Management Plan's goals, objectives and strategies are established under, and guided by, the Department's Mission, Values and Vision which define our purpose as an agency, guide how we do our work every day, set the standards for how we do our work, and envision what we are aiming to achieve in the future.

Mission

To protect and enhance our natural resources: our air, land and water; our wildlife, fish and forests and the ecosystems that sustain all life

To provide a healthy, sustainable environment and a full range of outdoor opportunities

To ensure the right of all people to use and enjoy these resources in their work and leisure

To work with people to understand each other's views and to carry out the public will

And in this partnership consider the future and generations to follow

Values

- *Integrity*
- *Professionalism*
- *Collaboration*
- *Respect*
- *Customer Service*

Vision Statement

We excel at protecting and managing natural resources while supporting the economy and the well-being of our citizenry.

3. PUBLIC PARTICIPATION

The Fish, Wildlife and Habitat Management Plan, and the Wildlife Action Plan which is currently being updated and is focused on rare and declining fish and wildlife species, are the key components of the Department's overall strategy for fish, wildlife, and habitat conservation and management for the next ten years. As such, providing opportunities for the public to share their views on fish and wildlife conservation – and listening to and considering those views – was integral to the development of these plans. The information resulting from the various public involvement efforts was reviewed, discussed and considered as the plans were drafted.

Because updated versions of the Fish, Wildlife and Habitat Management Plan and the Wildlife Action Plan were developed along the same timeline, and because these plans address specific but overlapping portions of Wisconsin's fish and wildlife resources, a decision was made to coordinate the development of these plans – including coordinating the steps taken to engage the public. This section briefly describes the public participation process used.

Public Participation Methods – Information regarding the development of the two plans was shared with the Conservation Congress, and their Fish and Wildlife 10 Year Ad Hoc Committee provided early input into the public participation methods – including serving as a pilot for the Cafés. They also helped us get the word out about the Cafés and online surveys.

In addition, briefing materials were provided at the statewide county meetings, and in May 2015, the Congress was briefed on the status of the plans. Information regarding the plans was also posted on the Department's website and Facebook page. In addition to sharing information with program partners and the public through these steps, two additional specific, public participation methods were used to further engage the public and solicit comments and ideas as the plans were developed.

Conservation Cafés

A series of community meetings - Conservation Cafes - were held at eight locations around the state during October and November 2014. These community meetings blended elements of focus groups, coffee chats, and planning meetings and were designed to bring together people with differing viewpoints to discuss a set of pre-determined questions.

The objective for the Conservation Cafés was to identify broad priorities and issues of concern among state residents regarding fish and wildlife conservation and management efforts over the next decade. Attendance at the Cafés varied by location, and while the numbers were lower than what we hoped, participation was similar to what we would have expected for a more traditional open house or public meeting on this topic. The Cafés provided a friendly, welcoming format where attendees had an opportunity to discuss topics in small, facilitated groups. Participants were overwhelmingly positive about the Café format (as measured by Café evaluation forms at the end of each event). The series of meetings revealed a number of recurring themes. The following themes capture the topics that were most frequently mentioned by participants as issues affecting fish and wildlife conservation they felt required Department attention.

Habitat protection

- Development
- Wildlife on private lands
- Invasive species
- Land acquisition

Environmental quality (emphasis on water quality)

- Concentrated Animal Feeding Operations (CAFOs) and agricultural practices
- Mining
- High-capacity wells
- Wetlands
- Phosphorus
- Climate change adaptation and impacts

Future of hunting and shooting

- Youth involvement

New partners

- Non-traditional partners
- Shifting demographics
- Emerging recreations: impact on habitat / land accessibility / land acquisition
- Regional perspectives

Questionnaire

In an effort to reach a wide audience and engage a larger number of citizens, an online questionnaire was developed to help identify issues of concern related to fish, wildlife and habitat conservation and management in Wisconsin. The opportunity to complete the questionnaire was widely publicized through emails, news releases, and on DNR's website and Facebook pages.

The questionnaire was available to the public in October and November 2014 for 30 days. Over 10,000 responses were received - which indicates success in reaching a very large number of people – and highlights the high level of interest in natural resource conservation issues in Wisconsin. It's important to point out that while the responses to the questionnaire provided a great deal of valuable information, it was not a 'scientific survey' sent to a randomly selected group, and it's therefore not possible to portray the responses as representative of Wisconsin's population in general or of any particular interest group. However, similar to information received through other types of public involvement methods – like public noticing a proposal and making it available for public comment – the information received is still very useful in providing some insights into what those who did respond think regarding the issues and helps shed some light on general trends regarding interests and views on these issues.

The majority of those completing the questionnaire indicated they participate in fish and wildlife recreational activities – (60 % said they participate in hunting or trapping, 80 % in fishing, and 84 % in wildlife watching) - as would be expected given the keen interest sportsmen and women have in how fish and wildlife are managed in the state, and the fact that they were more likely to receive information about the questionnaire from the various conservation organizations they are involved in.

Efforts to reach out to Hmong and Spanish respondents with translated version on the online questionnaire were not successful with less than 5 surveys completed among both translated versions.

Responses:

Following is a brief summary highlighting responses received.

Interest in fish and wildlife issues, public lands and sources of information:

- 72% indicated that Wisconsin's fish, wildlife and habitat was of great interest. Over half of the respondents agreed with the statement that there is adequate public hunting and fishing land near them, but 29% disagreed with the statement that those lands are well marked
- 37% indicated that public lands are well managed and 40% agreed that facilities are well maintained
- Respondents indicated that the top two sources of information regarding fish and wildlife issues are the DNR website and traditional media outlets such as TV, radio and newspapers
- About a third felt they were "well informed" about fish and wildlife conservation and management, more than half indicated they were "somewhat informed", and about 10% felt they were "uninformed".

Priority Concerns and Management Priorities -

Respondents were asked to rank a list of issues, identifying the top three issues that are of the greatest concern to them regarding the future of fish and wildlife in Wisconsin. Following are the results.

- Habitat Loss and Fragmentation - More than half of the respondents indicated habitat loss and fragmentation as their top concern
- Water Quality - 43% indicated this as their top concern
- Invasive Species - 34% of respondents identified this issue as their top concern

Respondents were also asked to weigh in on what activities and projects they felt should be the highest priorities for the allocation of available staff time and resources. Following are the results:

- Developing Fair Regulations – 62% indicated that this should be a top priority
- Scientific Research and Surveys – 55% indicated that resources should be dedicated to these activities
- Management Projects – 54% indicated that conducting on-the-ground management projects should be a top priority

In addition, respondents were asked to provide views on approaches to decision-making regarding natural resource management issues, and questions regarding funding for natural resource programs.

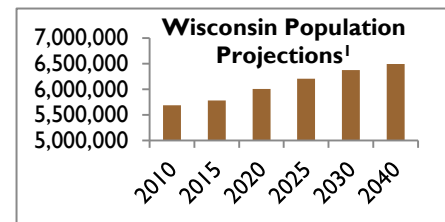
- Decision-making – 84% of respondents agreed that in making tough decisions on natural resource management, the DNR should strike a balance between considering the needs of future generations and the needs of today's citizens.
- Funding – 61% of respondents indicated that all citizens of the state should help pay for the management of state-owned properties. Eleven percent thought funding should be limited to those who harvest or otherwise use the resources on these properties.

4. TRENDS -

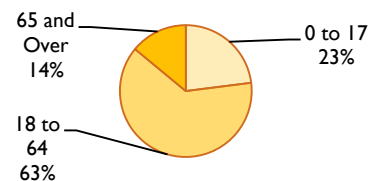
Following are some key trends that will affect fish and wildlife conservation, management and recreation activities in the future. These trends were considered as the strategic issues were developed - and will continue to be important as the goals, objectives and strategies included in this plan are addressed, as progress is evaluated, and steps are taken to adapt to changing conditions.

❖ **People**^{1,2,3} As Wisconsin's population grows, ages, and becomes more urban and diverse, additional opportunities and challenges that affect fish and wildlife management will arise. For example, changes in land use and increases in land development to accommodate a growing and shifting population will affect fish and wildlife habitat. In addition, an increasingly more diverse customer base may hold fish and wildlife management and recreational interests and views that differ from those of the current customer base, and public lands near urban areas will likely see more use as the population becomes less rural.

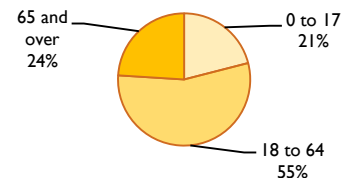
- From 2010 to 2025, Wisconsin's population is expected to increase by 6.8%.
- By 2040, the expectation is that the population will increase by 14%.
- During this same time period, the population will become progressively older with the share of those 65 and older increasing by 10%.
- The very elderly population—age 85 and over—will rise steadily.
- The median age of Wisconsin's population will increase to 42, versus 40 for the U.S.
- Wisconsin's population is expected to become more urban and suburban.
- Cities will contain the largest number and share of state residents in 2040 (3.5 million, 54%).
- Wisconsin's population will be more ethnically and racially diverse.
- The Hispanic population in Wisconsin and is projected to grow at a rate of 25% per decade.
- Over the next fifty years, the white population will decrease by roughly 300,000 people in Wisconsin, and the number of African Americans and Asians will each grow by about 75% over that same time period.



Wisconsin Population by Age Groups - 2010¹

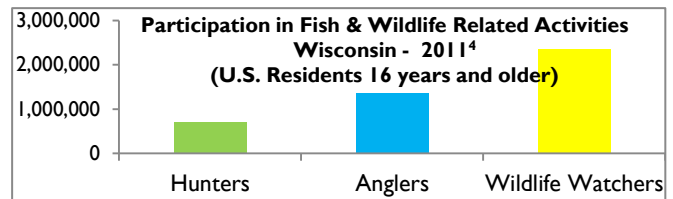


Wisconsin Population Projections by Age Groups - 2040¹



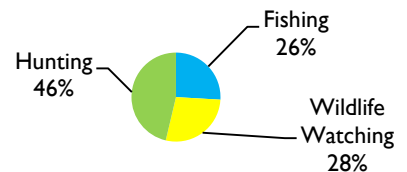
❖ **Participation in Hunting, Fishing and Wildlife Watching Activities** ^{4,5,6,7}

A strong tradition of hunting, fishing and wildlife watching has continued in Wisconsin, although similar to national trends, the number of hunters has declined, while the number of anglers has trended downward slightly. The number of people participating in wildlife watching remains strong.



