CAMP RIPLEY AND ARDEN HILLS MINNESOTA ARMY NATIONAL GUARD TRAINING SITES

CONSERVATION PROGRAM REPORT

2007 ANNUAL REPORT

Cover Photography: Upper left, ovenbird (*Seiurus aurocapillus*) courtesy of S. Maslowski, USFWS, Office of Public Affairs; Lower left, Camp Ripley Disabled Veteran's spring turkey hunt, Camp Ripley staff photo; Background, Camp Ripley prescribed burn, Camp Ripley staff photo.

Camp Ripley and Arden Hills
Minnesota Army National Guard Training Sites
Conservation Program Report

2007 Annual Report

January 1 – December 31, 2007

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MINNESOTA DEPARTMENT OF NATURAL RESOURCES
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EXECUTIVE SUMMARY

This Conservation Program Report provides Integrated Natural Resources Management Plan (INRMP) accomplishments and therefore meets the requirements of an annual update to the 2003 Camp Ripley and 2007 Arden Hills Army Training Site (AHATS) INRMPs. The INRMPs are intended to support and complement the military mission of the MNARNG while also promoting sound conservation stewardship principles.

This document replaces the Animal Survey Report that was completed annually by the Minnesota Department of Natural Resources (MNDNR) for the Minnesota Army National Guard (MNARNG). The INRMP goals and objectives that have been accomplished are addressed in this report for the year January 1 to December 31, 2007; and updates to the INRMP goals and objectives are included. Accomplishments for the Conservation Program of the MNARNG are summarized within the following program areas: cultural resources, forestry, vegetation management, water resources, wildlife, fisheries, pest management, land use management, and outreach and recreation.

In 2007, three pending cultural resources projects on Camp Ripley received concurrence from the State Historic Preservation Office (SHPO) and the second Nation to Nation Consultation was conducted. Beginning in January, The Nature Conservancy hired four staff to assist with the re-inventory of Camp Ripley forest stands. During the year, the crew completed re-inventory of 8,991 acres of forest stands which meets the goal of completing 10 percent of the forest inventory database annually. A total of 13,996 acres have been completed from 2003 to 2007. In 2007, five tracts of timber totaling 188 acres were offered for harvest at the first sealed bid auction on Camp Ripley. Thirteen individuals acquired fuelwood permits from Range Control and MNDNR, Division of Forestry, in 2007. During February and March, the Department of Military Affairs and Minnesota Department of Corrections worked together to facilitate a fuelwood program for families of deployed soldiers. Tree planting, during 2007, was accomplished at AHATS for a buffer on the west side of the installation. Similarly, tree planting on Camp Ripley occurred in a buffer area between Kodiak and Morrison County Highway # 1. A variety of forest insect and disease pests were monitored or treated on Camp Ripley including jack pine budworm, pine bark beetle, and gypsy moths. Prescribed fire was implemented on Camp Ripley for hazard reduction (10,000 to 12,000 acres), ecological (105 acres), and crew boss training (100 acres) burns.

In 2007, the Department of Biological Sciences at St. Cloud State University continued to monitor and test control methods for invasive plant species at Camp Ripley and AHATS, recommendations for control of invasive plant species, are provided in this report. At Camp Ripley, permits were obtained to repair damage to a cable concrete landing/bridge crossing on the Mississippi River. The water quality trend analysis program report for Camp Ripley indicates that overall the water quality of the aquatic systems monitored is good when compared to other systems and patterns found in central Minnesota. Data for all surface waters were examined in an effort to evaluate whether trends in nutrient loading are the result of training activities or other factors.

Species in greatest conservation need (SGCN) have been identified at Camp Ripley and AHATS, additional research will be directed toward identifying other SGCN species and

management or conservation actions that could be implemented to benefit these species. Camp Ripley Environmental staff once again participated in the Pillager area Christmas Bird Count. Songbird surveys were conducted from June 2 to July 3, 2007 on 91 Range Training Land Assessment (RTLA) plots, a total of 994 birds of 71 different species were counted. Additional bird species were monitored including bluebirds, bald eagles, red-shouldered hawks, ruffed grouse and wild turkeys.

Two packs of gray wolves continue to inhabit Camp Ripley, and were monitored through radio-telemetry throughout 2007. Pack sizes were estimated to be seven to ten wolves. An aerial deer survey was conducted in March 2007. Analysis of the survey data provided an estimate of 26 deer per square mile on Camp Ripley.

Ground and aerial radio tracking were used to monitor reproductive success, movements and mortality of fourteen collared black bears on Camp Ripley through 2007. An effort was made to document the occurrence of prairie voles at eight grassland plots, and ten prairie voles were captured. Beaver management was accomplished through the cooperative effort of the Camp Ripley Environmental Office, the MNDNR, and the Camp Ripley Department of Public Works.

Surveyors spent 189 hours searching Camp Ripley for Blanding's turtles and their nests, nineteen Blanding's turtles were observed. Anuran surveys were once again completed in April and May. Ten zebra mussel samplers were placed in the Mississippi and Crow Wing rivers, but no zebra mussels were detected.

AHATS songbird surveys were conducted on 13 RTLA plots on June 5, 2007. State listed Henslow's sparrows were documented on three plots. Trumpeter swans raised five cygnets during 2007. One hundred and twenty-four deer were counted during the AHATS aerial deer survey conducted in February of 2007. A butterfly survey was conducted by the Saint Paul Audubon Society on June 30, 2007, and three new species were observed.

Fish surveys were conducted on two Camp Ripley lakes and game fish were harvested from six lakes for stocking. In the summer of 2007, Camp Ripley Environmental staff cooperated with the Minnesota Department of Health to determine the role of rodents as reservoir hosts for tick borne diseases in Minnesota.

To date, 175 willing landowners have enrolled in Camp Ripley's Army Compatible Use Buffer program. These landowners represent about 25,000 acres of land. Over 90 percent of the interested landowners desire permanent conservation easements rather than acquisition.

In 2007, the environmental team gave presentations or tours to 138 groups totaling 6,296 people and 676 staff hours. Also, in 2007, Camp Ripley hosted the third annual Disabled American Veterans (DAV) turkey hunt and the sixth annual youth archery hunt. Camp Ripley also held the second annual deployed soldier's archery deer hunt which was held in conjunction with sixteenth annual DAV firearms deer hunt. Camp Ripley's general public archery deer hunt, which is one of the largest archery deer hunts in the United States, was again held in 2007. At AHATS, two youth archery deer hunts and the second annual deployed soldier's archery deer hunt were also held.

INTRODUCTION

The purpose of this report is to summarize accomplishments for the Conservation Program of the Minnesota Army National Guard (MNARNG). The Camp Ripley and Arden Hills Army Training Site (AHATS) Integrated Natural Resources Management Plans (INRMP) (Minnesota Army National Guard 2003, Minnesota Army National Guard 2007) provide a comprehensive five-year plan, and document the policies and desired future direction of the Conservation Programs for the MNARNG. The preparation and implementation of INRMPs is required by the Sikes Act (16 USC 670a et seq.) and several other Federal directives including regulations and guidance issued by the United States Department of Defense. The INRMPs focus on strategic goals, objectives, and policies that will be implemented for each of the Conservation Program areas. INRMP accomplishments and updates to the goals and objectives will be tracked and reported in this annual Conservation Program report, and therefore, meets the requirement for annual update for both the Camp Ripley and AHATS INRMPs (Appendices A and B).Other program areas such as cultural resources (Camp Ripley Environmental Office 2006), noise (Minnesota Army National Guard 2006) and pest management (Minnesota Army National Guard 2004) have individual management plans, and their accomplishments are also addressed in this report. This document replaces the Animal Survey Report that was completed annually by the Minnesota Department of Natural Resources (MNDNR) for the Minnesota Army National Guard (MNARNG).

CAMP RIPLEY TRAINING SITE

Camp Ripley is located in the central portion of Minnesota approximately 100 miles northwest of the Minneapolis/St. Paul metropolitan area (Figure 1). According to the 2003 property boundary survey, Camp Ripley occupies a gross area of 52,758 acres (approximately 82 sq. miles) within Morrison County. Camp is bordered on the north by the Crow Wing River and on the east by the Mississippi River. Land ownership is 98 percent state land under the administration of the Minnesota Department of Military Affairs (DMA), with the remainder under lease from Minnesota Power and Light Company.

Camp Ripley's landscape was sculpted during the last glacial period, the Late Wisconsinan. Because the glaciers receded along the northern two-thirds of the Camp Ripley, a sharp contrast is evident from north to south, both topographically and biologically. The high diversity of life forms (over 600 plant species, 202 migratory and resident bird species, 51 mammal species, and 23 reptile and amphibian species) is also a result of Camp Ripley's location along the forest transition zone in central Minnesota. Dryland forest dominates the landscape, covering 27,875 acres or 55 percent of the installation. The remainder is almost equally divided between wetlands, dry open grass and brush lands, and odd areas.

Camp Ripley supports the state mission for military reserve training as a 7,800 person, year-round training facility for the National Guard, primarily consisting of units from Minnesota,

North Dakota, South Dakota, Wisconsin, Iowa, and Illinois. The civilian training mission focuses primarily on law enforcement activities, natural resource education, environmental agencies, and emergency management activities. The central mission of the natural resource management program is to ensure that the multiple demands for land use can be met without sacrificing the integrity of Camp Ripley's natural resources and training mission.

The Range Training Land Assessment (RTLA) (formerly Land Condition – Trend Analysis) program was initiated at Camp Ripley in 1991. RTLA is a program that provides for inventorying and monitoring biological and physical resource data as a means of quantifying the condition of the land. Under this system, permanent study plots were established to inventory the flora and fauna of Camp Ripley, and are referred to as special use and core plots.

ARDEN HILLS ARMY TRAINING SITE

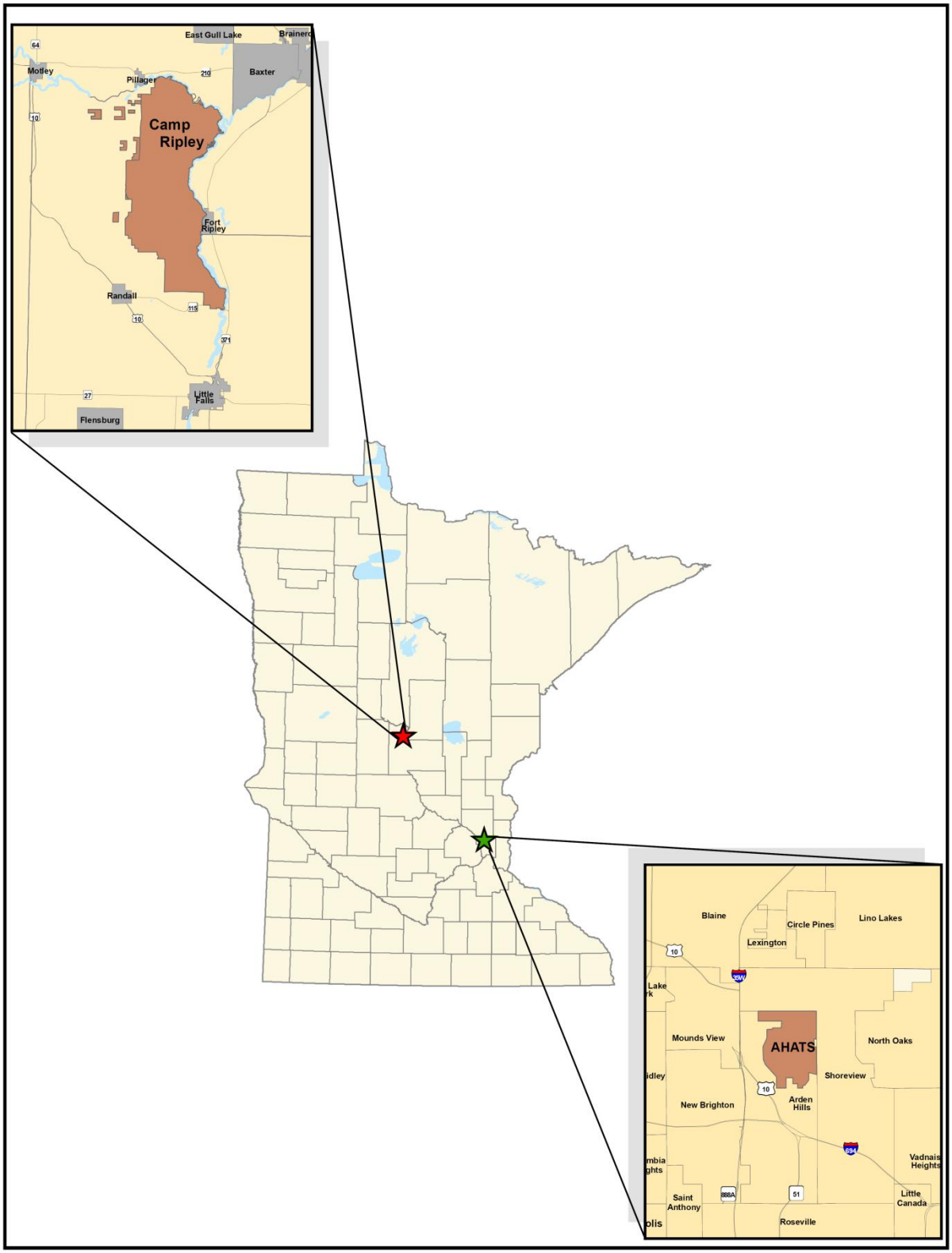
The Twin Cities Army Ammunition Plant was one of six Government Owned-Contractor Operated plants built to produce small arms ammunition during World War II. The MNARNG began leasing its current facility in 1972 and the Organizational Maintenance Shop vehicle maintenance buildings were constructed in 1973. In September 2000, MNARNG acquired accountability for a portion of the 2,347-acre installation. That portion of Twin Cities Army Ammunition Plant is now known as the AHATS (Figure 1). Presently, AHATS consists of 1,500 acres, which is available for military training and consequently, environmental management. AHATS lays in the northern portion of the city of Arden Hills, approximately eight miles north of the St. Paul city limits and six miles northeast of the Minneapolis city limits. Other surrounding municipalities include New Brighton, Mounds View, and Shoreview.

Population studies of flora and fauna will be an ongoing part of the installation's INRMP, which was completed in November of 2001 and updated in 2007 (Appendix B). The data obtained will be used to help manage the natural resources on AHATS. Thirty-one mammal species, 147 bird species and 298 plant species have been identified at the training site.

RESPONSIBILITIES

Camp Ripley Command-Site Environmental (CRC-SE) personnel are responsible for Conservation Program planning and implementation for the MNARNG. This includes, but is not limited to, preparing plans, developing projects, conducting field studies, securing permits, geographic information system (GIS) support, preparing reports, and facilitating land use activities between military operations and other natural resource agencies. The environmental personnel who work directly for the Post Commander are responsible for MNARNGs Conservation Programs statewide. Environmental personnel who work directly for the Facilities Management Office (FMO) have statewide responsibility for MNARNGs Compliance, Restoration, and Pollution Prevention Programs.

Figure 1. Location of Camp Ripley and Arden Hills Army Training Sites, Minnesota.



PARTNERSHIPS

In the interest of sound conservation, the MNARNG has developed partnerships with a variety of organizations and resource agencies. Some of these partnerships have resulted in formal interagency agreements with the Minnesota Department of Natural Resources (MNDNR), Division of Ecological Resources, Saint Cloud State University, and Central Lakes College in Brainerd. These have been extremely cost effective and beneficial. The MNARNG also relies on expertise of personnel from other state agencies and organizations who contribute significantly to the support of the MNARNG Conservation Program. Agencies that have made significant contributions include the MNDNR, Minnesota Department of Corrections, Minnesota Department of Transportation, Minnesota Department of Agriculture, Minnesota Department of Health, and the Minnesota Pollution Control Agency. Other partners include The Nature Conservancy, Board of Water and Soil Resources, Morrison County Soil and Water Conservation District, Crow Wing County Soil and Water Conservation District, and Cass County Soil and Water Conservation District.

The success of the Conservation Program for the MNARNG is also attributed to a partnership between the environmental and military operations offices, represented by a shared Training Area Coordinator position. This partnership has enabled the MNARNG to provide a quality training experience for its soldiers without sacrificing the integrity of the Conservation Program.

