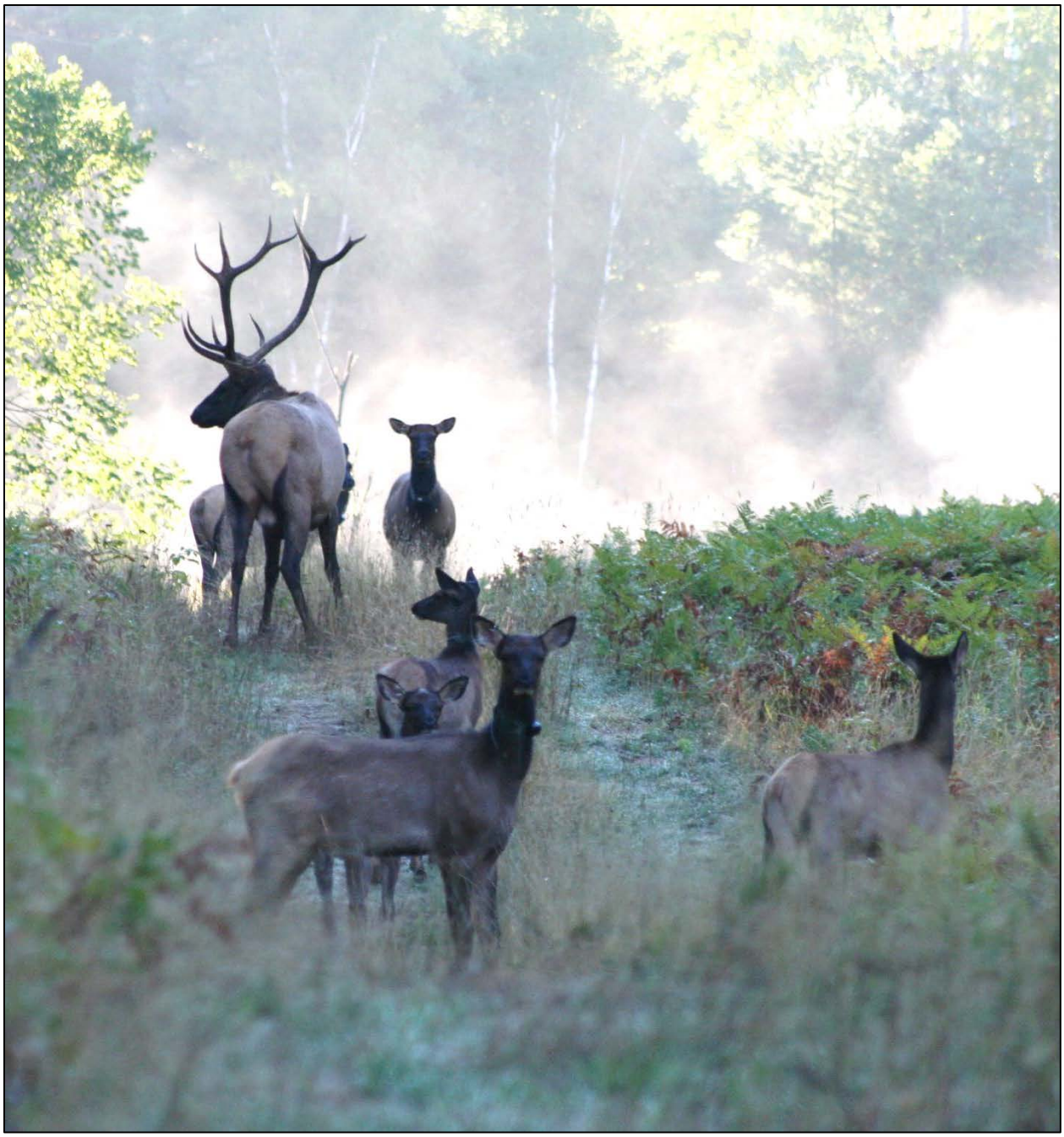
2012 Clam Lake and Black River
Elk Management Plan Amendment



Executive Summary

The purpose of this plan amendment is to make substantive changes to both the Clam Lake and Black River Elk Herd Management Plans. These changes were identified by government, tribal, and private partners, and by Department of Natural Resources (Department) staff. Current conditions which necessitate this amendment were not anticipated in the original plans, but we have since learned how elk have adapted to the northern Wisconsin landscape. In addition, there are new or proposed regulatory changes that will affect future elk management. There is also new information available, primarily on elk genetics, which was not available when the original plans were developed.

The Department recognizes that a full revision of the original elk management plans for both the Clam Lake and Black River elk herds will be needed in the future. In an effort to expedite the process and take advantage of current opportunities with a potential donor state to provide elk for import to Wisconsin, the Department is providing an amendment rather than a full rewrite of both plans.

Wisconsin's recent elk reintroduction started with 25 Michigan elk in 1995 and currently there is an estimated population of 154 elk (May, 2012). The Michigan herd started with seven animals in 1918. From 1996-2004, the Clam Lake Elk Herd (CLEH) grew an average of 21 percent per year (ranging from 13 to 30 percent annual growth). Since 2004, the herd has grown an average of seven percent per year (ranging from -3 to +15 percent). At the current rate of herd growth, it is anticipated that the population will reach the hunting threshold of 200 elk in the spring of 2013 after which a very limited bull hunting season will occur during the fall of that year. Revenues from hunting license applications and other permit-related sales, earmarked for elk management, are expected to generate approximately $400,000 annually and will be available to help fund implementation of these strategies.

Following the reintroduction of elk to the Clam Lake area, the Jackson County board adopted a resolution to support similar efforts on public lands in eastern Jackson County. The Department determined that historical and adequate elk habitat existed in the Black River area and, after conducting public meetings, determined there was significant support from the community for an elk reintroduction. In December of 2001, the Natural Resources Board (NRB) approved the Black River Elk Herd (BREH) Management Plan. The Black River Elk Range (BRER) is approximately 320 sq. miles, almost entirely publicly owned, and located in the Central Forest region of eastern Jackson County. A population goal of 390 elk was established in the original management plan, and limited public hunting for bulls will begin when the population reaches 150 elk. The population goals may be adjusted after the population has grown and dispersed to a level at which their interaction with Wisconsin's people, flora, and other fauna can be more thoroughly understood and predicted. With the discovery of Chronic Wasting Disease (CWD) in Wisconsin's wild whitetail deer herd in 2002, all movement of cervids across state borders was halted. The BREH cannot be established until new elk can be obtained from a donor state.

The following are the key findings from research and monitoring of the CLEH since it was introduced, and serve as the basis for the proposed changes to the original CLEH and BREH Management Plans:

1. The initial experimental release of 25 elk from a herd founded with seven elk was not enough to preserve levels of genetic variation consistent with native herds, nor sufficient numbers to assure strong, sustained population growth. The CLEH possesses reduced levels of genetic variation, potentially impacting recruitment, survival, and the long term adaptability of the herd.

2. Based on extensive telemetry monitoring, elk have shown that aspen clear cuts are their preferred forage habitat, using aspen clear cuts at almost twice the rate as other habitat types. Furthermore, aspen clear cuts that were abundant during the first five years after the elk release have become less frequent on the elk range, primarily on the Chequamegon/Nicolet National Forest (CNNF). Highest elk use is occurring mostly on the scattered private forest inholdings that are enrolled and cut as required under Wisconsin's Managed Forest Law. Over time, elk will require a greater mix of habitat providers including private landowners, Forest Service, State and County Forests, and others to ensure forage availability for a growing herd.

3. Similar to other eastern elk states, Wisconsin elk have shown limited dispersal. During the first five years post-release, the main group of elk immediately around the community of Clam Lake expanded to occupy

45 square miles. During the next 11 years, they expanded into just 42 additional square miles. The current population occupies less than 10 percent of the available elk range.

4. The Wisconsin herd is challenged by both relatively poor survival of yearling and breeding age cows, and periodic sudden increases in calf mortality. The top three mortality factors for Wisconsin elk have been wolf predation (37 percent), vehicle collisions (16 percent), and bear predation (14 percent). Combined, these three causes of mortality account for two-thirds of all known elk deaths.

5. Most importantly, Wisconsin's elk management program is stronger due to increased involvement by partners, government agencies, and the Tribes.

This amended plan recommends the following strategies based on these findings:

Supplemental Increases: The amended plan recommends importing a minimum of 275 wild elk over a three to five year period with different genetic background than the founding herd. A minimum of 200 elk would be released on the Clam Lake Elk Range (CLER) and a minimum of 75 would be released to establish the BREH. Multi-year releases would occur for both the CLER and BRER. Disease testing and quarantine procedures would be followed to ensure that the imported wild elk would be as free as possible from disease. The elk would be acclimated to the new locations with a "soft release" similar to existing assisted dispersal efforts. Wild Kentucky elk are currently the most attractive source because of their anticipated high levels of genetic diversity, herd health, and availability. This strategy is estimated to cost approximately $480,000 to $560,000 (Appendix A). No formal agreement currently exists with Kentucky and will be pursued after NRB approval of this plan.

Range Modification: The amended plan recommends expanding the CLER by 508 square miles south and immediately adjacent to the original elk range that contains 1,112 square miles, bringing the total CLER to over 1,600 square miles. The proposed boundary expansion avoids most agricultural areas and is primarily composed of a large block of state, county and industrial forest land that has the most abundant aspen resource in the region. Existing forest management plans in this area are designed to aggressively manage the aspen resource which will add to the long-term forage security for a growing elk herd. This existing management creates high quality elk forage now and in the future. It is expected that the elk in this area would have high growth potential on a landscape that has 78 percent public access (compared to 63 percent on the original CLER). Discussions with county forestry committees in Sawyer, Price and Rusk counties indicate unanimous support for this elk range modification. There are no proposed changes to the boundaries of the BRER.