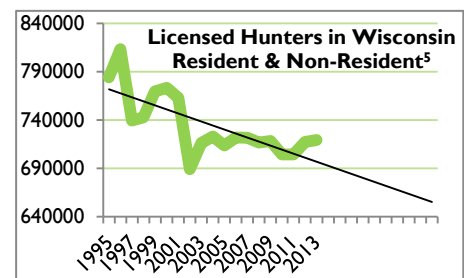
Expenditures - In 2011, state residents and nonresidents spent \$5.5 billion on fish and wildlife related recreation in Wisconsin. Of that total, trip-related expenditures totaled \$1.2 billion and equipment expenditures totaled \$3.1 billion. The remaining \$1.2 billion was spent on licenses, contributions, land ownership and leasing, and other items.

Fish and Wildlife Related Recreation Expenditures in Wisconsin - 2011
Total \$5.5 Billion⁴

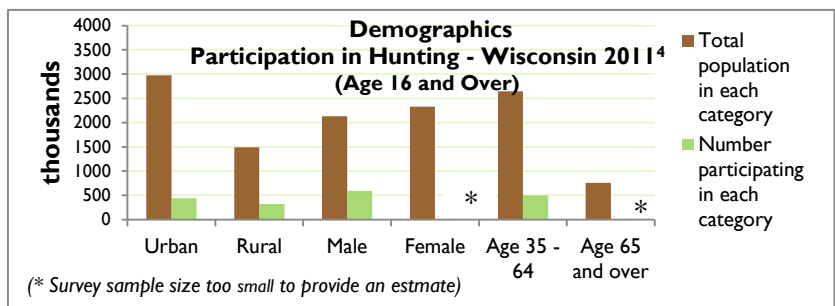


Hunting - Similar to national trends, the total number of hunters – along with the number of hunters as a percentage of the population - has declined over the past 20 years, and that trend is expected to continue. Hunting does, however, remain a strong tradition in Wisconsin and is important to the goals of wildlife management.

In 1995, 784,000 people held Wisconsin hunting licenses; in 1996, that number increased to 813,000. After 1995, the numbers fluctuated, until 2002 when the number of hunters decreased to 689,000 following the discovery of the Chronic Wasting Disease in Wisconsin’s deer herd. License sales have since recovered, with 719,100 licensed hunters in 2013.



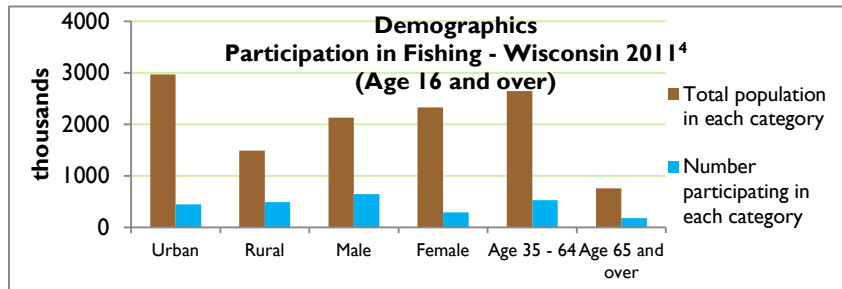
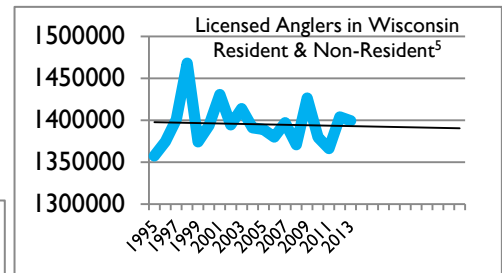
- The majority of hunters in Wisconsin are male
- About 28% of males over age 16 hunt, and about 15% of the adult population in Wisconsin held hunting licenses in 2013



- While 15% of people from urban areas hunt and 22% of people from rural areas hunt, about 58% of the people who hunted were from urban areas and 42% were from rural areas given the fact that there are more people living in urban areas than rural.

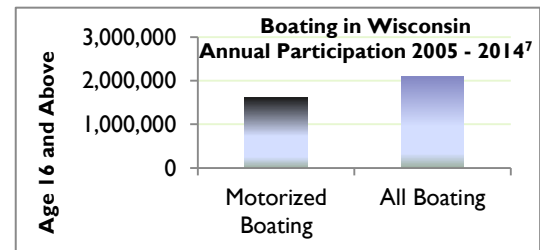
Shooting Sports – The use of both public and private shooting ranges by those interested in a variety of shooting sports has grown in popularity in both rural and more urban areas across the country and in Wisconsin. Of the 400 shooting ranges in Wisconsin, only 5 are publically owned. These public ranges are used heavily, and with an estimated 1.7 million firearm owners in Wisconsin – the demand for the use of shooting ranges is likely to increase. Shooting ranges are used for a range of activities including hunters for sighting in weapons, target shooting, for hunter safety training, and marksmanship competitions.

Fishing - Fishing participation in Wisconsin has trended down slightly since 1995. However, the number of licensed anglers was higher in 2013 than 1995 - both as a total number of anglers and as a percent of the population who participated in fishing. Data regarding angler numbers only captures those age 16 and over, since anglers under age 16 are not required to purchase a fishing license.

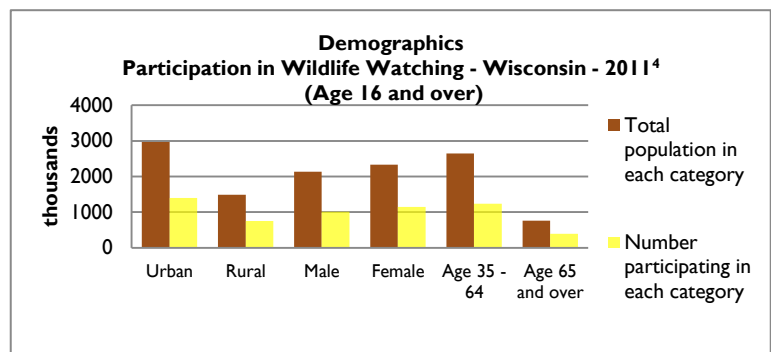


- About 30% of male Wisconsin residents while 13% of female Wisconsin residents fished.
- About the same number of anglers are from urban areas as are from rural areas of the state.
- As a percent of the total population from these areas – 15% of those from urban areas fished, and 33% of people from rural areas fished.
- Roughly 24% of the population age 65 and older fished, in comparison to 20% of those between the ages of 35 and 64 years.

Boating is also a highly popular activity in Wisconsin, and studies have shown a strong link between boating and fishing. Over the past ten years an average of 625,000 boats are registered in the state each year. In recent years there has been a large growth in fishing from kayaks.



Wildlife Watching – About 2.4 million people took part in some form of wildlife watching activities in Wisconsin during 2011. These activities include observing, photographing or feeding fish or wildlife. Most of this activity occurs within 1 mile of the participant’s home, with bird watching being the most popular. High participation rates have been maintained



over the years – although specific year to year comparisons are difficult because participation is based on survey data rather than on licensing data as is the case with hunting and fishing participation.

- Almost half (48%) of Wisconsin’s 16 and over population took part in wildlife watching activities.
- About half of those were female, and half male.
- About 65% of those participating were from urban areas and 35% were from rural areas of the state.
- Roughly 50% of those 65 and over participated in wildlife watching activities, and about 45% of those 35 to 64 participated.

❖ Fish and Wildlife Populations

Overview - Wildlife populations have changed dramatically on the Wisconsin landscape over the last 10,000 years, but these changes were not well documented before the mid-1800s. Many species declined with the massive changes that occurred to the landscape with the advent of farming and timber harvesting, and many species were used for food or were considered a threat to livestock or people and were deliberately eliminated. However, some species have increased, such as the eastern cottontail rabbit and raccoon. Others increased for a while but then declined, such as the Northern Bobwhite and the Greater Prairie-Chicken. One species, the Passenger Pigeon became extinct. Others were extirpated from the state, including the American bison, elk, gray wolf, cougar, American marten, fisher, and Wild Turkey. Others (white-tailed deer and the black bear) declined but remained.

Many species were at low levels in the 1900s to 1940s. However, some species declined even further, especially top predators, after the introduction of pesticides in the 1940s. Other species declined through the 1960s and beyond as a result of more intensive farming, leaving little habitat for wildlife, or from fragmentation or intensive use of forest and grassland habitats. Nonnative species were introduced, such as Ring-necked Pheasant, Gray Partridge, brown trout, and rainbow trout. Invasive species were introduced or moved into Wisconsin from neighboring states and have had impacts on native species (e.g., common carp, European Starling and House Sparrow.) In the last 80 years, a few species have been reintroduced into the state (e.g., fisher, elk, American marten, Trumpeter Swan, and Whooping Crane). Some species recolonized the state on their own (e.g., gray wolf and moose), and others increased in abundance (e.g., Bald Eagle and Osprey) once harmful pesticides such as DDT and its derivatives were banned in the 1970s. Other species have increased dramatically, taking advantage of the human-shaped landscape (e.g., white-tailed deer, coyote, raccoon, and Canada Goose).

Birds - Wisconsin provides important breeding, wintering, or migratory habitat for 284 native bird species. Of these 284 species, 84 (30%) have been identified as Species of Greatest Conservation Need (species with low or declining populations). Twenty-four of these species are currently listed as Threatened or Endangered in Wisconsin, and two are listed as federally Threatened or Endangered. There are about 35 game bird species in Wisconsin, which provide diverse bird hunting opportunities.

Habitat conversion is the primary concern facing bird species in Wisconsin. Nationally, grassland bird populations have shown some of the most precipitous declines of any bird group, falling by 40% since 1968. Grassland birds have now stabilized at low levels, and there are some species that have shown increases in certain portions of their range as a result of significant investments in Farm Bill Conservation programs. Some species, however, continue to decline due to changing agricultural practices and land uses. Recent research has shown that grassland birds are sensitive to landscape-scale features. In short, the more open the landscape and the greater the amount of grassland present, the better the birds will fare.