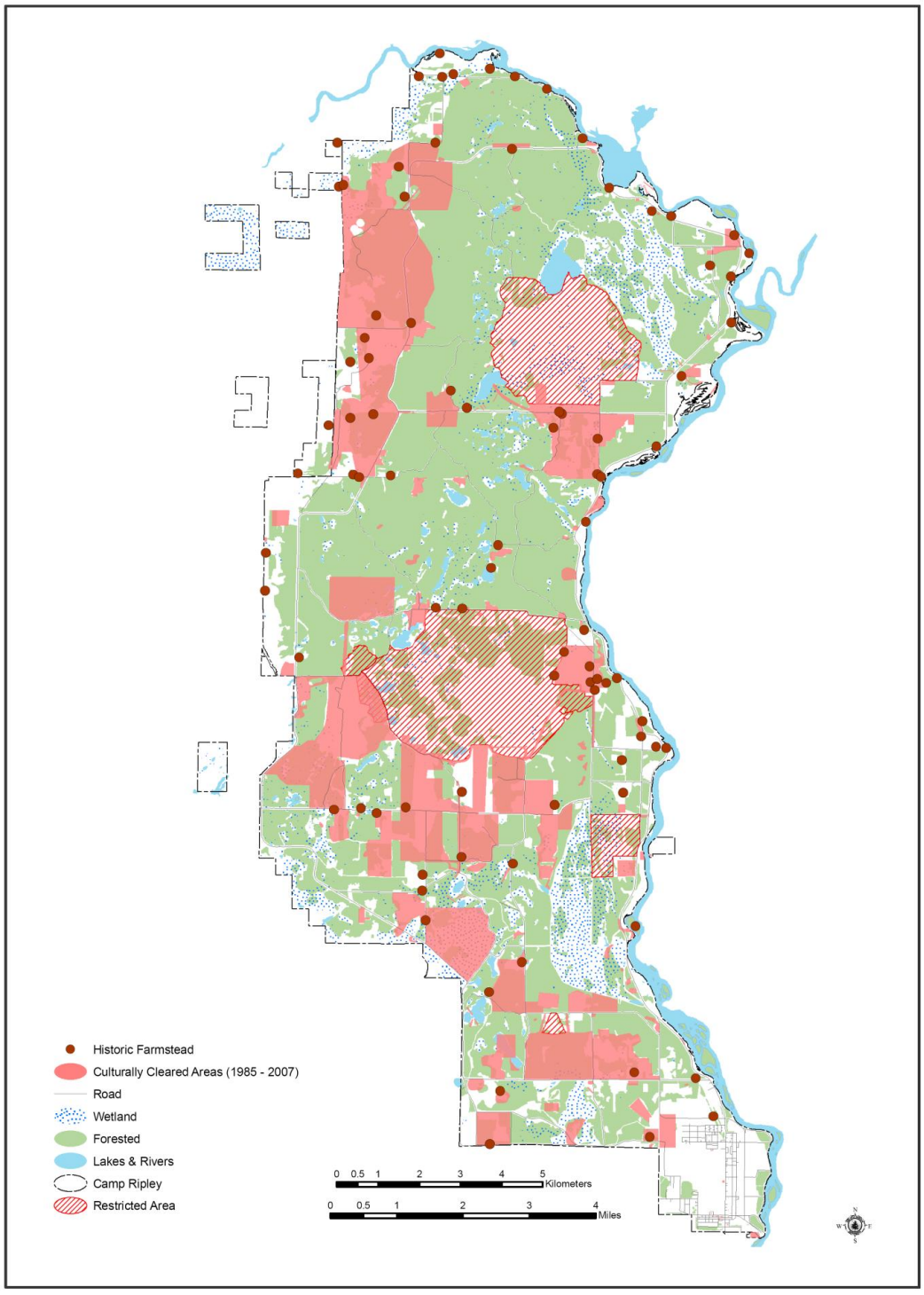
PROGRAM AREAS

For the purpose of documenting accomplishments for 2007, the Conservation Program of the MNARNG will be divided into the following program areas cultural resources, land use management, outreach and recreation, and natural resources including forestry, pest management, water resources, vegetation management, fisheries and wildlife.

Cultural Resources

During 2007, three pending projects on Camp Ripley received concurrence from the State Historic Preservation Office (SHPO). The first and most comprehensive was the submission of the final report for the field test of the research questions developed in the Historic Context for Farming in the Camp Ripley Area (Kloss 2006). The concurrence stated that while the farmsteads on Camp Ripley did not meet eligibility criteria for the National Register of Historic Places (NRHP), any other associated historic or prehistoric elements would need further evaluation and determination for eligibility (Figure 2). All stand alone farmsteads that contain no additional historic or prehistoric components are thus removed from protection and returned to Camp Ripley for military use as needed. The removal of foundation material or filling of depressions for hazard

Figure 2. Culturally cleared areas and farmstead locations at Camp Ripley, 1985-2007.



removal will still require concurrence from the SHPO through Section 106 of the National Historic Preservation Act (Advisory Council on Historic Preservation 2005). Capping of the farm building sites by burying with soil to retain the integrity of the site could well be the solution. To date, all known historic features existing prior to acquisition by MNARNG have been evaluated

for NRHP eligibility, this includes: schools, churches, cemeteries, town halls, ferry crossings, and lumber or logging camps. In addition, much of the military infrastructure built prior to 1950 has also been evaluated, subject to historic context. On Camp Ripley only the prehistoric archaeology remains to be completed in areas outside of the impact areas.

The second concurrence received from the SHPO was for the proposed ranges of the Urban Assault Course, the Convoy Live Fire Range, and the Infantry Squad Battle Course. The concurrence recognized that Camp Ripley would protect three sites located around the edge of a wetland on the western edge of the Infantry Squad Battle Course until a Phase II determination could be completed.

The third concurrence was received on an evaluation of the proposed relocation of a Walk-Through Course into Training Area 48.

Including the above concurrences the total of surveyed acres on Camp Ripley was increased to 13,303 acres, and four additional prehistoric sites requiring Phase II determination of eligibility.

During 2007, contractors were hired to complete the Phase I evaluation for the remainder of Training Area 10, the Multi-Purpose Range Complex, and the remaining portions of undisturbed soils at AHATS. Most of the field work was completed before freeze-up.

Also during 2007, the second Nation to Nation Consultation was conducted at Camp Ripley with representatives of many of the 23 participating federally recognized tribes. The significance of the meeting centered on the restoration of a previously disturbed burial mound including appropriate spiritual ceremony. The business of the meeting concluded with concurrence on the language for the proposed Programmatic Agreement between the Tribes and MNARNG.

Natural Resources

Natural resource planning is an integral part of the Conservation Program for the MNARNG. The MNARNG uses the INRMPs as the guidance documents for implementing the Conservation Program. The planning process used in developing the INRMPs focuses on using key stakeholders from the MNARNG, MNDNR, the U.S. Fish and Wildlife Service, and other organizations that have an interest in the MNARNGs Conservation Program. Together, these stakeholders represent the Integrated Natural Resources Management Planning Committee. The primary responsibility of the Planning Committee is to ensure that the INRMPs not only satisfy the military mission but also provide a foundation for sound stewardship principles that adequately address the issues and concerns that are raised by all stakeholders. Annually, stakeholders discuss and review the INRMPs for both Camp Ripley and AHATS, and present

their annual accomplishments and work plans for the next year. Please refer to Appendix C for the 2007 Camp Ripley annual meeting minutes.

FORESTRY

Forest Inventory

Beginning in January, The Nature Conservancy hired four staff to assist their Land Steward, Tim Notch, with the back-log of forest stands re-inventory. During the year, the crew completed re-inventory of 8,991 acres of forest stands for a total for 2003-2007 of 13,996 acres completed (Figure 3). The amount re-inventoried in 2007 meets the goal of completing 10 percent of the forest inventory database annually.

Forest Inventory and Analysis – Northern Research Station

Forest Inventory and Analysis is a national program of the U.S. Department of Agriculture, Forest Service. In cooperation with state forestry agencies, it conducts and maintains comprehensive inventories of the forest resources across all lands in the United States. In 1999, Forest Inventory and Analysis began transition to a sampling design in which a 6,000 acre hexagonal grid was established, and one sample point is measured within each hexagon. The state of Minnesota is supporting an intensification of the plot grid to one plot per 3,000 acres of land. In any given year, one-fifth of the plots, called a 'panel' are measured (Table 1 and Figure 4).

Table 1. Number of plots on the Forest Inventory and Analysis sample grid at Camp Ripley, 2008-2012.

STATE NAME	AREA NAME	2008	2009	2010	2011	2012
Minnesota	Camp Ripley	2	6	3	3	2

The Phase two component consists of one field sample site for every 6,000 acres. Field crews collect data on forest type, site attributes, tree species, tree size, and overall tree condition. Data is also collected on the understory vegetation, site productivity, and physical attributes of the site (e.g., slope, aspect, etc.). Each plot is visited once every 5 years on the annual system.

The phase three component consists of a subset of Phase 2 sample plots that are measured for a broader suite of forest health attributes. There is approximately one Phase 3 plot for every 16 Phase 2 plots, or one Phase 3 plot for every 96,000 acres. These attributes include tree crown condition, understory vegetation, down woody materials, and soil attributes. Additionally, soil samples are collected, sent to a laboratory for chemical analysis, and then completely destroyed.

Figure 3. Forest stands re-inventoried at Camp Ripley, 2003 – 2007.

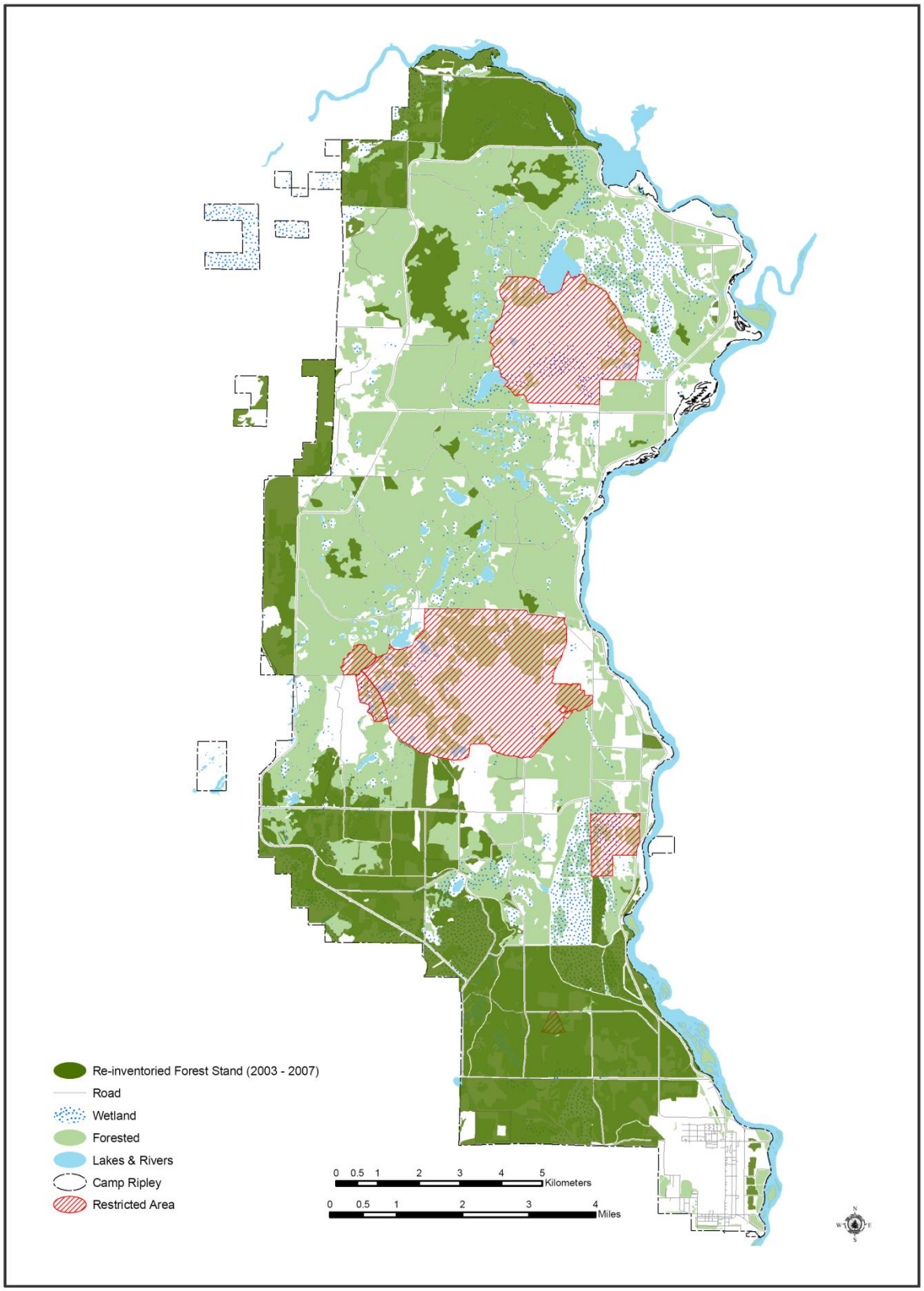
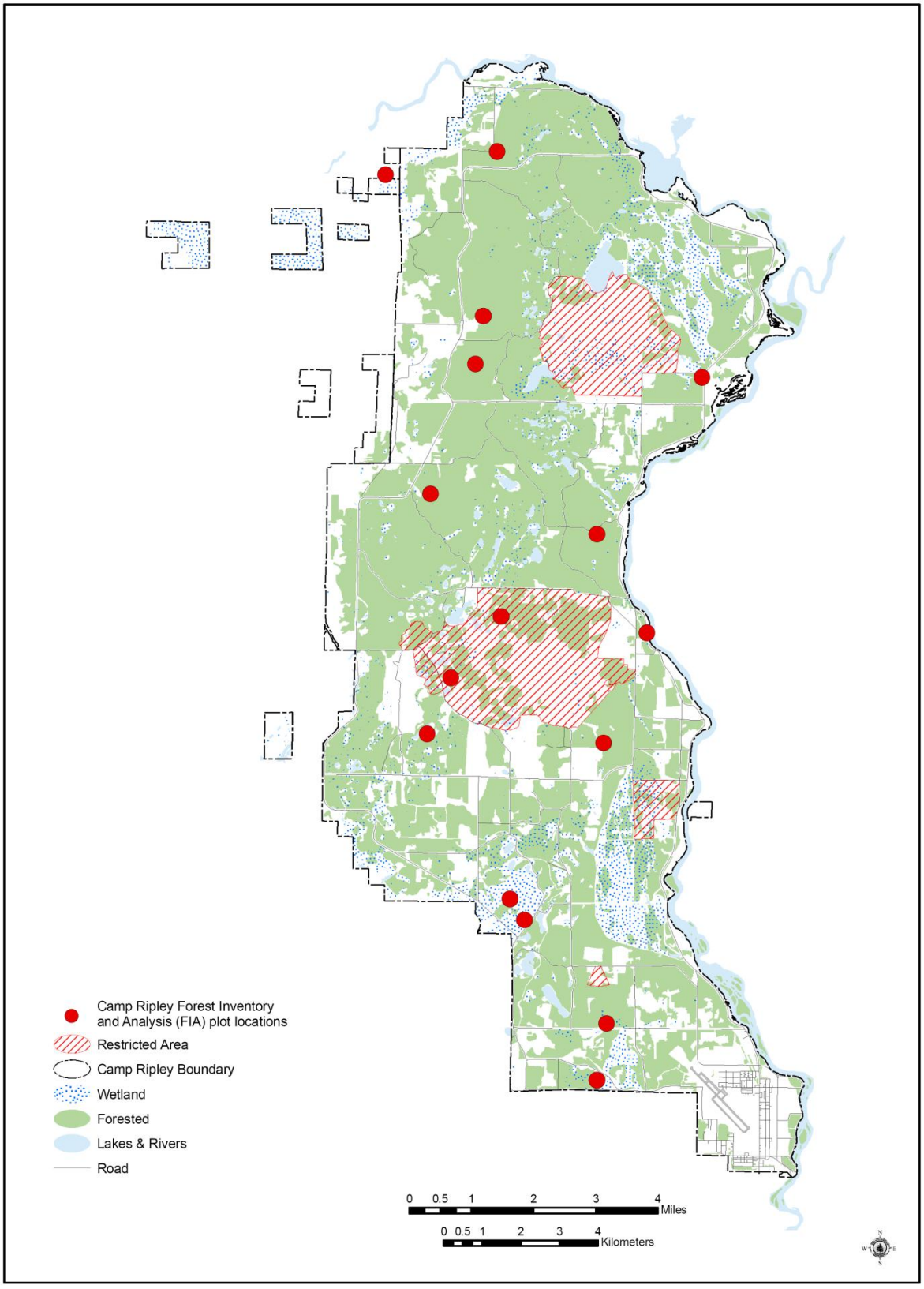


Figure 4. Forest Inventory and Analysis plot locations at Camp Ripley.



Timber Sales

During the first quarter of 2007, permit #2376 to Petty and Sons was closed as completed with the cutting occurring just prior to the end of 2006. Permit #2676 to Weyerhaeuser (TrusJoist) was also closed as completed with the harvesting completed during the fall of 2006.

In September 2007, five tracts of timber were offered for sale at the first sealed bid auction on Camp Ripley. The areas offered totaled 188 acres (Table 2). Five different bidders submitted proposals with Marcus Edin as the successful bidder on all of the tracts. Edin began logging within a week and competed two of the tracts before freeze-up.

During October 2007, Weyerhaeuser announced plans to shut down its operations at the Deerwood facility due to a slump in wood products markets. This action created a great uncertainty and dismay in the State's forest products industry. On Camp Ripley, three active timber permits issued to Weyerhaeuser remain uncut which will likely default and have to be re-offered for sale.

Table 2. Timber sale summary at Camp Ripley, 2002-2007.

Year	**2002**	**2004**	**2005**	**2006**	**2007**
Acres	189	218.5	217	139	**188**
Volume	1500 cds.	4040 cds.	4412 cds.	3140 cds.	**3624 cds.**
Appraised Value	$25,357.50	$86,943.00	$114,123.00	$85,705.00	**$67,140.00**
Sold Value	$52,632.00	$230,140.00	$413,321.30	$133,740.00	**$125,483.56**
Type of Harvest	Pine Thinning (88 ac.) Buffer Thinning (101 ac.)	Pine Thinning/Aspen Regenerate (70 ac.) Remove Aspen from Oak Overstory (53.5 ac.) Release White Pine Understory and Regenerate Aspen (95 ac.)	Regenerate Aspen (124.7 ac.) Pine Release (6 ac.) Oak Thinning (26 ac.) Range Development (60.3 ac.)	Regenerate Aspen (105.4 ac.) Remove Aspen from Oak Overstory (34 ac.)	**Regenerate Aspen (138 ac.)** **Pine Thinning (40 ac.)** **Military FOB Development (10 ac.)**

Fuelwood Permits

For the permit period from April 1, 2007 through March 31, 2008, there were 13 individuals that acquired fuelwood permits from Range Control and MNDNR, Forestry Division.

During February and March, the DMA and Minnesota Department of Corrections worked together to facilitate a fuelwood program for families of deployed soldiers. The trees were cut from an area set aside for expansion of the Cody gravel pit. Sentence to Serve (STS) crews from ten different communities throughout the central part of the state cut down the trees, personnel from Camp Ripley's Department of Public Works (DPW) moved the trees to a central processing area, and the STS crews blocked the wood into firewood lengths. The wood was loaded into trucks and transported to the Cantonment Area where the STS crews split and piled the firewood. In all over 200 cords (4'x4'x8') or 600 face cords of firewood were accumulated for families of deployed soldiers during the week-long effort, which was truly an amazing cooperative effort by the two agencies on behalf of soldiers.