Goal Modification: The amended plan recommends replacing the current Zone A and Zone B delineations for the CLER with one elk range delineation to include the newly-proposed expanded elk range. Furthermore, elk density goals should be made considering habitat and social carrying capacities. Since the current population is relatively young with low numbers, it is proposed to select a simple and conservative density goal of about one elk per square mile of total area for the entire elk range. It is recommended that an eventual density goal be based upon a detailed habitat evaluation. There are no proposed changes to the population goals or delineations of the BRER.

Assisted Dispersal: Neither of the original elk management plans addresses the need to move elk within existing elk range because it was assumed elk would naturally disperse. Telemetry monitoring of the CLEH has shown that cow elk in this habitat do not disperse readily. "Assisted dispersal" of elk has been particularly successful in other eastern states. Following their example, the Department initiated a trial assisted dispersal project in 2010 with tribal and partner involvement. The goal was to relocate a number of winter trapped pre-breeders (3:1 females to male ratio) to several suitable sites within the existing elk range over a five year period. Assisted dispersal is recommended for continued use in both the CLER and BRER in the future, especially if range modifications and supplemental stocking is approved.

Predator Management: This amended plan recognizes the critical importance that quality elk habitat plays in reducing the impacts of predators. In addition, while this plan amendment is consistent with the original plan that recommended no active predation control, a public wolf harvest that has been authorized by the Wisconsin legislature may influence elk predation rates in the future. The impacts of wolf harvest on elk populations are difficult to predict at this time.

Tribal Sovereignty: This elk management plan amendment addresses two populations of elk; one in the Clam Lake area within the Ojibwe Ceded Territories and the other in Jackson County among Ho-Chunk Nation lands.

This Wisconsin elk management plan recognizes that the well-being of the elk herd is premised upon a collaborative relationship between the Department and member tribes of the Voigt Intertribal Task Force and Ho-Chunk Nation. The Department recognizes sovereignty rights and authority in elk management and acknowledges that this plan in no way intends or should be construed to modify, alter, abridge or in any way affect treaty reserved rights as they have been established by the law, court decisions and stipulations. The Department will implement its authority and jurisdiction claims consistent with this plan in a way that does not infringe upon the established rights and responsibilities of tribal entities.

Partnership Involvement: In addition to recognizing the Ojibwe tribes and Ho-Chunk Nation, the amended plan recognizes that other government agencies like the U.S. Forest Service have been integral partners in the Wisconsin elk restoration effort and management program. It is expected that increased involvement by many partner and public resource management agencies will occur, especially with range expansion and establishment of the BREH. Coordination has also increased with other private elk interest groups like the Rocky Mountain Elk Foundation (RMEF) and the Jackson County Wildlife Fund (JCWF).

Other Considerations:

Tourism: It is expected that these strategies will promote tourism over a broad geographic area. While difficult to measure, it has been estimated by the Cable Area Chamber of Commerce that the Clam Lake elk herd contributes approximately $210,000 annually to the local economy. With range expansion and assisted dispersal, increased elk-related tourism would benefit additional communities in the area of both the CLER and BRER. The interstate corridor would make traveling to the BREF particularly easy for people coming from southern and western Wisconsin metropolitan areas.

Road Closures: The Department recognizes that with a larger elk population established over a broader area, past management recommendations advocating for permanent or seasonal road closures to motorized vehicle use are not necessary. In order for elk to prosper in Wisconsin, they must adapt to current land uses such as motorized vehicle traffic, outdoor recreational activities, and natural sources of mortality like predation.

Chronic Wasting Disease Monitoring: In March 2012, CWD was detected in a wild deer near Shell Lake in Washburn Co., less than 45 miles from the CLER, and less than 70 miles from the BRER. It is important to note that only one deer has tested positive for CWD, and that the geographic extent and infection rate of deer in this area are currently unknown. It should also be noted that approximately 1,000 deer have been tested for CWD since 2002 in each of Ashland, Bayfield, Sawyer, and Washburn counties. To date, CWD has not been detected in these counties. Over 1,800 samples have been collected since 2002 in the deer management units that make up the CLER, and CWD has not been detected. Thus, while it is likely that the risk posed by CWD to the CLEH is low in the near term, more information is needed to thoroughly assess the risk given the recent discovery.

As a precautionary measure, the Department collected samples during the 2012 gun deer seasons (and will again in 2012) for CWD testing in the deer management units that make up the majority of the CLER (DMUs 13, 14, 19 and 20) including the proposed expanded CLER and all of the BRER (DMU 55). A total of 148 samples from each area will provide 95% confidence that the disease exists at less than 2% prevalence. Prior to any importation of elk as recommended by this amendment, the risk posed by CWD to elk will be assessed. In the event that CWD is detected in either the CLER or BRER prior to importation of elk, the prevalence, geographic extent, specific location, and other risk factors for elk will be assessed, and an evaluation will be made whether to proceed with or cancel importation plans, future assisted dispersals, or any other proposal as outlined in this amendment. CWD and other diseases in elk will continue to be monitored in future years as they have been every year since 1995.

Financing the Elk Restoration Effort:
Based on 2011-12 figures obtained from Kentucky Department of Fish and Wildlife along with estimates from Wisconsin's current program, the importation of 275 elk (potentially from Kentucky) over a 3-4 year period (anticipating 75-100 elk per year) would cost approximately $480,000 to $560,000. All necessary funding has been

pledged from partner groups including the Ho-Chunk Nation ($100,000 existing grant), Rocky Mountain Elk Foundation ($300,000 written pledge), and Jackson County Wildlife Fund ($50,000), with other pledges pending.

Financing Future Elk Management in Wisconsin:
Wisconsin's elk management program is currently supported by Fish and Wildlife Segregated Funds and General Program Revenue at a cost of approximately $200,000 per year. When elk hunting begins, management costs will be offset with revenues from applications for elk hunting permits and the sale of hunting licenses. The cost of a permit application has been established at $10 per applicant including a $2.75 processing fee and $0.25 issuing fee, with the remaining $7.00 returning to the elk management program. Revenue from the sales of the elk hunting permits ($50 resident, $250 non-resident) is earmarked for elk management. Although harvest permits will be limited, with over 620,000 deer hunters in Wisconsin, anticipating approximately 40,000 applications seems reasonable, if not conservative. At that level, the $7 from application fees will provide an estimated $280,000 annually for elk management and will be used to cover personnel costs, vehicle and equipment purchases and maintenance, elk research and monitoring, and implementation of the elk hunting season. Revenues from all fees we be segregated to an elk management account.

Additional revenues from the implementation of an elk hunt are also anticipated. By State Statute, the Rocky Mountain Elk Foundation will be provided with one elk harvest permit each year for the first five years that hunting is allowed. The permit must be raffled (sale at auction is not allowed), and is expected to generate additional dollars that are earmarked for elk management in Wisconsin. We are hopeful that this single permit could generate an additional $100,000 or more per year.

In total, these revenue-generating items are expected to provide approximately $400,000/year for elk management, research, and monitoring need.

Once elk arrive in Wisconsin and the new BREH is established, additional personnel may be needed to monitor the herd and cover management responsibilities. The job responsibilities of the Jackson/Clark County wildlife biologist will include 40% of their time being dedicated to elk management if an elk herd is present. Ho-Chunk Nation Division of Natural Resources has agreed to help with herd monitoring, and graduate student projects from UW-Stevens Point are anticipated to monitor the BREH after release. Eventually, a full-time project position and LTE help may be required and would cost approximately $80,000 per year.

Consequences of No Action: The consequences of not implementing these strategies are expected to be a herd that will experience suppressed population growth and little range expansion. Without these changes, there may also be reduced public support for Wisconsin's current elk restoration efforts, resulting in a loss of tourism opportunities and revenues, both locally and statewide. The BREH would not be established.

Implementation of these strategies will best enhance individual fitness and adaptive potential of the CLEH, place it in the best habitat available that will support sustainable population growth, and help spread elk across more of the available suitable habitat. This will all be accomplished together with public and private partners, the Ojibwe Tribes and Ho-Chunk Nation.