Many wetland birds, nationally and in Wisconsin, have shown strong population increases, particularly since the 1990's. These increases reflect the success of conservation efforts associated with the Clean Water Act, North American Waterfowl Management Plan, and North American Wetlands Conservation Act (NAWCA). Conservation partners like Ducks Unlimited have worked together with the department to access significant NAWCA resources used to preserve over 144,000 acres of wetlands and associated

upland habitats in Wisconsin. These efforts have benefitted the more than half of all Wisconsin game and nongame birds that depend on wetlands for some portion of their lifecycle, including both breeding and migratory waterfowl, rails, terns, herons and bitterns. A specific concern is regarding shorebirds that use ephemeral mudflats and shallow-flooded fields as resting and feeding sites during the spring and fall migration, being harmed by the draining of habitat for agriculture and housing development.

The eastern forest bird species that have seen the deepest declines are those dependent on either young forests or mature forests. Efforts are currently underway to develop a landscape scale design for southern forests, concentrating on the Driftless Area of southwest Wisconsin, which will integrate areas for oak regeneration. This approach will benefit early-successional species like ruffed grouse and blue-winged warbler, while mature forest area protection is aimed at providing habitat for species like wood thrush and cerulean warbler. Federal Breeding Bird Survey data and monitoring on local national forest lands suggest that populations of many north woods species are doing well as northern forests recover from the historic cutovers last century.

Mammals - Of the 70 mammal species native to Wisconsin, 14 (20%) have been identified as Species of Greatest Conservation Need, while two of these species are listed as Threatened or Endangered at the state or federal level. Twenty two of these mammal species are classified as game species, i.e. there is a harvest (hunting or trapping season) and/or bag limits – which provide diverse hunting opportunities in the state. Included are the big game species of deer, bear, and elk, 14 furbearers and 5 small game species. Nine species are considered “protected” (take is not allowed except in specific situations or by permit) ranging from cougar and moose to badgers and flying squirrels. “Unprotected species” (no season or bag limits though a hunting/trapping license is required in some instances) include skunk, opossum, porcupine and numerous small mammals such as chipmunks, gophers, mice, voles, etc.

Traditional monitoring and the establishment of population estimates for game species using harvest reporting and radio telemetry is continuing, and is being supplemented with information gathered with the use of new technology. Trail cameras, which allow for both citizen-based reports of species presence, and other research methods are now frequently used to monitor and estimate populations. Information gathered from monitoring initiatives has demonstrated the southward range expansion of some species including black bear, bobcat, wolves and fisher. Monitoring information has also provided information indicating that fisher populations in their original core range have declined, and beaver populations have declined in the north due to control efforts to reduce negative impacts on trout fisheries. Cougars have been documented several times in the last 10 years, though there is no evidence of a breeding population. Information gathered indicates that these are likely young, male cougars of South Dakota origin that are moving through.

Deer populations and harvest peaked in the early-mid 2000s and have generally decreased since then due to a number of factors including intentional heavy antlerless harvest and severe winters in the northern and central forest. Subsequent harvest decreases resulted from these factors as well as things like hunting season conditions, reduced antlerless permits, and changes in hunting behavior such as increased selectivity. Deer populations are currently in a re-building phase in the more heavily forested areas but continue to be robust in the farmland. Archery/crossbow harvest has increase over time as a

total percentage of deer harvested annually, and now accounts for over 30% of the deer harvest. Concerns expressed by hunters about lack of deer, undesirable hunter regulations, and a perceived lack of input on deer management issues resulted in an independent review of the deer management program. In 2013, the result of this review referred to as the Deer Trustee Report (DTR) set in motion several changes to the deer management program including: the use of counties boundaries to identify deer management units; development of citizen County Deer Advisory Councils to recommend population goals and harvest quotas; changes in the metrics used to evaluate deer population levels; development of a Deer Management Assistance Program to assist individual or cooperatives of landowners in managing their land for deer; and implementation of electronic registration. DTR implementation is in its infancy, and the next several years will likely produce numerous modifications. The Department remains committed to engaging with our hunting constituents to manage the deer herd in a biologically and socially acceptable manner.

The Wisconsin elk population is estimated to be approximately 165-180 individual animals. Elk are present in the Clam Lake area of northwest Wisconsin (approx. 145-160 individuals post calving), and are currently being reintroduced in the Black River Elk Range of Jackson County. After finalizing an agreement with Kentucky, Wisconsin department staff coordinated and executed successful elk trapping efforts in January/February 2015, conducted jointly with Kentucky Department of Fish and Wildlife Resources staff in an effort to provide animals to the Black River Elk Range and boost numbers in the Clam Lake Elk Range. These capture efforts are expected to continue for up to four more years with an ultimate goal of relocating 150 elk to Wisconsin. Management will focus on timber harvest and forest opening maintenance to encourage young forest habitat, as well as monitoring population production and mortality.

The black bear population has increased both numerically and in distribution, and bear are now common throughout the state. Populations are highest in the northwest (bear zone D) and several serious bear/human interactions have occurred there in the last few years. Harvest goals and permit levels are increasing, with a particular focus on reducing bear numbers in Zone D.

The gray wolf has been delisted from and relisted to the federal endangered species list several times. Wisconsin implemented a wolf harvest season for 3 years (2012-2014) during the time that the state had management authority, resulting in the legal harvest of a total of 528 wolves. Intensive monitoring of the wolf population is ongoing, and a Wolf Management Plan is in progress, pending the return of management authority to the state.

Habitat conversion is the primary concern for mammal species, especially those that are rare or have declining populations. Threats to habitat vary widely, from loss of native prairie habitat due agricultural cultivation, roads, and houses; to changes in forest habitats through management activities that decrease the extent of older forests, nursery trees, woody debris and open forest canopies. Invasive plants can also degrade and simplify habitats, such as the invasion of prairies and forests by woody shrubs like buckthorn. While these habitat modifications are a threat to some species, they are a benefit to others. However, old forests with abundant features like large woody debris are scarcer in today's landscape. Non-native invasive plant species can also degrade and simplify habitats, such as

invasion of prairies by woody shrubs such as buckthorn. Pollution from a variety of sources is an important threat to mammal Species of Greatest Conservation Need, including chemicals that can negatively impact mammal species themselves as well as water quality and possibly invertebrate prey species. Changes in ecological processes are also important for many species, including succession of grassland habitats to shrubland and woodland due to lack of fire on the landscape.

Many of Wisconsin's game mammals are adaptable and do well in a variety of habitats, including human-dominated areas, and thus can cause damage or nuisance situations. The Department continues to contract with the USDA Wildlife Services for response to deer, bear, and wolf damage.

Fish - There are 148 fish species native to Wisconsin. There are at least 17 non-native species established in the state, for a total of 165 fish species. Twenty seven of these are identified as species of greatest conservation need, 11 are listed as threatened and 9 as endangered. There are 53 sport fish species, which includes 36 species that are the traditional sport fish species, plus a number of other species that are commonly fished for and harvested, at least in some places in the state (2 gars, 1 bowfin, 4 minnows, 7 suckers, 1 smelt, 1 burbot, 1 drum), which provide diverse angling opportunities.

Wisconsin's fish populations have always been in flux, but in the last 20 years populations trends have become apparent that have important implications for fisheries management. Changing patterns of climate, land use, and angler behavior have led and will likely continue to lead to some species increasing and others decreasing. For example, brook and brown trout in streams have benefitted from better agricultural practices and reduced angler harvest but are threatened by urban sprawl and warming temperatures. Walleye populations have declined in many lakes. Causes are uncertain but may include changing biological communities, habitat, and climate. Conversely, these same factors as well as lessened harvest have caused large increases in largemouth and smallmouth bass populations. Muskellunge distribution, numbers, and sizes are generally up statewide, due mainly to better stocking practices, more restrictive regulations, and greater catch-and-release angling. Habitat loss is a concern for all fish including rare and declining species identified as species of greatest conservation need. Shoreline modifications and development, urban and rural runoff, and aquatic invasive species can all affect the availability and quality of aquatic habitat. Management approaches that help protect specific refuge areas such as important spawning grounds, is an important consideration in protecting fish species including rare species that rely on specific habitat – as would approaches that address large river systems such as the Mississippi and Wisconsin which provide important for species throughout their life cycle.

Changes in Wisconsin's fish populations are inevitable and trends should be documented and considered in developing management strategies for species and water bodies. In some cases, management goals and stakeholder expectations will need to be modified to reflect inexorable shifts in species composition associated with long-term and landscape-scale environmental and social changes. In other cases, appropriate management actions can be applied to maintain or enhance current fisheries. Research should be conducted to determine the causes of distribution and populations trends and to identify the management responses that are most suitable and the places where they will be most effective.

5. STRATEGIC ISSUES – Opportunities and Challenges

- ❖ **Fish and Wildlife Populations and Habitat** – Wisconsin’s diverse fish and wildlife populations are the result of a wide range of quality fish and wildlife habitat, and a long history of natural resource conservation. The state’s natural resources – including fish and wildlife resources - supply the public with aesthetic, cultural and economic benefits.

Although Wisconsin’s landscape has changed significantly since the 1800’s – Wisconsin is fortunate to remain home to a diverse array of fish and wildlife species. This includes about 57 wildlife game species and 53 sport fish species, which provide diverse hunting and fishing opportunities in the state. Important breeding, wintering or migratory habitat is provided for 284 bird species – 84 of these species have been identified as ‘species of greatest conservation need’. Of the 69 mammal species that are native to Wisconsin, 14 have been identified as ‘species of greatest conservation need.’ There are 148 fish species native to Wisconsin – 27 of those species are identified as species of greatest conservation need.

The ecological health of the state in the future - and the ability to meet the public’s interests in outdoor activities – including fishing, hunting and wildlife watching – requires continued stewardship to ensure the long-term viability of healthy fish, wildlife and habitat. Following are some key population and habitat issues that will grow in importance in the coming years.

- **Fish and Wildlife Population Goals** – Successful fish and wildlife conservation requires setting clear population goals that balance complex ecological, economic and social factors. It will be increasingly important to prioritize which species or populations require additional monitoring and research to determine population levels and establish specific population goals that will help ensure diverse fish and wildlife populations. It will also be critical to identify conservation opportunities and prioritize strategies to best reach those goals – including strategies that provide game and sport fish populations to meet the expectations of hunters and anglers. In establishing these goals and strategies it will also be important to look broadly to understand the ecological potential of the overall landscapes associated with a population, along with a more focused look at the specific habitat needs of individual species.