In September 2007, the STS crew leaders returned to Camp Ripley for their annual chainsaw training. The area selected this year was on a future range development area for the Multi-Purpose Range Complex scheduled for Center Range. Over 100 individuals participated in the week long training exercise, and cut down nearly 300 trees.

Tree Planting

Tree planting during 2007 was accomplished at AHATS for the buffer on the west side of the installation. The 140 trees planted in the buffer were containerized in #10 pots and consisted of 35 pin oak *(Quercus ellipsoidalis,)* 35 northern red oak *(Quercus rubra),* 35 bur oak (*Quercus macrocarpa),* and 35 white oak (*Quercus alba)* trees with a one inch stem caliper. In addition, one hundred #2 pots of eastern red-cedar *(Juniperus virginiana)* in were planted.

Similarly, planting on Camp Ripley was in the buffer area between Kodiak and Morrison County Highway # 1 equidistant north and south of Normandy Road. In total, 500 potted trees were planted consisting of 300 black hills spruce (*Picea mariana*) and 200 conservation grade white spruce (*Picea glauca*).

The summer weather was hot and dry causing severe drought impact on the plantings. Mortality of planted trees on Camp Ripley was in excess of 50 percent. Fortunately, watering of the new trees at AHATS prevented critical losses. The major losses were incurred from planted trees that did not leaf out. Those trees were replaced by the vendor in September.

Insects and Disease

Insects and disease problems were noted during 2005 when an infestation of jack pine budworm (*Choristoneura pinus pinus*) defoliated nearly 600 acres of jack pine in the northwest part of Camp Ripley. Due to the damage and the potential of severe fire hazard, Camp Ripley

personnel conducted an aerial application of *Bacillus thuringiensis*, a selective bio-control agent. That application occurred during May 2006 on 677 acres of jack pine stands in the north part of Camp Ripley (Figure 5).

The treatment was effective and no budworm activity was detected in the area sprayed. However, during 2007 the trees weakened by the previous defoliation became more vulnerable to infestation from pine bark beetle (*Ips pini*). Consequently, tree and branch mortality throughout the affected pine stands became apparent. Some budworm activity was detected south of Argonne Road but damage did not become significant.

The hot dry weather during the summer of 2007 created stress on many trees throughout Camp Ripley including the Cantonment Area. The pine bark beetle, as well as other pests, caused sporadic tree and branch mortality in all of the conifer plantings. The impacts on hardwood trees may not show up until the spring and summer of 2008.

The Minnesota Department of Agriculture again placed gypsy moth traps throughout Camp Ripley (Figure 6). The traps were checked once in August and again when the traps were pulled at the end of the season. No moths were found as has been the status since 1999, when monitoring began.

VEGETATION MANAGEMENT

Prescribed Fire

Camp Ripley uses prescribed fire primarily to control vegetation in support of military exercises, and secondarily as a management tool for native prairie grass enhancement, woody encroachment, seed production, brush control, fuel-hazard reduction, forest management, and to improve habitat for threatened and endangered species. Two of the largest training areas on Camp Ripley are designated as impact areas. These areas are burned every spring along with eight other firing ranges to reduce fuel build up and minimize wildfires due to the use of tracers during firing exercises. A large wetland complex is also burned annually on the basis of fire hazard reduction due to its location adjacent to a firing range. These are categorized as hazard reduction burns. The total acreage of fire hazard reduction burns is approximately 10,000 to 12,000 acres annually (Figure 7).

Burn plans are carefully written for each burn unit and reviewed by local MNDNR Forestry personnel prior to execution of the burn. Resources from Camp Ripley's DPW partnered with the environmental staff and The Nature Conservancy to implement prescribed fire on these units.

Spring burn units I-62-53 and D-34-11 (Figure 7) totaled 105 acres, and were both completed in late spring. The objectives for both units were achieved as described in the plans,

Figure 5. Jack pine budworm treatment areas at Camp Ripley, 2006.

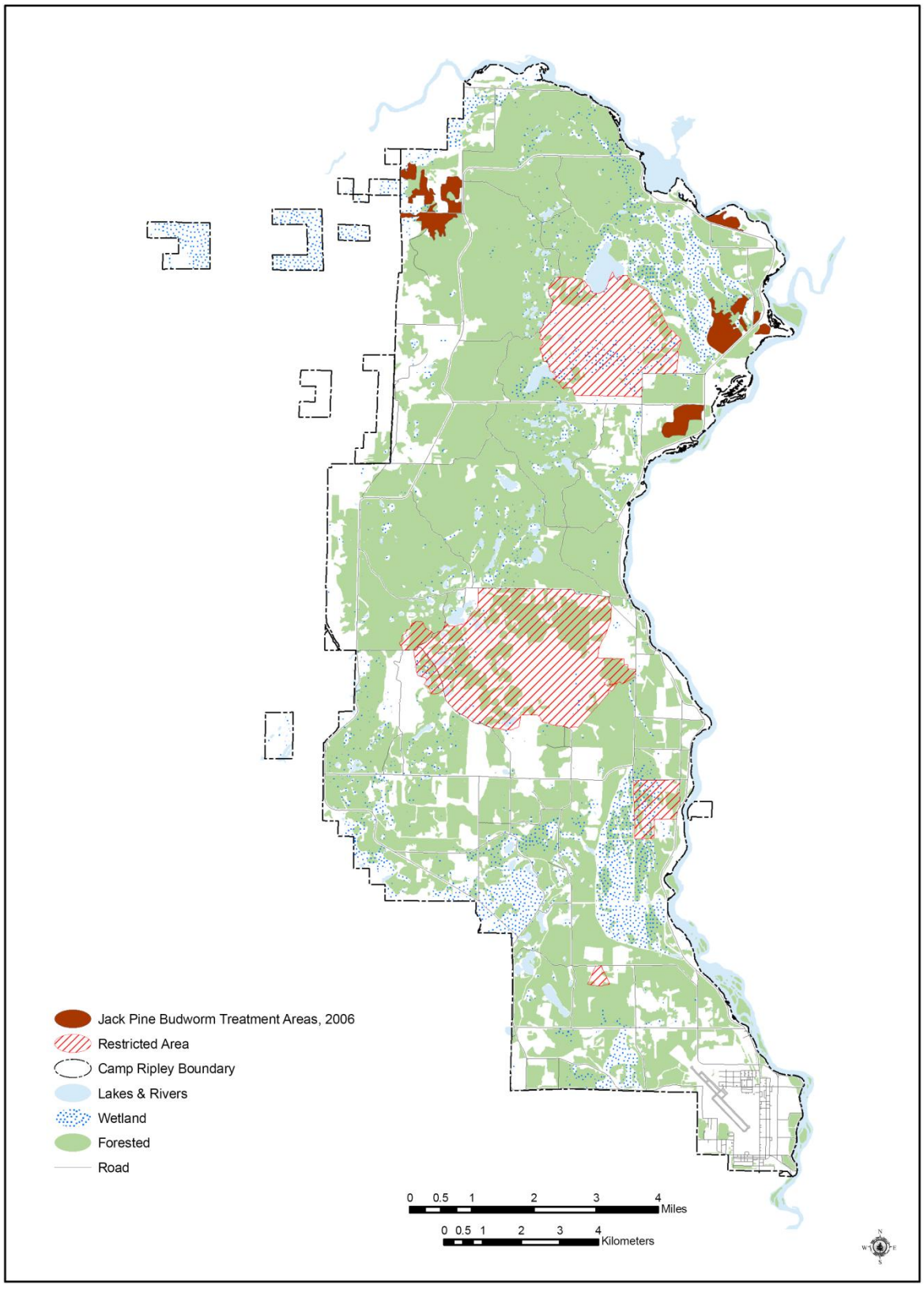


Figure 6. Gypsy moth trap locations at Camp Ripley, 2007.

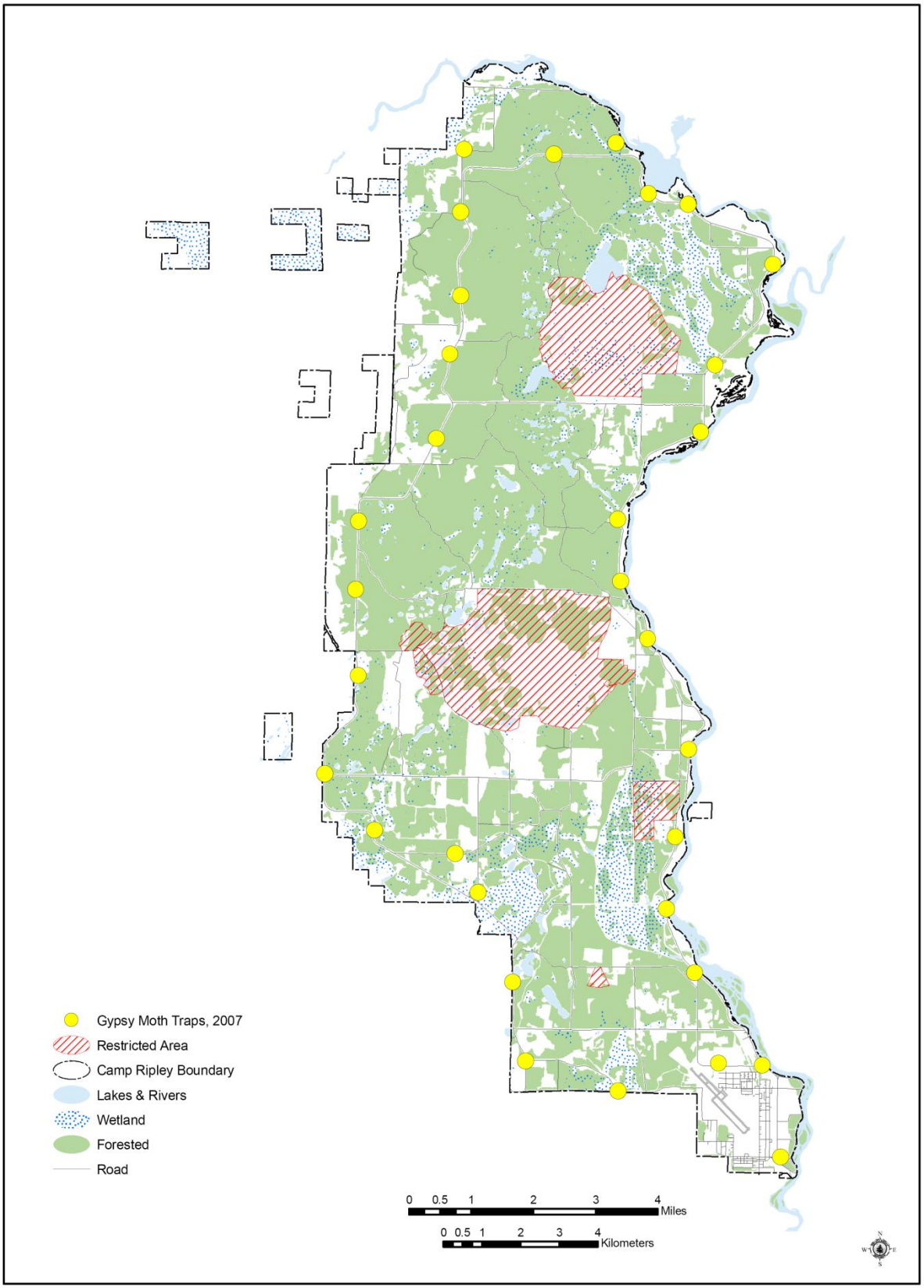
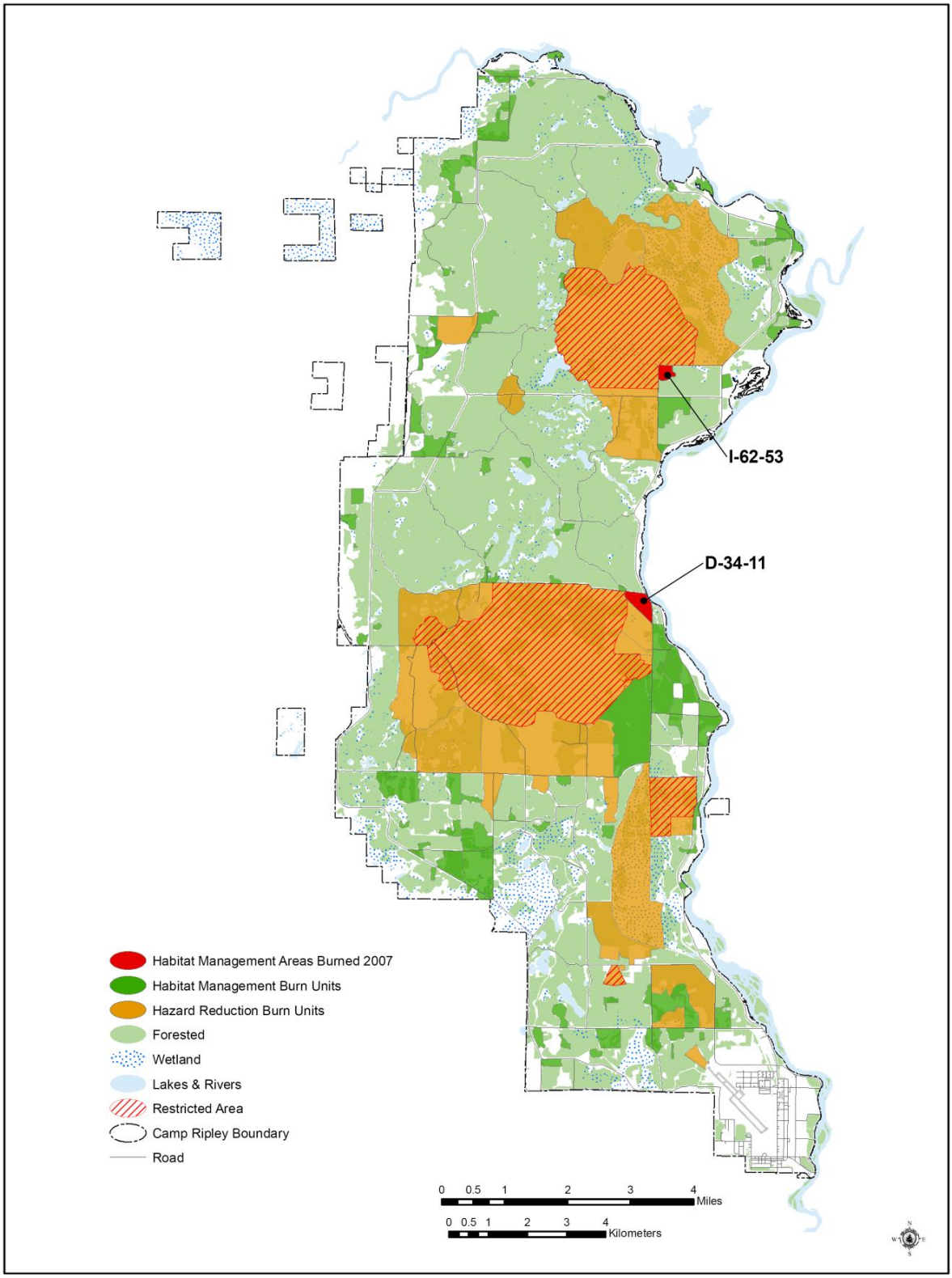


Figure 7. Fire units burned for habitat management at Camp Ripley, 2007.



they are: 1) burn and consume 90 percent of fine dead grassy fuels, and 2) reduce the influx of hazel in the unit by 50 percent. Objective one was measured by visual inspection of available fuels left on the site immediately after completion of the burn. Objective two was measured after sufficient green up is attained to quantify percent kill on hazel. All goals and objectives were achieved on all spring burn units which demonstrates the effectiveness of phenological timing of the burn events.

Fall burns occurred on approximately 100 acres as part of the crew boss training administered by The Nature Conservancy and sponsored by Camp Ripley. The total acres burned do not reflect 100 percent of the burn units utilized because the objectives of these burns were to provide suppression training and not implement ecological objectives. All of the ecological and training burn units were completed by prescribed fire crew under the direction of the RxB2 burn boss Tom Rothleutner, DPW Supervisor.

Invasives

The Department of Biological Sciences at St. Cloud State University has been contracted to monitor invasive plant species at Camp Ripley and AHATS, and to provide control recommendations. The goal of the project is to establish a comprehensive long-term control management program with minimum environmental damage to native communities. Following are the 2007 accomplishments and 2008 work plan submitted by Joseph Carlyon and Jorge Arriagada, St. Cloud State University.

Chemical Herbicide Recommendations

After the completion of four years of testing various controls we have quantifiable evidence, in the form of percentage cover, of which treatments and treatment combinations provide the greatest reduction for each of the invasive plant species found at the two Minnesota military training sites. For the purpose of conciseness, only the top three invasive species at these training sites and the pertinent chemical controls will be briefly covered.

For spotted knapweed (*Centaurea maculosa*), all chemical combinations with Overdrive®, (Sodium Diflufenzopyr, Dicamba, and Crystalline Silica) from the BASF chemical company, provide the greatest control. The most cost effective chemical combination is an Overdrive® and 2, 4D mix. The common tansy ***(****Tanacetum vulgare)* data also has compelling evidence that points to a specific chemical, Escort® (Metsulfuron Methyl) from the DuPont Chemical Company. Again, the most cost effective mix which provides the greatest control is an Escort® and 2, 4D mix. The evidence for the last of the top three invasive plants, leafy spurge (*Euphorbia esula*), points to chemical combinations that contain Plateau® (Imazapic Ammonium Salt) from the BASF Chemical Company. Again, the most cost effective chemical combination is a Plateau® and 2, 4D mix. Each of these chemical combinations for each of the top three invasive plant species are recommended for any future chemical treatments at the two military training sites.