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ACKNOWLEDGEMENTS

Written and Edited by:

Laine R. Stowell, Elk Biologist, WDNR, 10220N STH 27, Hayward, WI 54843

Michael Zeckmeister, NOD Wildlife Supervisor, WDNR, 810 W. Maple St., Spooner, WI 54801

Kenneth W. Jonas, Upper Chippewa Basin Wildlife Supervisor, WDNR, 10220N STH 27, Hayward, WI 54843

Kevin Wallenfang, Big Game Staff Specialist, WDNR, P.O. Box 7921, WM/6 GEF 2, Madison, WI 53707-7921

Scott C. Roepke, Assistant Big Game Ecologist, WDNR, P.O. Box 7921, WM/6 GEF 2, Madison, WI 53707-7921

Jonathan Gilbert, Wildlife Supervisor, Great Lakes Indian Fish and Wildlife Commission, Odanah, WI 54861

Daniel A. Eklund, Biologist Supervisor, USDA-Forest Service, Hwy 13 S., Park Falls, WI 54552

Timothy Ginnett, Professor of Wildlife, University of Wisconsin-Stevens Point, Stevens Point, WI 54481

Robert Rolley, WDNR Research Scientist, 2801 Progress Rd., SS/RC, Madison, WI 53716

Adrian Wydeven, WDNR Mammalian Ecologist, 875 S. 4th Ave., Park Falls, WI 54552

Brian Dhuey, WDNR Research Scientist, 2801 Progress Rd., SS/RC, Madison, WI 53716

Tim Babros, WDNR Area Wildlife Supervisor, 910 Highway 54 E, Black River Falls WI 54615

Kris Johansen, WDNR Area Wildlife Supervisor, 473 Griffith Avenue, Wisconsin Rapids WI 54494

Other advice and reviews provided by the following:

Matthew D. McKay, Former Assistant Elk Biologist, WDNR, 10220N STH 27, Hayward, WI 54843

Lindsey Long, WDNR Wildlife Veterinarian, 2801 Progress Rd., SS/RC, Madison, WI 53716

Thomas Matthiae, Biologist (retired), USDA-Forest Service, 604 Nyman Ave., Hayward, WI 54843

Lou George, Reg. Director, Rocky Mountain Elk Foundation, W390 Piepers Valley Rd., Fountain City, WI 54629

Kurt Flack, Reg. Director, Rocky Mountain Elk Foundation, 73 Myrna Jane Dr., Oshkosh, WI 54902

Karen Karash, Ho-Chunk Nation Division of Natural Resources, W9814 Airport Rd Black River Falls, WI 54615

Members of the Voigt Inter-Tribal Task Force including Bad River, Fond du Lac, Keweenaw Bay, Lac Courte Oreilles, Lac du Flambeau, Lac Vieux Desert, Mille Lacs, Mole Lake/Sokaogon, Red Cliff, and St. Croix.

Supplemental Increase:
Supplement the CLEH with more elk and elk with different genetic background.

In the original Clam Lake Management Plan and Environmental Assessment (MPEA) there were three alternatives recommended to the Natural Resources Board (Pils 2000:9):
1) Natural Increase: the herd would be allowed to increase to some target level only through natural increase (the option preferred by the Department at the time, and selected by the NRB).
2) Supplemented Increase: additional elk would be released to reach the population goal more quickly.
3) Population Reduction: this would serve as a contingency plan if elk began to cause unanticipated problems.

From 1996 through 2003, the CLEH grew at an average rate of 21 percent per year, but during the last eight years the rate of growth slowed to an average of seven percent per year (Table 1). Due to the reduced growth rates during the past eight years, the "Natural Increase" option is no longer preferred by the Department or partner groups. Several factors can possibly be attributed for the slow rate of growth demonstrated by the CLEH including depressed levels of genetic diversity, lack of range expansion into suitable habitat over the past 11 years, lack of sufficient breeding individuals, and increased rates of predation.

The small founding population of 25 animals may be a contributing factor to the slowed growth. Parker (1991) had recommended a minimum founder population of 50 animals for the start of a Wisconsin herd. Recent research (Roepke 2012:47) indicates that Wisconsin's elk herd possesses low levels of heterozygosity and allelic richness likely due to the small founding herd size, moderate post-release population growth, low genetic diversity of its source herd, and geographic isolation. Prolonged slow population growth could contribute to continued loss of allelic richness which is essential for long term evolutionary potential (Roepke 2012:44). Translocations of additional wild elk into the CLEH from a wild source herd (from a state other than Michigan where our original elk came from) could increase levels of variation. This could potentially increase the individual fitness and adaptive potential of the CLEH, both of which are critical for reintroduced elk herds. Roepke (2012:49) suggests that translocation of mature females would be the most successful strategy to accomplish this, and that future reintroductions or translocations should aim to reintroduce the maximum number of founding elk possible to maximize population growth and minimize the loss of genetic variation through drift. Therefore, an upcoming limited bull elk hunt in the CLEH will not conflict with supplemental increase since primarily cow elk would be imported and released.

Limited range expansion of the CLEH is another point of concern. A great deal has been learned from the elk restoration efforts of Kentucky. By 2002 and just five years into their efforts, Kentucky had released 1,549 elk at eight widely-spread sites across a 16 county area using wild elk from six different western source herds (Jon Gassett, pers. comm.). Four years later and 11 years ahead of schedule, they had reached their 2020 population goal of 10,000. They now have an annual hunting quota of 800 to 1,000 elk (Tina Brunjes, pers. comm.). We recommend maximizing the number of wild elk to be imported and to use "supplemented increase" and "assisted dispersal" to augment Wisconsin's herd numbers, increase the number of breeding individuals, and encourage expansion into currently unoccupied suitable habitat.

Source Herds: (Note: At the time of this writing, no formal agreement exists with the State of Kentucky.) Wild Kentucky elk are an attractive source for a "supplemental release" for both the CLER and BRER restoration efforts. Kentucky received animals from several sources in six western states, all originating in Yellowstone National Park. Though all sources used by Kentucky had Yellowstone origins, the Yellowstone population is believed to have never reached low enough levels to have lost heterozygosity or allelic richness. Furthermore, the Kentucky herd's quick growth likely preserved this initial genetic diversity. New Wisconsin sites using adequate founder populations from the Kentucky herd, and focusing on superior habitat that would sustain fast population growth, should translocate that heterozygosity and allelic richness to the existing CLEH as well as a new BREH.

Kentucky is currently providing surplus wild elk to the restoration efforts in the states of Missouri and Virginia. Department personnel have met with elk program staff and Administration from the Kentucky Division of Fish and Wildlife who stated that they would be anxious to work with Wisconsin in our restoration efforts. To take

advantage of this opportunity, the Department recommends approval of this plan amendment to allow "supplemental increase". Planning details are provided in Appendix A.

Desired Quantity and Funding Sources: To maximize the potential exchange of alleles between the current CLEH and any newly imported wild elk, and to accelerate herd expansion, we recommend a minimum of 200 supplemental wild elk for the CLEH, and 75 wild elk for the BREH. This will likely require multiple years to accomplish. Financial assistance will be necessary, and has already been pledged by the RMEF, JCWF, and Ho-Chunk Nation, and is anticipated from other supporters. Once a hunting season is initiated, revenues from application fees and harvest permit sales that have been earmarked for elk management will be available as well. A solid foundation consisting of an abundant, vibrant, and sustainable herd will be the home-grown source for further elk expansion projects within Wisconsin if desired, depending upon the interest of other communities located in suitable elk habitat. To assure continued maintenance of genetic diversity, opportunities to interchange elk with other sources may be pursued in the future, albeit with safeguards for herd health. Such a vibrant and robust population will provide hunting, recreation, and tourism-based economic development potential for Wisconsin. In short, this investment will grow employment opportunities.

Use of Wild Stock Only: Wisconsin elk partners and tribal nations insist on the use of wild elk for supplemental increase. Furthermore, partners that will substantially fund this portion of the project have indicated that they will withdraw funding if wild stock is not used. In 2009, the Department's Elk Advisory Committee passed a motion stating that *"At no time should farm raised and propagated elk be used to supplement wild populations or start new populations of elk in Wisconsin."* The use of domesticated animals for reintroduction purposes, regardless of the species, has a long history of failure. Historically, successful restorations using wild-caught animals have had a significantly higher likelihood of restoring wildlife populations to self-sustaining levels. In addition, the Department Elk Advisory Committee believes that the release of "non-wild" animals, which through the basic operation of a captive facility, have become domesticated and habituated to human interference could cause future problems with artificial feeding, human-wildlife conflicts, lack of wariness of wild predators, and potential for failed recruitment as animals are unable to forage for themselves after becoming accustomed to artificial feeding.

NRB Decision Item: The Department and partners recommend that "supplemental increases" are allowed if adequate numbers of healthy wild elk are available from a donor state, and contingent upon substantial partner funding.

Range Modifications

Boundary Modification: Expand current elk range by 508 square miles. The initial elk translocation was dependent upon forage provided by management action on the Great Divide District of the Chequamegon-Nicolet National Forest (CNNF). Young aspen along with other forage sources (hardwoods, conifer, forest openings and Navy ELF line) was considered abundant enough within the CLER on the CNNF to provide quality elk habitat (WDNR 2000 Draft EA). Over time, monitoring indicates that as expected, young aspen provides an important fall forage source for elk. During this same monitoring period, initial stands of young aspen on the CNNF moved from age classes available to elk to older age classes that provide less forage opportunity. Further, the 2004 Land and Resource Management Plan for the CNNF anticipated a 1.6% decrease in aspen forage over projected 10 year span of the plan to meet other forest management objectives (USDA-FS LMRP Append L 2004). However, timber salvage episodes such as spruce decline, jack pine bud worm along with creation of forage openings and management of the ELF line on the CNNF, coupled with habitat enhancement on private lands with the CLER have provided a partial off-set for those losses in aspen on the CNNF due to age class re-distribution of the initial aspen habitat and slowed the decline on the Great Divide District.