Monitoring populations to address nuisances and damage caused by overabundant species will also continue to be important. When some fish and wildlife populations grow in numbers - or expand their range – problems can occur. These problems can include crop and structural damage, nuisance situations and habitat degradation.

It will also be important continue monitoring species to identify where there are significant declines in population, and identify actions that can be taken to address rare and declining species. In particular it will be important to be aware of the status of particular species – whether they have been identified as “Species of Greatest Conservation Need” in *Wisconsin’s Wildlife Action Plan*, and look for opportunities to incorporate the conservation actions included in the Wildlife Action Plan into species and population management plans.

- **Fish and Wildlife Health** – The health of fish and wildlife populations is an important factor in fish and wildlife species survival. When combined with other stressors on habitats and populations, diseases can present serious conservation and management challenges. Fish and wildlife diseases can influence reproduction, survival, fitness, and species abundance. Disease can affect biodiversity within ecosystems and present an additional threat to many populations, especially those with low or declining numbers, such as threatened and endangered species.

Harmful impacts of diseases and pathogens on fish and wildlife have been amplified as a result of changing environmental landscapes, global travel and increased contact between wild and domestic species. Emerging diseases in fish and wildlife have become a high-priority concern in the United States and throughout the world because of the risks to human and animal health and resulting significant economic impacts and because of the harmful effects on natural fish and wildlife populations and ecosystems.

While it's difficult to predict what additional diseases may emerge and the specific effects of those diseases on Wisconsin's fish and wildlife populations, it will continue to be important that populations be monitored, cases of mortality be investigated when appropriate, and partnerships with other agencies, organizations and the public be maintained to identify future threats.

- **Quality Habitat** - Wisconsin's fish and wildlife populations are dependent upon habitat provided by the wide range of ecological landscapes across the state. Changes in the quality and availability of habitat result in changes in fish and wildlife populations, and can determine whether individual species are able to thrive. Many factors can affect both the quality and quantity of habitat available.
 - Although no longer a new issue, invasive species are a major concern for aquatic and terrestrial fish and wildlife habitat. New invasive species are continually being detected and existing invasive species are spreading to new locations, resulting in the potential for major changes to ecosystem composition, structure and function. Many wetlands throughout the state have become overrun with purple loosestrife, phragmites and reed canary grass. Garlic mustard, common buckthorn, and Japanese honeysuckle have invaded many southern forests, eliminating native spring wildflowers and significantly reducing oak regeneration. Habitat for native species in inland lakes has been negatively affected by aquatic invasive species. Many invasive species introduced into the Great Lakes – have made their way to the Mississippi River and inland waters and wetlands. Examples of some of the most problematic include the rusty crayfish, Eurasian water milfoil, and zebra mussels. A number of invasive species are found in Lakes Michigan and/or Superior – including the spiny water flea round goby, ruffe and white perch. Invasive plant and animal species will continue to present major challenges and it will be increasingly important to address and factor in approaches to both prevent the spread of invasive species where possible – and lessen the impact of these species where that is the best option.

- Changing land use patterns have also resulted in loss of habitat, with particularly significant impacts on those species that require large expanses of habitat, or that have very specialized habitat needs. Connected to this loss of habitat is the accelerating fragmentation of ownership into smaller and smaller tracts. This parcelization of rural landscape has significant implications for how habitat conservation efforts need to be approached. Smaller parcels tend to be more expensive to conserve, both in terms of staff time for projects that seek to encourage conservation by landowners as well as acquisition and management costs. In addition, it becomes substantially harder to protect larger, contiguous blocks of habitat and provide suitable public access when dealing with multiple small-acreage owners rather than fewer large-acreage owners.
- In addition, with the increased use and demands for energy in Wisconsin the production and distribution of energy in Wisconsin has consequences for landscapes and land use. Large scale energy projects such as transmission lines and pipelines traverse hundreds of miles and a broad diversity of macro and micro habitats. With these energy corridors come opportunities to partner with utilities to improve fish and wildlife habitat. For example, Integrated Vegetation Management practices can be implemented to create sustainable wildlife habitat and improve corridors between existing wildlife habitat that can benefit a broad range of species, while also complying with utility safety and reliability standards. In Wisconsin, we have also built strong partnerships with our Federal Energy Regulatory Commission (FERC) regulated hydropower customers to develop land and wildlife management plans associated with the lands surrounding dams and flowages. The hydropower owners provide financial assistance to non-profit organizations and local fish and wildlife groups to survey the landscape, monitor and manage waterways, educate the public about invasive species, enhance our parks and recreational opportunities. In addition, wind energy development continues to increase, and with them the potential for significant impacts on bird and bat species, some of which are rare or have declining populations, and the fragmentation of their habitats. Surges in demand for sand used outside Wisconsin in hydro fracking petroleum extraction have driven an increase in the development of industrial sand mines in Wisconsin, which also have the potential to impact fish and wildlife species as well as their habitats. All of these issues must continue to be considered as planning and implementing fish and wildlife management strategies continues in the coming years.

Following are some additional examples of some steps that are being taken – and will be built upon in the future to improve fish and wildlife habitat.

- **Wetlands** - Since European settlement, approximately half of Wisconsin's wetland acres have disappeared through agricultural drainage, development, other land use transformations, and sedimentation; in most southern Wisconsin counties the loss of wetland acres has exceeded 80%. However, while wetland loss still occurs today, several governmental agencies, organizations, and citizens recognize the importance of wetlands for wildlife habitat, water quality, and floodwater retention. There are numerous efforts ongoing today between all of these partners to restore and improve the quality of wetland

habitat. Several grant funding programs at the national, state, and local levels have brought these partners together to improve wetland habitat. Popular examples of these programs in Wisconsin include the North American Wetlands Conservation Act (NAWCA), duck stamp programs, Farm Bill programs, the Great Lakes Restoration Initiative (GLRI), Natural Resource Damage Assessment (NRDA), and funds raised from private donors and foundations.

Additionally, various wetland mitigation programs, such as mitigation banks and in-lieu fee programs are in place to create or replace wetlands that have been altered through processes such as wetland permitting and highway construction. Also, while hybrid cattail and *phragmites* are becoming more pervasive across the wetland landscape, one opportunity that may help to address this issue is the biofuels industry's interest in harvesting these plants, which will promote the regrowth of the native vegetation that provide higher quality wetland habitat. Other opportunities, such as phosphorous credits/trading provide a means to mitigate negative effects on water quality, and will likely have a positive impact on wetland habitat as well.

- **Forests** - The ownership pattern of the private, non-industrial forest has shown a striking change in recent years. The number of private forest owners has doubled in the last forty years to an estimated 270,000. Each year, nearly 3,400 new parcels are created within forestland. The average size of privately owned forest parcels in southern Wisconsin is now just over 30 acres and 90% of forest owners own fewer than 100 acres. Many of today's new forest owners are from urban areas and own land primarily for personal recreation use and aesthetic enjoyment. With this new ownership pattern comes new challenges and opportunities. Some of these landowners have demonstrated an interest in learning to properly manage the property for sustainable timber production and to benefit our wildlife resources. There are many state, federal, and partner programs that encourage responsible land ownership including: managed forest law (MFL), deer management assistance program (DMAP), young forest partnership (YFP), federal farm bill programs, and the landowner incentive program (LIP) to name a few. High landowner interest in responsible land management and multiple program offerings to fit individual needs provides a great opportunity to support our natural resources.

❖ **Participation in Hunting, Fishing, and Wildlife Watching**

Hunting, fishing, and wildlife watching are activities with a long tradition in Wisconsin, and are important to our state's culture and economy. In addition to the estimated \$5.5 billion annually in expenditures associated with hunting, fishing and wildlife watching in Wisconsin, many of those responding to the public outreach questionnaire referenced earlier in this plan indicated that they value these activities as being very important to their lives.

It will be important to tailor outreach efforts to the diverse group of people who enjoy fish and wildlife and who are invested in the protection of Wisconsin's natural resources, and are part of Wisconsin's fish and wildlife tradition. Tailoring outreach to the unique interests of all will grow in importance in the future, as there are changes in the demographics of Wisconsin's population, as

more people move from rural areas of the state to more urban/suburban areas, and as there are shifts in interests in fish and wildlife activities. It is also important to reach out to those who don't participate in outdoor activities – or who have dropped out of participation – to foster an interest in fish and wildlife related activities.

As Wisconsin's population grows, diversifies and becomes more urban, the value of some public properties will continue to grow – especially those properties close to urban areas and those with facilities and trails that facilitate use. This will result in increased costs to maintain properties and facilities, the potential for greater conflict between those using these properties, and increased opportunities to connect with people to highlight the value and benefits these lands provide. It will also be important to better understand who visits properties, what activities they participate in, what could be done to improve their outdoor experiences, and how to better engage people in the protection and management of these properties.

- **Hunting^{4,5}** - The number of hunters in Wisconsin peaked in 1997 at 813,000 and declined to 704,000 by 2013. Demographic analysis suggests that hunter numbers will likely decline by 27% over the next 15 years. The resultant loss in license revenues will seriously erode conservation funding. Hunting license fees and excise taxes on fire arms and ammunition provide significant financial resources for the wildlife conservation programs in Wisconsin. Supporting hunters, meeting their needs for access to hunting opportunities, managing for abundant and sustainable game populations and investing in hunter safety programs will continue to be critical. Programs to 'slow the loss' of hunters will be important, as further work is done to develop, implement and evaluate hunter recruitment programs.

The Department will also continue to implement programs that coordinate hunter education and safety programs with firearm and archery-range programs. This includes a commitment to provide shooting ranges on public lands and a program to assist with maintenance and development of private shooting ranges that provide some public access. The interest in recreational shooting programs and hunter training, specifically hunter safety, continues to be high. Ensuring hunting is a safe recreational activity is key element to maintain the overall public support for legal hunting. Based on changes in technology, motivation and the demands of modern hunters, delivery of hunter training to the customer has changed with an increase in online training opportunities. As the hunting community diversifies it will be increasingly important to adapt the style, format and delivery system used to provide hunter in order to ensure we are reaching our customers.

Recreational shooting⁶ continues to grow with more customers looking for access to safe public access shooting ranges. The highest demand for safe ranges is connected to population centers, and this which can present a challenge. Users and the general public support additional safe shooting opportunities however finding suitable location for a new range is difficult. Grants or partnerships with existing private or club ranges maybe a potential avenue to increase access to public shooting ranges.

