MICHIGAN DEER
MANAGEMENT PLAN

Michigan Department of Natural Resources and Environment
Wildlife Division Report No. 3512

MICHIGAN DEER MANAGEMENT PLAN

Approved:

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The Michigan Department of Natural Resources and Environment (DNRE) appreciates the valuable contributions offered by many individuals, agencies, and organizations during the development of this plan. Special thanks to the Michigan United Conservation Clubs (MUCC) and to Amy Spray (Resource Policy Specialist-MUCC) for their involvement with the initiation of the planning process and organization of the deer symposium and public meetings.

We thank the many Michigan residents who contributed to development of this plan through their participation in public meetings and through the input they provided during public-comment periods and through communication with Wildlife Division staff.

We express our appreciation to the representatives of the organizations that formed the Michigan Deer Advisory Team (DAT) and to Jordan Burroughs (DAT facilitator) of Michigan State University for their dedication and hard work as they worked together to develop a set of recommendations to help guide deer management in Michigan. Those recommendations are reflected in the management strategies outlined in this document.

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COVER ART BY AUTUMN FELDPAUSCH

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PROLOGUE TO THE 2010 DEER MANAGEMENT PLAN

Change is the watchword in Michigan. We confront double-digit unemployment, historic budget deficits, and the downsizing and outright disappearance of major employers. State government is undergoing transformation, and the Department of Natural Resources and the Department of Environmental Quality are now re-combined in the new Department of Natural Resources and Environment (DNRE). Nevertheless, the sporting tradition remains vibrant and strong. Michigan has more hunters than any other state save Texas, and despite our troubling times, nearly one million of us go to the woods and fields every fall to hunt and otherwise experience our abundance of wildlife and open lands.

Our troubled times present historic opportunities for positive change. We stand poised to capitalize on unique strengths –plentiful water, abundant natural resources, and vast expanses of public land. Michigan has a proud and vibrant hunting tradition and a well-deserved reputation for responsible and innovative conservation. Hunting and hunter-conservationists will be at the leading edge as our economy rebounds, and at the center of our recovery into an outdoor recreation based economy will be the management of white-tailed deer.

The 2010 Michigan Deer Management Plan is the product of a partnership between the DNRE and the public. Special thanks are due to the members of the Deer Advisory Team and to the Michigan United Conservation Clubs for the months of effort they invested in the process. It should come as no surprise that the principle theme in this plan is the development and conservation of a healthy deer herd in balance with abundant and well-managed habitat. It explicitly recognizes geographic differences in management priorities, and calls for the development of regional deer advisory groups. These standing groups will advise the DNRE and the Natural Resources Commission on management priorities and social preferences. Our objective is to move from stakeholder involvement to true partnerships with the deer hunting community and others. Together, using the Deer Plan as the overarching framework, the DNRE and its partners will act in coalition to chart a course for Michigan deer, for hunting, and the management of young forest habitats on which deer and other species of wildlife depend. As you read this plan, I encourage you to think about how you and your friends and colleagues can join with us in this partnership to maintain healthy deer, habitats, and hunting traditions.

Russ Mason, Ph.D.
Chief, DNRE Wildlife Division

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1. INTRODUCTION

1.1 Purpose of Plan

This plan provides strategic guidance to Michigan Department of Natural Resources and Environment (DNRE) staff and involved stakeholders for the management of white-tailed deer (*Odocoileus virginianus*) in Michigan, in support of the mission: *to maintain a healthy white-tailed deer population, using sound scientific management, maximizing recreational opportunities while minimizing negative impacts on ecosystems and other wildlife species and without creating undue hardship to private interests.*

Management of Michigan's deer herd is essential to maximize its positive and minimize its negative effects on social, biological, ecological, and economic values. While the DNRE is the lead agency for deer management, collaboration with Federal and State agencies and Tribal governments, as well as private landowners, hunters, and other partners and stakeholders is critical to the success of management efforts. Consequently, this plan encourages cooperation and consistent approaches among partners in all efforts to manage deer in Michigan.

This plan does not outline operational details of deer management in Michigan. Operational details will be specified within an adaptive-management framework in which specific management methods are routinely adjusted and updated as local conditions, technology, regulations, and other aspects of management change. Direction from this plan will be reflected in annual work plans and specific products identified as Actions in this plan. This adaptive management approach will be implemented through the established deer management regulatory framework described in Section 1.2 of this plan.

1.2 Current Management Authority and Process

The DNRE has a public trust responsibility for the management of all wildlife species and populations. Primary legal authority for wildlife management and regulation comes from the Natural Resources and Environmental Protection Act, Public Act 451 of 1994 (www.legislature.mi.gov). Part 401 of Public Act 451 gives authority to the Natural Resources Commission (NRC) and the DNRE Director to issue orders specific to wildlife management and hunting.

In 1996, Michigan voters supported a ballot initiative requiring that the NRC "to the greatest extent practicable, utilize principles of sound scientific management" in making decisions concerning the taking of wildlife. This legislation gave exclusive authority to the NRC over the method and manner of take for game species. Following passage of the initiative, it was codified as Section 40113a of Public Act 451 of the Public Acts of 1994, MCL 324.40113a. The regulations established by the NRC pursuant to Public Act 451 for the taking of game in the state

of Michigan are found in the Wildlife Conservation Order (WCO) which can be viewed on-line at www.michigan.gov/dnre.

Scientific information is obtained from many sources including research, in-state surveys, communication with national and international experts, and published literature. Social issues associated with deer are also important factors that should be considered when making decisions regarding deer management in Michigan. Qualitative social information is obtained from discussions with Tribal governments, hunters and other stakeholders, DNRE field staff, and other agency staff, as well as through surveys such as the annual Michigan Deer Harvest Survey, which ask questions pertaining to specific management options or objectives. Additional social information, not necessarily associated with hunting, also is obtained through surveys.

Scientific management incorporates the concept of adaptive resource management, which is an iterative process by which changes in management actions (e.g., hunting regulations or educational efforts) are evaluated to determine if these changes achieve management goals. Management efforts over time are modified as new information is obtained, new analyses are conducted, or factors that influence deer ecology change.

The current deer management program includes research to help understand the ecology of deer and the opinions and concerns of Michigan's residents regarding deer. In addition, the DNRE provides information to the public about deer and technical assistance to landowners on deer habitat issues and conflicts with deer. Hunting provides recreational opportunities, is important as a cultural and social activity, and is one of the primary tools used to manage the size and distribution of Michigan's deer population.

Decisions about deer management in Michigan historically have been developed through interactions between the Wildlife Division's field staff, wildlife research and management specialists, and the Wildlife Division management team who provide recommendations to the NRC. Recommendations are also discussed with, and sometimes originate from, interested deer hunting organizations or individuals. Recommendations also go through the NRC process, which includes open public comment opportunities. Despite the legal framework and procedural requirements for management of Michigan's natural resources, the deer management program has lacked statewide strategic guidance. The purpose of this document is to remedy this deficiency.

2. PLANNING PROCESS

This plan was developed through a process that included review of the best available scientific information and substantial involvement of affected stakeholder groups and the public. The process included the following nine stages:

1. Intra- and inter-agency scoping
2. Deer symposium: the science of deer management
3. Public issue scoping meetings

4. Review of science relevant to deer management in Michigan
5. Michigan Deer Advisory Team deliberations
6. Government to Government Tribal consultation
7. Public opinion survey
8. Plan writing
9. Public review and comment

The information compiled and evaluated during all of these stages was used to produce a plan that is based on sound science, and on careful and respectful consideration of the diverse perspectives held by Michigan's residents. These stages are described under the following headings:

2.1 Intra- and Inter-Agency Scoping

The DNRE-Wildlife Division field staff interact with Wildlife Management Unit Supervisors, wildlife research and management specialists, and other Lansing staff when identifying deer management issues and making deer management recommendations. Input from field staff is critical to development of accurate and appropriate assessments of deer population status throughout the state and for the development of appropriate management recommendations. Field staff input was also critical to the development of this plan as observations of local deer populations, deer habitat and vegetation conditions, and daily interactions with hunters and other stakeholders provided important information and local perspectives.

Successful implementation of deer management in Michigan requires that DNRE-Wildlife Division staff regularly review deer regulations with other DNRE Divisions including: Forest Management Division (FMD); Law Enforcement Division (LED); and Recreation Division (RD). Input from appropriate Federal agencies including: U.S. Forest Service (USFS); U.S.D.A. Animal and Plant Health Inspection Service; and the U.S. Fish and Wildlife Service (USFWS), as well as Tribal representatives are also important to successful deer management in Michigan. While this level of review and consultation occurs successfully at some levels and in some parts of the state, communication among divisions and with other government agencies regarding deer management has not been consistent. Actions identified in this plan will improve cooperation at this level. Ultimately, draft management recommendations and actions are reviewed with the NRC for approval prior to implementation. All of these interactions are beneficial and will continue.

2.2 Deer Symposium: The Science of Deer Management

A symposium focusing on the science of deer management was held on September 29, 2008, in Mt. Pleasant, Michigan. The symposium was co-organized by the Michigan United Conservation Clubs (MUCC) and the Michigan Department of Natural Resources (DNR), the predecessor to the DNRE, as part of the strategic planning process for the management of deer in Michigan. The purpose of the symposium was to explore what science can tell us about several major areas of concern related to the management of deer in Michigan. The meeting was open to

wildlife professionals and interested citizens and included deer experts from across the country. Two hundred and twenty individuals attended this event. The following topics were addressed: estimating deer harvest; population management; human dimensions of deer management; managing disease; wolf impacts on deer populations; urban wildlife management; impacts of deer on Michigan's economy; and management of public lands (Appendix A). Reaction to this symposium was overwhelmingly positive. Additional symposia on deer-related topics including habitat management and updates on topics covered during the 2008 symposium will be held in future years.

2.3 Public Issue Scoping Meetings

In February and March of 2009, MUCC hosted eight public meetings to discuss deer management in Michigan. Two meetings took place in the Upper Peninsula (Crystal Falls and Newberry), and six meetings took place in the Lower Peninsula (Hillman, Cadillac, Midland, Kalamazoo, Rochester and Lansing). Each meeting consisted of two sessions: an afternoon session with individuals and representatives of groups identified as critical stakeholders by local DNR and MUCC staff and an evening session open to the public. The purpose of the meetings was to provide the public with an opportunity to identify important issues and express opinions regarding deer and deer management in Michigan. Participants were asked to complete a profile card that asked for information about their interests in deer management, whether they hunted, if they represented a group or agency, how far they drove to attend, and the issues they wanted to discuss.

The meetings were attended by a total of 240 participants. Sixty-five of those participants attended the Upper Peninsula (UP) meetings and 175 attended the Lower Peninsula (LP) meetings. A summary of comments made at these meetings is provided in Appendix B of this document. In addition, requests for public comments on deer management were announced in a series of press releases, at public meetings, and on the DNR website, encouraging people to mail or email their comments to the DNR during any part of the deer management planning process. From February 17, 2009 through December 23, 2009, comments were submitted by 88 individuals that specifically addressed the deer management plan (Appendix C).

2.4 Review of Science Relevant to Deer Management in Michigan

Concurrent with the stages described above, the DNR developed a document entitled: *A Review of Deer Management in Michigan*, which is available in Appendix D and can also be viewed at www.michigan.gov/dnre. This document includes a review of scientific information pertaining to deer, deer-related issues, and deer-management options in Michigan and summarizes the best available biological and social science relevant to these topics. It was not intended to provide management recommendations for white-tailed deer in Michigan. The information presented in this document was obtained from published scientific literature, agency and university reports, unpublished agency data, and personal communication with wildlife biologists and deer experts.

The document was used by the Michigan Deer Advisory Team to aid in their understanding of deer management in Michigan, to aid in the completion of the Michigan Deer Management Plan, and to inform interested members of the public regarding deer management issues.

2.5 Michigan Deer Advisory Team

To help develop a plan that is acceptable to a wide range of stakeholders the DNR, in cooperation with MUCC, convened the Michigan Deer Advisory Team (DAT) to serve as an advisory committee. Participants included representatives of 24 agencies and organizations that reflected a diversity of interests in Michigan's deer resource. These interests included environmental, ecological, recreational hunting, agricultural, forestry, private land ownership and public-safety. Each organization on the DAT was selected to represent a segment of those with an interest or "stake" in deer management. Membership included both UP and LP residents.

From October, 2008 to July, 2009, the DAT met on seven occasions for one or two day meetings to review, prioritize, and discuss deer management issues. The DAT received informational presentations from DNR staff, and was asked a series of questions designed to encourage discussion on important aspects of deer management in Michigan. The DAT discussed important deer-related issues, reviewed relevant social and biological science, and engaged in intense negotiations to reach consensus on a set of recommendations for deer management in Michigan.

The DAT submitted its final report, *Recommendations for Deer Management in Michigan*, to the DNR Director in November 2009. This report outlines recommendations pertaining to the following topics: introductory deer management issues; assessment of populations; harvest management and hunter access; deer hunting; deer and other wildlife habitat issues; urban/suburban deer issues; deer/human conflicts; deer health; and information and education. This report is found in Appendix E and can be viewed on-line at www.michigan.gov/dnre. The recommendations presented by the DAT were used extensively in the development of this Michigan Deer Management Plan.