Upcoming CNNF projects like the Early Successional Habitat Initiative and the Black Torch Vegetation Management Project (in development) which emphasize young aspen forest habitat, will contribute to aspen forage availability in the current CLER in the near future (next 1-6+ years). Future herd growth, both among current animals and by the proposed supplemental stocking, coupled with other factors (predator numbers, loss of private land aspen forage to age class re-distribution) indicates that for a stable or increasing elk herd, forage habitat needs to be provided across the landscape so that it is sufficiently available at all times to elk. Enlarging their range accomplishes this need as partners continue practicing forestry management and harvest, while at the same time they are providing for the long-term habitat needs of the elk herd and other wildlife that depend upon early

successional habitat types. Wisconsin elk telemetry data shows that the aspen-dominant forest type is used more than any other habitat during all months except February (Table 2). From 1995 through 2000, 72 percent of timber-cut acres on the elk activity range were on the CNNF and 28 percent on private lands, while the reverse is true from 2001 through 2011 when 73 percent of timber cuts were on private land versus 27 percent on the CNNF (Table 3). Elk use was greatest on the 0-10 year old timber cuts.

However, abundant and excellent forage habitat exists on an adjoining area identified as suitable elk habitat in 2001 when the Department partnered with the RMEF and GLIFWC to study elk habitat suitability across Wisconsin (Gilbert et al. 2010). Results identified 15 different areas across the Northern Forest and Central Forest Regions suitable for elk reintroduction (Figure 1). The only area currently containing wild elk is the 3,875 square mile patch that adjoins Sawyer, Ashland, and Bayfield counties.

The original Management Plan and Environmental Assessment (MPEA) established the CLER by Administrative Code, and is currently comprised of Zone A and Zone B (Figure 2). This plan amendment recommends that 508 square miles of suitable habitat that adjoins the southern boundary of the current CLER be added (Figure 3). In doing so, the expanded CLER would include major blocks of Sawyer, Price and Rusk County Forest properties, the Flambeau River State Forest, the Kimberly Clark and Silver-nail Wildlife Areas, and large blocks of industrial forest land. These properties are aggressively managed for revenue generation and contain vast acreages of aspen in all age classes including over 84,000 acres of aspen forest (29 percent of the total area) (Figure 4). By age class, this can be broken out into 15,000 acres of 0-14 year old aspen which would provide high quality winter and spring forage; 44,000 acres of 15 to 44 year for future quality forage; and 6,500 acres of 45 year old and older aspen that is ready for cutting and will provide additional future aspen habitat. The area comprises 78 percent state, county and industrial forest public access lands (compared to 63 percent on the existing elk range) and contains minimal agricultural land.

The recommendation to expand the CLER has been presented and unanimously approved by the Sawyer, Price and Rusk County Forestry Committees. Public input into the recently-revised Flambeau River State Forest Master Plan voiced additional support for establishing an elk herd on the Flambeau River State Forest and resulted in language accommodating elk in the Master Plan. Ojibwe tribes in the ceded territory have stated their support of the range expansion and their desire to be more involved in the elk program. They have provided a letter of support from the Voigt Intertribal Task Force stating their support.

The original MPEA (Pils 2000) that was approved by the NRB provided for boundary changes to the CLER. Because of the factors previously discussed, the Department recommends implementing the aforementioned "boundary flexibility" option by adding 508 square miles that lies immediately south of the existing STH 70 boundary of the current CLER.

NRB Decision Item: The Department and partners recommend expansion of the CLER. This change will require a rule change as boundary changes must be reflected in an amendment to Administrative Code. The rule proposal would require public hearings to incorporate input from the public and then approval by the NRB, Governor's office, and the Legislature. Upon final approval, elk could then be moved from the existing elk range to the expanded area utilizing the "assisted dispersal" method and by means of "supplemental increase" of new animals imported.

Goal Modifications: Establish one elk range delineation; eliminate Zone A and B range delineations. As stated previously, the original MPEA established the CLER by Administrative Code, and is currently comprised of Zone A and Zone B (Figure 2). Also included in Administrative Code were density goals of two elk per square mile for Zone A and one elk per square mile for Zone B, totaling 1,400 elk for the 1,112 square mile elk range. As covered in the section above, this plan amendment recommends the expanded elk range boundary as shown in Figure 3.

Buffer zones and "step down" density goals to prevent dispersal of elk outside of the elk range are unnecessary in Wisconsin. With the exception of the first year's adjustment period, data accumulated since reintroduction confirms that the CLEH does not disperse or expand readily. During the first five years after the initial release, the CLEH had increased to 52 elk and occupied 45 square miles of the 1,112 square mile CLER. Since 2001, occupied elk range

has expanded by only 42 square miles and now totals 87 square miles and, as of 31 December 2011, holds approximately 140 elk (1.6 elk per square mile of elk range. This total does not include the Butternut or Moose Lake Groups). This most recent herd expansion of 42 square miles since 2001 equates to a rate of expansion of four square miles per year.

The fact that there is slow herd expansion precludes the need for a "step-down" density and a "Zone A" boundary. Since the CLEH population is relatively young and has low numbers, this plan amendment recommends a simple and conservative density goal of less than one elk per square mile of area for the entire elk range of 1,620 square miles. A population goal of 1,400 elk remains unchanged and is recommended for the total area shown in Figure 3, and will be maintained through the eventual issuance of cow and bull elk harvest permits. It is further recommended that a future density goal be established once elk occupy a greater portion of the CLER, and that it be based upon a detailed inventory of habitat as well as social carrying capacity.

The Department recognizes that with a larger elk population established over a broader area, past management recommendations advocating for permanent or seasonal road closures to motorized vehicle use will no longer be necessary. In order for elk to survive in Wisconsin, they must adapt to current land uses like motorized vehicle travel, and any natural sources of mortality. The Department will formally communicate this position to the U.S. Forest Service Forest Supervisor of the CNNF and to any other public land manager where elk are released.

NRB Decision Item: The Department recommends authorization to proceed with development of proposed Administrative Code changes that eliminate the Zone A boundary of the CLER, and to establish a density goal of approximately one elk per square mile of elk range.

Assisted Dispersal

The CLEH occupies only 10 percent of the current 1,112 square mile elk range. Since reintroduction, annual growth rates have declined from an average of 21 percent (1996 through 2004) to seven percent (2004 -2011) (Table 1). Eastern elk herds are non-migratory with all their seasonal needs interspersed and readily available. After elk reintroductions in Pennsylvania (1915) and Michigan (1918), it took several decades for these herds to reach levels that could sustain regulated hunting seasons. Similar to findings in Pennsylvania (Anderson et al. 2005, DeBerti, 2006), telemetry monitoring of Wisconsin elk has demonstrated little or no dispersal of cow elk (Stowell et al. 2010). In addition, Wisconsin's herd growth has been hampered by wolf and bear predation, as well as vehicle collisions, combining for two-thirds of all known elk deaths. These factors have challenged Wisconsin's herd by causing declining survivorship of yearling and breeding-age cows in recent years, and periodic sudden increases in calf mortality (Tables 4, 5 and 6). Smith et al. (2006:15 & 19) and Raithel et al. (2007) found that adult and juvenile survival have been shown to be the most significant factor influencing herd growth. Smith et al (2006:15 &19) found that adult female elk survival had twice the effect on growth rate as a change in neonatal survival (i.e. recruitment). However, Raithel el al (2007) found that calf survival explained more variation in herd growth than adult survival. For Wisconsin elk, the decreased survival may be attributed to the sedentary behavior of eastern elk, and concentrated patches of ideal habitat, making them easily located by large predators.

Combined, all of these factors are likely limiting herd growth. "Assisted dispersal" of elk has been particularly successful in overcoming these factors in Pennsylvania where from 1998-2000, 68 elk were moved from their herd of 160. By 2006, the herd totaled over 700 elk.

In 2010, after consultation with the Ojibwe tribes and U.S. Forest Service, the Department began efforts to relocate winter-trapped pre-breeders (3:1 females to male ratio) to several suitable sites within the existing CLER over a five year period (Figure 5). The first group (12 elk) was captured and moved ten miles from their capture site to an area of high quality habitat southeast of Moose Lake in eastern Sawyer County. Nine months after release, six of the cows and two of the bulls remained within two miles of the original release site, along with two new bulls that dispersed to the area on their own. During the winter of 2011-12, a second assisted dispersal effort was undertaken five miles east of the Moose Lake release site. Again, twelve elk were moved, held for several months, and released at the end of May. UW-Stevens Point is currently evaluating the success of the assisted dispersal effort.

More releases are planned in similar suitable areas during the next three years. In cooperation with the Department and RMEF, the University of Wisconsin-Stevens Point has initiated a two year study investigating whether these relocations produce the desired effect of overcoming the limiting factors of herd growth and expansion.

Although there are 1,112 square miles to select from, there are few areas of high quality habitat suitable for these assisted dispersal releases. However, if range expansion is approved an additional 508 square miles of habitat including large blocks of aspen would be available for these efforts. Population growth rates can be expected to be high in these areas, similar to the growth rates observed from 1996 through 2004. Furthermore, some of the supplemental animals could also be released with the CLEH to mix DNA and increase genetic diversity for improved long term survival. Experience gained through assisted dispersal will be invaluable in successful implementation of supplemental releases.

Benefits: Assisted dispersal will establish more cow-calf groups over a broader geographic area, especially if range expansion is approved. This will result in a faster growing population, expand hunting and elk viewing opportunities, and promote tourism over a broader geographic area. It is estimated that the current elk population contributes approximately $150,000 annually to local businesses through tourism in the Clam Lake area. With range expansion and assisted dispersal, increased elk-related tourism would benefit additional Wisconsin communities.