- **Fishing^{4,5}** – More than 1.4 million people are licensed anglers in Wisconsin. That number has trended down over the past 20 years, but just slightly. Only those age 16 and older are required to have a license in order to fish, so this number does not capture those anglers who are under

the age 16. As with hunters, license fees for fishing and excise taxes on fishing equipment provide significant resources for fishery conservation programs through habitat management and restoration projects, and fish stocking and propagation initiatives. Supporting anglers and meeting the needs of those who fish will continue to be a priority for the Department – including programs to recruit to anglers and introduce people to fishing.

- **Boating/Boating Access**⁷ - Motor boating is a highly popular activity in Wisconsin due to the abundance of lakes and rivers and the state's Great Lakes shoreline. Over the last ten years (2005-2014), an average of 625,000 boats are registered in the state each year, with only a small amount of variability; from a low of 614,000 to a high of 634,000. The 2011-2016 Wisconsin Statewide Comprehensive Outdoor Recreation Plan (SCORP) estimated that 36% of the state's residents over age 16 (1.62 million people) participate in motor boating each year. And for all boating, which would include motorized and non-motorized boats, the estimate is a 47% participation rate or about 2.1 million people over age 16.

Studies have shown there is a strong link between boating and fishing, with over half of those who go recreational boating do so for the purposes of fishing. In recent years there has been a large growth in fishing from kayaks, and this method of fishing is now widely promoted in the fishing media and by outdoor recreational goods suppliers. It's anticipated that the number of registered boats in Wisconsin will remain relatively stable, and that there will continue to be some growth in the number of non-motorized boats (kayaks) but solid quantitative information is lacking at the present time.

A critically important common theme for both boaters of all types and anglers is the need for access to water. The Department will continue to support boating by obtaining and developing new access sites to the waters of the state where needed, and also to maintain and where necessary enhance existing access sites.

- **Wildlife Watching**⁴ – More than 2.4 million people feed, observe, or photograph wildlife in Wisconsin. Wildlife watching is growing in popularity over time, and it will continue to be important to engage with and support those interested in wildlife watching, and find opportunities to meet the needs associated with this growing area. Some wildlife watchers are also hunters and/or anglers – while others are not. Opportunities should be pursued to bring together all who are interested in Wisconsin's fish and wildlife resources – to address and be involved in fish and wildlife management and conservation issues.

❖ **Communication - Collaboration - Customer Service—Engaging and Serving the Public**

Managing Wisconsin's fish and wildlife resources can only be accomplished through collaboration with, and understanding and meeting the needs of, the many current partners, customers and stakeholders who have an interest in how these resources are managed.

Wisconsin's changing demographics will require the Department to develop new partnerships and to better understand the wildlife-related interests and wishes of an increasingly diverse, urban, and technology-oriented population. Adapting communication to better serve customers and meet the needs of Wisconsin's changing population, and taking greater advantage of evolving technology

and the use of, for example, social media, to communicate with customers will grow in importance in the coming years. Strategies to engage the public, strategies to reach out in new ways, strategies to communicate with all who have an interest in Wisconsin's fish and wildlife resources, strategies to better understand and respond to their views and opinions regarding the wide range of fish and wildlife issues – will be critical to the success of fish and wildlife conservation in the state. Finding more effective ways to engage and serve the public, is a strategic priority that is integrated into all aspects of the Department's fish and wildlife conservation programs, and is central to the Department's mission.

❖ **Environmental and Ecological Health**

Wisconsin's fish and wildlife populations are dependent upon the many factors that influence the environmental and ecological health of the state. Following are a few of the factors that will be of particular importance as fish and wildlife conservation strategies are developed and implemented in the coming years.

- **Water Quality and Quantity** – Wisconsin's water resources include over 44,000 miles of rivers and streams, more than 15,000 lakes, 800 miles of Great Lakes shoreline, 250 miles of Mississippi River frontage and an estimated two quadrillion gallons of groundwater. Water resources have undergone many changes over the past years and decades. Water quality in many large streams and rivers has been steadily improving as contamination from 'point' sources has been substantially lowered since the 1970's. The fish populations in many of these water bodies have dramatically rebounded and now support populations of many popular sport fish species. Pollution problems still exist and several waterbodies, including the lower Fox River, are the focus of clean-up efforts. Addressing 'non-point' sources of pollution – a more pervasive form of contamination– can pose additional challenges. The sediments, nutrients and toxic materials that wash off farm fields, city streets, construction sites, parking lots and barnyards, have degraded many surface waters and contaminated some of the state's groundwater. Fish and wildlife conservation projects and strategies will need to consider the implications of water quality on the ability to achieve goals and strategies.

Water clarity affects the ability of fish and wildlife to find food, how deep aquatic plants can grow, dissolved oxygen content, and water temperature. Nutrients—like phosphorus—can dramatically affect water quality, create harmful algal blooms, and determine what species can survive. Nonpoint source pollution - polluted runoff - is a leading cause of water quality problems in Wisconsin. Polluted runoff is caused by rainfall or snowmelt moving over and through the ground picking up natural and human-made pollutants, depositing them into rivers, lakes, wetlands and groundwater. Steps to further reduce nonpoint pollution will translate to improved fish and wildlife habitat across Wisconsin's aquatic landscapes.

Water quantity issues can also affect fish and wildlife habitat – specifically regarding the availability of good quality groundwater to provide adequate base flow to lakes, streams and wetlands. Lowered water tables can have major impacts on wetland vegetation, in some cases, by effectively decreasing the water levels in the wetland to the point where aquatic vegetation can no longer survive. Excess groundwater withdrawals may also reduce the output of springs and seepages, altering the quality and quantity of water received by lakes and streams,

destroying important micro habitats and species dependent on those habitats. Groundwater quantity problems have occurred as a result of drought and bedrock structures that yield low volumes, and as a result of excess withdrawal and pumping and land use activities that limit infiltration rates.

- **Adapting to Changing Environmental Conditions** –The department regularly makes decisions amidst change, and our mission statement directs us to think about the future and how it will affect our customers, the people of Wisconsin. Using sound science to inform our decision-making has always been important to the agency, and it remains especially true as we consider how to adapt to changing environmental conditions. Changes in environmental conditions can alter the behavior, distribution, development, reproduction, and survival of fish and wildlife populations. In turn, such changes can alter the benefits that our customers receive from those populations. As such, successful management of our natural resources will depend on first, our ability to understand and predict the impact of these changes on the state’s ecosystems, and secondly, on how well we have planned for managing these changes.

The effects of changing environmental conditions may be direct (e.g., heat stress) or indirect (e.g., changes in habitat). Fish and wildlife respond to both types of effects. For the majority of species, there is a common set of weather-climate conditions that affect individuals and populations: advance of spring conditions, spatial shift in climate niche, high temperature extremes, altered snow cover and cold exposure, altered periods of ice cover, drought, and heavy precipitation/flooding events.

Some fish and wildlife species are dependent on specific temperature and precipitation patterns. When changes in these patterns occur, changes in a species’ geographic range may occur. All species live within an upper and lower temperature range. When temperatures are outside this range, physiological stress or death can occur. While some fish and wildlife species tolerate a wide range of temperatures, for others the range is quite narrow. For example, in response to the earlier onset of spring conditions, some species initiate migratory and breeding behavior earlier in the year, resulting in various concerns including lack of adequate food source. Some cold-water fish species may no longer be able to occupy portions of waterbodies that are warmed by increased ambient air temperatures. Altered snow cover and cold exposure are also of concern, particularly in the extremes of northern Wisconsin. Drought and periods of high rainfall and flooding are occurring as regional weather patterns change – resulting in the loss or alteration of critical habitat, reduced reproductive success, and further isolation of small populations. For example, flooding is a fairly ubiquitous cause of reproductive failure in waterfowl and shorebirds. A single event can result in complete nest loss in an entire colony. Similarly, high river flows can flush eggs and larval fish from their habitats. Spring and early summer droughts can impact the reproduction of amphibians that rely on ephemeral pond habitats and limit the availability of waterfowl foods.

Some fish and wildlife species may be able to adapt to environmental changes more readily than others because, for example, they have more general habitat requirements or are able to adjust their range in response to environmental variations. Thus, some species will be

“winners” while others may be “losers.” As well, changes in the distribution, abundance, and phenology of one species may affect other species. For example, peak insect (i.e. prey) abundance is occurring earlier in spring as a result of temperature changes, but migrating birds that respond to day-length cues don’t return earlier to begin their nesting season. As a result, less food is available for chicks at a critical life stage. The anticipated intensification of insect predation and pathogens in some ecosystems will also impact fish and wildlife species.

Understanding these dynamics will be central to how we manage fish and wildlife resources for future generations. Working with our partners, management plans and approaches will need to consider both the direct and indirect effects of environmental changes and the interactions these factors have with other stressors (e.g., habitat loss/degradation, invasive species, nutrient loading, etc.). A large body of scientific work currently informs our understanding of projected effects on ecosystems, as well as our knowledge of measured impacts. Yet, a greater understanding of these impacts will be increasingly important, as will an understanding of what types of adaptation strategies have the greatest chance for success in specific situations.

Managing for natural resilience—increasing the capacity of a system to absorb or recover from disturbance while retaining its essential structure and function—will be key. Adapting land protection, habitat and population management, and other approaches as we monitor and evaluate the results of specific strategies—and focusing efforts to provide the most cost-effective outcomes—will also be critical. Prior work has already led to critical adaptation planning in the agency. One example is the master planning effort for trout management in Wisconsin’s Driftless Area. This effort, based on predicted temperature and hydrology changes, will help guide future trout habitat and stocking efforts in southwest Wisconsin. These better informed management efforts will, in turn, ensure that trout fishing will remain a vital element of this region’s tourism-based recreation. Within resource constraints and program priorities, adaptation strategies such as the Driftless Area trout master plan will be developed and implemented where appropriate.

❖ **Capacity to do the Job**

Being effective stewards of Wisconsin’s fish and wildlife resources requires a continued focus on: opportunities within the Department to align programs and resources in a way that can best maximize efficiency, effectiveness and collaboration; the availability of biological, social and ecological data and other information needed to make program decisions; adequate resources, staffing and tools to get the job done; effective administrative systems that allow for efficient operations; and adaptive management processes that include standard monitoring and evaluation protocols critical to science based decision-making.