2.6 Tribal Consultation

There are two treaty areas (1836 Treaty of Washington and 1842 Treaty of LaPointe) in Michigan where certain Tribes hunt and fish under Tribal regulations rather than State law. The 2007 Inland Consent Decree applies to the 1836 Treaty of Washington ceded territories and to the five federally-recognized Tribes that reside in that area: Bay Mills Indian Community, Grand Traverse Band of Ottawa and Chippewa Indians, Little Traverse Bay Bands of Odawa Indians, the Sault Tribe of Chippewa Indians, and the Little River Band of Ottawa Indians. Two western UP Tribes, the Lac Vieux Desert Band of Lake Superior Chippewa Indians and the Keweenaw Bay Indian Community of Lake Superior Band of Chippewa Indians, reside in the Michigan portion of lands covered by the 1842 Treaty of LaPointe.

The DNR engaged representatives of these Tribes during the process of preparing this plan through group discussions involving DNR staff and tribal representatives. In addition, as the Natural Resources Department Program Director for the Little River Band of Ottawa Indians, Jimmie Mitchell provided a presentation on tribal concerns regarding deer management to the DAT. The Tribal representatives stressed three issues: 1) that rights identified in the treaties should not be infringed upon by any recommendations in the deer management plan; 2) that deer hunting and deer management are very significant to the tribes; and 3) that deer should be respected. In addition, they brought forth the following values and beliefs: deer management should be focused on subsistence hunting rather than trophy hunting; deer management decisions should be based on quality data regarding proper sex and age ratios rather than simple abundance; and quality habitat leads to healthy deer. Additional concerns included: negative aspects associated with increasing privatization of deer hunting; misuse of nuisance deer permits; increasing urban deer problems; and deer disease issues, especially chronic wasting disease (CWD).

2.7 Public Opinion Survey

To complement insight gained through other forms of public involvement, a public opinion survey was conducted in 2009 under contract by the Department of Fisheries and Wildlife and the Institute for Public Policy and Social Research at Michigan State University. This survey was designed to provide information about the values and attitudes of Michigan residents regarding deer management and to examine their acceptance capacity for deer. A comparison of opinions of both hunters and non-hunters among residents of the three regions of the state: the Upper Peninsula (UP), Northern Lower Peninsula (NLP) and Southern Lower Peninsula (SLP), helps explain differences that exist among these two groups and these three geographic areas. Approximately 9,000 self-administered, mail-back questionnaires were sent out; 623 were undeliverable, and 3,882 useable questionnaires were received for an overall response rate of 47 percent.

Each of the three regions was stratified by urban and non-urban households using United States Census Bureau data and criteria. More people were sampled proportionally in the non-urban strata because they have more interactions with deer. The sample population was further divided into deer hunters and non-deer hunters. Deer hunters were randomly selected from the 2008 resident licensed deer hunter population. Addresses for the non-deer hunters were obtained from Survey Sampling, Inc., which drew a random sample of current households within each region.

Questionnaires were mailed between April 29 and July 1, 2009, with four total mailings: two copies of the questionnaire with cover letters, a reminder post card between mailings one and two of the questionnaire, and a final request, with questionnaire, to people in the general public sample who had not replied as of July 1, 2009. A telephone non-response questionnaire was initiated July 15, 2009, to assess non-response bias in the general population sample.

The final report, *Acceptance Capacity for White-tailed Deer in Michigan: a Comparison of Hunters and Non-hunters from the Upper Peninsula, Northern Lower and Southern Lower Peninsula of Michigan, 2009,* is available in Appendix F and can be viewed on-line at www.michigan.gov/dnre. This report was presented to the DNR Director and the NRC on December 3, 2009. Results of the survey provided information about values and attitudes of Michigan residents, including deer hunters and non-hunters, about deer and deer management. Differences among residents of the three eco-regions of the state (SLP, NLP, and UP) and between deer hunters and those who did not hunt deer were apparent. These differences and other insight gained from this survey support the concept of regional management of deer within a statewide context, the need to focus on the impacts of deer and not just on population size, the importance of retention and recruitment of hunters and the need for an effective communication strategy. Information from this report was used in the development of the Michigan Deer Management Plan.

2.8 Plan Writing

A number of DNR biologists began preparing introductory and background materials for this plan near the end of 2008. From August 2008 through February 2010, DNRE staff evaluated the input and recommendations obtained through interactions with agency staff, the general public, the DAT, and the Tribes to develop a draft version of the plan. The DNRE staff, Natural Resource Commissioners, Tribal biologists, and the DAT reviewed the draft prior to its public release. Public input received throughout the process, including comments on the first draft of the plan at the public meetings in February and March 2010, were considered during the completion of the final version of the plan.

2.9 Public Review and Comment

In February and March of 2010, the DNRE hosted eight public meetings to take input on the draft Deer Management Plan. Meetings were held in Kalamazoo, Novi, Alpena, Cadillac, Newberry, Crystal Falls, Lansing and Midland. Each meeting consisted of a formal presentation describing the process used to develop the plan and a brief summary of the plan. Following the presentation, the public was given the opportunity to provide input regarding the draft Deer Management Plan.

The meetings were attended by a total of 505 participants. One hundred and twenty-five of those participants attended the Upper Peninsula (UP) meetings and 380 attended the Lower Peninsula (LP) meetings. A summary of comments made at these meetings is provided in Appendix G. In addition, citizens were once again encouraged to provide input via email and U.S. Mail. From February 10, 2010 through March 26, 2010, 615 comments were received. Of these comments, 123 specifically addressed the draft deer management plan (Appendix H) and were used to further develop the plan.

3. DEER IN MICHIGAN

3.1 History of Deer and Deer Hunting in Michigan

Prior to European settlement, Michigan had an abundant deer herd in the southern part of the state. The mixture of hardwoods, wetlands, bogs, forest openings, and prairies was ideal for deer. There were fewer deer in the forests of the north, which were also inhabited by moose and woodland caribou. These mature forests allowed little sunlight to reach the forest floor and deer browse was limited except in burned-over areas, blow-downs, or other areas of significant disturbance.

As farmers and settlers moved into southern Michigan in the 1800s, deer habitat was altered dramatically by removal of cover for crop fields. The shooting of deer for food was unregulated and deer were mostly gone from the SLP by 1870. Logging of forests in the north produced the opposite effect. More openings, brush, and young forests provided cover and browse and the northern herd climbed to an estimated one million deer in the 1880s. As railroads developed and provided access into the wilderness, market hunters shot hundreds of thousands of deer. Early measures to control market hunting by restricting the timeframe to take deer, but not the number of deer taken, were unsuccessful. What followed were decades of ups and downs in the deer population resulting from changes in hunting regulations and available habitat.

The first regulation enacted to limit the taking of deer in Michigan occurred in 1859, when the State Legislature limited the taking of deer to the period of August 1 through December 31. In 1887, the use of dogs and artificial lights became illegal. The State Legislature shortened the season to 25 days with the first bag limit (five deer) and created the first deer license in 1895, selling 14,477 licenses for 50 cents each with 22 non-residents paying $25 for a Michigan deer license. In 1909, the bag limit was reduced to three deer and market hunting and the selling of venison became illegal.

In 1914, Game Commissioner William R. Oates estimated that there were only 45,000 deer in Michigan. He recommended changing regulations limiting hunters to one deer per season with the goal to increase the size of the deer herd. That year, 21,061 resident licenses and 178 non-resident deer licenses were sold.

In 1921, the three inch rule was enacted limiting hunters to antlered deer only. The deer herd began to rebound. The population increase was driven by the protection of antlerless deer and changing habitat conditions as the vegetative response to an increase in forest-fire control (resulting from legislation passed in 1915), timber harvests and abandonment of agricultural fields across northern Michigan produced abundant deer cover and browse.

By 1930, the increasing abundance of deer was recognized and the first discussions of deer-vehicle accidents began. There also was a significant amount of winter starvation and over-browsing in cedar swamps where field investigators reported a shortage of food and cover for the growing herd. Mr. Ilo Bartlett, the State's first deer biologist, reported that there were 1.125 million deer in the state in 1937, and began to talk about the "deer problem." About one-third of

the deer at this time were in the UP and two-thirds in the NLP - only a few deer were present in southern Michigan.

The deer population continued to grow and peaked at about 1.5 million deer in the late 1940s. Antlerless deer were once again allowed to be taken by hunters in an attempt to reduce the size of the deer herd. However, before that could happen, the habitat for deer collapsed, due to a combination of pressure from a large herd and an increase in forested areas, as mature stands of timber once again began to develop on formerly logged lands.

To address the habitat problem, the legislature directed the DNR to develop what has become known as the Deer Range Improvement Program (DRIP) in 1971. This program was designed to acquire and manage critical deer habitat, with a goal of increasing the deer herd to one million deer by the spring of 1981. Through DRIP, one dollar and fifty cents from every deer license is placed in a restricted fund and used for acquisition and management of deer habitat. Impacts of the DRIP, a substantial increase in commercial timber harvest throughout the State, a series of mild winters, and a rapidly expanding deer population in the farm country of southern Michigan combined to propel the herd to a new peak of 2.2 million deer in 1995. While deer were still abundant in northern Michigan, the increasing populations in southern Michigan caused a shift of population balance from north to south that is even more pronounced today. Signs of distress in the herd appeared again. State records for deer hunting participation were set in 1998, when 785,000 hunters pursued deer during Michigan's firearm deer season (Figure 1) and when an estimated 582,000 deer were harvested (Figure 2).

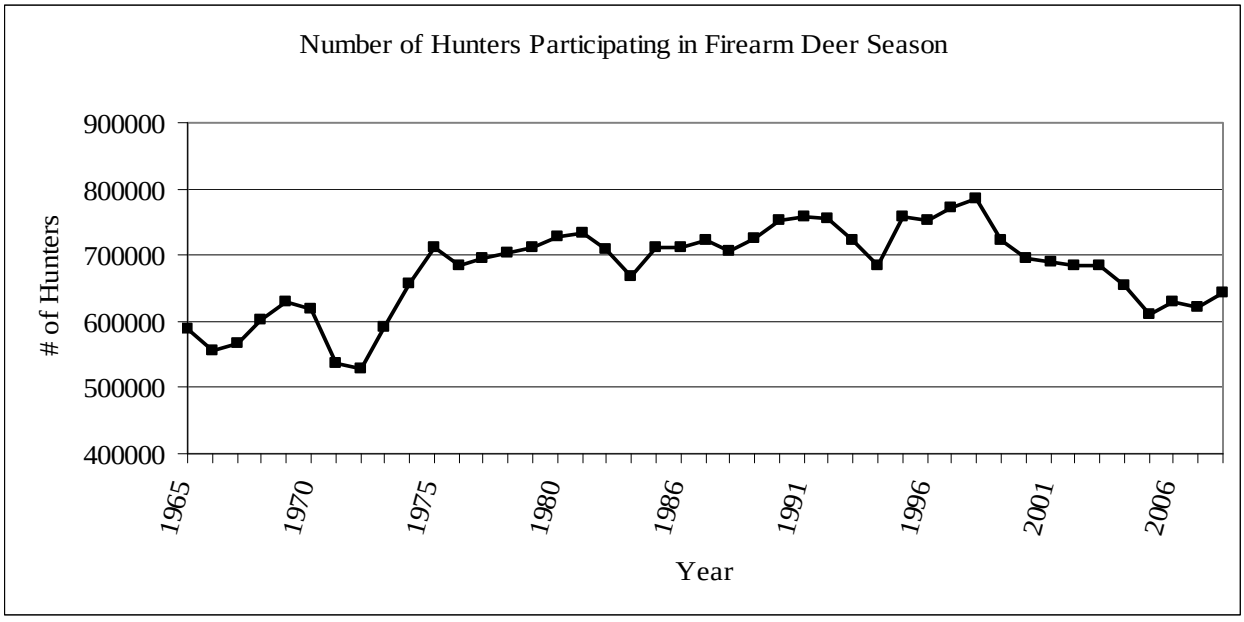

Figure 1. Number of firearm deer hunters in Michigan 1965-2008.

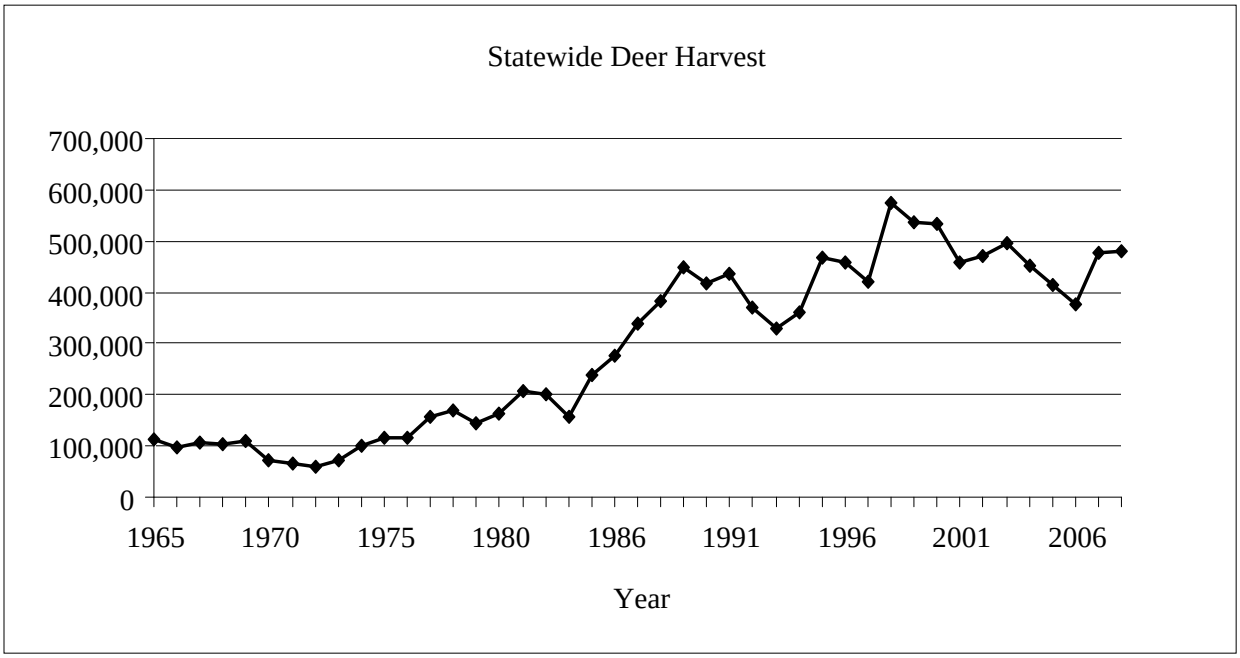

Figure 2. Estimated annual statewide deer harvest 1965-2008.