Tribal Sovereignty

This Wisconsin elk management plan recognizes that the well-being of the elk herd is premised upon a collaborative relationship between the Department and member tribes of the Voigt Intertribal Task Force and Ho-Chunk Nation. The Department recognizes sovereignty rights and authority in elk management and acknowledges that this plan in no way intends or should be construed to modify, alter, abridge or in any way affect treaty reserved rights as they have been established by the law, court decisions and stipulations. The Department will implement its authority and jurisdiction claims consistent with this plan in a way that does not infringe upon the established rights and responsibilities of tribal entities.

The Department will consult with the Ojibwe tribes in an attempt to reach consensus on decisions affecting the elk herd within the Ceded Territories. In partial fulfillment of this principle, the Department recognizes representatives of the Ojibwe tribes through the Great Lakes Indian Fish and Wildlife Commission (GLIFWC) as official members of any committee or process that engages in any review of elk population goals, range decisions, assisted dispersal, additional stocking efforts, harvest parameters, or any other committee or team created to manage or which may impact elk or elk range in the Ceded Territories.

The Department appreciates the partnerships we have with the tribal entities, and acknowledges the substantial efforts that they have undertaken for the elk herd. In particular, the Department appreciates the ceremonies that the Ojibwe tribes have conducted in the past to honor elk based upon the principles of Anishinaabe teachings, traditions, and customary tribal law. We hope that these ceremonies will continue, and anticipate ceremonies hosted by Ho-Chunk Nation as we work together to reestablish elk populations in central Wisconsin. The Department agrees to work with tribal leaders to facilitate ceremonies in accordance with tribal customs.

Currently, the off reservation model code lists elk as a protected species with a closed season by Ojibwe tribes of the Ceded Territory. Once elk hunting begins the Ojibwe tribes will be entitled 50 percent of the harvestable surplus of elk in the Ceded Territories. The opportunity for tribal members to harvest elk is culturally significant for the Anishinaabe people as elk were historically harvested for subsistence, medicinal, cultural, religious and economic purposes.

When an elk herd is established in central Wisconsin, the Department recognizes that elk management will be dependent on the longstanding government to government relationship between the Department and Ho-Chunk Nation. Huwa (elk) are an integral part of Hocak (Ho-Chunk) way of life. Ho-Chunk Nation is committed to returning elk to the landscape. The Department and Ho-Chunk Nation have agreed to develop a policy that will guide this government to government relationship as it pertains to elk management. The Ho-Chunk Nation agrees to consult with the Department when making decisions about elk management on Ho-Chunk Nation lands (Figure 6).

Predator Management

The importance of early seral stages of aspen to elk is one of the primary reasons that this plan amendment recommends an expansion of the elk range into more intensively-harvested and aspen rich timber lands of the industrial, county, and state forests located immediately south of the current CLER. This would spread the elk out across the landscape, likely reducing predation and ensuring secure foraging habitat availability. Elk prefer to use aspen timber stands in the 1 to 15 year age class at a much higher frequency than it occurs on the landscape. While most land within the CLER is owned by USFS, most of the current young aspen habitat that elk prefer is located on a comparatively smaller percentage of private land (as outlined in Range Modification section). Concentrated elk activity on these small private inholdings makes them easily located and more vulnerable to predation.

Grey wolves, and to a lesser extent black bears have accounted for 51 percent (n=92 of 178) of all observed elk deaths in the CLEH since reintroduction. The original elk management plan states that a predator reduction policy to boost elk population growth was not biologically necessary and would likely be unacceptable to many people. Under those assumptions, the Department chose not to implement specific predator control options to support elk populations.

Multiple wolf packs and black bears occupy virtually all of the CLER and BRER. Regulated hunting of bears has occurred throughout both areas since 1985. Refined black bear population estimates have resulted in an increase in harvest quotas and black bear harvest in Wisconsin, including Black Bear Management Zone A where elk currently exist. Future population management strategies for black bears throughout Wisconsin will be addressed in the next Black Bear Management Plan that is scheduled to begin the revision process in 2013.

Until January of 2012, gray wolves were protected in Wisconsin under Federal listings as a threatened or endangered species. Once delisted, the Wisconsin Legislature quickly directed the Department to create rules allowing for a regulated public harvest of wolves to begin in October of 2012. While the State of Wisconsin remains committed to the principles of wolf conservation, regulated management of wolf populations is a new challenge with many decisions currently being made. Determining effective harvest strategies will be a learning process for years to come. The Clam Lake and Black River Falls areas will be open to low-modest rates of wolf harvest. Within the Clam Lake area, approximately 300 square miles within a Marten Restoration Area will be closed to trapping by foot-hold traps in uplands, which may reduce harvest rates by trappers in that area. It remains unclear whether public harvest of wolves in these areas will reduce levels of wolf predation on elk.

In summary, implementation of the strategies in this plan amendment will best enhance individual fitness and adaptive potential of the CLEH, place it in the best habitat available that will support sustainable population growth, and help spread elk across more of the available suitable habitat. Just as important, this plan will establish a new elk herd in the Black River Area with the same benefits. This will all be accomplished together with public and private partners, the Ojibwe Tribes and Ho-Chunk Nation.

Note: If future elk restorations or herd growth is compromised due to high levels of predation by wolves, bears, or other predators, the department will work with the Board and appropriate stakeholders to initiate actions that will reduce predator populations in the elk restoration zones.

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Table 1. Population estimates and annual percent growth from 1995-2012 for the Clam Lake, Wisconsin elk herd. Pre- and Post-Calving estimates are made in early May and late June, respectively.

Elk year	Pre-calving	Post-calving	Annual % growth
1995-1996	25	29	-16
1996-1997	21	25	19
1997-1998	25	33	28
1998-1999	32	47	25
1999-2000	40	56	30
2000-2001	52	65	13
2001-2002	59	76	15
2002-2003	68	87	19
2003-2004	81	99	17
2004-2005	95	116	4
2005-2006	99	123	-3
2006-2007	96	122	13
2007-2008	109	135	13
2008-2009	123	150	6
2009-2010	131	155	0
2010-2011	131	164	15
2011-2012	151	176	3
2012-2013	154	---	---

Table 2. Use of available habitat types by month from 1999-2011 for the Clam Lake, Wisconsin elk herd.

		Habitat type								
Month	**# of locations**	**Aspen**	**Pine**	**Open**	**Lowland conifer**	**Upland hardwood**	**Spruce/ Fir**	**Urban**	**Lowland hardwood**	**Lowland shrub**
January	1,928	33.7	33.1	10.6	9.6	5.1	2.8	2.3	1.7	1.1
February	2,036	21.3	22.6	28.1	10.5	7.3	5.6	0.8	2.1	1.6
March	2,007	40.8	19.4	15.6	14.4	0.7	1.3	2.9	2.1	2.7
April	1,482	33.1	23.7	19.2	8.2	8.3	4.3	2.5	0.7	0.1
May	4,720	38.9	30.2	13.4	5.5	6.6	3.0	1.3	0.4	0.8
June	4,313	36.3	28.0	14.9	8.0	9.8	1.6	0.3	0.3	0.7
July	1,988	39.2	25.4	9.5	8.6	11.4	5.0	0.1	0.2	0.8
August	1,986	39.6	25.3	15.7	7.0	5.2	4.9	0.0	0.2	2.1
September	2,843	36.3	23.9	11.8	9.3	9.7	6.7	0.1	0.5	1.7
October	2,013	37.6	21.4	15.5	11.1	7.9	2.8	0.5	1.4	1.8
November	1,394	43.1	15.9	13.6	13.7	5.0	5.3	0.0	2.8	0.5
December	1,731	32.8	20.7	16.9	11.8	9.1	5.5	0.0	1.0	2.3
% available	-	27.0	13.3	19.4	16.4	12.2	3.9	1.1	2.0	4.8

Table 3. Frequency, acreage, and elk use of timber harvests during the 1995-2000 and 2001-2011 periods on the Chequamegon-Nicolet National Forest and private land within the Clam Lake elk range.

Harvest period	**Ownership**	**# of sites**	**% sites**	**# of acres**	**% acres**	**# of locations**	**% of locations**
1995-00	CNNF	32	74	1,083	72	913	66
	Private	11	26	429	28	473	34
Subtotal		43	100	1,502	100	1,386	100
2001-11	CNNF	10	30	335	27	321	15
	Private	23	70	891	73	1,883	85
Subtotal		33	100	1,226	100	2,204	100

Table 4. Observed adult mortality by elk year for the Clam Lake elk herd.

	Males			Females			Combined		
Elk Year	**# of mortalities**	**Sample size**	**Mortality rate**	**# of mortalities**	**Sample size**	**Mortality rate**	**# of mortalities**	**Sample size**	**Mortality rate**
2002-2003	0	3	0.00	1	20	0.05	1	23	0.04
2003-2004	1	7	0.14	2	22	0.09	3	29	0.10
2004-2005	3	8	0.38	1	30	0.03	4	38	0.11
2005-2006	4	9	0.44	4	32	0.13	8	41	0.20
2006-2007	2	6	0.33	0	36	0.00	2	42	0.05
2007-2008	1	6	0.17	1	38	0.03	2	44	0.05
2008-2009	2	7	0.29	7	44	0.16	9	51	0.18
2009-2010	0	6	0.00	2	40	0.05	2	46	0.04
2010-2011	2	9	0.22	1	40	0.03	3	49	0.06
Total	15	61	0.25	19	302	0.06	34	363	0.09

Table 5. Observed yearling mortality by elk year for the Clam Lake elk herd.