Biological Control

In 2003, the first biological control agents were released at Camp Ripley and AHATS. At Camp Ripley, 50 *Cyphocleonus achates* were released in training area 17 (Figure 8) on an infestation of the target species spotted knapweed. At AHATS 20,050 biological control agents were released at five sites. These releases included two 5,000 insect counts of *Aphthona lacertosa* on two leafy spurge sites, two 5,000 insect counts of *Aphthona lacertosa* on two cypress spurge (*Euphorbia cyparissias*) sites, and a 50 insect release of *Cyphocleonus achates* on a spotted knapweed site.

In 2004, the biological control program was continued with the release of 780 biological control agents at Camp Ripley. All the biological control agents were released on two spotted knapweed infestations. Four hundred and fifty *Larinus minutus* and 40 additional *Cyphocleonus achates* were released on the same knapweed infestation in training area 17. In addition, 40 *Cyphocleonus achates* and 250 *Larinus minutus* were released on a knapweed infestation near the bone yard in the cantonment area (Figure 9).

In 2005, five thousand seven hundred and fifty biological control agents were released at the two military training sites. These releases included a 5000 insect release of *Aphthona lacertosa* on an existing leafy spurge site at AHATS. Also at AHATS, 450 *Larinus minutus* and 40 *Cyphocleonus achate* were released on a spotted knapweed site. At Camp Ripley three hundred *Cyphocleonus achates* where released. A 100 insect count was released near the bone yard at the previous release site and a 200 insect count was release in training area 17 at the other previous release site.

In 2006, six hundred and ninety five biological control agents were released at the two military training sites. All 2006 biological controls were released on previously established spotted knapweed biological control sites. These releases included; 275 *Larius minutus* at a previously established site at AHATS, and two identical releases of 200 *Larius minutus* and 20 *Cyphocleonus achates* on the two previously established knapweed biological control sites at Camp Ripley.

In 2007, 50 *Cyphocleonus achates* agents were released at Camp Ripley. This release was the only release of biological control agents in 2007. The previously established training area 17 (Figures 8 and 9) release site at Camp Ripley had a hearty population of *Larius minutus*. This spotted knapweed infestation showed visible signs of recession from the release point. After sweep net samples were collected it was determined that it would be safe to move a moderate amount of *Larius minutus* out of the training area 17 site and establish new biological control sites on other knapweed infestations at Camp Ripley. A total of 1400 *Larius minutus* were collected from training area 17 and moved to three new release sites all in training area 18 (Figures 8 and 10). Although the agents had spread to training area 18 on their own, the insect population levels were low, indicated by the sparseness of the sighting. The release of this extra 1400 insect count could help boost *Larius minutus* population levels in training area 18 and hopefully start to put a dent into this larger population of spotted knapweed.

Figure 8. Invasive plant biological control locations at Camp Ripley, 2007.

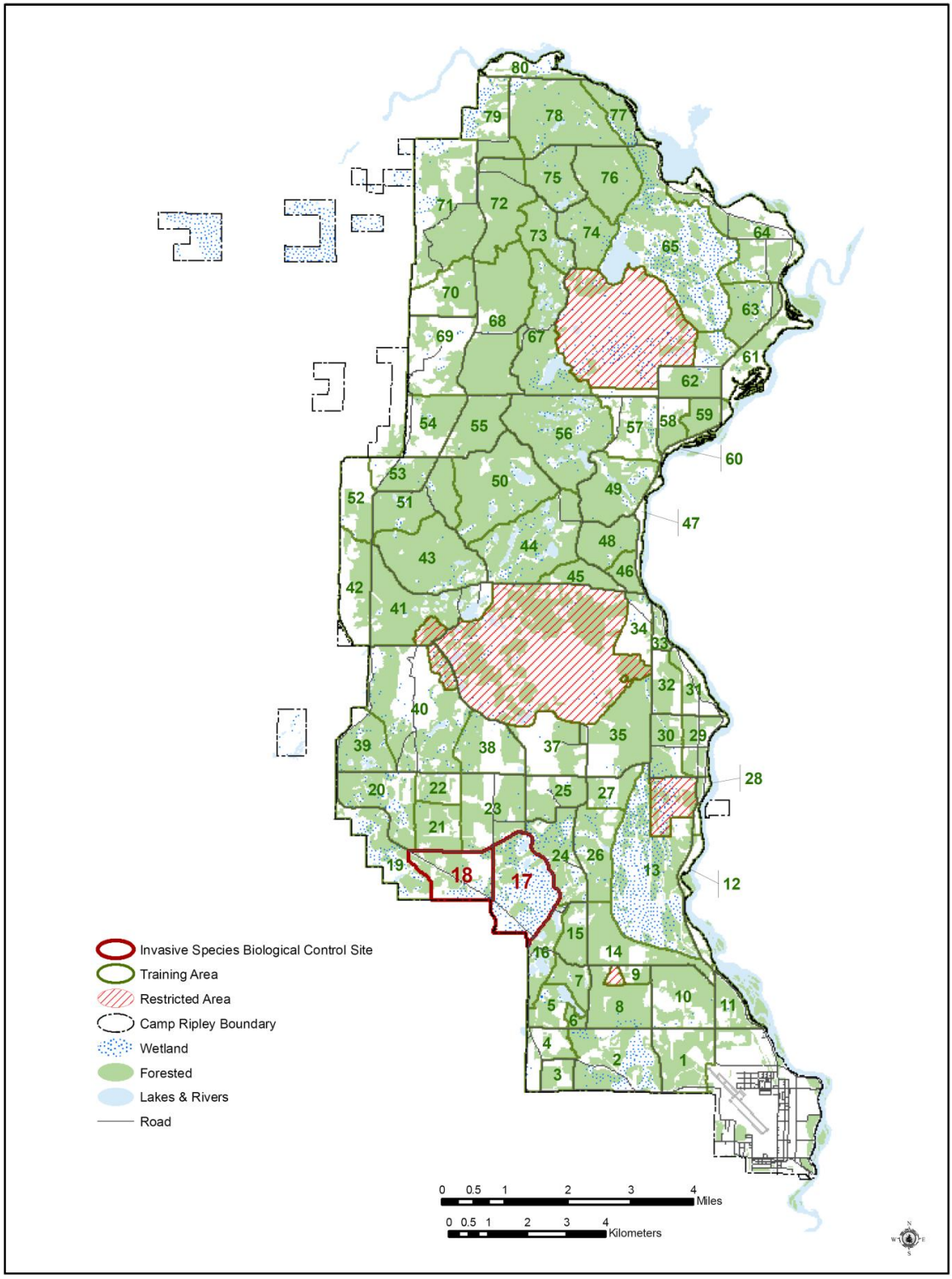


Figure 9. Biological control sites in the Camp Ripley cantonment area.

Figure 10. Biological control sites training area 17 and 18 at Camp Ripley, 2007.

In 2008, all biological control sites will be visited, sweep net tested, and population estimates made. Despite the large numbers of biological control agents released in AHATS, little to no agents were found in 2007. The 2008 assessment will be important in determining if the previous direction of the biological control program in AHATS was correct or if changes should be made in the numbers or species for these smaller infestations in land surrounded by urban development.

WATER RESOURCES

Wetlands Permits

A permit was obtained to repair damage to a cable concrete landing/ bridge crossing on the Mississippi River. Please see Appendix D for permit documentation.

Water Quality Trend Analysis Program

The water quality trend analysis program (WQTAP) report was prepared for the Minnesota Department of Military Affairs by Matthew L. Julius, Ph.D., Department of Biological Sciences, Saint Cloud State University. His annual report summary follows.

Overall the water quality of the aquatic systems monitored in this study is good when compared to other systems and patterns found in central Minnesota. This is the seventh report on water quality monitoring and statements can now begin to be made about ongoing trends in the systems. The 2002-2006 WQTAP Annual Reports correctly identified an appropriate framework for evaluating trends in water quality. This is a non-trivial decision and selecting appropriate endpoints for gauging ecosystem health is not straight-forward.

Data for all surface waters were examined in an effort to evaluate whether trends in nutrient loading are the result of training activities or other factors. This was done by utilizing the existing GIS coverages for the training area and plotting values for Total Nitrogen, Total Phosphorus, and Chlorophyll A onto sampling areas. Two trends manifested themselves in past data. The first is a general reduction in Total Nitrogen and Total Phosphorus from west to east. The second trend noticed in the nutrient plots is elevated Nitrogen levels in aquatic systems in or surrounding the impact zones. The 2007 data and multivariate analysis of prior year data was informative in developing an understanding of the factors driving these two general trends. This is likely the result of training activities. First, the 2007 data did not show elevated Total Nitrogen levels in the same manner as previous years. Calendar year 2007 was an extreme dry year and absence of elevated Total Nitrogen levels during this period is consistent with the hypothesis that nitrogen levels are driven by run-off events reflecting high nitrogen levels in soils or materials transported from off-base. Second, canonical correspondence analysis of all data (years 2002-2007) generally showed higher nutrient levels (greater impact) in southern portions of the training area. These areas are where the majority of training activities are occurring and may indicate a negative association with training activities and overall water quality.

While increases have been noted as described above, these elevated levels are short lived and nutrients are utilized and processed successfully by Camp Ripley's aquatic systems. These inputs do not exceed the system's environmental tolerance.

WILDLIFE

Species in Greatest Conservation Need

One of the federal requirements of the Comprehensive Wildlife Conservation Strategy to manage species in greatest conservation need (SGCN) was that all states and territories develop a wildlife action plan by October 2005. Tomorrow's Habitat for the Wild and Rare is Minnesota's response to this congressional mandate. It helps guide how the program operates in Minnesota, and provides direction for sustaining species in greatest conservation need into the future (MNDNR 2006a).

Tomorrow's Habitat for the Wild and Rare is a strategic plan focused on managing Minnesota's populations of "species in greatest conservation need." Species in greatest conservation need are defined as native animals whose populations are rare, declining, or vulnerable to decline and are below levels desirable to ensure their long-term health and stability. In Minnesota, 292 species meet the definition of species in greatest conservation need. This set of SGCN includes mammals, birds, reptiles, amphibians, fishes, insects, and mollusks; and represents about one-quarter of the nearly 1,200 animal species in Minnesota that were assessed for this project (MNDNR 2006a). More than 60 SGCN species, including 44 bird species of which 28 are songbirds, have been identified on Camp Ripley. Additional research will be directed toward identifying other SGCN species on Camp Ripley and management or conservation actions that could be implemented to benefit these species.

Camp Ripley Birds

Christmas Bird Count

The Christmas Bird Count (CBC) has been coordinated by the National Audubon Society since 1900, and has become the oldest continuous nationwide wildlife survey in North America (Sauer et al. 1997). Counts occur within predetermined 15-mile diameter circles located across North America. The northwest portion of Camp Ripley is within one of these circles (Figure 11). Each count is conducted during a single calendar day within two weeks of Christmas. CBC data is primarily used to track winter distribution patterns and population trends of various bird species.

The 2007 CBC occurred on January 1, 2007, and was conducted by Bill Brown, Camp Ripley Environmental Office, and a volunteer, Terri Botz. The count began at 10:00 a.m. and concluded at 4:00 p.m. The total number of birds counted this year was similar to 2006 but lower than previous years (Table 3). The skies were clear, temperature was 20 degrees Fahrenheit, and winds were northwest at 5 mph (USDC and NOAA 2008). Most of the river was frozen this year, concentrating the few waterfowl in a short stretch of open water below Sylvan Dam. However, twice as many of trumpeter swans (*Cygnus buccinator*) were present compared to the last few years.

Figure 11. Christmas bird count area within Camp Ripley.

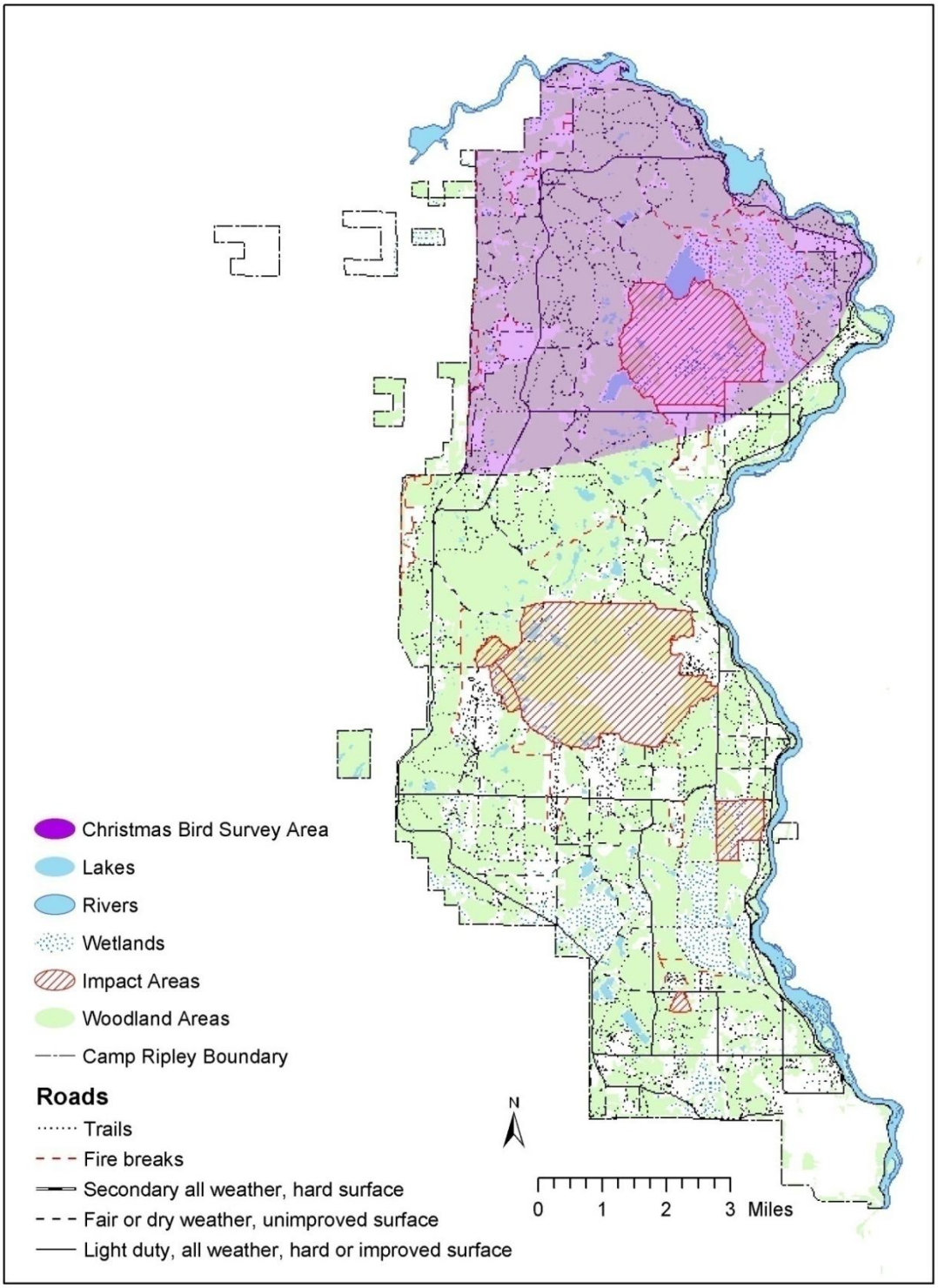


Table 3. Christmas bird count data from Camp Ripley, 2002-2007.

Species	2002	2003	2004	2005	2006	2007
Trumpeter swan	0	3	20	28	26	**49**
Mallard	0	1	70	0	20	**0**
Black-capped chickadee	11	9	6	9	12	**1**
Bald eagle	6	2	13	3	4	**11**
Common merganser	0	0	10	0	4	**12**
Blue jay	4	20	8	1	3	**0**
White-breasted nuthatch	1	4	5	0	3	**0**
Canada goose	6	344	110	81	2	**4**
American crow	4	2	13	3	2	**3**
Red-breasted nuthatch	6	0	1	3	1	**0**
Downy woodpecker	2	1	1	0	1	**0**
Pileated woodpecker	1	5	0	0	1	**0**
Common redpoll	0	0	0	32	0	**0**
Wild turkey	0	25	10	5	0	**0**
Northern goshawk	0	0	0	2	0	**0**
Ruffed grouse	1	1	3	2	0	**0**
Red-tailed hawk	0	0	0	1	0	**0**
Northern shrike	3	0	1	1	0	**0**
Golden eagle	0	0	1	1	0	**0**
Belted kingfisher	0	0	1	1	0	**0**
Rough-legged hawk	2	3	1	0	0	**0**
Bohemian waxwing	0	30	0	0	0	**0**
American tree sparrow	0	20	0	0	0	**0**
Common raven	1	4	0	0	0	**0**
Red-bellied woodpecker	0	1	0	0	0	**0**
Hairy woodpecker	0	1	0	0	0	**0**
Dark-eyed junco	0	1	0	0	0	**0**
Northern cardinal	1	0	0	0	0	**0**
Cedar waxwing	0	3	0	0	0	**0**
Barred owl	1	0	0	0	0	**0**
TOTAL	52	480	274	171	79	**80**

Songbirds

Songbirds are excellent indicators of habitat change because of the large number of species, the relative ease with which they can be detected and identified in the spring breeding season, and the large variety and diversity of habitats they inhabit. Songbird surveys have been conducted on Range Training Land Assessment (RTLA) (formerly, Land Condition-Trend Analysis) (Tazik et al. 1992) core and special use plots throughout Camp Ripley since 1993. The number of plots that are surveyed each year varies according to training, weather, and survey strategy. Additionally, certain plots are no longer surveyed due to complete habitat alteration. During 2001 and 2002, only a subset of the total 90 plots were surveyed in order to reduce the amount of effort expended by staff in any one year. However, after the rapid spread of West Nile Virus across the country, and the possible negative implications to various bird species and populations, it was decided that 90 or more plots would again be surveyed each year.