3.2 Current Population Status and Range in Michigan

Regional deer densities in Michigan have changed a great deal since the 1970s. Historically, deer hunting opportunities in the UP and NLP attracted hunters from southern Michigan to hunt the relatively abundant deer populations of the north woods. Statewide deer population estimates indicate that the Michigan deer population grew steadily through the '70s, '80s, and early '90s, but has shown a gradual long-term declining trend since 1995 (Figure 3). Population trends are not consistent across the State, as this statewide decline has been driven by declines in both the UP and NLP even as the SLP population continued to grow (Figure 4).

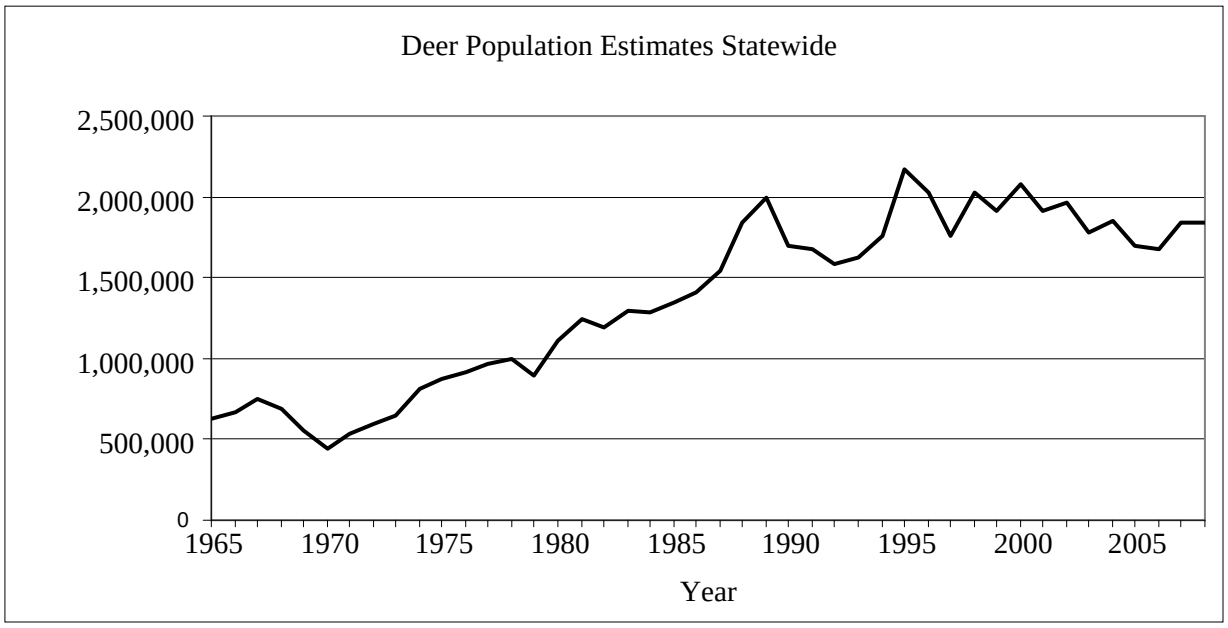

Figure 3. Estimated statewide deer population, 1965-2008.

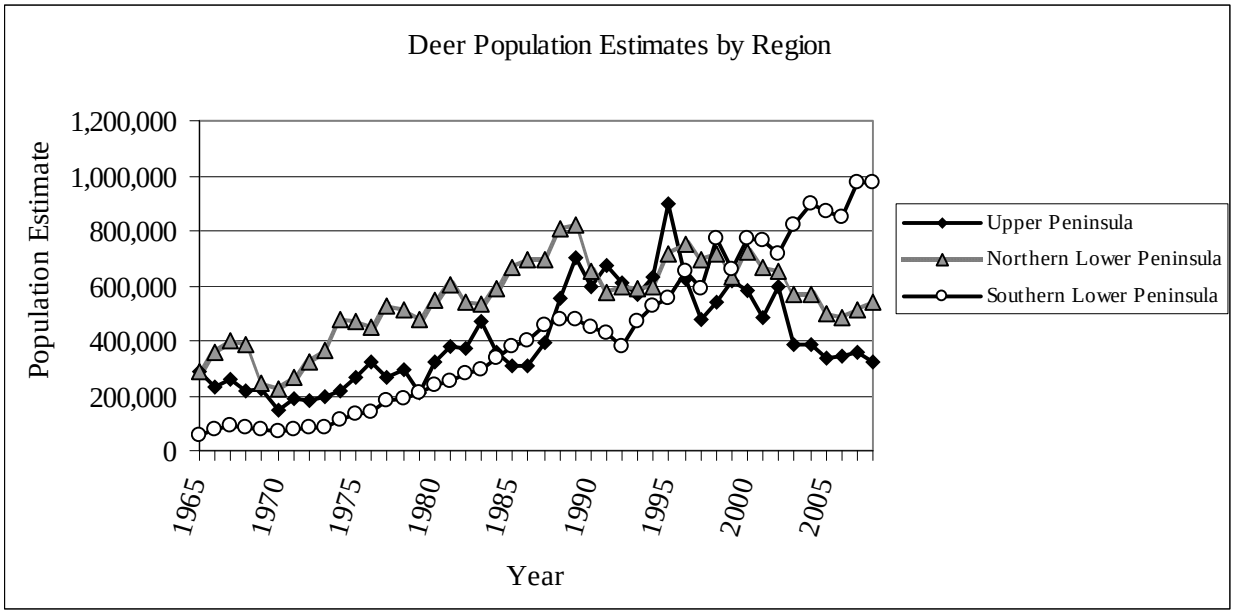

Figure 4. Estimated deer populations by region, 1965-2008.

Today, deer densities in Michigan generally increase from north to south. Deer populations are low along the northern edge of the UP as lake-effect snow associated with Lake Superior makes winter conditions tough on deer. Deer in this area are forced to seek out lowland conifer swamps or migrate south in early winter to areas that typically receive less snow. Snow depth data (Figure 5) show a link to current estimated population densities (Figure 6) across the entire State as deep snow and cold winter temperatures frequently result in significant winter mortality and low fawn recruitment. In the southern one-third of the state, where winter conditions are less severe and agricultural crops are more common, deer densities are mostly above goal.

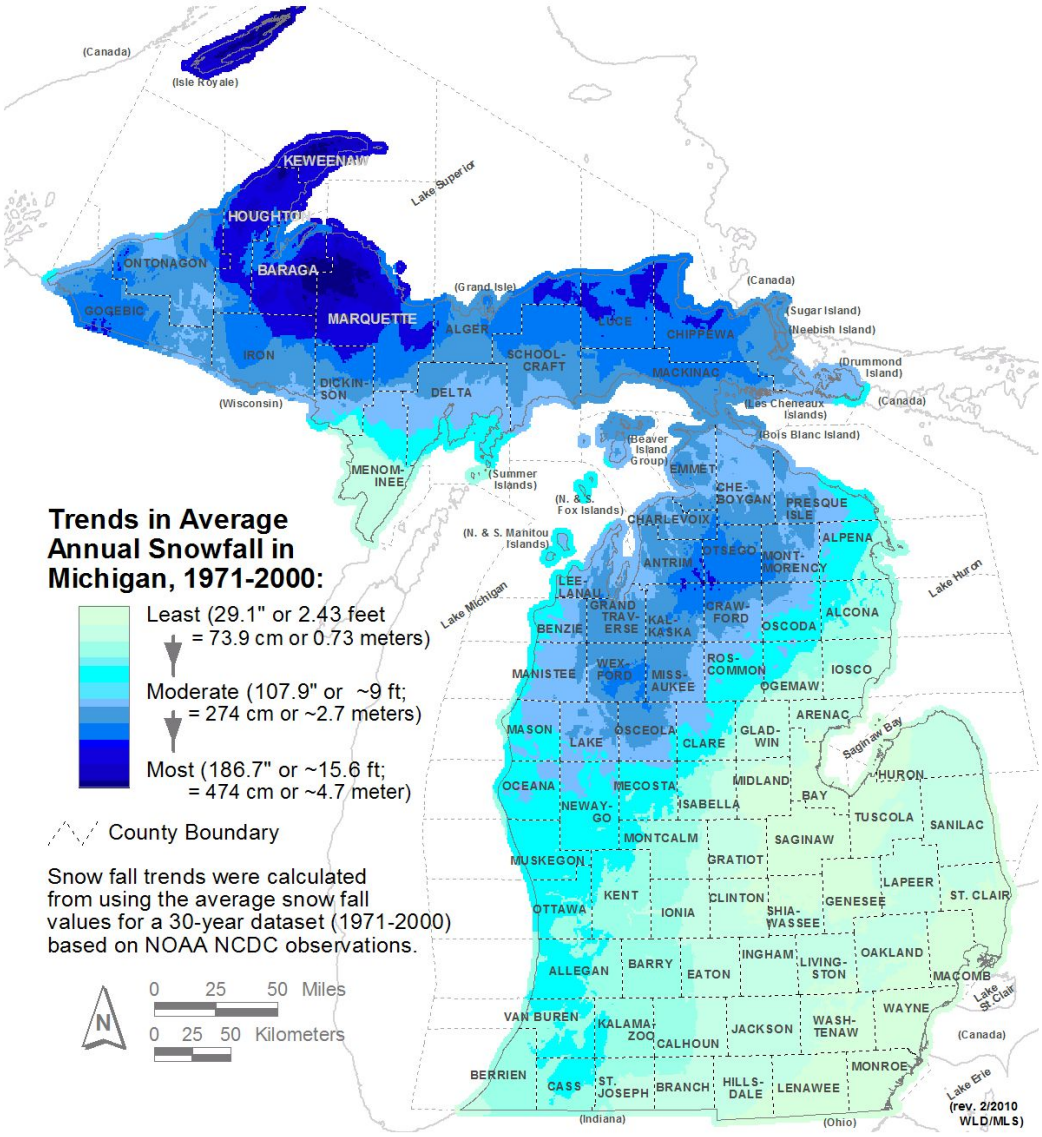

Figure 5. Average annual snowfall depths in Michigan, 1971-2000.

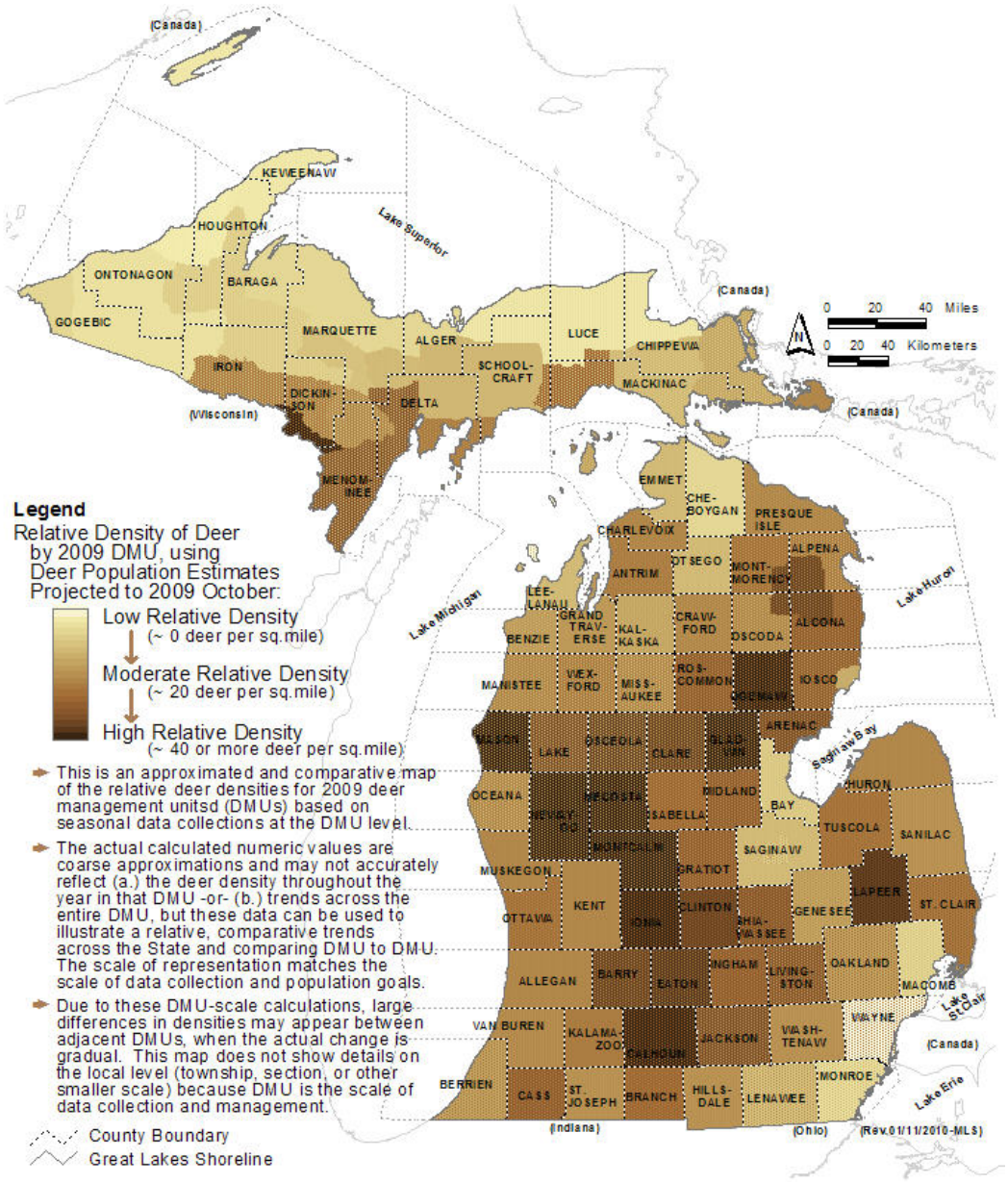

Figure 6. Estimated white-tailed deer densities in Michigan.