	Males			Females			Combined		
Elk Year	**# of mortalities**	**Sample size**	**Mortality rate**	**# of mortalities**	**Sample size**	**Mortality rate**	**# of mortalities**	**Sample size**	**Mortality rate**
2002-2003	3	12	0.25	0	4	0.00	3	16	0.19
2003-2004	1	7	0.14	0	5	0.00	1	12	0.13
2004-2005	3	8	0.38	2	6	0.33	5	14	0.36
2005-2006	2	6	0.33	1	7	0.14	3	13	0.23
2006-2007	1	4	0.25	0	4	0.00	1	8	0.13
2007-2008	3	9	0.33	0	7	0.00	3	16	0.19
2008-2009	0	5	0.00	2	9	0.22	2	14	0.14
2009-2010	2	8	0.25	4	6	0.67	6	14	0.43
2010-2011	1	8	0.13	0	5	0.00	1	13	0.08
Total	16	67	0.24	9	53	0.17	25	120	0.21

Table 6. Observed calf mortality by elk year for the Clam Lake elk herd.

	Males			Females			Combined		
Elk Year	**# of mortalities**	**Sample size**	**Mortality rate**	**# of mortalities**	**Sample size**	**Mortality rate**	**# of mortalities**	**Sample size**	**Mortality rate**
2002-2003	1	6	0.17	2	5	0.40	3	11	0.27
2003-2004	1	7	0.14	0	3	0.00	1	10	0.10
2004-2005	3	8	0.38	2	5	0.40	5	13	0.38
2005-2006	4	9	0.44	5	8	0.63	9	17	0.53
2006-2007	5	9	0.56	3	8	0.38	8	17	0.47
2007-2008	8	14	0.57	4	9	0.44	12	23	0.52
2008-2009	5	9	0.56	2	6	0.33	7	15	0.47
2009-2010	5	9	0.56	4	7	0.57	9	16	0.56
2010-2011	2	13	0.15	6	10	0.60	8	23	0.35
Total	34	84	0.40	28	61	0.46	62	145	0.43

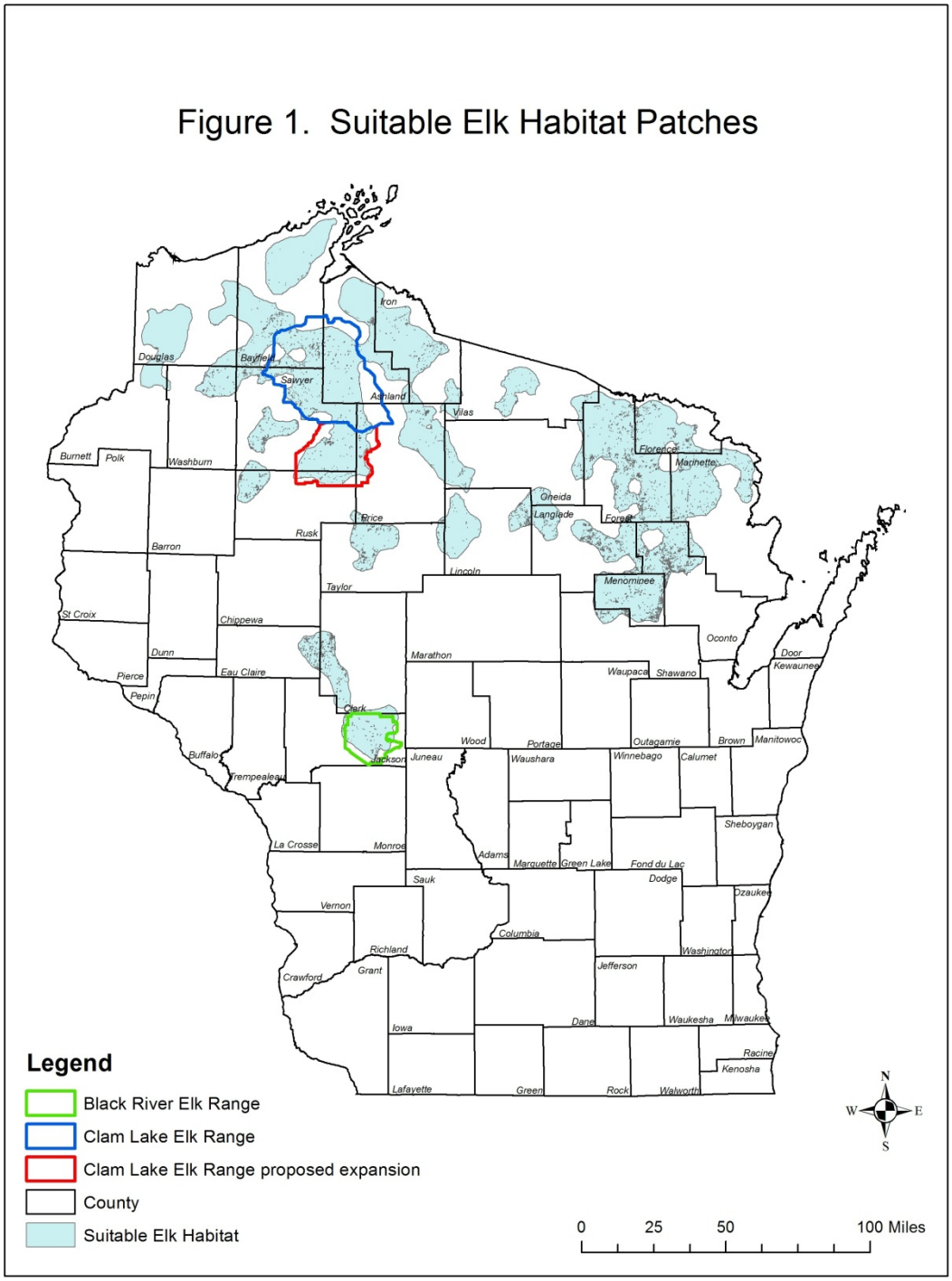

Figure 1. Suitable patches of elk habitat in Wisconsin determined using a combination of biological and social factors. The existing Clam Lake and Black River elk range and the proposed Clam Lake expanded range are outlined.

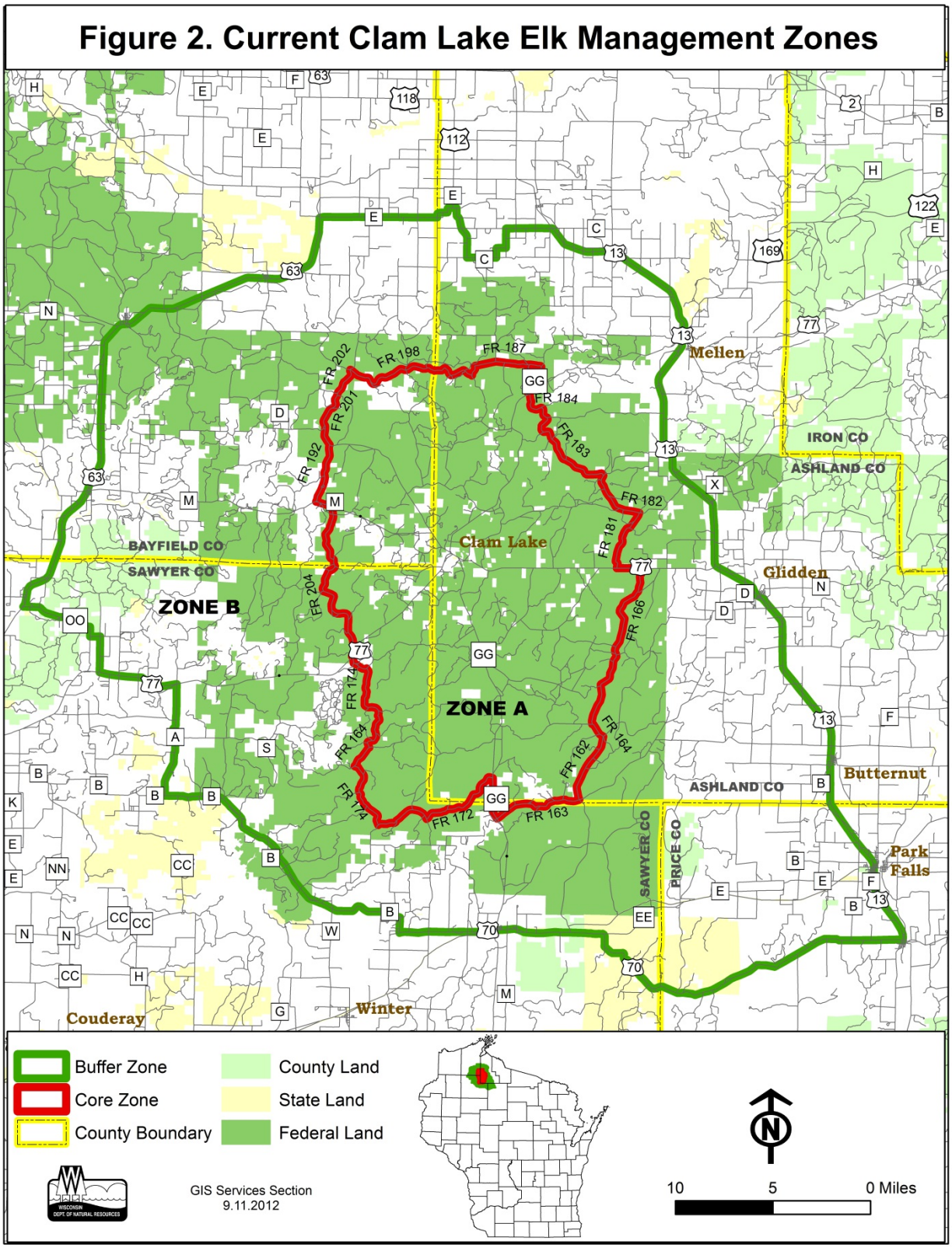

Figure 2. Management zones for the Clam Lake, Wisconsin elk range including the core zone (Zone A) and the buffer zone (Zone B).