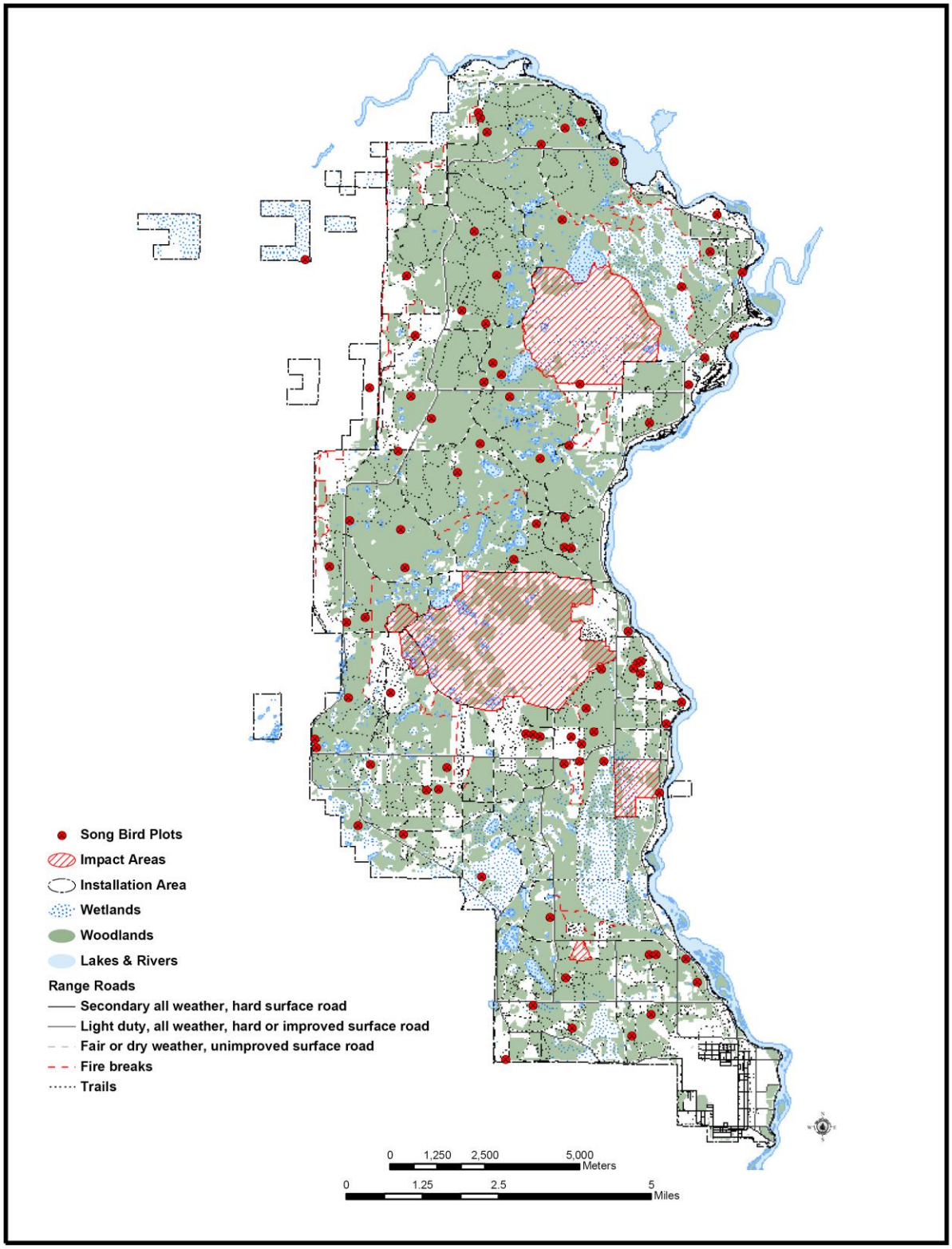
Totals and Trends

Songbird surveys were conducted between June 2 and July 3, 2007 on 91 RTLA plots (Figure 12). Birds were counted on 58 core plots and 33 special use plots. A total of 994 birds of 71 different species were counted. However, 27 species make up 85 percent of the total number of birds recorded. The average number of birds per plot was 10.9 and the average number of species per plot was 7.02 (Table 4). Similar to past years, the most common birds documented on plots were red-eyed vireo (*Vireo olivaceus*), ovenbird (*Seiurus aurocapillus*), American redstart (*Setophaga ruticilla*), chipping sparrow (*Spizella passerina*), veery (*Catharus fuscescens*), and eastern wood-pewee (*Contopus virens*). Three species, red-eyed vireo, ovenbird, and American redstart accounted for 39 percent of the total birds counted on all plots.

Table 4. Songbird survey data Camp Ripley, 2000-2007.

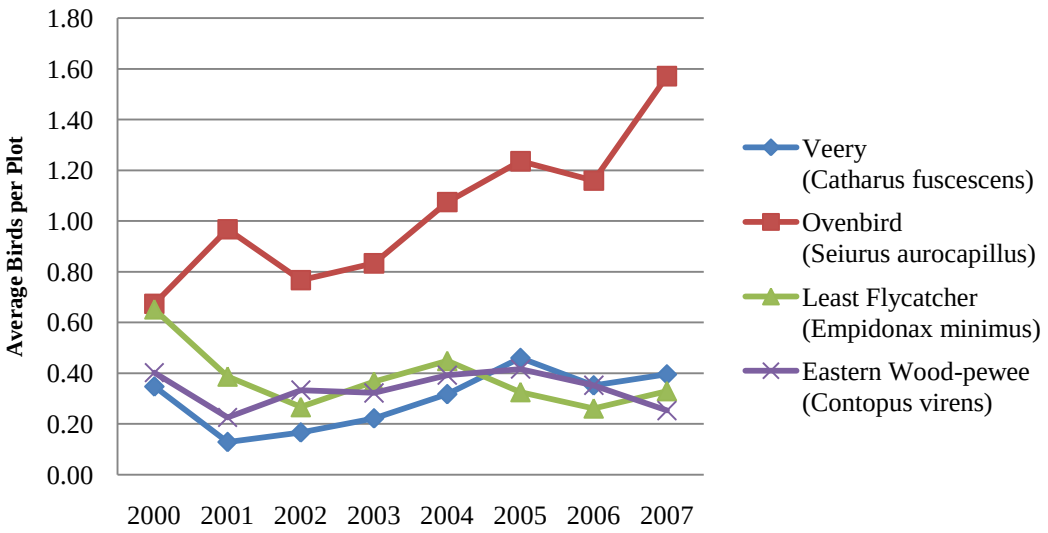
Year	Number of Plots Surveyed	Total Number of Birds Documented	Total Number of Species Documented	Average Number of Birds per Plot	Average Number of Species per Plot
2000	92	1002	66	10.89	6.43
2001	31	316	46	10.19	5.77
2002	30	258	42	8.6	5.83
2003	90	823	68	9.14	5.37
2004	107	1129	64	10.55	6.14
2005	89	897	61	10.08	6.20
2006	88	802	64	9.11	5.84
2007	**91**	**994**	**71**	**10.92**	**7.02**

Figure 12. Range Training Land Assessment songbird survey plot locations at Camp Ripley, 2007.



On Camp Ripley, the average number of species surveyed per plot and the average number of birds on each plot has remained relatively constant since 2000. The ovenbird, one of the most common forest bird species on Camp Ripley, and a species of greatest conservation need, has shown an increasing trend since 2000. In fact, the average number of ovenbirds per plot and total number of ovenbirds counted has more than doubled (Figure 13). The Breeding Bird Survey trend for ovenbirds has been increasing in the state, within the Great Lakes Transition physiographic region (in which Camp Ripley is located), regional, and national levels over the same period (Sauer et al. 2007), but not to the same extent as on Camp Ripley.

Figure 13. Selected songbirds in greatest conservation need at Camp Ripley, 2000 to 2007.



Analyzing 40 years of population information collected for Audubon's Christmas Bird Count and combining this with Breeding Bird Survey data from the U.S. Geological Survey, Audubon has identified the most vulnerable common birds at the national and state levels. Of the 20 fastest declining common bird species in the nation, 16 breed in Minnesota. Audubon says golden-winged warblers (*Vermivora chryspotera)* are "A rare and declining species. Over 40 percent of the world's population breeds in Minnesota although little is known about population trends here" (Audubon 2007). However, survey and field observations indicate that golden-winged warblers are increasing in number on Camp Ripley. Only 1-2 singing males were heard each year on survey plots from 2000-2004, this number increased to five in 2006 and nine in 2007. Although several species appear to be in decline on Camp, at least 10 other bird species have increased during the same time period. Camp Ripley provides important habitat for many species that have pressures from development and habitat fragmentation outside of Camp.

Bluebird Nest Box Route in Veterans Cemetery

During 2007, thirteen bluebird nesting boxes were monitored in the Minnesota Veterans Cemetery, located across the Mississippi River from Camp Ripley. The boxes were monitored intermittently during the breeding season by Camp Ripley staff, as the volunteer from the previous season resigned.

Eastern bluebird (*Sialis sialis*) nestlings were first observed in nest boxes on June 4, 2007. Four boxes were used to raise bluebirds, two boxes were used to raise house wrens (*Troglodytes aedon*), and six were used to raise tree swallows (*Tachycineta bicolor*). Several attempts to nest were made by invasive house sparrows (*Passer domesticus*), but their nests were removed. Nine bluebirds fledged from the nest boxes at the Veterans Cemetery. A new volunteer will be recruited for the 2008 season.

Bald Eagle (*Haliaeetus leucocephalus*)

Bald eagles are closely monitored at Camp Ripley. Since 1991, between two and six nests have been active within Camp Ripley, fledging from one to eight young annually (Table 5). The bald eagle nesting season started out strong in 2007, with a pair of eagles on five of six nests throughout Camp Ripley (Figure 14). The Yalu nest was confirmed to have one chick. Mud Lake, East Boundary, North Range, and Prentice Pond nests were active, and each fledged two young. The Lake Alott nest was confirmed inactive.

Three eagle nests within one mile of the Camp Ripley boundary are also monitored. One of the nests was occupied in 2007 but no chicks fledged.

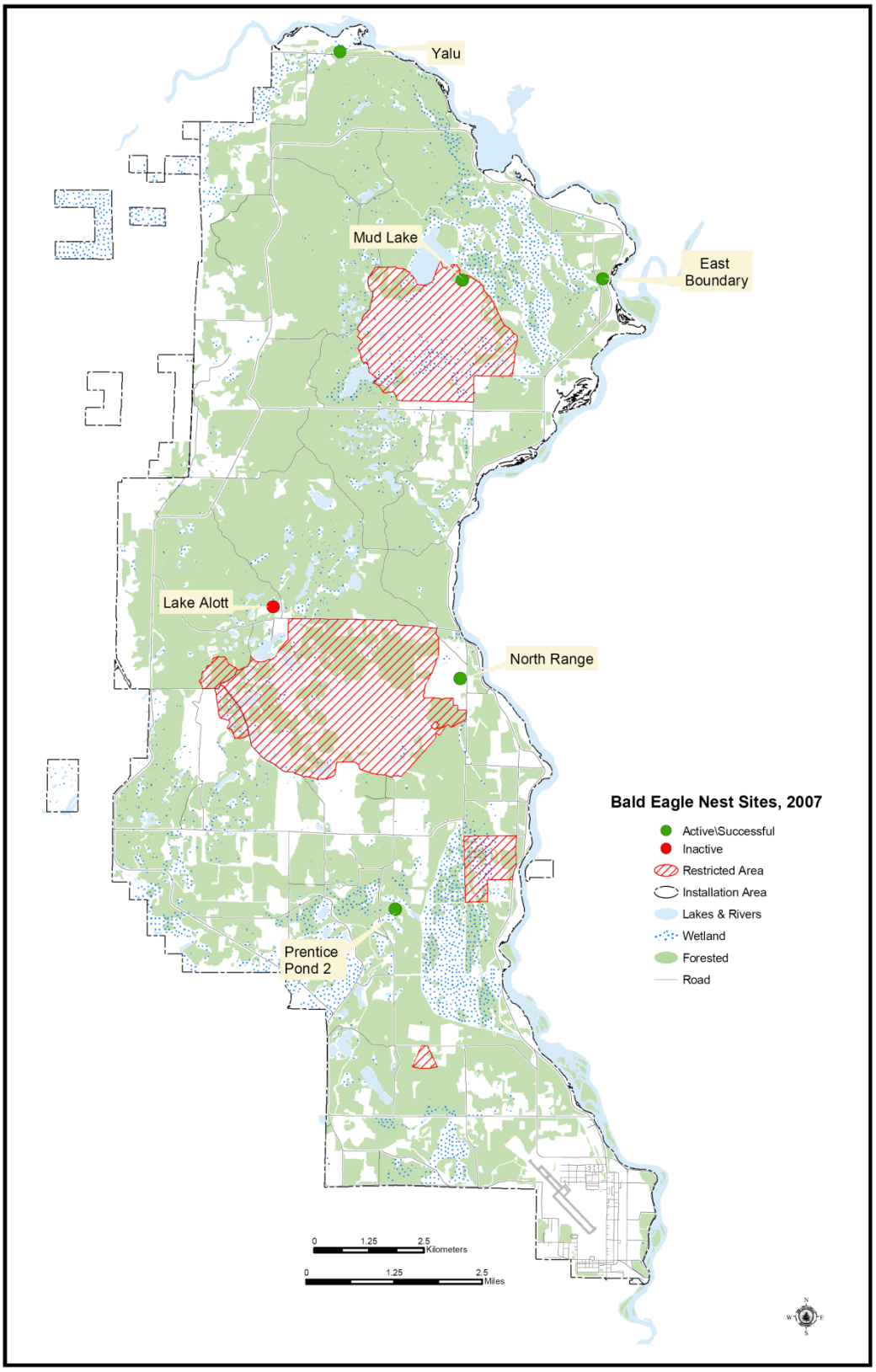
In 2006, a bald eagle nest was discovered near the North Range in Training Area 34 (Figure 8). The nest was occupied by two adult eagles through mid April. An adult bald eagle was found dead under a power line in the vicinity of the nest on April 22, 2006. This nest was abandoned soon after, and no chicks were fledged. In 2006, consultation began between the Minnesota Army National Guard and the U.S. Fish and Wildlife (USFWS) concerning a new Urban Assault Course which was scheduled to be constructed on the

Table 5. Bald Eagle nests and fledglings at Camp Ripley, 1991-2007.

Year	Number of Active Nests	Number of Young Fledged
1991-1992	4	?
1993	2	4
1994	3	5
1995	3	4
1996	3	4
1997	3	6
1998	2	4
1999	3	3
2000	4	8
2001	4	8
2002	2	1
2003	3	4
2004	3	4
2005	5	5
2006	6	1*
2007	**5**	**9**

* Two active nests not checked for nest success due to military training.

Figure 14. Bald eagle nests at Camp Ripley, 2007.



North Range near the eagle nest. During the spring and summer of 2007, bald eagles successfully nested at the North Range complex nest, producing two fledgling birds. In August 2007, the Minnesota Army National Guard received the U.S. Fish and Wildlife Service's Biological Opinion regarding the effects of the construction of the new Urban Assault Course. See Appendix E for complete documentation regarding the U.S. Fish and Wildlife Service's Biological Opinion.

On August 8, 2007, the bald eagle was removed from the list of endangered and threatened species under the Federal Endangered Species Act. Secretary of the Interior Dick Kempthorne noted at the announcement of the delisting that "In 1963, the lower 48 states were home to barely 400 nesting pairs of bald eagles. Today, after decades of conservation effort, they are home to some 10,000 nesting pairs." Minnesota is the state with the most nesting pairs at approximately 1,312. The number of nesting bald eagle pairs has doubled on Camp Ripley since they were first recorded in the early 1990's (Table 5).

The bald eagle will continue to be protected under the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act. Both of these acts prohibit killing, selling or otherwise harming or disturbing eagles, their nests or eggs. The U.S. Fish and Wildlife Service released Bald Eagle Management Guidelines for people who are engaged in recreation or land use activities around bald eagles. These guidelines provide information and recommendations regarding how to avoid disturbing bald eagles. Camp Ripley will continue to monitor and protect active or alternate bald eagle nests with no disturbance buffers during breeding and nesting seasons as required by Bald and Golden Eagle Protection Act (USFWS 2008) and Bald Eagle Management Guidelines (USFWS 2007).

Red-shouldered Hawk (*Buteo lineatus*)

Nests that were used by red-shouldered hawks in the past were checked to find active nests for trapping. Locating active nests was difficult as red-shouldered hawks on Camp Ripley rarely use the same nest in consecutive years. Often birds were heard in the vicinity of old nests, but not at the actual nest site.

Several attempts were made to capture red-shouldered hawks using bal-chatri traps during the summer of 2007. The goal was to capture two red-shouldered hawks and attach battery powered satellite transmitters in order to track their winter and spring migrations. One red-shouldered hawk was captured in the first few hours of trapping. Although it was an adult bird, it was not large enough to attach a transmitter, so it was banded and released. Unfortunately, no other hawks were captured. New methods will be explored in 2008 to find a less labor intensive, more reliable method to capture red-shoulders.

Ruffed Grouse (*Bonasa umbellus*)

The official ruffed grouse drumming survey route is conducted in conjunction with counts conducted by the MNDNR throughout Minnesota's ruffed grouse range. The data is used as an index to track grouse population trends across the state. Two routes are run at Camp Ripley, the official MNDNR route (#38) and an additional route (#39) that was added by Camp personnel in 1998 (Figure 15). Drumming counts are conducted for four minutes at ten points along each route. In order to allow local high school students to participate, the ruffed grouse drumming counts were conducted several times in 2007.