In the NLP, current deer populations are at or near DNRE goals in many of the current deer management units (DMUs). However, when harsh winter conditions occur, herd size can be noticeably reduced by high winter mortality rates and low fawn recruitment. Even with efforts to reduce the deer density in the bovine tuberculosis (TB) area of the northeast part of the NLP, which were initially successful, deer populations have increased and are currently over the DNRE population goal for this area.

In the SLP, deer populations are over DNRE population goals in nearly every DMU. The abundance of food in the form of available agricultural crops combined with the more than

adequate cover of scattered woodlots and idle fields provide near perfect white-tailed deer habitat. In addition, relatively mild winter conditions, the near elimination of natural predators, and limited hunting access on private land (including numerous parcels where no deer hunting occurs at all) contribute to the growth of these populations.

4. DEER MANAGEMENT GOALS, OBJECTIVES AND ACTIONS

DNRE staff identified six principal Goals that incorporate issues and values identified through the public input process: 1) manage deer populations at levels that do not degrade the vegetation upon which deer and other wildlife depend; 2) promote deer hunting to provide quality recreational opportunities, as the primary tool to achieve population goals, and as an important social and cultural activity; 3) manage habitat to provide for the long-term viability of white-tailed deer in Michigan while limiting negative impacts to the habitats of other wildlife species; 4) reduce conflict between humans and deer; 5) reduce the threats and impacts of disease on the wild deer population and on Michigan's economy; and 6) Enhance public engagement in and awareness of deer management issues and knowledge of deer ecology and management.

To achieve these Goals, the DNRE will use sound scientific management principles and will consider the complex interactions of many biological, social, and economic factors while implementing measures that assure adequate protection and conservation of white-tailed deer in Michigan. Considering the myriad aspects of deer management, this plan outlines a strategic management effort that addresses deer management issues that are important to the people of Michigan. By focusing on the Goals identified in this plan, the DNRE strives to create the best and most appropriate management effort for Michigan's white-tailed deer herd and for the people of the State of Michigan.

Stakeholder groups and individuals often have opposing views and needs regarding deer management. This plan reflects efforts to identify an appropriate balance among the biological needs of the species, the benefits deer provide to some segments of society, the costs they impose on others, and the acceptability and feasibility of particular management methods.

The following deer management Goals, Objectives and Actions will be implemented to achieve the principal purposes of the Michigan Deer Management Plan. They provide guidance for the management of several deer-related issues at the strategic level. The ensuing headings indicate strategic Goals (in bold; e.g., **4.1**), Objectives (underlined; e.g., <u>4.1.1</u>), and Actions. These headings partition broad needs into manageable segments, and thus provide a structure for addressing individual management issues. Implementation of the Actions described in this plan will require a considerable amount of funding and effort and will occur over a period of the next several years. Prioritization of the Objectives and Actions within each Goal will be the first step toward implementation of this plan. Some of the Actions identified in this plan are purposely worded in a general and less urgent manner and are intended to provide long-term direction, while others are more direct in nature and call for immediate specific action. In general, those worded more specifically address items that were identified by DNRE staff or the public as high priority. Specific Actions may be listed more than once in this plan if they are critical to

achievement of more than one Goal or Objective. Some additional review and alignment with a new leadership structure and organization may be necessary as transition from DNR to DNRE occurs while the Deer Management Plan is being finalized.

4.1 Manage Deer Populations at Levels that do not Degrade the Vegetation Upon Which Deer and Other Wildlife Depend.

White-tailed deer have been designated Michigan's official game animal and are likely the signature wildlife species in the State. In addition, deer have been identified by the DNRE as a Featured Species, which is a designation that indicates a species that is highly valued by the citizens of Michigan and has habitat issues that can be addressed through active management. Deer are important to the people of Michigan, perhaps more so than in any other state. For many Michigan residents deer season is the focal point of the year, providing the opportunity to reconnect with family, friends, and the natural world. Deer hunting provides revenue that is critical to conservation of Michigan's natural resources and is important to stores, shops, and restaurants of rural towns where hunters spend money on lodging, food, and supplies. Recruitment of new hunters and retention of hunting traditions are important to the culture of Michigan, yet management efforts designed to provide sufficient deer abundance to meet the recreational needs of Michigan's citizens also must consider the impacts of deer on the landscape. Deer management efforts of the DNRE seek to maintain a healthy and balanced deer herd that meets the social, economic, and recreational demands of the public, while conserving sustainable habitat for deer and other wildlife species. Protection of native plant communities, agriculture, horticulture, silviculture, and safety of Michigan's citizens must be included in planning and implementation of deer management.

White-tailed deer evolved in a forested environment and it is likely that there are both wildlife and plant species that benefit from the presence of deer and their activities. By foraging selectively, deer affect the growth and survival of many herbaceous, shrub and tree species, modifying patterns of relative abundance and species interactions. When populations are not in balance with habitat, deer have the ability to alter their environment by over-browsing preferred plants and destroying the vegetative cover upon which they and other species depend. Over-browsing can result in reduced availability of adequate ground-level vegetation (herbaceous plants, seedlings, saplings, and shrubs) that provides the food and cover required by deer (Alverson et al. 1988). In addition to impacts on deer habitat, over-browsing by deer can degrade the quality of habitats for other wildlife species and alter entire ecosystems. Numerous wildlife species use ground level and mid-story vegetation of forests in Michigan for nesting and escape cover that may be negatively impacted by intense deer browsing (deCalesta 1997, Cote et al. 2004). In addition, deer compete directly with wild turkeys, ruffed grouse, squirrels, and a variety of other birds and small mammals for acorns, fruits, and other mast.

Deer browsing can impact the quality and viability of entire natural communities. Damage to natural communities extends to a variety of other species including insects, birds, reptiles, amphibians, and other mammals that are dependent on those communities. Impacts on rare plants, animals, and communities are of special concern as years of over-browsing can threaten viability of local populations. In addition, over-browsing of native vegetation facilitates invasion

of aggressive, non-native plant species like garlic mustard. Many of these invasive plants degrade habitat for deer and other species by crowding out preferred deer forage and changing ground flora to species that provide little or no benefit to most wildlife species. Management activities designed to benefit deer must ensure that other resources are not negatively impacted. It is important that deer numbers are kept below levels where they may cause long-term damage to the ecosystems in which they live.

In addition to consideration of the impacts that deer have on ecosystems and on other wildlife species, it is important to consider the impacts of other species on deer. Predators that prey on deer in Michigan include coyotes, wolves, black bears, and bobcats. Impacts of predators should be considered when making deer management decisions.

Successful deer management requires assessment of deer populations so that goals and management activities can be identified, implemented, and evaluated. While it is difficult to accurately and precisely estimate the population size of free-ranging deer, deer management has typically included the development of population estimates, population goals, and population management activities related to these goals. The DNRE collects biological data (biodata) from a sample of the harvested deer at voluntary check stations located throughout the State. These data are used to monitor the size, composition, and health of the deer herd. In addition, the annual deer harvest mail survey, sent to a randomly-selected sample of deer hunting license buyers, uses a statistically-based, stratified sampling design to develop estimates of various factors of the annual harvest (e.g., number of antlered and antlerless deer harvested, the number of hunters pursuing deer, the number of days hunters spent pursuing deer).

The DNRE uses the sex-age-kill (SAK) technique as its primary tool to estimate deer populations where data is sufficient. The procedure was originally formulated by Eberhardt (1960), and has been adopted for use in other states and with various modifications (Creed et al. 1984). The SAK is a complex, scientifically credible population reconstruction method that uses the biodata from the deer herd gathered at voluntary deer check stations along with hunter harvest information from the harvest mail survey to estimate deer numbers. Some limitations to reliably applying SAK exist, such as when substantial changes occur in regulations, hunter selectivity, or population size or where limited biological data are available (Mattson and Moritz 2008, Millspaugh et al. 2009). These challenges are greatest when attempting to apply SAK to small spatial scales. In DMUs with insufficient data and where basic assumptions of the SAK cannot be met, other tools are used to provide population estimates including deer pellet surveys, aerial surveys, day-time observations, spot-light surveys, and deer camp surveys. In addition, many factors associated with deer population size are considered when population goals are established, including hunter satisfaction and success rates, landownership patterns, habitat quality, climate, amount of crop damage, forest regeneration concerns, and deer-vehicle collisions. Proposed deer population goals were developed by DNR-Wildlife Division staff for each DMU in 2005 for the period 2006 - 2010. While public opinions of the proposed goals varied across the State and among stakeholder groups, many vocal stakeholders questioned the accuracy of DNR population estimates and subsequently felt the proposed population goals for many DMUs were too low. Controversy over the proposed 2006 - 2010 goals was significant, and the draft goals were never accepted as operational. The DNRE-Wildlife Division deer

management recommendations to the NRC continue to be based upon previously established deer population goals which date back to 1996.

While deer population estimates and goals are helpful when considering deer management strategies and when providing information to the public, reliable estimates of free-ranging wildlife require a large amount of data, are not always accurate, and do not necessarily provide information that is critical to management. It is generally more beneficial to know whether there are more, the same, or less deer than before, and what impacts those deer have on themselves, their environment, and on people, than it is to know precisely the number of deer. The concept of managing impacts of deer rather than focusing exclusively on deer numbers is supported by biologists from Michigan and in other states, and was identified in the DAT report (Appendix E), and in the report on the public survey implemented by Michigan State University (Appendix F) in preparation for completion of this plan.

In order to provide Michigan deer hunters with clear and understandable deer hunting regulations, it is important that the framework for deer management and deer hunting regulations are consistent across the State whenever possible. However, Michigan has a diverse landscape with soils, climate, land use patterns, human population densities, and other factors that vary significantly across the state. Similarly, deer numbers and habitat quantity and quality can be very different from one part of the State to the next. When necessary, deer management regulations should incorporate these differences, and be applied so that regional issues can be addressed at the appropriate scale. Historically, deer management in Michigan has been implemented at the relatively small scale of the DMU. Current DMUs range in size from 5 to 2,023 square miles and average approximately 580 square miles. The smaller DMUs are typically islands or special management units. Sufficient data have proven difficult to acquire at the DMU level and deer management decisions and efforts are generally more appropriate when focused on larger and more ecologically-similar areas. Consequently, population estimates, goals, and deer management decisions will be implemented on larger geographic areas such as Wildlife Management Units (WMUs) and Regions in the future (Figure 7). The 8 WMUs currently used by DNRE for administrative purposes range in size from 4,600 to 11,550 square miles and average approximately 7,260 square miles. The three regions in Michigan (UP, NLP, and SLP) range from 16,700 to 24,600 square miles, average approximately 19,370 square miles and are similar to the 3 Hunting and Trapping Zones. New DNRE Management Regions implemented in the formation of the DNRE (Figure 8) range in size from about 6,000 to 19,700 square miles and average approximately 14,500 square miles and may also be appropriate units for managing deer. Regional management of deer in Michigan is supported by DNRE leadership, recommendations from the DAT (Appendix E), and the public survey report (Appendix F).