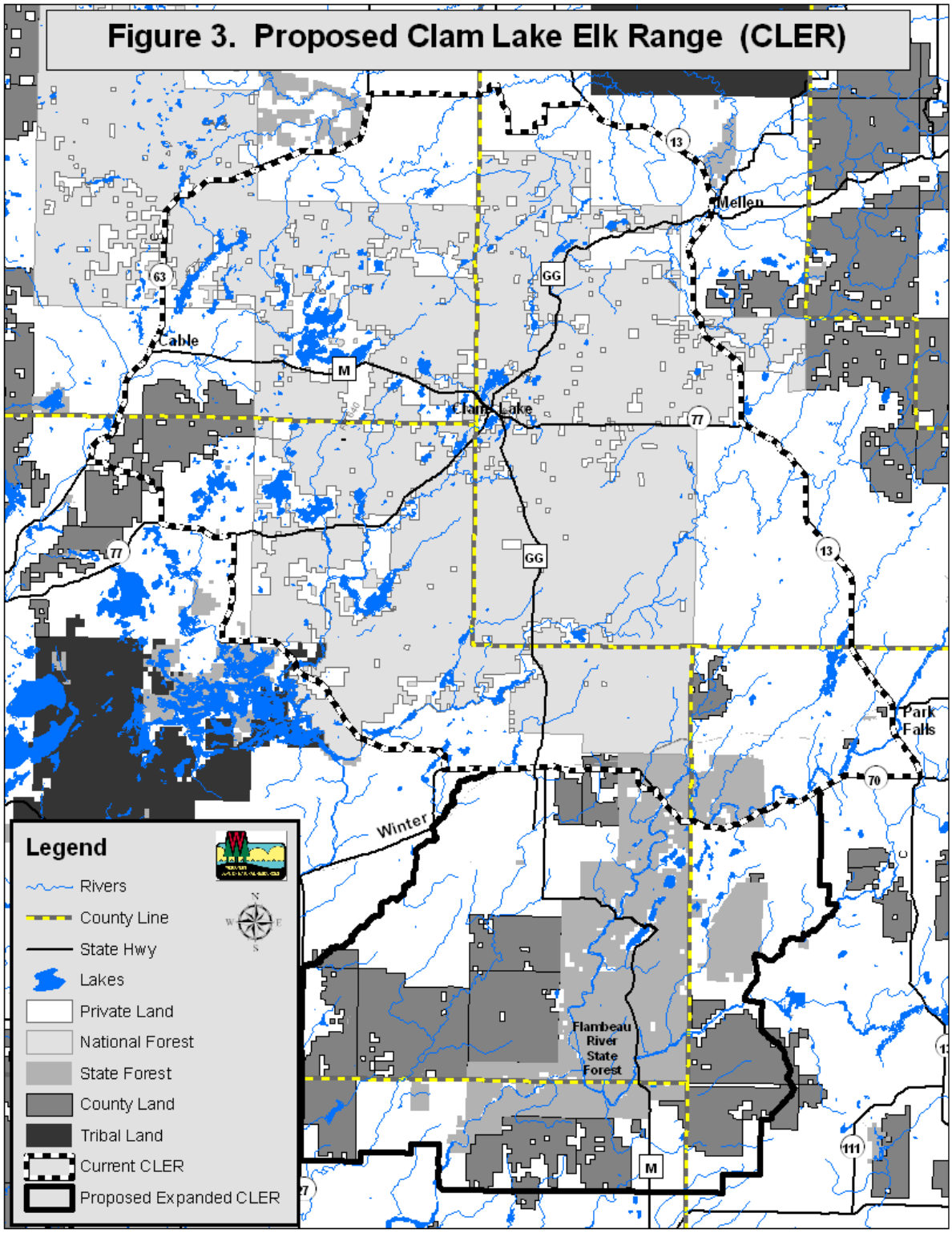

Figure 3. Proposed expanded Clam Lake elk range including the existing Clam Lake elk management zones and the proposed expanded range in Sawyer, Price, and Rusk counties.

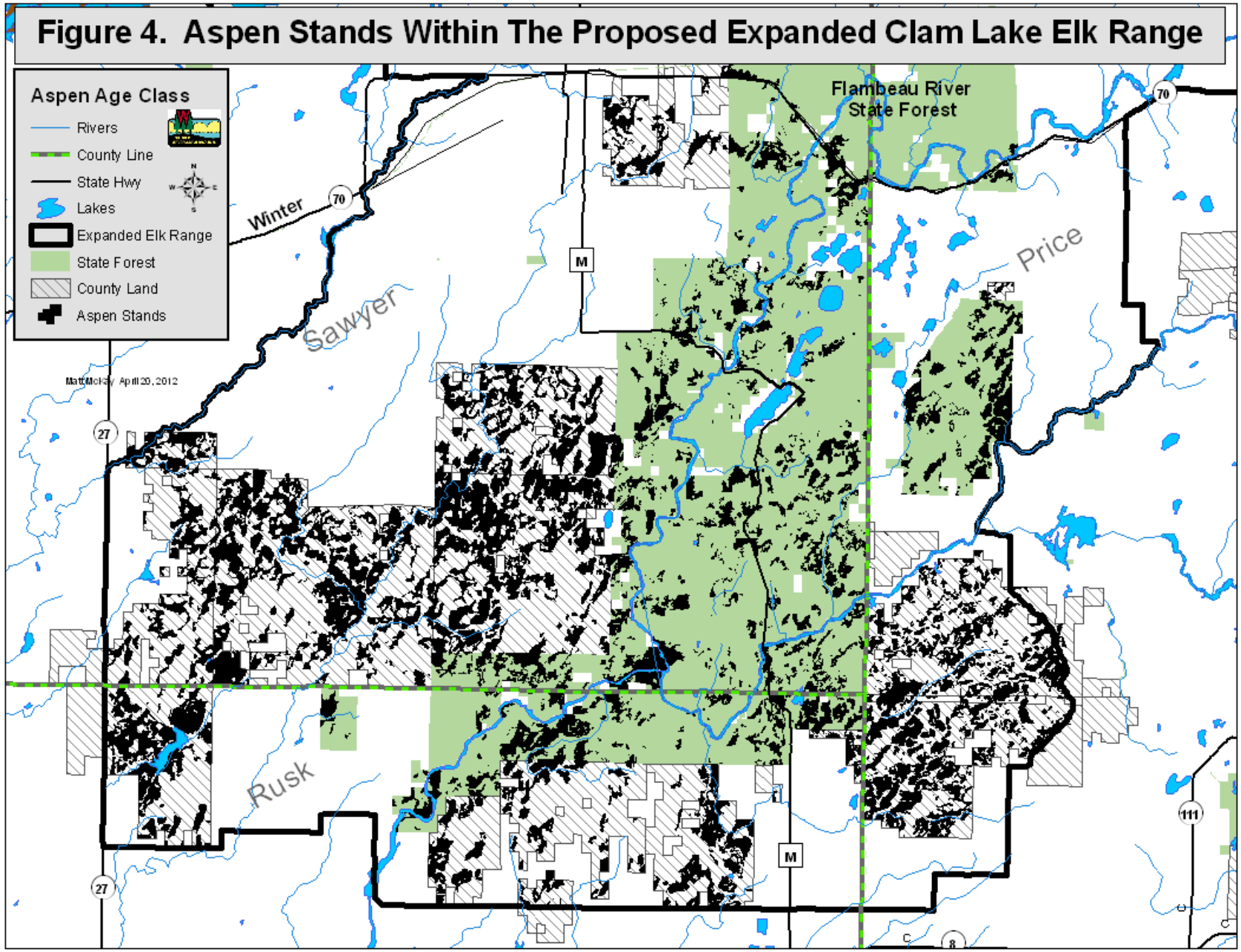

Figure 4. Existing aspen stands located on state and county forests within the proposed expanded Clam Lake elk range.