• **Strategic Alignment**

Balancing priorities and aligning resources with critical functions will continue to be a challenge. To help meet this challenge, the Department launched an effort in July, 2015 to strategically evaluate functions across the agency – as well as the organizational structure of the agency – to determine what changes would help the agency operate as effectively and efficiently as possible. A number of initial changes were made as a result of this evaluation. The results of the strategic evaluation will be fully implemented in July, 2016. Following are the goals that were established for this effort:

- DNR's Mission, Vision, Values and One DNR approach will be reflected in the alignment process and final organizational structure.
 - Increased alignment between agency services and customer groups.
 - Improve the management of our workload by documenting, prioritizing, and efficiently managing our core work.
 - Increase efficiency by grouping similar functions within divisions.
 - Improve consistency by building systems and processes for our business functions.
 - Increase integration and collaboration.
 - Maintain accountability through line-authority reporting.
 - Increase financial flexibility and sharing of resources.
 - Maximize outcomes we can produce.
- **Biological or ecological data and Information** - The need for accurate data will grow in importance as challenges grow in complexity. Sound, science-based conservation policies require a careful balancing of ecological, social and economic factors. Research to answer and address specific conservation questions and issues - along with surveys of the public and specific interest groups to better understand their views and interests, will be needed to gather data to be used in formulating management strategies and in designing approaches that are responsive to the public.
 - **Funding** – The estimated \$5.5 billion in expenditures associated with fishing, hunting and wildlife watching annually are a significant part of Wisconsin's economy. Financial support for fish and wildlife management programs is largely dependent upon fishing and hunting license fees, and excise taxes on the purchase of fishing equipment and firearms and ammunition. If the numbers of licensed hunters and anglers goes down, less revenue will be available for fish and wildlife conservation in Wisconsin. New funding mechanisms that reflect the diverse array of fish and wildlife conservation programs will be increasingly important in the coming years.
 - **Infrastructure and Technology**- The physical resources necessary for the Department to carry out its responsibilities include buildings, roads, bridges, dikes, specialized equipment, fish hatcheries and other structures. Maintaining the infrastructure needed to accomplish program goals is expensive. An improved and updated inventory of infrastructure, including age and condition, is needed to plan for anticipated costs for maintenance and repair as well as for making decisions on where new infrastructure is needed and whether older infrastructure should be considered for removal.

In addition, the ways in which people use technology to get information and communicate with each other – the various options for electronic communications – are much different now than they were in the past. Greater demands will be placed on the Department to provide data and information quickly to customers, and tailor communication to meet a wide range of customer needs. The changes in technology also provide opportunities to collect and interpret data more efficiently, and communicate information quickly. Technology is also increasing the effectiveness of harvesting fish and game, which may have implications for fish and wildlife programs, how fishing and hunting are monitored and regulated. It will be critical to be aware

of the opportunities associated with evolving technology, as well the additional demands and expectations the availability of new technologies will have on staff and program operations.

- **Workforce** – A work environment that maximizes employee productivity and satisfaction will attract and retain a diverse, knowledgeable and innovative staff. As with all organizations, the Department will continue to face challenges with the loss of specialized expertise and experience through retirements and the decrease in staffing. It will be important to identify those skills and expertise that will be critical to accomplishing the array of fish and wildlife conservation objectives in the coming decade, and to focus recruitment and training programs on meeting those needs. Career development and quality training will help ensure professional and dedicated employees, build leadership, and help align staff and skills to emerging issues. Staff also need to have adequate tools to perform their duties, including up-to-date technology.
- **Administrative Processes and Management Systems** – Basic to any organization’s ability to meet their responsibilities and accomplish program goals and objectives, is the use of efficient administrative processes and adaptive management systems. Administrative processes that are nimble and require efficiencies across all programs, that ensure funding and staff time are being invested to achieve the greatest benefit - will continue to be critical especially as available resources are reduced and program challenges grow. Management systems that facilitate looking to the future – collecting and updating information and data to identify trends and better understand the implication of those trends on fish and wildlife conservation will be critical. Emerging issues will need to be addressed as goals and strategies are established, and resources are aligned with those goals. Monitoring and evaluating progress will also be important, in order to adapt as needed to reach goals and to respond to changes and new information. It will be important for all of the fish and wildlife programs to work collectively to achieve common goals, and make decisions regarding the best use of resources.

6. FISH AND WILDLIFE GOALS, OBJECTIVES & STRATEGIES

Four broad goals have been developed to describe what we are aiming to accomplish through the implementation of this plan - in consideration of the trends, strategic issues, opportunities and challenges facing fish and wildlife conservation, management and recreation. For each, there is a series of objectives that define more specifically what the aim is, along with a number of strategies - the approaches that will be used in achieving the objectives and goals. A number of outcomes have also been included, which will be used in developing specific measures to evaluate progress and adapt.

Goal I

Protect, restore and enhance sustainable fish and wildlife populations and habitat through an integrated ecosystem approach.

Outcomes:

- Wisconsin is home to diverse and sustainable populations of fish and wildlife that are representative of healthy ecosystems and sustainable use, and are at levels acceptable to the public.
- The public is satisfied with the availability of fish and wildlife for fishing, hunting and wildlife watching.
- The potential effects of invasive species, environmental contaminants, fish and wildlife diseases, climate change and other challenges are understood, and strategies are in place to minimize threats to fish, wildlife and habitat.
- The number of rare or declining fish and wildlife species has decreased.

Objectives:

- 1.) Objective – The diversity of Wisconsin’s fish and wildlife populations are maintained and populations are managed to assure their long-term viability, while minimizing the negative impacts of overabundant species, and to satisfy the public’s desire for hunting, fishing and wildlife watching opportunities.
- 2.) Objective - Habitat on public and private land is present in sufficient quantity, quality and spatial distribution to sustain fish and wildlife species at desired levels.
- 3.) Objective – Fish and wildlife conservation actions are developed in consideration of the varied and dynamic factors that affect populations, are based upon the ecological potential of specific landscapes, and are designed and implemented to provide the greatest benefits and greatest chance for success.

Goal I: Protect, restore and enhance sustainable fish and wildlife populations and habitat through an integrated ecosystem approach

Objective – The diversity of Wisconsin’s fish and wildlife populations are maintained and populations are managed to assure their long-term viability, while minimizing the negative impacts of overabundant species, and to satisfy the public’s desire for hunting, fishing and wildlife watching opportunities.

Objective - Habitat on public and private land is present in sufficient quantity, quality and spatial distribution to sustain fish and wildlife species at desired levels.

Objective – Fish and wildlife conservation actions are developed in consideration of the varied and dynamic factors that affect populations, are based upon the ecological potential of specific landscapes, and are designed and implemented to provide the greatest benefits and greatest chance for success.

Strategies

A balanced approach:

A.) Provide assistance, guidance and incentives to landowners to provide and improve fish and wildlife habitat on private lands, including partnering with other organizations and agencies that are involved in private lands management.

B.) Work with customers, partners, and the general public to conserve fish and wildlife populations and habitat, through a combination of regulations, policies, partnerships and outreach.

C.) Pursue opportunities to manage fish and wildlife populations using a community and ecosystem-based approach to help ensure a diverse array of species is maintained.

D.) Provide technical information and support to municipalities and land-use planners to mitigate negative impacts of land use on fish and wildlife habitat and populations.

E.) Work with the Department’s Water Quality and Watershed programs on joint projects and initiatives to identify opportunities to enhance fish and wildlife habitat by addressing specific water quality issues.

Monitor and assess:

F.) Inventory, monitor and assess the status of fish and wildlife species, using the best available science and protocols.

G.) Assess populations and establish harvest frameworks and hunting and fishing regulations for sport fish and game wildlife species, and monitor nuisances and damage caused by detrimental or overabundant species, and developing and carrying out management actions that effectively address public concerns.

H.) Monitor the presence and effects of, diseases and environmental contaminants on fish and wildlife, develop and implement plans to address threats, evaluate progress and adapt plans as needed. Monitor trends that indicate future threats to fish and wildlife, and develop proactive strategies to prevent or minimize impacts.

I.) Monitor the presence and spread of terrestrial and aquatic invasive species and develop, implement and adjust management approaches that prevent or limit the spread of invasive species. Monitor trends that indicate future threats from invasive species and develop proactive strategies to prevent or minimize impacts.

Prioritize, plan and take action:

J.) Prioritize fish and wildlife species that require updated species management plans that include population goals and management approaches to achieve those goals. Develop and implement species and habitat management plans.

Goal I: Protect, restore and enhance sustainable fish and wildlife populations and habitat through an integrated ecosystem approach

Objective – The diversity of Wisconsin’s fish and wildlife populations are maintained and populations are managed to assure their long-term viability, while minimizing the negative impacts of overabundant species, and to satisfy the public’s desire for hunting, fishing and wildlife watching opportunities.

Objective - Habitat on public and private land is present in sufficient quantity, quality and spatial distribution to sustain fish and wildlife species at desired levels.

Objective – Fish and wildlife conservation actions are developed in consideration of the varied and dynamic factors that affect populations, are based upon the ecological potential of specific landscapes, and are designed and implemented to provide the greatest benefits and greatest chance for success.

K.) Incorporate conservation actions identified in Wisconsin’s Wildlife Action Plan in species and habitat management plans, in order to help keep common species common and decrease the number of rare or declining fish and wildlife species.

L.) Stock/Introduce/Restore fish and wildlife species when and where appropriate to sustain a population, restore a system to its natural ecological potential, address a need for greater genetic diversity or provide fishing, hunting and wildlife watching opportunities.

M.) Prioritize habitats for protection, restoration and enhancement with a focus on identifying opportunities within specific ecological landscapes that will be most important to fish and wildlife conservation into the future, including protecting and restoring critical linkages between existing habitat blocks to facilitate fish and wildlife adaptation to large-scale, long-term changes to habitat and environmental conditions.

N.) Develop and implement long-term management plans for all properties managed by the Department which focus available resources on management activities that will provide the most benefit to fish and wildlife activities and resources.

O.) Focus land protection efforts and available resources, on those properties that address the highest priorities for fish and wildlife conservation and recreation.

Evaluate and adapt:

P.) Evaluate progress in implementing species and habitat/property management plans and adapt as needed to increase chances for success in reaching goals.

Q.) Identify specific opportunities to adjust management plans and approaches to enhance the ability of fish and wildlife populations and individual species to adapt to large scale, long-term changes to habitat and environmental conditions.