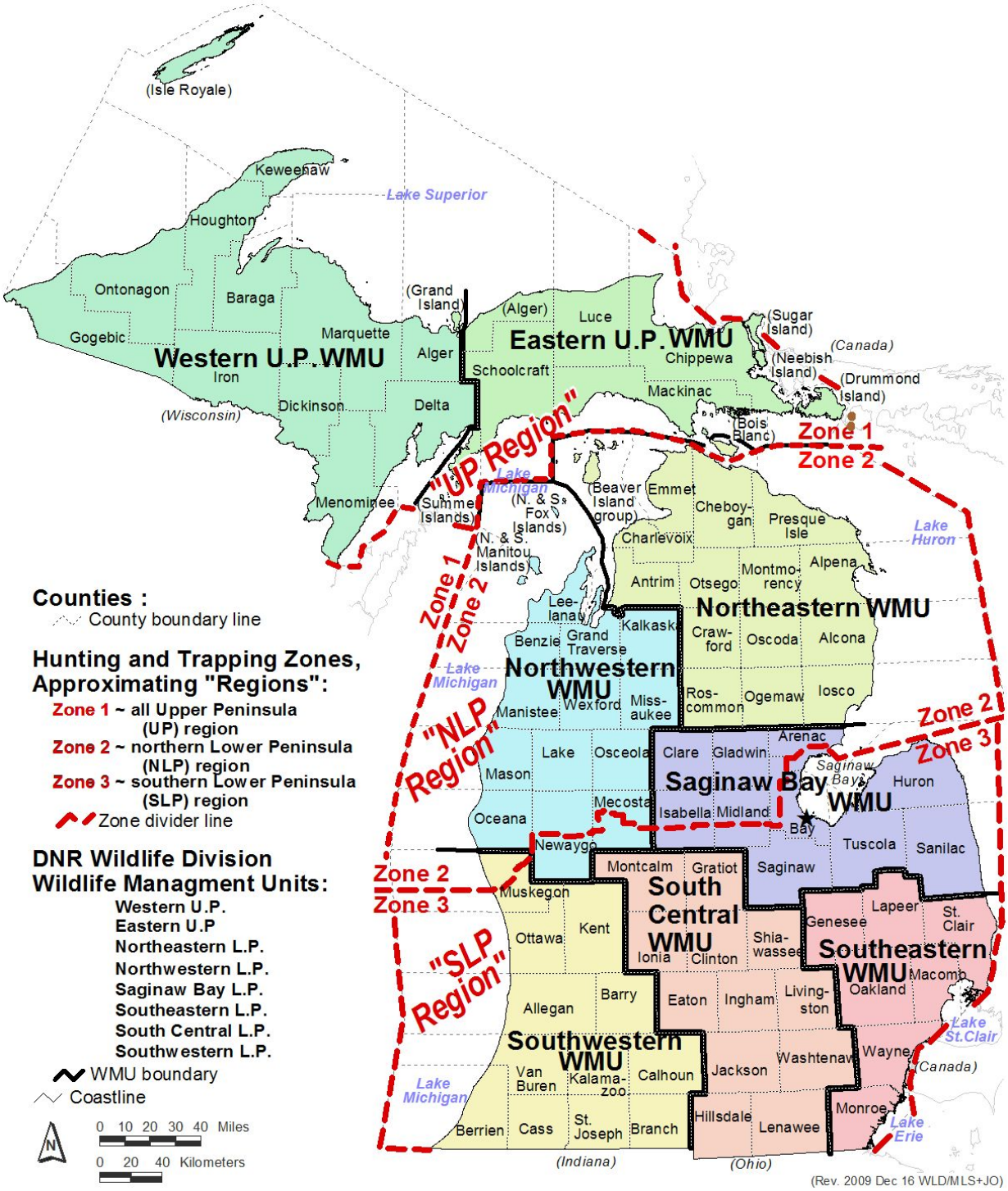

Figure 7. Wildlife Management Units and Regions of Michigan.

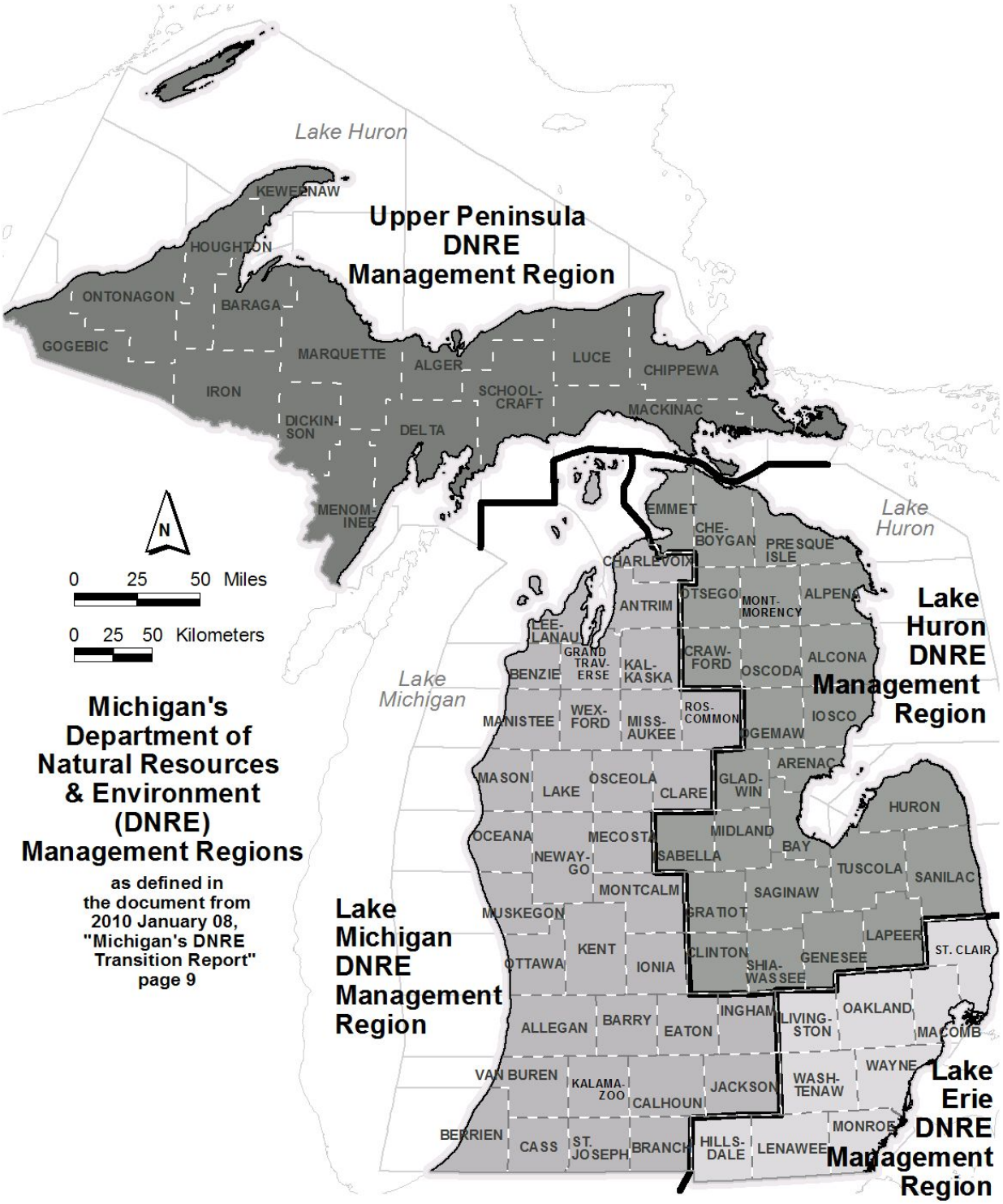

Figure 8. DNRE Management Regions of Michigan.

The following Objectives and Actions have been identified to help overcome many of the challenges identified above. To the extent the Objectives are achieved, deer numbers will be compatible with available habitat.

4.1.1 Manage Deer at the Appropriate Scale, Considering Impacts of Deer on the Landscape and on Other Species in Addition to Population Size.

Action: Establish Regional Deer Advisory Teams (RDATs) for each ecologically-based region of Michigan (SLP, NLP, and UP) to help identify and provide stakeholder input on regional deer management issues. RDATs will be led by DNRE-Wildlife Division staff and may include representatives from DNRE-Forest Management, Recreation, and Law Enforcement Divisions, appropriate Federal and Tribal agencies, as well as stakeholders, partners, and individuals interested in deer management.

Action: Investigate and implement methods to assess and incorporate ecosystem impacts, hunter satisfaction, human-deer conflicts, and other factors cited in this plan when establishing population goals and setting antlerless quotas.

Action: Consider impacts of deer on other species, communities and ecosystems especially as identified in other resource management plans (e.g., Wildlife Action Plan (WAP), Biodiversity Conservation Plan, State Forest Management Plan, Eco-regional plans) when setting population goals.

Action: Evaluate and consider impacts of predators on deer numbers especially in northern Michigan where cumulative impacts of severe winter weather conditions and predation may be significant.

Action: Establish population goals for each WMU and region based on hunter satisfaction and success rates, impacts to ecosystems (e.g., extent of damage to native plant communities, forest regeneration), conflicts with humans (e.g., deer-vehicle collisions, urban deer issues, extent of crop damage), and other factors and issues specific to the area.

4.1.2 Assess and Monitor Deer Populations Using the Best Available Techniques.

Action: Evaluate current and potential data collection and population monitoring and estimation techniques, and use the best and most appropriate science-based methods to accurately assess populations at the WMU or regional scale.

Action: Develop, implement, and evaluate methods of quantifying impacts of deer populations on vegetation (e.g., native plant communities, forest health and regeneration, crop damage).

Action: Investigate and implement ways to monitor the health of the deer herd to ensure numbers are sustainable and in balance with the browse and thermal cover upon which deer depend, including consideration of

herd condition as exhibited by appropriate age distribution, sex ratios, reproductive rates, antler development by age, and good physical condition.

4.1.3 Use Appropriate Tools to Manage Deer Population Size and Composition.

Action: The DNRE Deer and Elk Program Leader and other staff, as appropriate, will continue to participate in and provide leadership roles for national, regional, and state wildlife organizations and committees that focus on deer population management and research activities (e.g., The Wildlife Society, the Midwest Deer and Wild Turkey Study Group).

Action: Evaluate current and potential deer hunting regulations and other programs such as discounted antlerless licenses, earn-a-buck, one buck restriction, antler point restrictions, support to formation of private landowner cooperatives, and certification of landowner wildlife management plans, to adequately balance harvest of bucks and does in efforts to reach WMU and regional goals.

Action: Investigate and implement programs designed to increase hunter recruitment and retention so that hunting remains an effective population management tool.

Action: Investigate and implement programs designed to increase hunter access to private land, especially in areas where deer numbers are over goal.

4.2 Promote Deer Hunting to Provide Quality Recreational Opportunities, as the Primary Tool to Achieve Population Goals, and as an Important Social and Cultural Activity.

Deer hunting is an important social and cultural activity for many hunters, as family and friends enjoy traditions revolving around deer hunting that go back for generations. Many people view deer hunting as a special experience shared with family and friends with the actual harvest of a deer as a secondary benefit. Most hunters would find it difficult to put a price on the value of deer hunting and of putting wild game on their tables. Michigan has a strong and proud deer hunting tradition and is at or near the top of the list of deer hunting states in number of deer hunters, number of days spent hunting, and number of deer harvested each year.

Deer hunting is the primary tool used by the DNRE to manage deer numbers. Where habitat conditions are good, winter climates are mild, and large predators are absent, recreational harvest by deer hunters can keep deer numbers from growing unchecked and therefore minimizes conflicts between people and deer and impacts of deer on other animal and plant communities. Proper implementation of this tool is critical to successful management of deer in Michigan and is a cooperative effort of the DNRE and Michigan's deer hunters to maintain the deer population

at appropriate levels. Deer hunting regulations and traditions in Michigan have historically focused on shooting of bucks. A culture shift toward reducing buck harvest and recognizing the value of harvesting antlerless deer would increase the effectiveness of recreational hunting as a population management tool. Regulations mandating a shift in harvest pressure from bucks to antlerless deer may be equally effective, but would likely be opposed by many hunters at this time. The DNRE staff must investigate and implement appropriate deer season structures, hunting regulations, and outreach programs to ensure that hunting traditions are maintained and that appropriate antlerless harvest occurs. The DNRE staff must actively encourage the culture shift from buck hunting to deer management even outside of the regulatory process.

The primary deer seasons in Michigan have traditionally consisted of the archery seasons (October 1-November 14 and December 1-January 1), the regular firearm season (November 15-30), and the December muzzleloading season (in the UP, 10 days starting on the first Friday in December, in the NLP, 10 days starting on the second Friday in December, and in the SLP, 17 days starting on the first Friday in December). In recent years, additional seasons designed to increase antlerless harvest where needed and to provide special opportunities for young hunters or hunters with disabilities have also been established. These include an early antlerless deer season (5 days starting on the third Thursday in September on private land in select areas), a youth and disabled veterans season (2 days starting the fourth Saturday in September), a season for disabled hunters (4 days starting the Thursday prior to the third Saturday in October), and a late antlerless season (the first Monday following the third Saturday in December through January 1 on private land in select areas).

In addition, deer hunting is important to Michigan's economy. The nearly 700,000 hunters that hunt deer annually in Michigan spend over $700 million each year on food, lodging, transportation, equipment, and hunting licenses (Southwick 2007). License fees and taxes on equipment provide funding for much of the conservation and management efforts of the DNRE, and the overall economic impact to the state's economy is an estimated $1.16 billion annually (Southwick 2007). In addition, deer hunters harvest around 450,000 deer per year, providing venison for countless citizens and helping to minimize impacts on the agricultural and forest product industries.

Although Michigan does have a strong deer hunting tradition, numbers of annual deer hunters have declined during the last decade from a high of 870,000 in 1997 to 694,000 in 2008. This decline is a major cause for concern because of deer hunting's role in Michigan culture and in population management.

One factor that impacts both the number of deer hunters and the effectiveness of recreational hunting as a population management tool, is the ability of hunters to access private lands where deer numbers are high and deer-human conflicts are common. This situation typically occurs where private land predominates, landowners control hunting access, and there is insufficient harvest of antlerless deer. Programs designed to increase hunter access to private lands, especially where deer numbers are over-goal, may be effective at achieving appropriate antlerless harvests and increasing recreational opportunities for hunters.