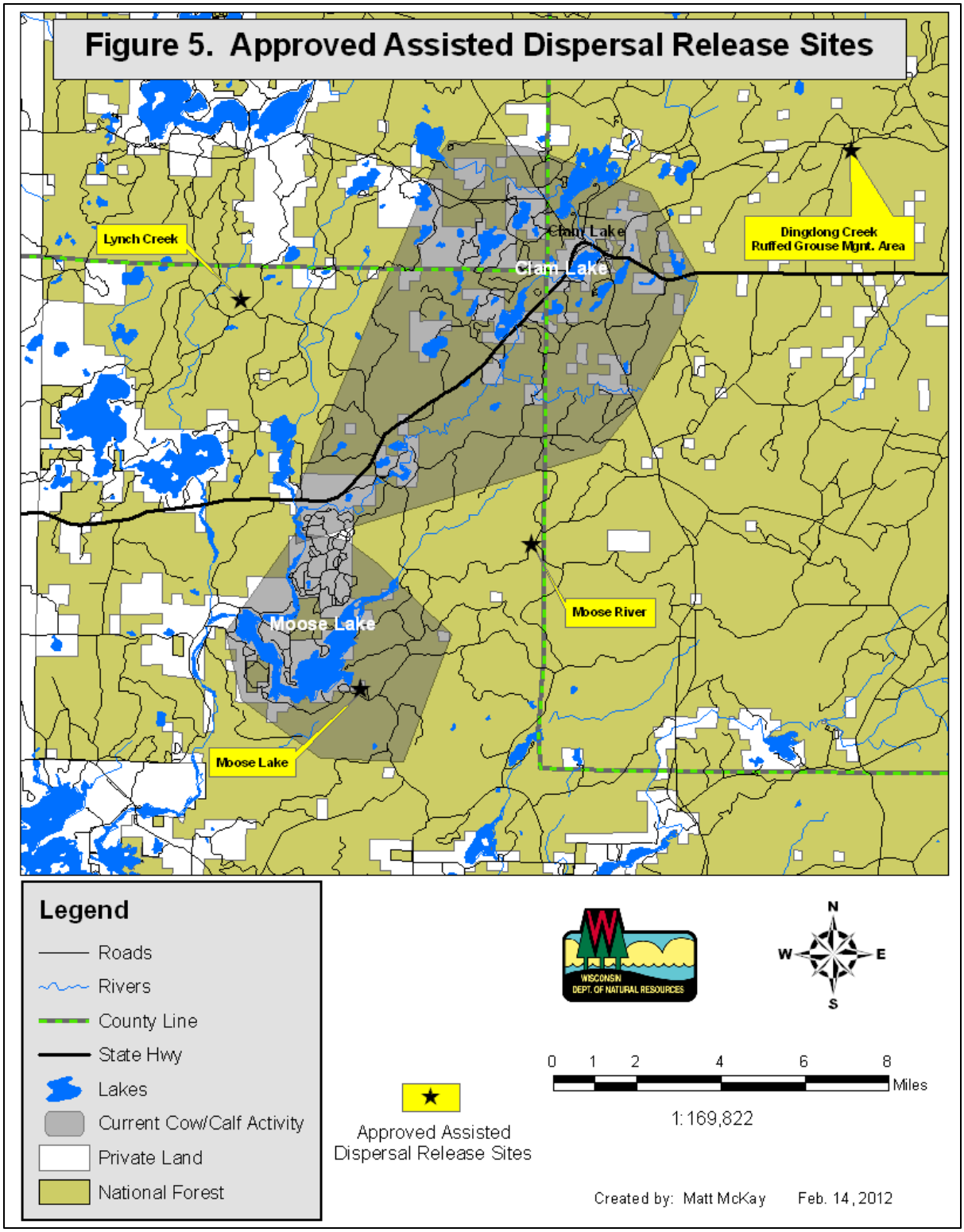

Figure 5. Approved assisted dispersal release sites and current elk activity areas located within the existing Clam Lake elk range.

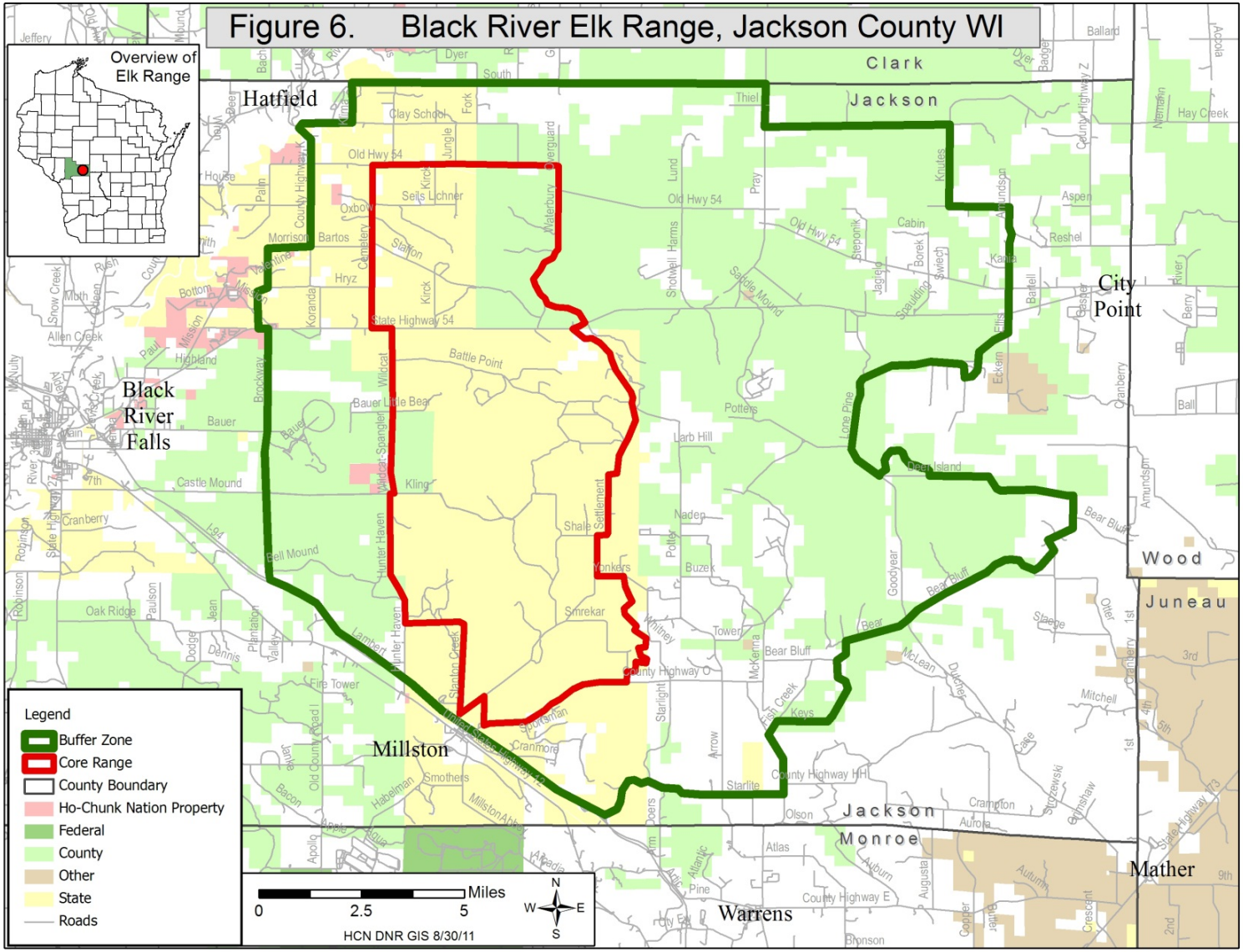

Figure 6. Management zones for the proposed Black River elk herd including a core and buffer zone.

Appendix A. DRAFT Wisconsin Elk Restoration Estimated Annual Budget

Item		*1-time Cost*	*50 Elk*	*75 Elk*	*100 Elk*
Trapping Costs					
Bait for corral trap			$1,500.00	$2,000.00	$3,000.00
Lodging/meals/expenses	Trapping crews		$10,000.00	$15,000.00	$20,000.00
Misc Supplies			$2,500.00	$2,500.00	$2,500.00
subtotal			***$14,000.00***	***$19,500.00***	***$25,500.00***
Holding and Processing in KY for 90 days					
Hay	est $3.75 ea		$2,765.00	$3,500.00	$4,250.00
Water					
24 hour Caretakers	2 caretakers		$11,000.00	$12,000.00	$13,000.00
subtotal			***$13,765.00***	***$15,500.00***	***$17,250.00***
Holding and Processing in WI					
Release Site Prep		$3,000.00			
Holding Pens	3 pens	$15,000.00			
Water Tanks	2 tanks	$1,100.00			
Feed			$3,520.00	$5,250.00	$6,000.00
subtotal		***$19,100.00***	***$3,520.00***	***$5,250.00***	***$6,000.00***
Post Release Herd Monitoring					
VHS Transmitters			$16,250.00	$25,000.00	$32,500.00
Misc Equipment/Supplies			$5,000.00	$5,000.00	$5,000.00
subtotal		***$0.00***	***$21,250.00***	***$30,000.00***	***$37,500.00***
Disease Testing/Supplies					
Osterpro (Vet supplies needed for disease tests and parasite control)			$3,500.00	$5,000.00	$6,500.00
CWD Test Lab wCSU ($25/elk)			$1,250.00	$1,875.00	$2,500.00
Disease testing MSU ($60.50/elk)			$3,025.00	$4,540.00	$6,050.00
Immobilization drugs for KY			$1,000.00	$1,500.00	$2,000.00
Misc Supplies			$500.00	$750.00	$1,000.00
subtotal			***$9,275.00***	***$13,665.00***	***$18,050.00***
KYDFWR Reimbursements					
KY Staff time/lodging/meals for trapping			$50,000.00	$50,000.00	$50,000.00
subtotal			***$50,000.00***	***$50,000.00***	***$50,000.00***
Transportation					
Contract semi-hauling $3.50/mile X 1000 miles			$3,500.00	$5,000.00	$7,000.00
subtotal			***$3,500.00***	***$5,000.00***	***$7,000.00***
Total Cost		***$19,100.00***	***$115,310.00***	***$138,915.00***	***$161,300.00***

Years to Complete (275 elk)			6	4	3
Total Importation Cost			***$691,860.00***	***$555,660.00***	***$483,900.00***