R.) Evaluate the effectiveness and validity of fish and wildlife population and habitat management tools and approaches, to learn how to adapt to be more effective.

Goal II

Support and increase opportunities for people to participate in fish and wildlife-focused activities

Outcomes:

- The number of people who enjoy Wisconsin's natural resources through fish and wildlife-focused activities, has increased.
- Anglers, hunters and wildlife watchers are satisfied with the quality and availability of fish and wildlife recreational opportunities

Objectives:

- 1.) Objective - Fish and wildlife populations are managed to meet the demand, and provide additional opportunities for, fishing, hunting and wildlife watching
- 2.) Objective – Recruitment and retention programs have been developed and implemented to increase the number of people who enjoy fishing, hunting and wildlife watching.
- 3.) Objective – Fish and wildlife recreational activities have been enhanced by reducing the number of incidents, fatalities, user conflicts and property damage
- 4.) Objective – Through access to both public and private lands - fishing, hunting and wildlife watching opportunities are abundant, are well distributed across the state, and provide opportunities to increase involvement in fish and wildlife conservation.

Goal II: Support and increase opportunities for people to participate in fish and wildlife-focused activities.

Objective – Fish and wildlife populations are managed to meet the demand, and provide additional opportunities for, fishing, hunting and wildlife watching.

Objective –Programs have been developed and implemented to maintain the involvement of people who currently participate in fishing, hunting and wildlife watching, and to introduce new people to these activities

Objective – Fish and wildlife recreational activities have been enhanced by reducing the number of incidents, fatalities, user conflicts and property damage.

Objective – Through access to both public and private lands, fishing, hunting and wildlife watching opportunities are abundant and are well distributed across the state

Strategies:

Data, research and trends:

- A.) Collect and use data and other information regarding future trends and current demand and interest in hunting, fishing and wildlife watching as population and property management plans are developed and implemented.
- B.) Conduct research to better understand how and why people enjoy and value fish and wildlife
- C.) Conduct surveys and use other mechanisms to collect data on the use of Department properties, to better understand how many people visit these properties, what their interests are, what kinds of activities they participate in, and how their experience could be improved.
- D.) Assess emerging recreational activities, trends and technologies for user conflicts and compatibility with fish and wildlife conservation and established principles of ethical fish and wildlife recreational activities.

Access and opportunity:

- E.) Prioritize habitat projects that provide opportunities for access to fish and wildlife recreation – including projects that provide opportunities close to where Wisconsin’s population is shifting – to urban and suburban areas – and other areas that will be experiencing rapid population growth.
- F.) Work with private landowners to strategically improve public access opportunities for fish and wildlife-focused recreation on their land.
- G.) Maintain current infrastructure and strategically add infrastructure to facilitate use of Department-managed lands for a variety of fish and wildlife-focused recreation by the public, including fishing, hunting, wildlife watching and the development and maintenance of shooting ranges.
- H.) Support local units of governments and other partners in developing and maintain boat and shore fishing access areas/opportunities.

Goal II: Support and increase opportunities for people to participate in fish and wildlife-focused activities.

Objective – Fish and wildlife populations are managed to meet the demand, and provide additional opportunities for, fishing, hunting and wildlife watching.

Objective –Programs have been developed and implemented to maintain the involvement of people who currently participate in fishing, hunting and wildlife watching, and to introduce new people to these activities

Objective – Fish and wildlife recreational activities have been enhanced by reducing the number of incidents, fatalities, user conflicts and property damage.

Objective – Through access to both public and private lands, fishing, hunting and wildlife watching opportunities are abundant and are well distributed across the state

Promote participation:

I.) Partner with other organizations to promote and support outdoor initiatives that engage the public in conservation, provide information on fish and wildlife, and provide opportunities to participate in fish and wildlife-focused activities.

J.) Use data regarding the status of fish and wildlife populations and individual species to identify management approaches to support and promote opportunities for fishing, hunting and wildlife watching.

K.) Establish harvest frameworks in species and population management plans that provide sustainable opportunities for the public to hunt and fish.

L.) Develop and implement clear fish and wildlife regulations that can be easily understood and enforced, and that increase opportunity, promote quality experiences and reduce conflicts between user groups.

M.) Through collaborative efforts with partners, enhance and build upon fishing, boating safety, and hunter safety courses, certification programs and facilities such as shooting ranges to support hunter safety, to meet the needs of the public.

N.) Improve communications letting the public know where fish and wildlife-focused recreational opportunities are available.

O.) Protect the public's right to use public waters for fishing, hunting, trapping and wildlife-viewing.

P.) Promote fishing and hunting as legitimate uses of fish and wildlife and compatible with the conservation of all fish and wildlife.

Goal III

Improve communication and engagement with the public and program partners regarding fish and wildlife conservation issues

Outcomes:

- The public is well-informed and knowledgeable about fish and wildlife conservation issues and is engaged in discussions and decision-making as management strategies are developed and implemented.
- People of all backgrounds and interests are actively engaged in fish and wildlife-focused activities, and understand and appreciate the value of healthy fish and wildlife populations and habitat – to them and to the state as a whole.
- The public values the Department’s stewardship of Wisconsin’s fish and wildlife resources and supports continued investment of their conservation dollars with the agency.
- Conservation organizations, land trusts, friends groups, volunteers and others consider the Department to be a valuable partner as we collaborate on fish and wildlife conservation projects and initiatives.

Objectives:

- 1) Objective – Fish and wildlife conservation information is available to the general public, program partners and customer groups - tailored to meet their needs and interests.
- 2) Objective – Opportunities are provided for people to be engaged and involved in decisions that affect fish and wildlife conservation and recreation.
- 3) Objective - Strong partnerships are fostered to bring people together to work together, to pursue common fish and wildlife conservation goals.

Goal III: Improve communication with the public and program partners regarding fish and wildlife conservation issues.

Objective – Fish and wildlife conservation information is available to the general public, program partners and customer groups - tailored to meet their needs and interests.

Objective – Opportunities are provided for people to be involved in – and share their views and comments regarding - fish and wildlife conservation and activities

Objective - Strong partnerships are fostered to bring people together to work together, to pursue common fish and wildlife conservation goals.

Strategies:

Promote involvement:

A.) Promote programs that provide opportunities for all who have an interest in fish and wildlife conservation to work together to pursue common goals – including programs such as Citizen Based Science surveys and data collection initiatives that provide “hands on” opportunities to contribute.

B.) Provide timely information on public participation and decision-making processes used by fish and wildlife programs. Monitor public input opportunities and processes and adjust as needed to maximize public engagement. Notify those interested of opportunities to participate in decision-making.

C.) Develop and enhance partner and stakeholder coalitions to engage in planning efforts and support fish and wildlife management programs, and support partner groups in developing locally-led fish and wildlife conservation and recreational initiatives

D.) Increase the use of citizen-based advisory groups to help solve and steer the direction of high profile fish and wildlife issues.

Communicate information and assess views:

E.) Develop and implement a public communication plan that addresses key fish and wildlife conservation messages, encourages participation in fish and wildlife programs and events, and uses new and evolving technology and tools to promote timely, effective communication with a wide range of audiences.

F.) Routinely evaluate and adjust the communication plan and strategies to better meet the needs, expectations and interests of the public; and to provide transparency as fish and wildlife management issues are discussed and decisions are made.

G.) Routinely assess views and interests in a range of fish and wildlife conservation issues. Report on opinions and attitudes of stakeholders and the public regarding fish and wildlife conservation issues, along with approaches being taken to consider these views as conservation strategies are developed and implemented.

H.) Share information about Wisconsin’s fishing, hunting and conservation heritage – along with the benefits of these activities to fish and wildlife management and to the state’s economy.

Goal IV

Ensure management systems, resources, and data are available to effectively meet program objectives and to make sound decisions based on science, including ecological, social and economic factors

Outcomes:

- The public values the Department's effective and efficient use of the fish and wildlife financial resources we are entrusted with.
- Programs have a good understanding of fish and wildlife strategic issues and trends that will require attention – and have plans and systems in place to address those issues, evaluate progress and adapt.
- Necessary resources – staff, financial resources, infrastructure and technology- are available to provide good customer service in implementing the fish and wildlife programs.
- Data and other information needed to make sound, science-based decisions is available, and being used.

Objectives:

- 1.) Objective – Financial, infrastructure and staff resource needs are assessed, and business practices and management systems used result in effective implementation of programs and the efficient use of resources.
- 2.) Objective – Programs are administered following a 'continuous quality improvement' model – that includes understanding and planning for future needs, implementing programs and aligning resources with those plans, evaluating progress and adapting plans and implementation steps as needed.
- 3.) Objective - Opportunities to adopt the use of new technologies are monitored, to determine whether they would increase the ability to provide good customer service and implement programs more effectively and as efficiently as possible.
- 4.) Objective – Initiatives and procedures are developed, adapted and implemented, to increase the ability to attract, support and retain a diverse, well trained and professional workforce.
- 5.) Objective – Science-based resource management decisions are made using appropriate data and other information.

Goal IV. Ensure management systems, resources, and data are available to effectively meet program objectives and to make sound decisions based on science, including ecological social and economic factors.

Objective –Financial, infrastructure and staff resource needs are assessed, and business practices and management systems being used result in effective implementation of programs and the efficient use of resources.

Objective – Programs are administered following a ‘continuous quality improvement’ model – which includes understanding and planning for future needs, implementing programs and aligning resources with those plans, evaluating progress, and adapting plans and implementation approaches as needed.

Objective – Opportunities to adopt the use of new technologies are monitored, to determine whether they would increase the ability to provide good customer service and implement programs more effectively and efficiently.

Objective – Initiatives and procedures are developed, adapted and implemented to increase the ability to attract, retain and support a diverse, well trained and professional workforce.

Objective – Science-based resource management decisions are made using appropriate data and other information.

Strategies:

Provide and align resources:

A.) Determine staff and financial resource needs, establish short-term and long-term plans and budgets to provide resources, and align resources with the highest priorities necessary to meet fish and wildlife goals and objectives.

B.) Require work and workloads to be aligned with established priorities – and require program and individual workplans to include information on how priorities are being addressed.

C.) Explore opportunities for sustainable, broad-based funding necessary to address increasingly more complex fish and wildlife management needs, and diverse interests in fish and wildlife conservation.

D.) Provide staff with the resources and equipment they need to get the job done.

E.) Assess and prioritize infrastructure needs associated with the implementation of fish and wildlife programs. Address these needs as short-term and long-term plans are developed and resources are aligned with those plans.