In efforts to increase hunter recruitment and retention and to increase hunter access to hunting opportunities on private land, the State of Michigan has implemented various programs over the years which provided landowners with a payment in return for allowing hunters to access their land. These programs have had limited success. In 1936, the Michigan Department of Conservation, the predecessor to the DNR, initiated the Cooperative Farm Game Management Plan which enrolled nearly 500,000 acres during the early years. Participation of landowners dropped quickly, however, and the program was soon discontinued. Similar programs were re-initiated in 1948, and again in 1977, but have not been sustainable. The current program, known as the Hunter Access Program (HAP), is in decline. The HAP has fewer than 8,000 acres enrolled and no longer provides significant private land hunting opportunities. Other states, most notably Kansas, North Dakota, and South Dakota have had success with similar programs indicating the potential for success. However, most effective programs occur in western states where land values and hunting pressure are generally lower than in Michigan, making the programs more attractive to landowners in those states.

Other programs and deer hunting regulations designed to provide hunting opportunities and to increase recruitment and retention of hunters have been implemented including: youth or disabled-only hunting seasons, legalization of crossbows, reduced minimum age requirements for hunting, and the Archery in the Schools program. The success of these programs in terms of recruitment and retention of hunters has not been fully evaluated, and it is unclear whether these activities provide positive outcomes commensurate with the effort and resources invested, or if changes to these programs or initiation of entirely new programs is required. In times of shrinking budgets and reductions in staffing, evaluation of the impacts of these programs is critical.

As important as recreational deer hunting is in Michigan, it is not supported by all citizens of the State. The benefits associated with deer hunting must be communicated to the non-hunting community so that deer hunting remains socially and politically acceptable. This concept was identified by all forms of public input to this plan including the DAT report (Appendix E) and the public survey report (Appendix F).

In addition, positive images of hunting must be reinforced and negative stereotypes and examples of unethical behavior associated with deer hunting must be eliminated so that recreational hunting can continue to thrive in Michigan. Recognizing that opinions on the ethics of hunting-related activities vary widely among individuals, the DNRE promotes “fair chase” principles through education and outreach, using regulations to ban specific behaviors or activities when such activities represent a serious threat to the long-term viability of deer, deer habitat, or deer hunting, or are an infringement on the rights of others.

Fair chase principles address the sporting, lawful pursuit of free-ranging wild game animals and extend beyond the hunt itself, as an attitude and a way of life based in a deep-seated respect for wildlife, for the environment, and for other individuals who share the bounty of this state’s natural resources. Fair chase principles are built into the DNRE Hunter Safety Program and all DNRE information, education and outreach efforts should embrace and promote fair chase concepts.

The DNRE supports the following definition of "hunting ethics" from the Boone and Crockett Club (www.boone-crockett.org):

Fundamental to all hunting is the concept of conservation of natural resources. Hunting in today's world involves the regulated harvest of individual animals in a manner that conserves, protects, and perpetuates the hunted population. The hunter engages in a one-to-one relationship with the quarry and his or her hunting should be guided by a hierarchy of ethics related to hunting, which includes the following tenets:

1. *Obey all applicable laws and regulations.*
2. *Respect the customs of the locale where the hunting occurs.*
3. *Exercise a personal code of behavior that reflects favorably on your abilities and sensibilities as a hunter.*
4. *Attain and maintain the skills necessary to make the kill as certain and quick as possible.*
5. *Behave in a way that will bring no dishonor to the hunter, the hunted, or the environment.*
6. *Recognize that these tenets are intended to enhance the hunter's experience of the relationship between predator and prey, which is one of the most fundamental relationships of humans and their environment.*

The following Objectives and Actions have been identified to help overcome many of the challenges identified above. To the extent the Objectives are achieved, opportunities for high quality hunting-related recreation and the ability to manage deer populations through hunting are expected to improve.

4.2.1 Promote Recreational Deer Hunting as the Primary Tool to Manage Deer.

Action: Investigate and implement programs designed to improve hunter access to private land where deer numbers are over-goal and where increased antlerless harvest is necessary. This Action could include a continuation or expansion of the current HAP program and implementation of programs designed to link hunters with landowners interested in allowing hunter access.

Action: Investigate the impacts of declining hunter numbers on the ability of recreational hunting to maintain deer numbers at appropriate levels.

Action: Work with communities and local governments to consider recreational hunting as a tool to address urban deer issues.

4.2.2 Evaluate and Implement Programs Designed to Improve Recruitment and Retention of Deer Hunters.

Action: Determine the primary factors involved with the decline in recruitment and retention of deer hunters.

Action: Evaluate the effectiveness of programs designed to improve recruitment and retention of deer hunters.

Action: Investigate, implement, and evaluate new programs designed to improve recruitment and retention of deer hunters.

Action: Facilitate cooperation among non-governmental organizations and the hunting/mentoring community to develop programs targeted toward hunter retention and recruitment.

4.2.3 Establish Deer Hunting Programs and Regulations That will Result in High Quality Recreational Opportunities for Deer Hunters and Will Allow Population Control Through Appropriate Harvest of Antlerless Deer.

Action: Continually evaluate and implement deer hunting season structures, regulations, and outreach programs to improve recreational opportunities associated with deer hunting, achieve appropriate harvest of antlerless deer, and shift harvest pressure from antlered to antlerless deer.

Action: Investigate and implement programs designed to improve hunter access to huntable land including additional public land acquisition, public hunting on private lands, and information and education on landowner liabilities regarding hunters.

Action: Recognize, incorporate, and promote the idea that deer hunting is more than a deer population management tool and is a means to express social, cultural, economic, and spiritual values.

Action: Promote established principles of fair chase for free-ranging wildlife through education and outreach materials.

Action: Continue to regulate hunting methods and human behaviors that pose a detriment to the resources or the rights or safety of others.

4.3 Manage Habitat to Provide for the Long-term Viability of White-tailed Deer in Michigan While Limiting Negative Impacts to the Habitats of Other Wildlife Species.

Creating and maintaining quality deer habitat that produces healthy and abundant deer is an important component of deer management in Michigan. While white-tailed deer prefer young, dense forests mixed with agricultural lands where food and cover are abundant, they are generalists that can be found in a variety of cover types ranging from grasslands, wetlands, and forests to intensively-farmed agricultural lands and even urban areas. White-tailed deer use habitats seasonally and in order for deer to thrive they must have access to habitat that meets all of their year-round requirements. Habitat conditions are different across the state because climate, land use, human population density and other factors vary by region. Impacts of habitat management efforts will be greatest when projects address specific regional needs.

Habitat quality in most of Michigan is adequate to support deer numbers at some level. Throughout most of the UP, the habitat factors limiting deer numbers are the availability of vegetation that provides quality browse, shelter from accumulation of deep snow, and thermal cover. These factors are particularly important in winter and early spring. Winter deer yards, typically consisting of coniferous forests dominated by northern white cedar, eastern hemlock, white pine, spruce, and balsam fir are critical to deer in these areas as they provide refuge from deep snow, cold temperatures, and windy conditions. In the NLP, conditions are generally less harsh although deer numbers are still influenced by winter severity and the quality of winter deer yards. In the SLP, intensive agriculture and scattered woodlots and swamps provide an abundance of food and cover and winter conditions are relatively mild. Deer numbers in the SLP are rarely limited by habitat quality except for some urban and intensively farmed areas where suitable cover is scarce.

Habitat management concerns and efforts vary not only across the regions of Michigan, but depend on ownership patterns as well. The proportion of public and private lands varies across the regions of the State, with 96 percent of the SLP, 74 percent of the NLP, and 51 percent of the UP under private ownership (Michigan Center for Geographic Information 2000, 2001). Statewide, about 79 percent of the land area is privately owned. Management goals are often much different on private and public land. Generally, private and public landowners operate at different scales, with different levels of public input and under different management objectives and mandates.

Michigan has more public land than any state east of the Mississippi River except Florida. Public land in Michigan consists primarily of National Forests (over 3 million acres), State Forests (approximately 4 million acres), State Game and Wildlife Areas (approximately 400,000 acres) and State Parks and Recreation Areas (approximately 300,000 acres). While the various types of public land are managed with different goals and objectives, they all have deer residing on them and nearly all of this public land is open to deer hunting.

National Forest lands are predominantly located in the northern two-thirds of the State and there are three National Forests in Michigan: the Ottawa, the Hiawatha, and the Huron-Manistee. Although the State of Michigan has legal authority for the wildlife found across the state, it does not dictate land management practices on these Federal lands which are managed by the United States Forest Service.

State Forest lands are found primarily in the northern two-thirds of the state, with scattered State Parks. The State Forest lands are co-managed by the Forest Management Division of DNRE and the Wildlife Division of DNRE. These forests cover approximately four million acres and are managed for several resources including timber, wildlife, minerals, and oil and gas; while providing recreational opportunities. The Michigan Sate Forest Management Plan provides overall direction and guidance for management of state forest lands. Regional State Forest Management plans are being developed which will focus on a particular region and will include more details and direction. For annual operating plans, the State forest system has 10% of its land base inventoried every year and forest treatments are proposed by DNRE professionals. These treatments or prescriptions are posted for public review and comment before final

approvals are made at the compartment review meeting. There are also planning documents and management guidance for specific areas such as Natural Areas and Wildlife Flooding Areas.

In southern Michigan, less than 4 percent of the land is publicly owned. Public lands in southern Michigan consist primarily of State Game and Wildlife Areas, State Parks and Recreation Areas. State Game and Wildlife Areas are managed for wildlife and wildlife-associated recreation, while Parks and Recreation Areas are managed for a variety of uses focusing on recreation but including preservation and management of Michigan's unique natural resources.

Federal and State agencies manage public lands with a diverse set of goals and objectives involving conservation and restoration of native plants, animals and communities along with provision of opportunities for associated recreation. Management efforts often seek to address habitat for game and non-game species alike with special consideration for Featured Species (highly valued species at a local, regional, or statewide level) and for rare or threatened species. Habitat management activities include: commercial and non-commercial timber operations; planting of herbaceous vegetation for nesting, thermal and escape cover; maintenance of wetlands and wildlife openings; and the application of prescribed fire, mowing, and herbicide. In some cases, food plots are planted to provide highly attractive food sources for deer and other wildlife.

The most influential treatments that occur on public land are commercial timber sales, which can result in a diverse array of wildlife habitat conditions. Deer benefit when felled tops are available during logging operations, particularly in winter when other forage is scarce, and again when new tree saplings regenerate the harvested stands. Additional forest treatments implemented on public land include planting, seeding, burning, and scarifying to regenerate forests after harvest. In addition, wildlife biologists and foresters implement non-commercial treatments such as planting of tree seedlings, herbaceous plantings in forest openings, prescribed burns to reduce woody encroachment, and roller chopping to create or limit brush growth. These treatments are frequently funded by DRIP and may include public partners, such as conservation organizations or local sportsman groups.

A manual created to guide implementation of DRIP in the 1970's emphasized the creation of young forests dominated by aspen, upland brush, grass openings, oak, and other forest types that are beneficial to deer during spring, summer, and fall. The winter range portion of the DRIP manual gave guidance on how to harvest and regenerate conifer swamps to provide rejuvenated food and cover conditions for deer. Although the principles of deer habitat management have remained much the same, the DRIP manual is now nearly 40 years old and will be updated.

Wildlife Division staff continue to work with State foresters to ensure that young forest conditions prevail in appropriate locations and amounts, and they implement special projects to enhance deer habitat, such as planting of clover in forest openings, and planting of oak seedlings to provide future acorns. The DRIP funds, in concert with Michigan Natural Resources Trust Fund dollars (revenues generated by sale and leases of oil, gas and minerals from state lands), have been increasingly used to purchase lands that are viewed as important to wintering deer, particularly in the UP, where the loss of quality winter habitat appears to be greatest over the past half century.

Soil types and land cover types are not equally distributed between public and private lands in Michigan. This inequitable distribution often results in higher quality deer habitat occurring on private land. Agricultural lands are almost entirely (99 percent) found on private land and the abundant nutritional forage provided by crops allows for tremendous deer productivity. According to the Michigan Gap Analysis Project (Donovan et al. 2004), over 70 percent of the oak forests in Michigan are found on private land with the hard mast produced by these forests allowing deer to take on critical fat deposits as they enter the lean winter months. About 65 percent of Michigan's aspen forest is found on private land and deer benefit from browse available in regenerating forests, particularly those with aspen. In parts of northern Michigan, deer display seasonal migratory behavior where they seek out traditional deer yards consisting of large lowland conifer blocks that provide thermal cover and shelter from deep snow accumulation. More than 57 percent of the lowland conifer and 60 percent of the identified deer yards are found on private land.

Private landowners and the properties they own range from rural homeowners that live on parcels of less than an acre to huge corporations whose ownership may be in the hundreds of thousands of acres. Land management objectives vary significantly as well as interests range from nicely landscaped backyards to private hunting spots to maximized production of agricultural and forestry products. Commercial forest management, agricultural activities, and human development have the largest impact on deer habitat on private land; smaller scale efforts, including non-commercial forest manipulations and food and cover plots established by deer hunters, can have local impacts.

With nearly 80 percent of the land base and the majority of the most productive forests and agricultural lands under control of private landowners, there is potential for habitat management activities on these lands to influence deer numbers. This influence will increase in significance if landowners work together to identify regional habitat limitations and to address these limitations with appropriate projects. The potential for this type of cooperation is high in the northern portions of the state where corporations often enroll large tracts of land in the Commercial Forest Act (CFA), which provides a property tax reduction to private landowners as an incentive to retain and manage forestland for long-term timber production. The CFA also stipulates that public hunting be allowed on all parcels enrolled in the program. In 2009, there were approximately 2.2 million acres enrolled in this program by nearly 1,700 different landowners (Michigan Department of Natural Resources 2010). In addition, in parts of northern Michigan, large hunt clubs often consisting of tens of thousands of contiguous acres aggressively manage for deer and control enough land to impact local habitat conditions. Cooperative land management appears to be a growing trend throughout Michigan as deer management co-ops are becoming increasingly common, even in southern Michigan. These co-ops involve groups of landowners working together on habitat projects and wildlife management activities.