The official count for route #38 occurred on April 24, 2007. Four drums were heard on 10 stops, which is a decrease from last year (Figure 16). It appears that Camp Ripley's ruffed grouse population has been decreasing since 2003 which is similar to other routes in the Little Falls area (Figures 16 and Figure 17). However, this is contrary to the higher ruffed grouse populations found throughout most of Minnesota during 2007 (Figure 17). Nine grouse were heard drumming on the route #39, also surveyed on April 24, 2007. Counts on this route have been low since 2001 but increased substantially in 2007 (Figure 16).

Figure 15. Ruffed grouse spring drumming survey route at Camp Ripley.

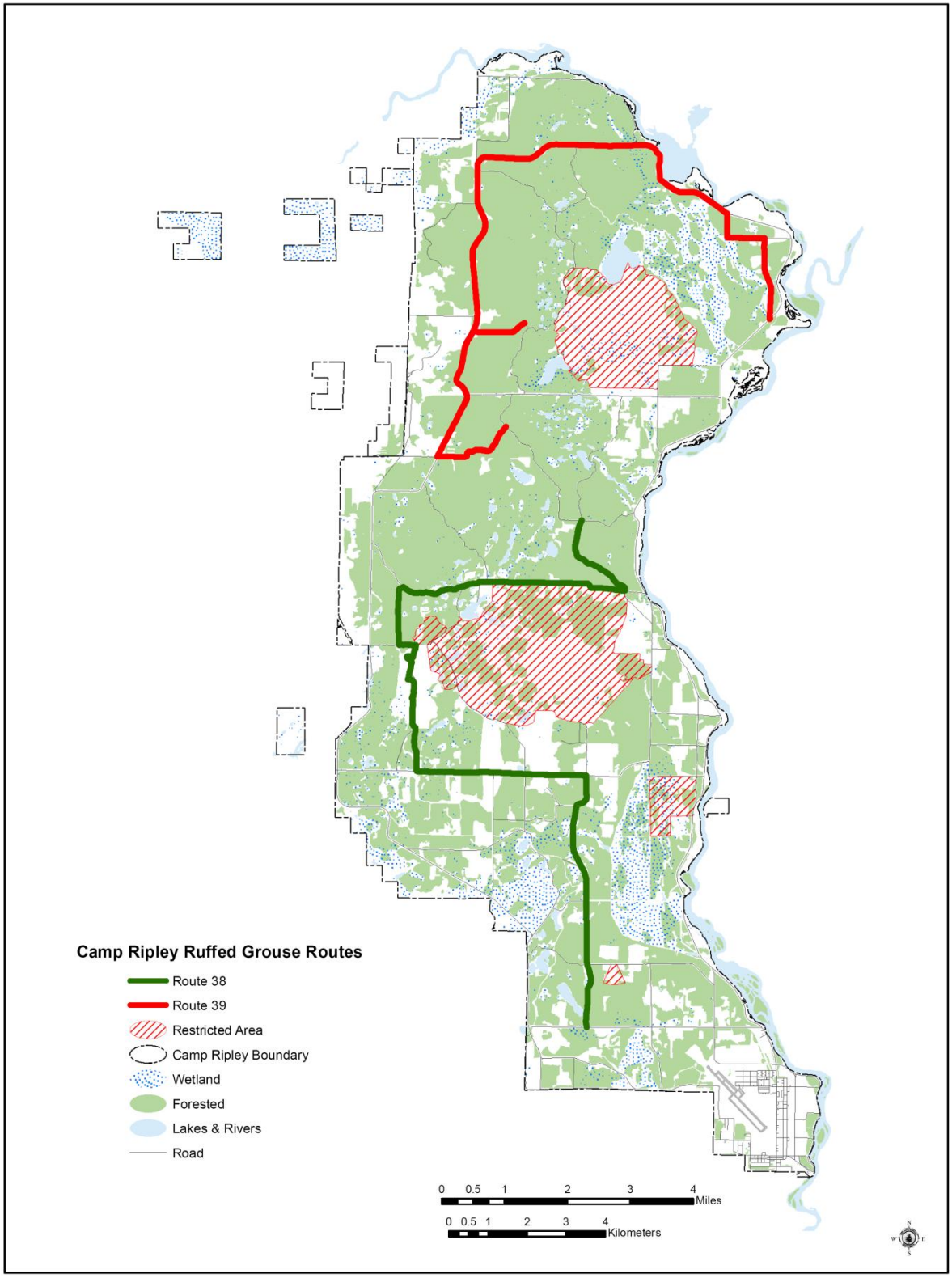


Figure 16. Ruffed grouse surveys at Camp Ripley, 1979-2007. Gaps in the graph indicate years when the survey was not conducted.

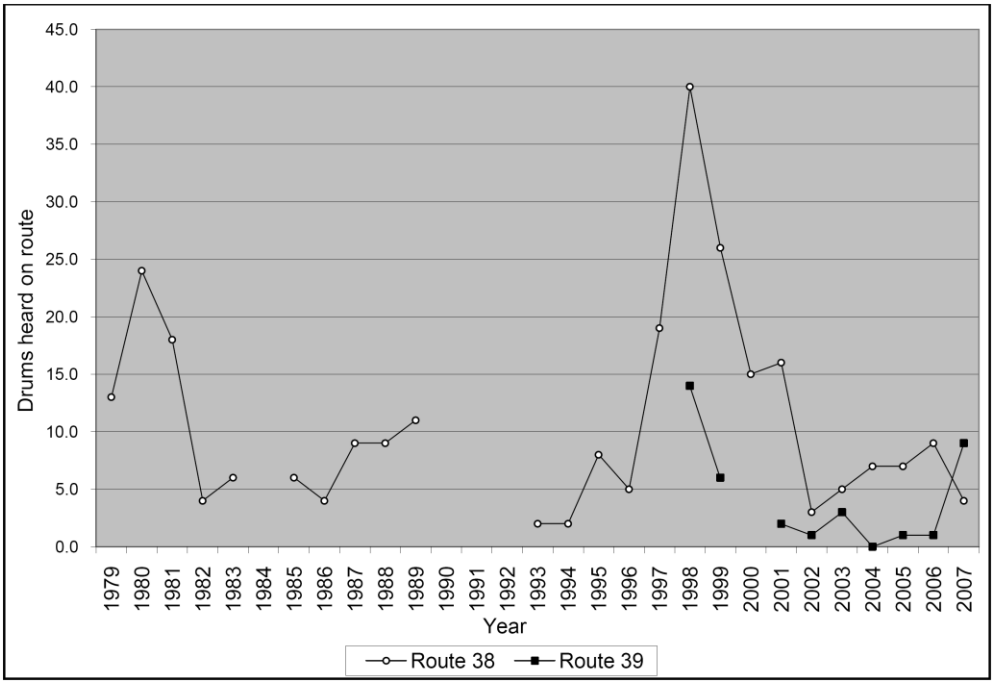


Figure 17. Ruffed grouse drumming surveys in Little Falls Area, 1979-2007. Gaps in the graph indicate years when the survey was not conducted.

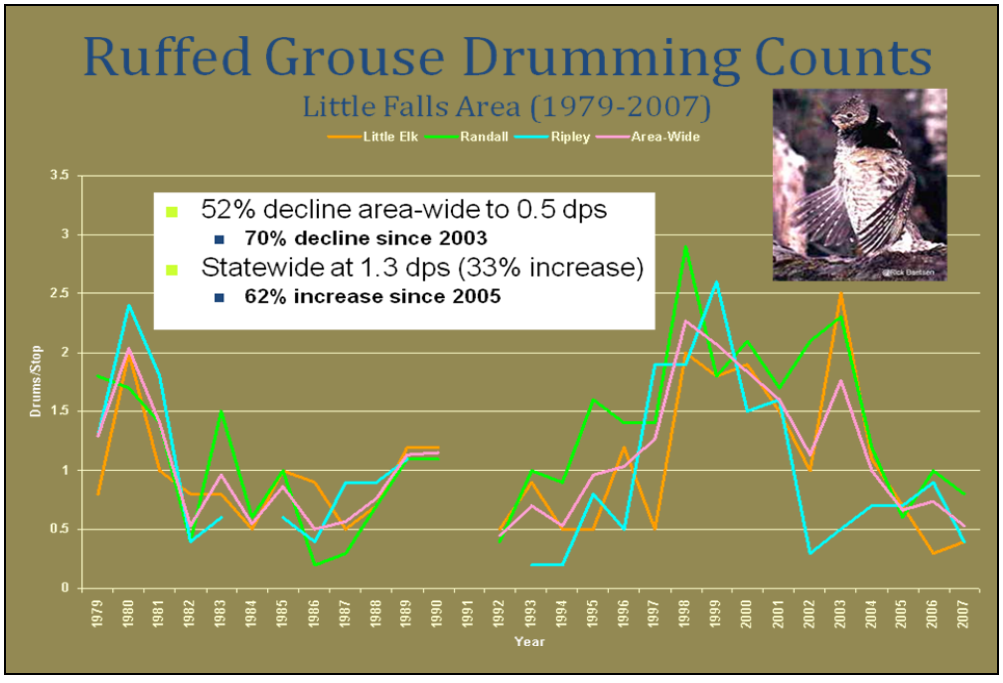
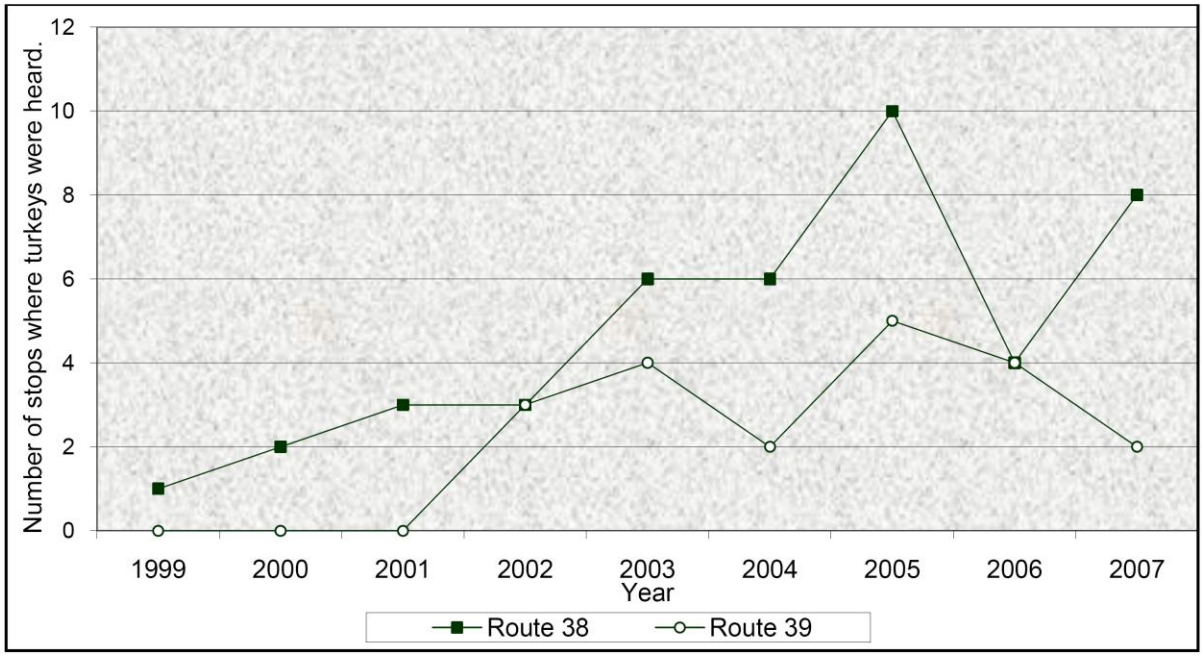


Chart courtesy of Beau Liddell, MNDNR, Division of Fish and Wildlife, Little Falls, MN.

Wild Turkey (*Meleagris gallopavo*)

As recently as the year 2000, wild turkey sightings and broods at Camp Ripley were recorded as uncommon events. The turkey population at Camp has exploded since that time, and in 2007 wild turkeys were observed throughout Camp Ripley. During ruffed grouse counts in April, turkeys were documented on eight of ten stops on survey route #38 and two of 10 stops on route #39 (Figures 15 and 18). Other surveys, such as brood counts in the spring and summer, and winter flock counts were considered in the past but were determined to be unnecessary due to the solid population numbers recorded through spring gobbling counts and observations in the field.

Figure 18. Wild turkeys heard on ruffed grouse spring drumming routes at Camp Ripley, 1999-2007.



Camp Ripley Mammals

Gray Wolf (*Canis lupus*)

On March 12, 2007, the U.S. Fish and Wildlife Service removed Endangered Species Act protection for the gray wolf in the states of Minnesota, Wisconsin, and Michigan. In the past, human caused mortality and habitat loss resulted in the near extinction of gray wolves in the lower 48 states. The wolf was first protected under the Act in 1974. The goal of this Act is to improve the status of threatened and endangered species to the point they no longer need protection. During the mid- to late-1970's the MNDNR estimated the wolf population at about 1,000 to 1,200, based on a 2003-2004 survey, the population has grown to approximately 3,000 animals.

Table 6. Gray wolves captured at Camp Ripley since 1996.

Wolf #	Sex	# of Captures	Age at 1st Capture	Date of 1st Capture	Date of Last Capture	Weight at Last Capture	Fate	Comments
1	F	1	Yearling	9/10/96	9/10/96	57	dead	Trapped/shot in Cass County (8/97)
2	F	2	Pup	9/19/96	8/29/97	42	dead	Shot-poacher
3	F	1	Yearling	9/20/96	9/20/96	80	dead	Poisoned
4	M	2	Yearling	9/23/96	1/31/98	79	dead	Hit by car
5	F	1	Yearling	2/21/97	2/21/97	55	unknown	Dropped collar for data retrieval
6	F	3	4-5 years	2/21/97	7/24/98	90	dead	Hit by car
7	M	3	10 month	2/21/97	2/1/98	55	dead	Shot-poacher
8	F	1	10 month	2/21/97	2/21/97	50	unknown	Dropped collar for data retrieval
9	M	2	3-4 years	2/21/97	2/3/98	90	unknown	Pillsbury State Forest
10	M	1	Pup	8/29/97	8/29/97	20	dead	Starved? (9/23/07)
11	F	4	Pup	10/31/97	2/4/99	59	dead	Shot in Hillman area? Collar found in swamp
12	M	2	Yearling	11/4/97	2/3/98	60	dead	Killed by ADC in Pine County (7/26/99)
13	M	1	Yearling	2/3/98	2/3/98	88	unknown	Dropped collar for data retrieval
14	F	3	Yearling	9/14/98	1/30/02	76	unknown	Collar failed -2003
15	M	3	>3 yrs	2/2/99	1/17/01	107	dead	Unknown, found dead (7/01)
16	F	1	1-2 years	1/18/01	1/18/01	65	dead	Found dead in Michigan- shot (9/02)
17	M	2	1-2 years	9/26/01	2/4/2004	88	unknown	missing
18	M	3	3-4 years	11/15/01	2/25/03	95	dead	Struck by car on Hwy 371
19	F	2	1-2 years	1/30/02	12/13/02	76	dead	Shot south of Camp
20	F	2	>3 years	1/30/02	1/30/2006	79	dead	Found dead west of Camp (8/07)
21	F	1	1-2 years	2/25/03	2/25/03	68	dead	Found dead in cornfield
22	M	1	2-3 years	2/4/2004	2/4/2004	100	dead	Killed by ADC 4/24/04 in Cass County
23	M	2	1-2 years	2/4/2004	1/30/2006	72	dead	Shot during firearms deer season (11/07)
24	M	1	1-2 years	2/4/2004	2/4/2004	78	unknown	Collar failed
25	M	1	1-2 years	2/4/2004	2/4/2004	83	unknown	Collar chewed off
26	**M**	**1**	**3-4 yrs**	**1/30/2006**	**1/30/2006**	**85**	**ALIVE**	**Current alpha? - South pack**
27	M	1	2 years	1/30/2006	1/30/2006	85	dead	Struck by car on Hwy 371
28	**M**	**1**	**4-5 years**	**1/30/2006**	**1/30/2006**	**103**	**ALIVE**	**Current alpha? -North pack**
29	**F**	**1**	**2 years**	**1/30/2006**	**1/30/2006**	**67**	**ALIVE**	**North pack**
30	**F**	**1**	**3 years**	**1/31/2006**	**1/31/2006**	**85**	**ALIVE**	**Current alpha? - South pack**

In 2000, the Minnesota Legislature passed a bill that set the framework for wolf management. The state will now manage wolf populations based upon its 2001 Minnesota Wolf Management Plan. This plan establishes a minimum state population goal and defers any general public taking of wolves for five years following federal delisting.

Besides serving as a National Guard training facility, Camp Ripley is also a Minnesota Statutory Game Refuge. Camp Ripley provides good quality habitat for wolves on the southern edge of the Minnesota gray wolf range. In the past fifteen years, thirty wolves have been captured and radio-collared on Camp Ripley to determine pack size, movements, causes of mortality, and possible effects of military training (Table 6). Pack numbers and occupied territories in Camp Ripley have fluctuated during this time between one and two packs. Research has demonstrated that military training activities on Camp do not negatively affect wolves and the presence of wolves on Camp has not resulted in any loss of training capabilities. In fact wolves that move off Camp are moving into a more hostile environment where they die from illegal and accidental killing by humans. During 2007, two wolves died during movements off of Camp Ripley. One female wolf, #20, died of unknown causes and was located less than one mile west of Camp (Figure 19). The second wolf (#23) was shot during the firearms deer season and dropped off at the southwest corner of Camp (Figure 20).

Even though the gray wolf is no longer protected by the Endangered Species Act in Minnesota, the law requires the U.S. Fish and Wildlife Service to monitor wolf populations for five years after delisting to ensure they will continue to thrive. If gray wolf populations fall below their goals, they could be re-listed. The Camp Ripley Environmental Office will continue to cooperate with the U.S. Fish and Wildlife Service and the MNDNR to monitor wolf populations on Camp as recommended in the Minnesota Wolf Management Plan.