Evaluate and adapt:

F.) Routinely measure progress toward meeting goals and objectives, and incorporate specific steps for evaluating and reporting on progress in short-term and long-term plans.

G.) Monitor trends and emerging issues that affect fish and wildlife programs, and establish plans that anticipate the effects on the ability to meet program goals.

H.) Assess technology needs across the fish and wildlife programs, and identify opportunities to meet those needs – through the adoption of new technology and through adapting procedures to make better use of currently available technology.

I.) Assess staffing issues across the fish and wildlife programs, to determine where attention is needed in order to attract and retain staff with specific expertise and experience.

J.) Assess, develop and implement training programs that provide basic, on-going employee training regarding program and Department operations and procedures – including employee safety requirements - as well as specialized training tailored to specific employee classifications and work responsibilities.

Goal IV. Ensure management systems, resources, and data are available to effectively meet program objectives and to make sound decisions based on science, including ecological social and economic factors.

Objective –Financial, infrastructure and staff resource needs are assessed, and business practices and management systems being used result in effective implementation of programs and the efficient use of resources.

Objective – Programs are administered following a ‘continuous quality improvement’ model – which includes understanding and planning for future needs, implementing programs and aligning resources with those plans, evaluating progress, and adapting plans and implementation approaches as needed.

Objective – Opportunities to adopt the use of new technologies are monitored to determine whether they would increase the ability to provide good customer service and implement programs more effectively and as efficiently as possible.

Objective – Initiatives and procedures are developed, adapted and implemented to increase the ability to attract, retain and support a diverse, well trained and professional workforce.

Objective – Science-based resource management decisions are made using appropriate data and other information.

K.) Identify and address factors that limit employee engagement, satisfaction, effectiveness and retention, where possible.

L.) Evaluate administrative processes and eliminate or improve processes in order to provide better customer service and assure that resources are being used as efficiently as possible.

Obtain and share information:

M.) Determine what the data and other information needs are in order to make specific fish and wildlife resource management decisions, and in order to implement programs in general. Support the development of data management applications that are user-friendly and provide the information and reports needed.

N.) Follow established protocols to obtain and use data and information needed to reach fish and wildlife goals and objectives and support research initiatives that provide information and data critical for answering questions and making decisions regarding resource management.

O.) Determine what specific information stakeholders and the general public want regarding the use of resources to achieve specific fish and wildlife goals and objectives, and develop routine reports to meet those information needs.

P.) Support cross program, interdisciplinary initiatives that provide opportunities for programs to share expertise, information and resources.

- **Appendix: Constitutional, Statutory and Regulatory Authorities**

Constitution

The State Constitution includes a provision specific to fish and wildlife – regarding the right to fish and hunt: Section 26 - ***The people have the right to fish, hunt, trap, and take game subject only to reasonable restrictions as prescribed by law.***

Statutes

Statutory authorities to manage fish and wildlife populations and habitat are found primarily in Ch. 29 Wis. Stats. – Wild Animals and Plants.

Specifically:

- ss. 29.001 – 29.095, Wis. Stats. - Definitions and General Fish and Wildlife Regulations
- ss. 29.161 – 29.241, Wis. Stats. - Hunting, Trapping and Fishing Approvals
- ss. 29.301 – 29.364, Wis. Stats. - Hunting and Trapping Regulation
- ss. 29.401 – 29.424, Wis. Stats. - Fishing Regulation
- ss. 29.501 – 29.541, Wis. Stats. - Commercial Activities
- ss. 29.553 – 29.569, Wis. Stats. - Approvals, Fees and Effective Periods
- ss. 29.591 – 29.598, Wis. Stats. - Education and Training
- ss. 29.601 – 29.627, Wis. Stats. - Miscellaneous Provisions
- ss. 29.701 – 29.753 Wis. Stats. - Fish and Game Propagation and Stocking
- s. 29.875, Wis. Stats. - Captive Animals
- ss. 29.885 – 29.89, Wis. Stats. - Wildlife Damage
- ss. 29.921 – 29.991, Wis. Stats. - Enforcement

Additional authorities are included in Ch. 23 Wis. Stats. – Conservation. This chapter includes various authorities that provide for an ‘adequate and flexible system for the protection, development and use of forests, fish and game, lakes, streams, plant life, flowers and other outdoor resources in this state’. In addition, Chs. 24 – 28 and 30 – 34 Wis. Stats., include provisions that affect fish and wildlife conservation including conservation funding programs; protection of forests, parks and outdoor recreation areas; and provisions related to navigable waters in the state.

Administrative Rules

Regulatory provisions are included in the Wisconsin Administrative Code, which establish policies and specific provisions for the implementation of a wide range natural resource programs that affect fish and wildlife conservation. Chapters NR 1, NR 10, NR 20, and NR 27, Wis. Adm. Code include the main provisions regarding fish and wildlife conservation.

(Constitutional, Statutory and Regulatory Authorities, Continued)

Specifically:

- Ch. NR 1, Wis. Adm. Code – Natural Resource Policies Establishes policies concerning the management of fisheries, aquatic resources and wildlife; specific provisions regarding game birds and mammals, nongame wildlife, captive wildlife, natural areas, wildlife areas, use of public lands, and land acquisition.
- Ch. NR 10, Wis. Adm. Code – Game, Hunting and Trapping Seasons and Regulations Establishes specific provisions regarding protected and unprotected wild animals, hunting and trapping regulations - including limits and quotas, and wildlife disease management
- Ch. NR 20, Wis. Adm. Code – Fisheries Establishes specific provisions regarding open and closed seasons, bag limits, possession limits, size restrictions and other rules governing the taking of fish in the inland and outlying waters of Wisconsin.
- Ch. NR 27, Wis. Adm. Code – Endangered and Threatened Species Establishes provisions regarding rare fish and wildlife.

Following are additional chapters of the Wis. Adm. Code that include provisions that relate to specific aspects of fish and wildlife management, recreation and conservation.

Ch. NR 8, Wis. Adm. Code - License and Permit Procedures

- Ch. NR 11, Wis. Adm. Code - Closed Areas
- Ch. NR 12, Wis. Adm. Code - Wildlife Damage and Nuisance Control
- Ch. NR 13, Wis. Adm. Code - Chippewa Treaty Rights Participants
- Ch. NR 15, Wis. Adm. Code - Game Refuges
- Ch. NR 16, Wis. Adm. Code - Captive Wildlife
- Ch. NR 17, Wis. Adm. Code - Dog Trials and Training
- Ch. NR 18, Wis. Adm. Code - Falconry
- Ch. NR 19, Wis. Adm. Code - Miscellaneous Fur, Fish, Game and Outdoor Recreation
- Ch. NR 21, Wis. Adm. Code - Wisconsin-Minnesota Boundary Waters
- Ch. NR 22, Wis. Adm. Code - Wisconsin-Iowa Boundary Waters
- Ch. NR 23, Wis. Adm. Code - Wisconsin-Michigan Boundary Waters
- Ch. NR 24, Wis. Adm. Code - Clams
- Ch. NR 25, Wis. Adm. Code - Commercial Fishing — Outlying Waters
- Ch. NR 26, Wis. Adm. Code - Fish Refuges
- Ch. NR 28, Wis. Adm. Code - Wild Plants
- Ch. NR 29, Wis. Adm. Code – Natural Heritage Inventory Data Sharing and Fees
- Ch. NR 30, Wis. Adm. Code – Forest Fire Control
- Ch. NR 40, Wis. Adm. Code - Invasive Species Identification, Classification And Control
- Ch. NR 44, Wis. Adm. Code - Master Planning For Department Properties
- Ch. NR 45, Wis. Adm. Code - Use of Department Properties
- Ch. NR 50, Wis. Adm. Code - Administration Of Outdoor Recreation Program Grants & State Aids
- Ch. NR 51, Wis. Adm. Code - Administration Of Stewardship Grants
- Ch. NR 52, Wis. Adm. Code - Stewardship Land Access
- Ch. NR 58, Wis. Adm. Code - Endangered Resources Grant Programs
- Ch. NR 60, Wis. Adm. Code - Public Inland Lake Protection and Rehabilitation

Appendix: References

For specific demographic information and hunting, fishing and wildlife watching related data cited:

1. Wisconsin's Future Population – Projections for the State, Its Counties and Municipalities, 2010 - 2040
Wis. Dept. of Administration – Demographic Services Center, December, 2013
2. U.S. Census – 2010 U.S. Census Bureau
3. University of Wis. Applied Population Lab – Net Migration Patterns for US Counties – Mapping Tools
4. 2011 National Survey of Fishing, Hunting and Wildlife Associated Recreation – revised February 2014
US Fish and Wildlife Service
5. Hunting and Fishing Licensing Data 1995 – 2013 Wis. Dept. of Natural Resources
6. Shooting Sports Participation – 2014 National Shooting Sports Foundation
7. 2011 – 2016 Wisconsin Statewide Comprehensive Outdoor Recreation Plan – Wis. Dept. of Natural Resources

Portfolio of some of the reports and plans that guide natural resource conservation in Wisconsin – including fish and wildlife conservation – and were used as a resource and as background in the development of this plan:

- 2015-2025 Draft Wildlife Action Plan – Wisconsin Dept. of Natural Resources
- Wisconsin All Bird Conservation Plan – Wisconsin Bird Conservation Initiative, 2013
- Land Legacy Report- *An inventory of places to meet Wisconsin's future conservation and recreation needs*, 2014 Wis. Dept. of Natural Resources
- Ecological Landscapes of Wisconsin Handbook 1805.I, Wis. Dept. of Natural Resources, 2012
- Wisconsin's Biodiversity as a Management Issue, Wis. Dept. of Natural Resources, 1995
- Climate Change Impacts on Wisconsin's Wildlife – A Preliminary Assessment Tech Bulletin No. 197, 2013 Wis. Dept. of Natural Resources
- Wisconsin White-tailed Deer Trustee and Review Committee – Final Report and Recommendations, 2012
- North American Waterfowl Management Plan, updated version 2012 North American Waterfowl Management Planning Committee
- National Fish Habitat Action Plan, 2006 Association of Fish and Wildlife Agencies
- Wisconsin Water Quality Report to Congress, 2014, Wis. Dept. of Natural Resources,
- Various Wis. Dept. of Natural Resource's species, project and program specific plans and reports