The DNRE has identified white-tailed deer as a Featured Species, highly valued by the citizens of Michigan, with habitat concerns that realistically can be addressed through active management. Even so, land managers must include the habitat needs and requirements of other species when considering managing habitat for deer. Management practices implemented to improve habitat for one species nearly always result in a decrease in habitat quality for other

species and proper habitat planning is a process of balancing the needs and requirements of a host of species. Improving habitat for white-tailed deer decreases habitat quality for some other species, especially those that require large tracts of mature forest.

The following Objectives and Actions have been identified to help overcome many of the challenges identified above. To the extent the Objectives are achieved, habitat conditions for deer and some additional species across the state should improve.

4.3.1 Identify and Address Critical Habitat Needs of White-tailed Deer by Region.

Action: The DNRE Deer and Elk Program Leader and other staff, as appropriate, will continue to participate in and provide leadership roles for national, regional, and state wildlife organizations, and committees that focus on deer habitat management and research activities (e.g., The Wildlife Society, the Midwest Deer and Wild Turkey Study Group, the Midwest Private Lands Working Group, the Midwest Public Lands Working Group).

Action: Evaluate existing deer habitat conditions, especially wintering habitat in the northern two-thirds of the state, and identify strategies to address regional habitat issues.

Action: Update the DRIP Manual to ensure that habitat improvement projects and land acquisition strategies successfully improve and increase deer habitat in the highest priority areas.

Action: Identify and implement habitat projects on DNRE-managed lands to address specific deer habitat needs.

Action: Work closely with agencies and individuals responsible for vegetation management on non-DNRE public land including those managed by USFS, and USFWS and private landowners, particularly those enrolled in the CFA or managed as hunt clubs or deer management cooperatives, to identify deer habitat issues and to implement habitat improvements.

Action: Continue to identify and acquire land parcels containing critical winter habitat, especially where quality habitat is in danger of being converted or destroyed.

4.3.2 Consider Habitat Needs and Requirements of Other Wildlife Species and Impacts on Natural Communities When Planning and Implementing Deer Habitat Projects.

Action: Minimize negative impacts on habitat of other wildlife species and on native plant species, communities and ecosystems, especially as identified in other resource management plans (e.g., WAP, State Forest Management Plan, Biodiversity Conservation Plan, Eco-

regional Plans) when planning and implementing deer habitat improvements on DNRE-managed lands.

Action**:** Consult with other significant land managers including the USFS, USFWS, and private landowners, particularly those enrolled in CFA or managed as hunt clubs or deer management cooperatives, on impacts of deer habitat improvement projects on other species.

4.4 Reduce Conflict Between Humans and Deer.

While white-tailed deer are highly valued by Michigan residents, conflicts between deer and humans occur at various levels of intensity across the State. Damage to agricultural and horticultural crops, suppressed forest regeneration, high rates of deer-vehicle collisions, and destruction of landscaping and other property by deer in urban/suburban areas can be significant. People engaged in these conflicts frequently request assistance from the DNRE and these conflicts must be considered when deer management decisions and policies are developed. While the DNRE attempts to minimize deer-human conflicts by managing deer numbers at appropriate levels through recreational hunting, development and implementation of new strategies will be necessary to successfully manage deer numbers in areas where hunting has not been effective.

Deer readily feed on a variety of agricultural crops and can reduce yields significantly. Agriculture is an enormous part of Michigan's economy and in 2007 more than 55,000 farms encompassing over 10 million acres, produced a net farm income of $2.03 billion and generated $71.3 billion in economic activity. Michigan ranks 19th nationally in total cash receipts for agricultural products and is the leading producer of crops such as dry beans, blueberries, cherries, cucumbers, and bedding and garden plants in the U.S. (USDA 2009). Agricultural crops are damaged by deer in most Michigan counties, but most significant damage occurs in areas where deer numbers are high and agricultural crops are common on the landscape.

The DNRE attempts to minimize deer damage to crops and ornamental plants through a variety of tools. Non-lethal methods that are frequently recommended to landowners by DNRE staff include the use of fencing, repellents, habitat alterations, and dogs. These methods have shown some short-term effectiveness, but can be expensive and labor-intensive. Regulated shooting of deer in conjunction with non-lethal methods has generally been the most effective strategy. The DNRE issues Deer Damage Control Permits (DDCPs) to farmers experiencing excessive crop damage during the growing season, and provides opportunities for appropriate harvest of antlerless deer during the hunting seasons by making sufficient antlerless licenses available. Where necessary, the DNRE issues the authority to purchase additional antlerless deer licenses called Deer Management Assistance Permits (DMAPs) to eligible land owners for use during the hunting seasons. In some areas, these tools have not been effective at reducing crop damage and alternative methods are needed.

Another significant conflict between deer and humans is deer-vehicle collisions. Approximately 1.5 million deer-vehicle collisions occur on U.S. roads annually and Michigan ranks second in the country in reported collisions. In 2008, 61,010 deer-vehicle collisions were reported in Michigan resulting in 12 human deaths and 1,648 injuries to the persons involved (Michigan Office of Highway Safety Planning 2009). Reduction of deer numbers in areas where deer-vehicle collisions present a significant public safety concern is imperative, as are education campaigns that promote safe driving and explain what to do when deer are present on roads.

As deer have adapted to living among humans and densely populated areas, they have moved into urban/suburban areas across the state. Increasing numbers of urban deer-vehicle collisions and excessive damage to landscaping are the most common problems associated with deer in these settings. In addition, concerns of disease associated with an abundant deer population living so closely with humans (e.g. Lyme's disease) also arise.

Perhaps the most challenging aspect in all of white-tailed deer management is the issue of how to best manage deer in these urban/suburban areas where use of lethal control as a management tool is frequently unavailable and community members often have highly polarized views and values regarding deer management. Successful resolution of urban/suburban deer issues requires that community leaders and DNRE staff work together with stakeholders to gain acceptance of proven methods and utilize them to successfully reduce human-deer conflicts. Currently, the DNRE advises community leaders, assists in the development of deer management plans, participates on local task forces, speaks at public meetings, conducts disease testing, and provides permits for lethal harvest, but lacks a defined process that can be implemented consistently across the State.

The DNRE encourages additional harvest of antlerless deer, especially on private lands, in order to lower deer population levels in some areas. Discounted prices on antlerless licenses, additional antlerless seasons, and educational efforts aimed at increasing antlerless harvest have failed to encourage hunters to harvest enough antlerless deer to keep numbers at reasonable levels in some areas of the state. Some landowners are unwilling to require their hunters to harvest antlerless deer and guest hunters often choose to focus harvest efforts on antlered bucks. DNRE efforts to engage organizations such as Michigan State University Extension, Farm Bureau, and MUCC to connect farmers seeking reductions in deer with hunters seeking hunting opportunities may be productive. In addition, the effectiveness of deer management tools must be evaluated thoroughly. Current programs may be too voluntary in nature, lacking adequate incentives to change behaviors and to increase the harvest of antlerless deer. It is foreseeable that recreational hunting may no longer be adequate to manage the deer herd in some places in southern Michigan.

The following Objectives and Actions have been identified to help overcome many of the challenges identified above. To the extent the Objectives are achieved, human-deer conflicts should be reduced.

4.4.1 Reduce Damage Done by Deer to Agricultural, Silvicultural and Horticultural Crops**.**

Action: Consider extent of damage to agricultural, silvicultural, and horticultural crops when establishing population goals and setting antlerless quotas.

Action: Evaluate the effectiveness of current tools designed to reduce or maintain deer numbers and to minimize damage to agricultural, silvicultural, and horticultural crops.

Action: Work with organizations like Michigan State University Extension to facilitate relationships between farmers and hunters to increase recreational antlerless deer harvest on private lands, where excessive deer damage occurs.

Action: Report and publicize (e.g. website, press releases) on a routine basis the number of deer permits (DDCPs, DMAPs, and DCPs) that are issued and used by geographic area.

Action: Identify opportunities to implement new and innovative tools for managing deer populations where voluntary programs are not effective, potentially including discounted antlerless licenses, earn-a-buck, market hunting, etc.

Action: The DNRE Deer and Elk Program Leader and other staff, as appropriate, will continue to participate in and provide leadership roles for national, regional, and state wildlife organizations, and committees that focus on management and research activities addressing public health and safety problems and depredation impacts created by deer and other wildlife (e.g., National Wildlife Services Advisory Committee, The Wildlife Society, Wildlife Damage Management Working Group).

4.4.2 Reduce Deer-vehicle Collisions on Michigan Roads.

Action: Consider deer-vehicle collision rates when establishing population goals and setting antlerless quotas.

Action: The DNRE Deer and Elk Program Leader and other staff, as appropriate, will continue to work with and increase involvement with the Michigan Deer Crash Coalition (MDCC) to develop and implement programs designed to reduce deer-vehicle collisions.

4.4.3 Increase Effectiveness at Managing Deer Numbers in Urban and Suburban Areas, Airports, etc.

Action: Review the current urban/suburban deer policy and develop an urban/suburban deer management plan that provides specific,

consistent guidelines and recommendations for communities dealing with urban/suburban deer issues.

Action: Pursue policies that allow and encourage the use of recreational hunting, including archery hunting in urban/suburban areas, to address urban/suburban deer issues.

Action: Provide educational materials with technical advice and tools for dealing with urban and suburban deer.

4.5 Reduce the Threats and Impacts of Disease on the Wild Deer Population and on Michigan's Economy.

The Michigan DNRE is responsible for safeguarding the health of free-ranging wildlife, including white-tailed deer through its management and regulatory powers. Like all wildlife species, white-tailed deer are susceptible to a variety of diseases and parasites, many of which weaken affected animals, but generally are not fatal. Others can be deadly to individual animals either acutely or chronically, may potentially affect entire populations and can be transmitted to other species, including domestic animals and/or humans. Diseases that are of concern in Michigan include Epizootic Hemorrhagic Disease, Eastern Equine Encephalitis, Lyme's Disease, Bovine TB (TB), and CWD. In recent years, the discoveries of Bovine TB in the wild deer population and of CWD in a single captive deer in Michigan have triggered intense public concern and influenced deer management decisions.

The Bovine TB eradication effort has had a significant effect on the northern Michigan deer population, the livestock industry, and Michigan's economy since discovery of the disease in Michigan in 1975. In efforts to lower TB infection rates in deer, baiting and feeding of deer were banned in the TB management area (a portion of the NE Lower Peninsula) in 1998. Sufficient antlerless licenses and DCPs were made available to hunters and landowners, and the deer population in that area was reduced by over 30 percent. However, as hunters observed fewer deer, they became less willing to sustain aggressive antlerless deer harvests and public resentment of control measures has grown.

Following confirmed diagnosis of CWD in a captive white-tailed deer in a Kent County facility in August 2008, the DNR intensified surveillance efforts as prescribed by the Michigan Surveillance and Response Plan for Chronic Wasting Disease of Free-Ranging and Privately-owned/Captive Cervids (Michigan DNR and Michigan MDA 2002). In 2008, 9,151 free-ranging deer were tested for CWD Statewide, including 1,523 from a 9 township area (mandatory deer check) surrounding the infected captive facility. All were negative. Since 1998, over 32,300 free-ranging white-tailed deer have been tested statewide, and all have been negative.

Both simulation modeling and field research conducted in other states suggest that once established, CWD can build to high prevalence in infected deer populations, resulting in marked decreases in survival of infected deer and likely causing substantial population declines over decades (Miller et al. 2008, Wasserberg et al. 2009). Where CWD has become established, no

characteristics of the disease make containment and control, let alone eradication, a likely result (Williams et al. 2002). Because the apparent presence of CWD poses such a significant threat to deer populations, actions taken by the DNRE included placing further restrictions on captive deer facilities throughout the State, approving antlerless deer regulations designed to reduce the herd, and implementation of a ban on baiting and feeding of deer in the entirety of Michigan's LP. Some stakeholders have accused the DNRE of over-reacting to the detection of CWD in a single deer and have requested that the ban on baiting and feeding be reversed.

DNRE management decisions and responses to disease risks must continue to be based on the best available science and consider relative risks to the health of deer, other wildlife species, livestock and agriculture, and human health and safety. The DNRE strategies regarding the threat of disease must be clear, well communicated to the public, and appropriate to the seriousness of the threat. Recognizing that the state has two distinct deer sub-populations (UP and LP), disease prevention strategies can be addressed at the sub-population level rather than on a statewide basis. Similar to the plan completed for CWD, response plans for diseases that pose potential threats to Michigan's deer herd facilitate proactive and well-planned responses. Development of similar plans for other diseases of concern is likely to be beneficial in some circumstances.

The following Objectives and Actions have been identified to help overcome many of the challenges identified above. To the extent the Objectives are achieved, the threats and impacts of disease on the wild deer population and on Michigan's economy should be minimized.

4.5.1 Implement Deer Management Programs and Regulations Designed to Prevent the Infection of Deer by Diseases That are Not Currently Endemic to Michigan's Deer Herd and to Reduce Prevalence Rates and Distribution of Existing Diseases in Michigan's Deer Population.

Action: Manage diseases (by containment, control, or eradication when appropriate) commensurate with the threats they pose to the sustainability of the deer population, human health, other wildlife, the economy, and agriculture.

Action: Develop disease response plans, similar to the one completed for CWD, for diseases that are determined to pose significant threats to Michigan's deer herd.