North Pack

Female wolf #20 was first captured on the north end of Camp Ripley on January 30, 2002. Wolf #20 was often located with the alpha, or breeding male, and was first observed at a den with pups in 2002. She was the alpha female in the north pack since that time and spent most of her life on Camp Ripley (Figure 19). During 2005, alpha female wolf #20 and alpha male wolf #18 were often observed together (Dirks and DeJong 2006). However after the alpha male (#18) was displaced and eventually died in 2006, wolves #20 and the new male wolf #28 were often located together. This proved to be the alpha pair that spring (2006) but through late 2006 and most of 2007 wolf #20 was often located separate from the main pack. In August of 2007 she died of unknown causes less than one mile from Camp Ripley's west border (Figure 19). Wolf #28 is still the alpha male in the north pack, but the new alpha female has not been identified.

The north pack wolves likely denned in the Leach Range/Impact Area again during 2007, and four young pups were observed on Salerno Road on the southeast corner of the Range

in June. Through aerial radio-tracking and December track surveys pack size was estimated to be eight to ten wolves (Figure 21).

South Pack

Wolves #23, #26 and #30 were often located together during 2007 (Figure 21). Both wolves #26 and #30 are large, adult animals and are believed to be the breeding pair in this pack. A den was located in the southeast corner of Training Area 22 and this pair was located near the den on several occasions, however pups were not observed. Through aerial radio-tracking and December track surveys pack size was estimated to be seven wolves.

Wolf #23 was captured for the first time on February 4, 2004, and was one of three very dark or black colored wolves born in the north pack in 2003. He was monitored through satellite locations until December 31, 2004 when his collar failed. He spent the first few months after capture in the northern portion of Camp, but migrated south on November 9, 2004 into the center of Camp, an area also used by south pack female wolf #21. His last satellite locations placed him south of Lake Alexander. After the south pack moved south of Camp, these two wolves were often located together in an area between the north and south packs; they were closely monitored for denning activity and pups to determine if they might be the start of a new central or Lake Alexander pack. However, after wolf #21 died in 2005, wolf #23 joined the south pack and the new pack did not develop. Wolf #23 was recaptured in January, 2006, and recollared with a standard VHF collar. He was monitored until November 2007 (Figure 20), when he was shot during the firearms deer season.

Figure 19. Locations for wolf #20 at Camp Ripley, 2002-2007.

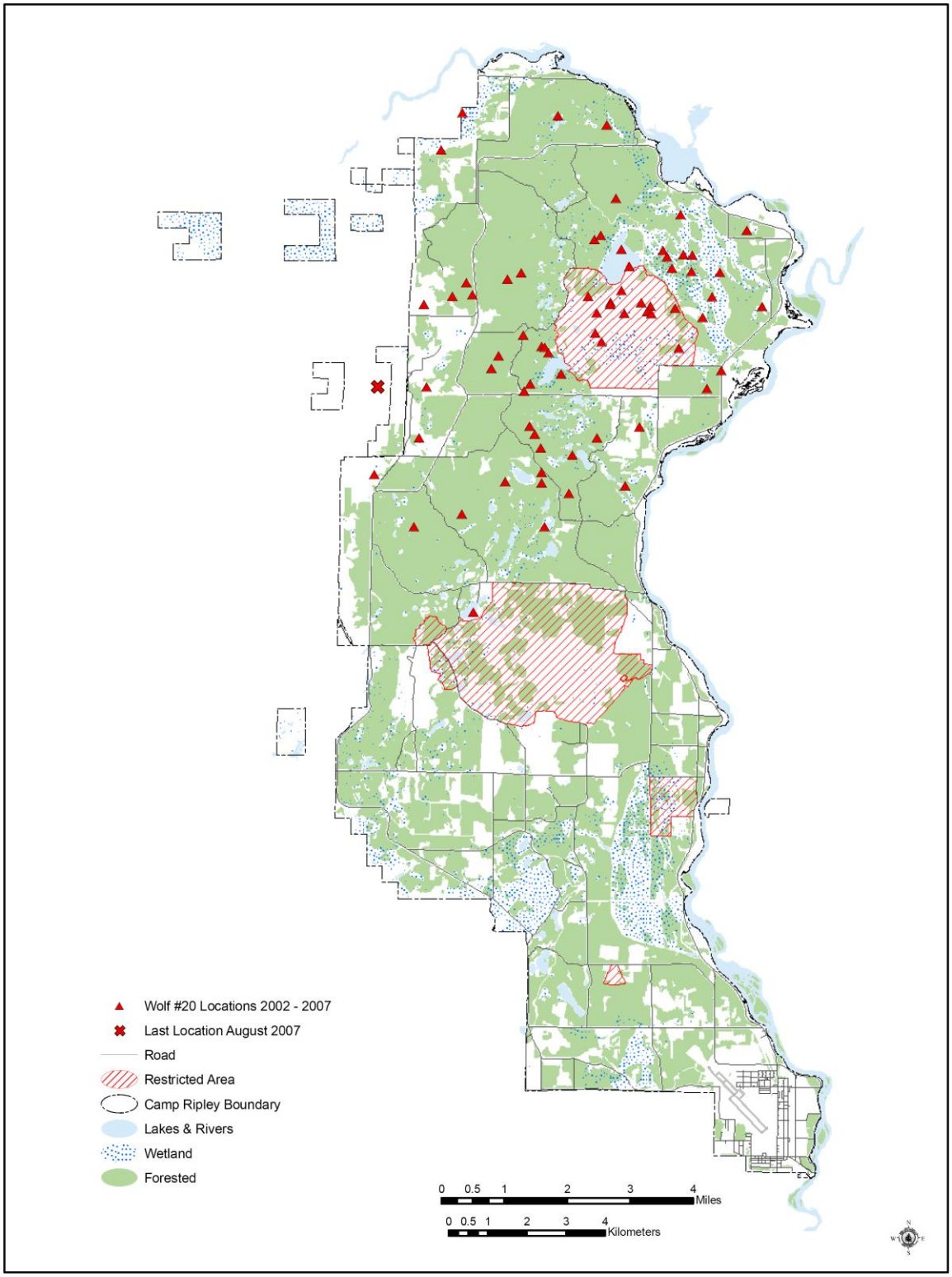


Figure 20. Locations for wolf #23 at Camp Ripley, 2004-2007.

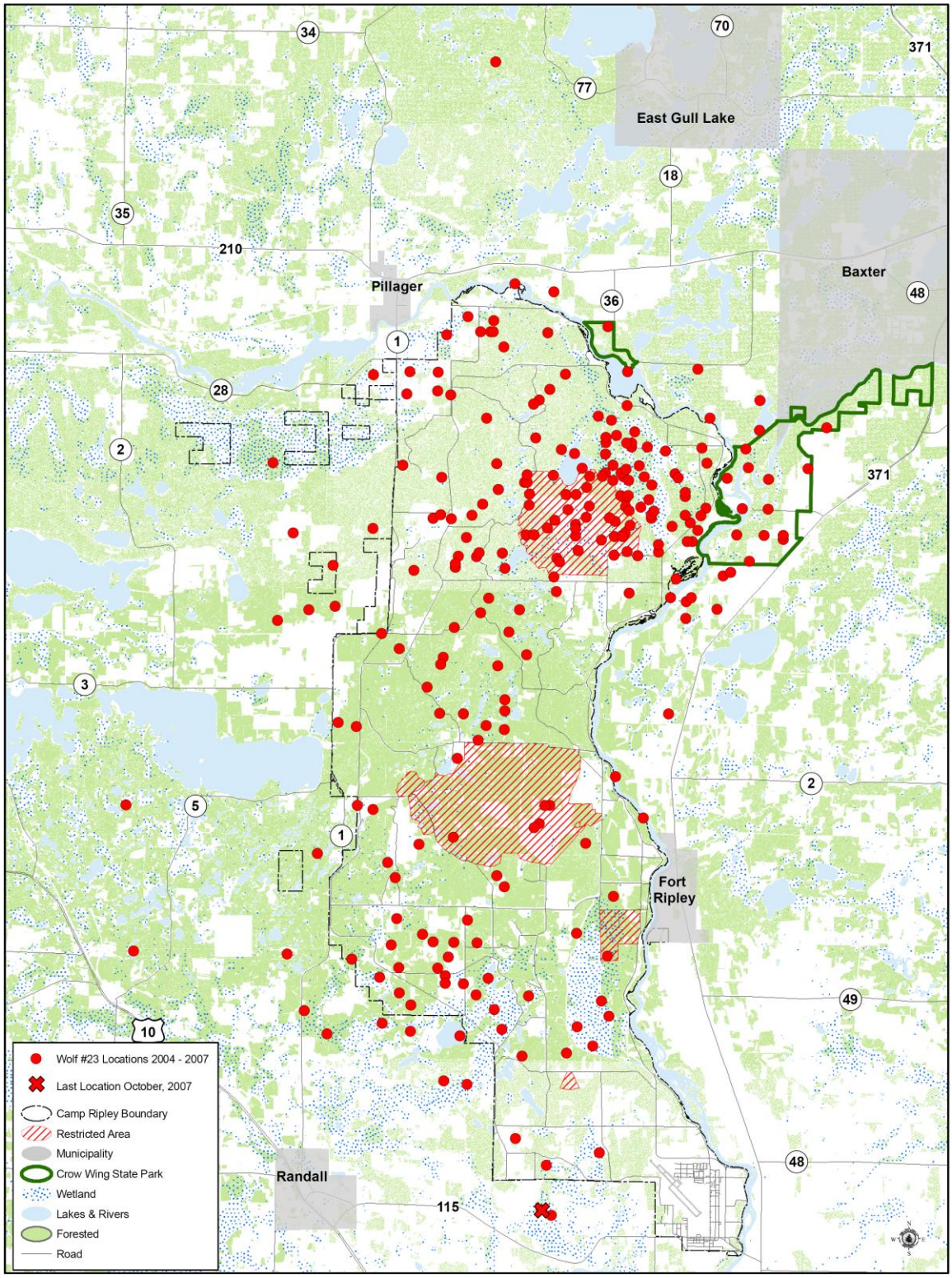
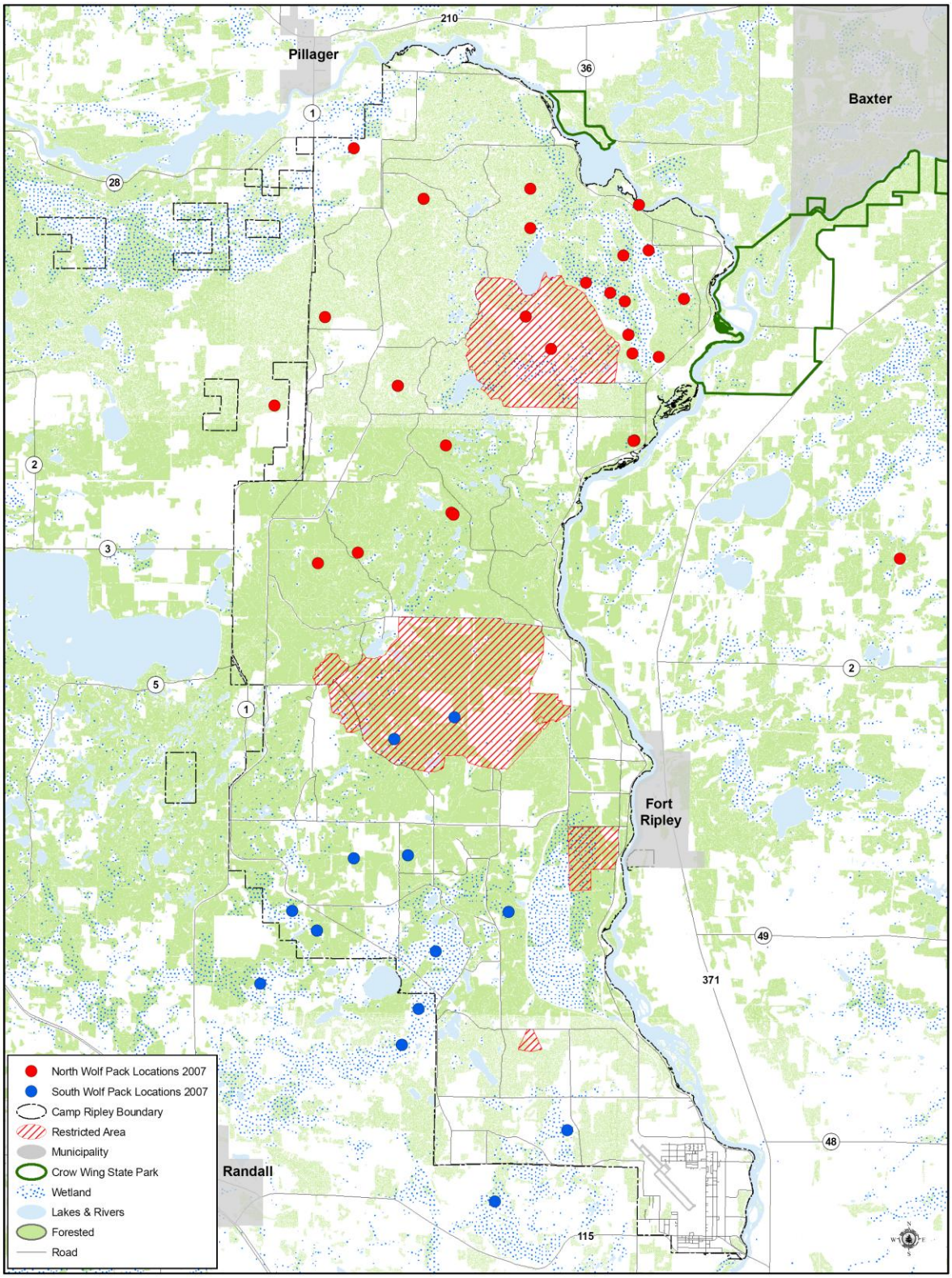


Figure 21. Locations of north and south wolf pack at Camp Ripley, 2007.



White-tailed Deer (*Odocoileus virginianus*)

White-tailed Deer Survey

Aerial deer surveys were scheduled for December 2006 and March 2007. The December survey was cancelled because of inadequate snow cover. An aerial deer survey was conducted on March 9, 12, and 15, 2007. Camp Ripley was divided into 277 1 km^2 quadrats and 81 of these plots were systematically selected to be surveyed (Figure 22). The sampling frame was expanded from 57 plots surveyed in 2006 to include plots adjacent to Camp Ripley that were considered potential wintering areas in past surveys (1996 and 1997) (Figure 23) (Appendix F).

Quadrats to be surveyed were plotted using ARCMAP, and loaded into a Global Positioning System (GPS) unit attached to the helicopter. This allowed the pilot to monitor his flight path, and to determine whether deer were observed within quadrats. Real-time data capture allowed researchers to pinpoint deer locations on a laptop while ARCMAP was running. The helicopter's GPS unit was set up to communicate the location of the aircraft to the computer, which displayed an aerial photo and the location of the aircraft on the screen. The pilot flew transects through each quadrat while two observers and the pilot counted deer.

Analysis of data provided an estimate of 26 deer per square mile (90% CI: 23–30). The 2006 survey was relatively imprecise (CV=34%), but provided good baseline data on deer and habitat distributions within Camp Ripley. The 2007 population estimate was very precise (CV = 8%), especially when compared to the poor precision in 2006. Deer were more evenly dispersed and group sizes were smaller in 2007 than in 2006 (Figure 23). Deer distributions in 2007 were not correlated with major wintering areas identified in 1997 (DelGiudice 1997), whereas 75 percent of deer observations in 2006 were in or near wintering area #2 and #4 (Figure 22 and Appendix F).The dramatically improved precision in 2007 was primarily due to a more even distribution of deer among sample plots (no extreme counts) and a larger sample size (81 vs. 59 plots). However, always be cognizant of the distinction between the statistical and biological populations. Movement and distribution of deer in and around Camp Ripley (the biological population) may vary substantially within and among years (Appendix F).

Black Bear (*Ursus americanus*)

Research

A telemetry-based study of black bears was initiated at Camp Ripley in 1991. The current study is part of a statewide research project conducted by the MNDNR designed to monitor the body condition, movements, and reproductive success of bears in the northern, central and southern parts of Minnesota's bear range. Camp Ripley lies along the southern edge of the bear range in Minnesota. The principal objectives of this study include: 1) continued monitoring of

Figure 22. Aerial deer survey quadrats and results at Camp Ripley, March 2007.