Action: Implement guidelines and strategies provided by disease response plans to ensure that the herd is not limited by diseases that influence the wellbeing of deer or the health of humans, domestic animals, and other wildlife.

Action: Maintain existing programs and regulations designed to reduce the likelihood that diseases not currently found in Michigan deer will become established and to reduce prevalence rates and distribution of existing diseases. These include a ban on all baiting and feeding of deer in the LP, restrictions on importation of deer parts from states

with CWD, and monitoring of taxidermy facilities, private deer farms and rehabilitation of deer.

Action: Consider use of all available tools to manage deer numbers at levels where transmission rates of significant contagious diseases such as TB and CWD are minimized.

Action: Regulations aimed at addressing the impacts of disease on deer in Michigan, to the extent possible, will target/address at the sub-population (UP and LP) level, rather than the entire statewide herd.

4.5.2 Adequately Sample Michigan's Deer Herd for Disease.

Action: Continue to test deer and other wildlife for TB at levels sufficient to characterize the magnitude and distribution of TB in Michigan's deer herd.

Action: Continue to test deer for CWD at levels established in the CWD response plan.

Action: Continue to test deer that exhibit "unusual" behavior including loss of fear of humans, extreme emaciation, drooling, walking in circles, etc., and conduct investigations of deer die-offs or unusual events involving sick deer.

Action: Regularly report findings to the public on diseases of concern and the health status of the deer herd.

4.5.3 Disease Prevention and Management Policies and Regulations Will Incorporate the Best and Most Recent Scientific Information Pertaining to Deer Diseases in Michigan**.**

Action: Review appropriate scientific journals for new and more complete information regarding deer diseases relevant to Michigan.

Action: The DNRE Deer and Elk Program Leader and other staff, as appropriate, will continue to participate in and provide leadership roles for national, regional, and state wildlife organizations and committees that focus on issues of wildlife health and diseases that affect deer (e.g., U.S. Animal Health Association (USAHA), Midwest Fish and Wildlife Health Committee, National Wildlife Services Advisory Committee, Association of Fish and Wildlife Agencies (AFWA)-Fish and Wildlife Health Committee, National CWD Surveillance Working Group, The Wildlife Society Wildlife Diseases Working Group).

Action: Participate in, evaluate, and conduct research on deer disease-related issues.

4.6 Enhance Public Engagement in and Awareness of Deer Management Issues and Knowledge of Deer Ecology and Management.

Deer are one of the most recognizable and most frequently observed wildlife species in Michigan, and the DNR has attempted education and outreach activities over the years to inform and educate the citizens of Michigan about deer and deer management. Despite the high profile nature of deer and DNR outreach efforts, the general public still holds many misconceptions about the species. Many members of the public do not fully understand the details of deer management in Michigan and there is skepticism regarding DNRE management efforts, especially with the accuracy of deer population estimates. The public survey report (Appendix E) identified a lack of trust of DNR deer management efforts among deer hunters, especially in the UP. Clear and concise information describing how the DNRE monitors and manages the deer herd is critical to building trust among stakeholders for the DNRE. The public is interested in all aspects of deer and deer management and information and education programs that encourage interest and participation in deer hunting and deer management among Michigan's citizens should be comprehensive. Of particular interest to those concerned with deer management are statewide, regional, and local deer population estimates, the methods used to estimate deer numbers, how antlerless quotas and deer hunting regulations are determined, and the impacts of deer on the landscape.

Deer hunting and deer management opinions and philosophies often elicit strong emotions among stakeholder groups and individuals. These opinions and philosophies can stem from long held traditions and ideals, which may be difficult to change. Developing educational materials that effectively impact Michigan citizens is difficult. The presentation of accurate, unbiased information that is based on sound science is essential when difficult or controversial ideas and concepts are being communicated.

Researchers, managers and stakeholder groups generally agree an informed public is critical in creating a successful deer management program. Efforts undertaken by DNR staff to provide the opportunity for public input leading up to development of this plan (i.e., the eight public meetings held throughout the State, interactions with the Michigan Deer Advisory Team, Tribal representatives, public opinion survey, and public review and comment period) reinforced awareness about the desire of the public to be well informed on deer management issues and the need for an effective deer information and education program.

Although the need for an effective deer management information and education program is widely recognized, development of such a program is not a simple task. Acquiring and incorporating input from and creating and providing information to a diverse group of organizations and individuals is challenging. Many stakeholders interested in deer management in Michigan are easily identified and willing to participate in public meetings. These groups have regular contact with DNRE staff, and take notice of DNRE press releases and outreach materials. However, there are many other individuals or groups that are much less engaged, but are equally interested or opinionated. Opinions and ideas of groups or individuals that are familiar and comfortable with traditional DNR outreach efforts are often over-represented compared to those who are unwilling or uninterested in making the efforts necessary for interaction with DNRE staff and DNRE outreach efforts.

A major challenge to the development of an effective education program has been a lack of priority within the agency. Although the DNR has engaged in several deer education and outreach activities during the past several years, it has lacked sufficient staff to develop and implement a comprehensive deer-based education program while maintaining all other priority activities.

Coordinating a deer education program in cooperation with partners (e.g., other agencies, Tribes, MSU Extension, Michigan Association of Conservation Districts, and private organizations) may be an effective way to overcome many challenges and barriers that exist with deer management. There is a need to identify target audiences, information needs, and the educational approaches that may be most effective. Partnerships with appropriate organizations and stakeholder groups can lend credibility to educational materials and help ensure those materials present unbiased, accurate information. A program involving such partners that utilize a diverse array of proven media outlets can effectively communicate information to broad audiences.

In addition, targeted information and education programs that involve partners, who possess the expertise and resources necessary to develop and implement an effective program, can improve the quality and accelerate the development and distribution of educational materials that address the specific needs and interests of target audiences. Some individuals, organizations, or businesses that are vested in deer management (e.g., hunting equipment manufacturers, agricultural and silvicultural interests, or those concerned about deer-vehicle accidents) have not fully participated in promoting deer management and deer hunting. Partnering with organizations associated with the hunting community, shooting sports industry, tourism industry, and non-government organizations should increase the credibility of outreach efforts. Public engagement efforts should be implemented at all geographic (statewide, regional, and local) levels. Communication strategies should be proactive in discovering, addressing and managing issues, while engaging partner organizations whenever possible.

Since it is difficult to take input from the large and diverse groups and individuals interested in deer management in Michigan, the RDATs will assist DNRE staff with information and education efforts regarding deer management issues that are specific to the different regions of the State. The RDATs will be helpful to the DNRE as conduits between the DNRE, stakeholders, and Michigan citizens. Similar advisory groups on black bears, furbearers, fisheries, and waterfowl have been established, and have proven effective.

The following Objectives and Actions have been identified to help overcome many of the challenges identified above. To the extent the Objectives are achieved, public awareness and understanding of deer management is expected to increase.

4.6.1 Ensure Stakeholder Engagement as Deer Management Decisions are Considered and Outcomes are Communicated.

Action: Investigate and implement means to ensure a diversity of stakeholders have opportunities to provide input when considering deer management issues.

Action: When necessary, engage various stakeholders by utilizing RDATs, surveys, public forums, focus groups, or one-on-one conversations to ensure needs and interests of Michigan citizens are being considered.

4.6.2 Ensure Appropriate, Accurate and Consistent Information is Conveyed to the Public Concerning Deer Ecology and Deer Management in Michigan.

Action: Develop a Deer Communication Strategy to so that appropriate deer management information is communicated, such as the deer management methods and philosophies that are considered by DNRE staff (e.g., explanation of methods used to estimate deer population demographics and size; habitat concerns and issues; consequences of over-browsing on forest health and diversity; deer herd health; human-deer conflicts; on-going deer research projects; economics of deer hunting; hunting regulation setting process and timeline; and the role of hunting in deer management).

Action: Ensure that appropriate information on deer hunting and deer population status is communicated, such as the legal authorities and processes through which pertinent laws and regulations are adopted; regional deer population information; public and private land hunting opportunities; deer harvest results and statistics; principles of fair chase; the role of hunting in deer management; and trespass laws and recreational liability for landowners.

Action: Ensure that information presented to the public is science-based and factual.

4.6.3 Coordinate With Partners to Develop and Implement Deer-based Information and Education Efforts Identified in the Deer Communication Strategy.

Action: Identify and develop relationships with partners including government agencies, hunting and conservation organizations, businesses and organizations associated with deer hunting, agricultural, silvicultural, and insurance industries, etc., that can provide assistance (technical and/or financial) in the development of information and education programs and materials.

Action: Work with partners to develop, distribute, and evaluate materials, presentations, and programs that address the needs and interests of target audiences.

Action: Work with the media to present accurate information to broad audiences.

Action: When prudent, invite public and media participation in deer-related projects.

Action: Support efforts initiated and implemented by partners to provide positive deer-related information and to enhance relationships.

4.6.4 Support Training Opportunities for Staff and Partners Involved in the Deer-based Information and Education Program.

Action: Provide staff with the training and information resources necessary for effective participation in the information and education program.

Action: Share information with partners to facilitate understanding of current deer-related issues.

4.6.5 Evaluate the Effectiveness of the Deer Communication Program.

Action: Work with RDATs, partners, and research staff to complete a regular needs assessment and an evaluation of the effectiveness of the information and education program.

5. PLAN MONITORING AND REVIEW

Regular communication among the DNRE, other agencies, stakeholder groups, and the general public allows interested parties to monitor progress made toward implementation of this plan. It also provides opportunities for DNRE staff to receive input on specific management issues. The DNRE Deer and Elk Program Leader will work with the RDATs and take input from other interested organizations and individuals annually to ensure that the deer management plan is being implemented effectively. Progress toward implementation of specific Actions will be assessed and ultimately, success of the deer management program will be judged by evaluating achievement of the six Goals identified in this plan.

Deer abundance, distribution and the attitudes of Michigan residents concerning deer will likely continue to change through time. To address ecological, social and regulatory shifts in a timely manner, the DNRE will review and update this plan at 5-year intervals. The plan-revision process will include review of the best available scientific information and substantial involvement by affected stakeholder groups and the public.

6. FUNDING

Much of the funding for wildlife management in Michigan has traditionally been derived from revenues generated by sportspersons. For example, the Michigan Game & Fish Fund and the DRIP, are generated by state hunting and fishing license revenues, and the Federal Aid in Wildlife Restoration Act (also known as the Pittman–Robertson Act) provides funds derived from a Federal tax on purchases of sporting arms and ammunition. Passage of the Pittman-Robertson Act in 1937 was a huge step forward for America's growing wildlife management programs. In Michigan, these funds have been, and continue to be, used for the acquisition and maintenance of state game lands and to fund important wildlife management efforts including planning, population surveys, research, and outreach activities including hunter education programs. Since more hunting licenses and sporting arms and ammunition are purchased by deer hunters than any other group, deer hunters support a significant portion of the DNRE's wildlife conservation activities. In addition, timber sale revenues from State forest lands and some State Game and Wildlife Areas also contribute toward wildlife management and conservation. Approximately 30 to 35 million dollars of timber revenues are generated on State forest lands each year. These funding sources are critical in Michigan since the DNR has gotten less than five percent of its budget from the State of Michigan General Fund (general tax dollars). In the absence of other funding alternatives, the DNR deer management program has been supported primarily by these funding sources. As a result, sportspersons have played a critical role in funding the conservation and management of deer in Michigan.

While sportspersons and other management partners have provided much of the funding for deer management, they currently represent only a small proportion of Michigan residents. Regardless of the inequities that may be associated with such a system, a funding approach that relies on the contributions of these groups may fall short of management needs in the future. This is especially true if the number of sportspersons continues to decline. This issue is not specific to funding for deer management, but applies to most major funding sources utilized for wildlife management in Michigan.

Successful efforts to obtain funding from alternative sources could spread the financial support for deer management among a greater variety of stakeholder groups who are impacted by deer. Such an approach could help sustain the required levels of funding, and it could provide the general public with a greater stake and interest in deer management. Pursuit of alternative funding sources for wildlife management will be coordinated at the Department level.

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8. APPENDICES

APPENDIX A: DEER SYMPOSIUM AGENDA AND SUMMARY

APPENDIX B: SUMMARY OF COMMENTS FROM THE PUBLIC ISSUE SCOPING MEETINGS (FEB. AND MAR. OF 2009)

APPENDIX C: SUMMARY OF COMMENTS RECEIVED VIA MAIL OR EMAIL DURING PUBLIC COMMENT PERIOD (FEB. 17, 2009-DEC. 23, 2009)

APPENDIX D: A REVIEW OF DEER MANAGEMENT IN MICHIGAN

APPENDIX E: DEER ADVISORY TEAM REPORT: RECOMMENDATIONS FOR DEER MANAGEMENT IN MICHIGAN

APPENDIX F: PUBLIC SURVEY REPORT: ACCEPTANCE CAPACITY FOR WHITE-TAILED DEER (ODOCOILEUS VIRGINIANUS) IN MICHIGAN: A COMPARISON OF HUNTERS AND NON-HUNTERS FROM THE UPPER PENINSULA, NORTHERN LOWER AND SOUTHERN LOWER PENINSULA OF MICHIGAN, 2009

APPENDIX G: SUMMARY OF COMMENTS FROM THE DRAFT DEER MANAGEMENT PLAN PUBLIC MEETINGS (FEB. AND MAR. OF 2010)

APPENDIX H: SUMMARY OF COMMENTS RECEIVED VIA MAIL OR EMAIL DURING DEER MANAGEMENT PLAN REVIEW PERIOD (JAN. 1, 2010-MAR. 26, 2010)