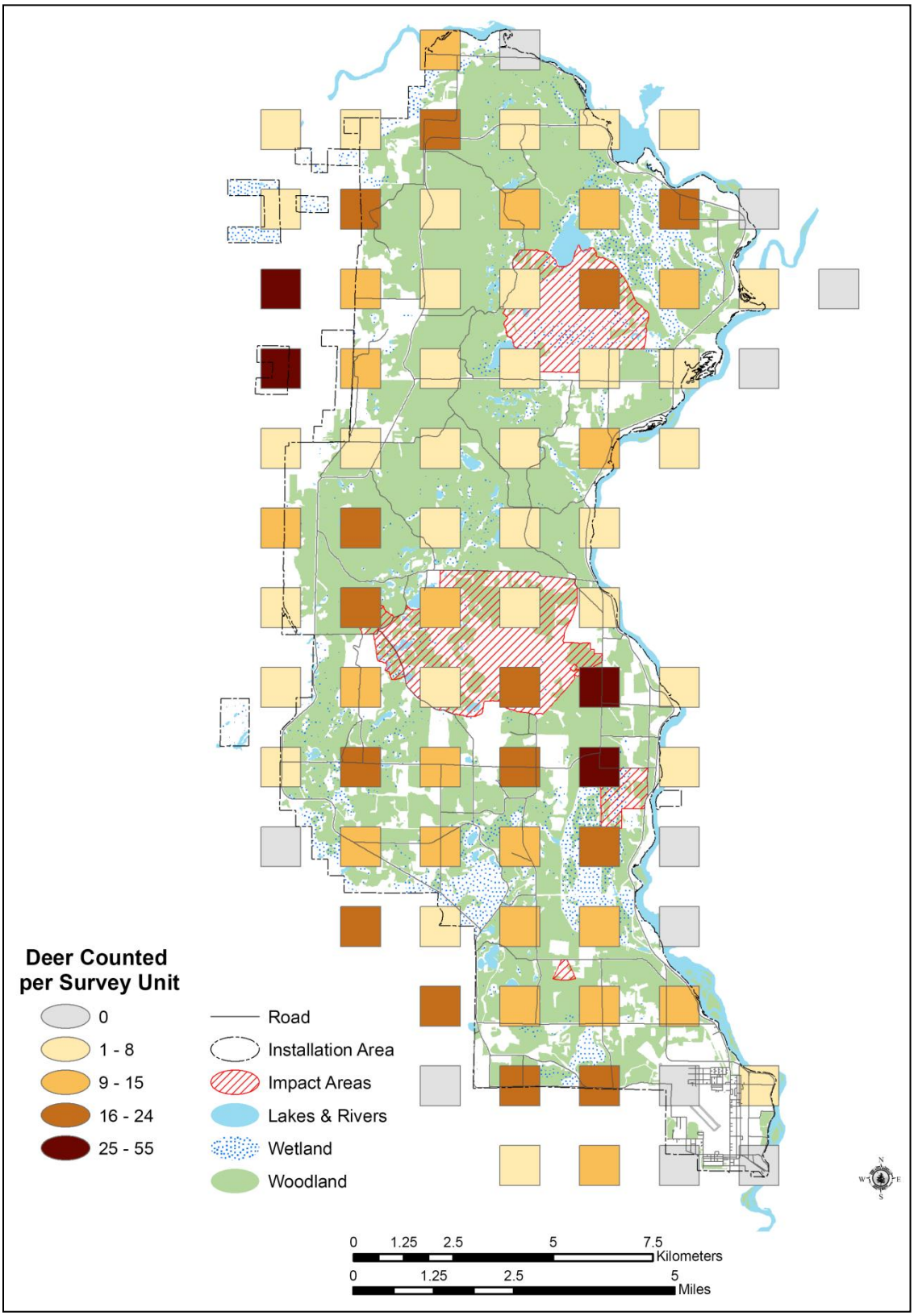
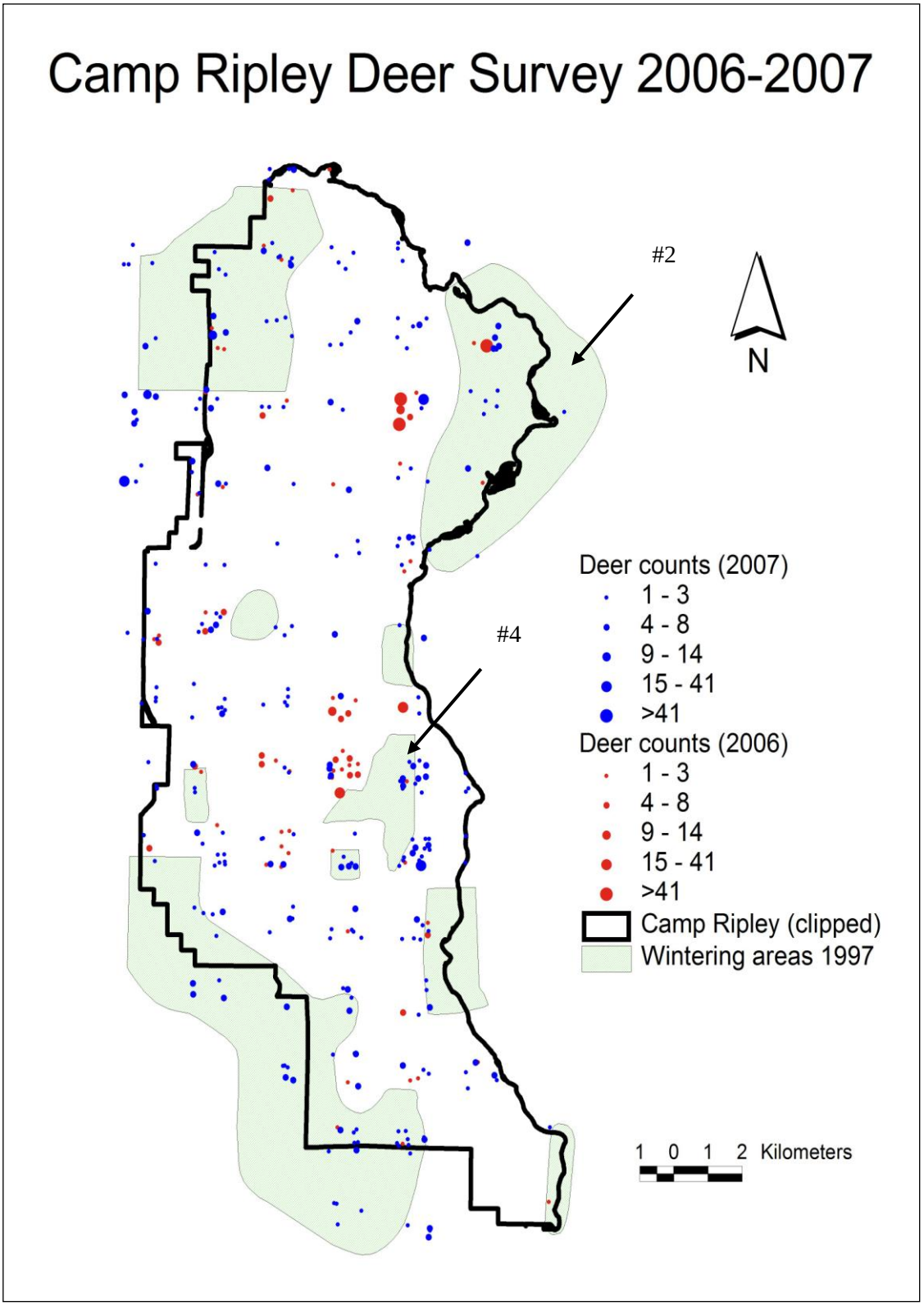


Figure 23. Distribution of white-tailed deer observed (total per plot) in Camp Ripley aerial surveys, 2006-2007.



reproduction and cub survival, 2) additional (improved) measurements of body condition, heart function, and wound healing, 3) examination of habitat use and movements with GPS telemetry, 4) investigation of female dispersal near the southern fringe of the expanding bear range (Garshelis et al. 2004), and 5) monitoring the incidence of nuisance bears and in particular any conflicts with soldiers and military training.

Future project goals include monitoring black bears on the edge of their range in Minnesota. The MNDNR Forest Wildlife Populations and Research Group has initiated a new study site at the edge of bear range in northwestern Minnesota. The goal is to assess the factors that may limit range expansion, including highly fragmented forested habitat, lack of agricultural crops that bears can eat, and human-related mortality. Comparisons will be made between GPS collared bears at the northwestern edge of the range and collared bears at Camp Ripley, along the southern edge of the range (Garshelis et al. 2007).

Mortalities and Reproduction

Ground and aerial tracking were used to monitor reproductive success, movements and mortality of collared black bears through 2007 (Table 7), four males and ten females were monitored.

Four radio-collared bears from Camp Ripley were killed during the bear hunting season of 2007. All four had radio-collars that had stopped functioning. Bear #2087 went missing about the time she should have denned in the fall of 2006. Intensive air searches picked up her signal in a very small window over training area 25, but the signal could not be heard from the ground. The area was thoroughly searched but the den was not located. In the fall of 2007, she was shot near Remer, Minnesota approximately 65 miles from her last known location on Camp Ripley.

The other three bears were all harvested in the same general area within two to four miles of Crow Wing State Park. Two siblings, #2098 and #2099 had not been heard from in over five months, #2098's last record was a photograph taken at a bird feeder on the west side of Gull Lake in April 2007. The other, bear #2093, had often been located just north of the Mississippi River on the south edge of Baxter. A hunter saw her in this area numerous times during the fall, then in only a few days she was reported as having been shot four miles west of her area and in the same vicinity as #2098 and #2099.

A fifth bear (#2086) that had been missing since April 2006 was photographed on a field camera at a hunter's bait station, also east of Camp. Contact was lost with two other bears (#2076 and #2097) when their GPS collars dropped prematurely in August.

Female bears #2063, #2079, and #2105 all produced cubs during 2007. Bear #2063 again had one cub, and an orphaned cub was placed with her during the March 2007 den visit, both cubs survived to den visits in December 2007. Bear #2079 had three cubs in a low swampy area south of Camp (Figure 25). One week later an attempt was made to introduce a second orphan cub to Bear #2097, but it was discovered during the den visit that she did not have cubs, so the orphan cub was placed with bear #2079. All four cubs, including the orphaned cub, survived to

the December den visit. Bear #2105 had three very small cubs in 2007, none survived. Adult female #2081 and possibly #2105 could produce cubs in 2008.

Table 7. Black bears monitored at Camp Ripley, 2007.

Bear ID	Sex	Current Age	Date of First Capture	Age at First Capture	Weight at Last Capture (lbs)	Status
2017	F	18	1989	2 months	205	Died of unknown causes found 7-05-07
2063	F	7	2001	2 months	161	Alive
2076	M	12	2003	7 years	397	Alive - Dropped collar August 2007
2079	F	6	2004	2 years	193	Alive
2081	F	9	2004	5 years	174	Alive
2086	M	5	2004	1 year	66	Missing – two sightings in 2007
2087	F	5	2004	1 year	41	Dead – shot near Remer fall 2007
2092	F	3	2005	2 months	Unknown	Alive
2093	F	2	2005	2 months	110	Dead – shot fall 2007
2096	M	Unknown	2005	Unknown	295	Dropped collar June 2007
2097	F	Unknown	2006	Unknown	190	Dropped collar August 2007
2098	M	2	2006	1 year	92	Dead – shot fall 2007
2099	F	2	2006	1 year	80	Dead – shot fall 2007
2105	F	Unknown	2006	Unknown	124	Alive

Figure 24. Locations for black bear #2097 at Camp Ripley, 2006-2007.

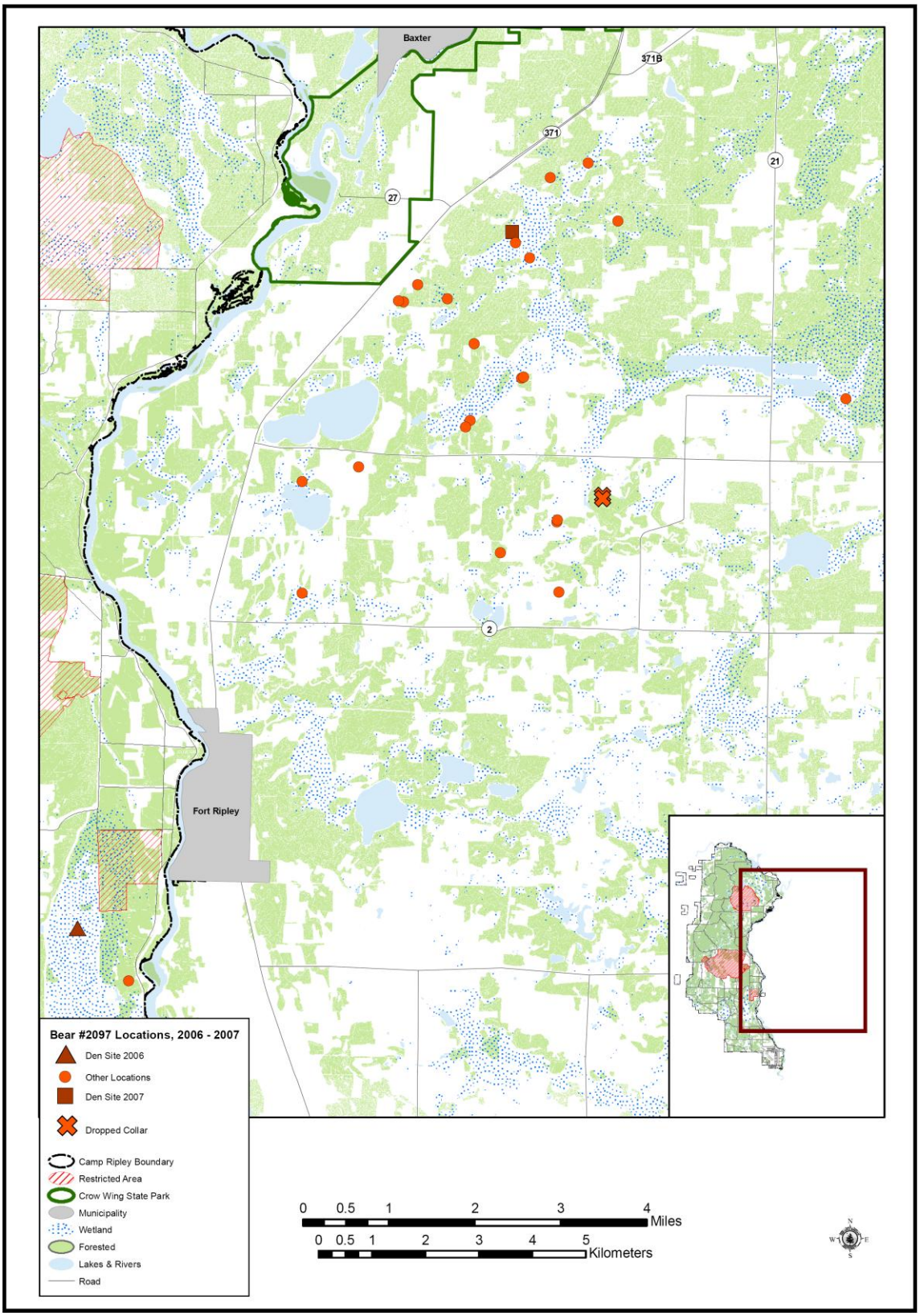


Figure 25. Locations for black bear #2079 at Camp Ripley, 2007.

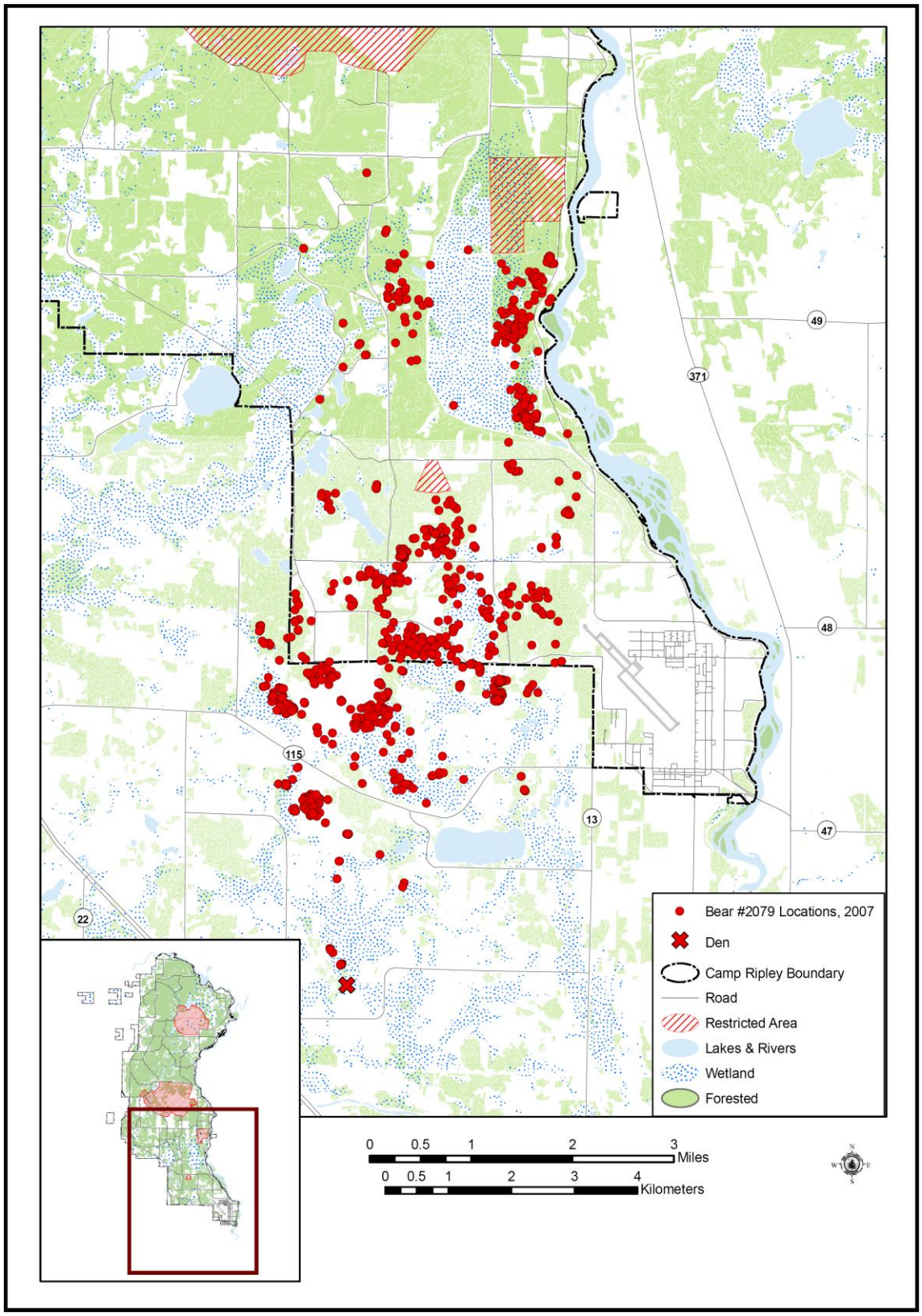
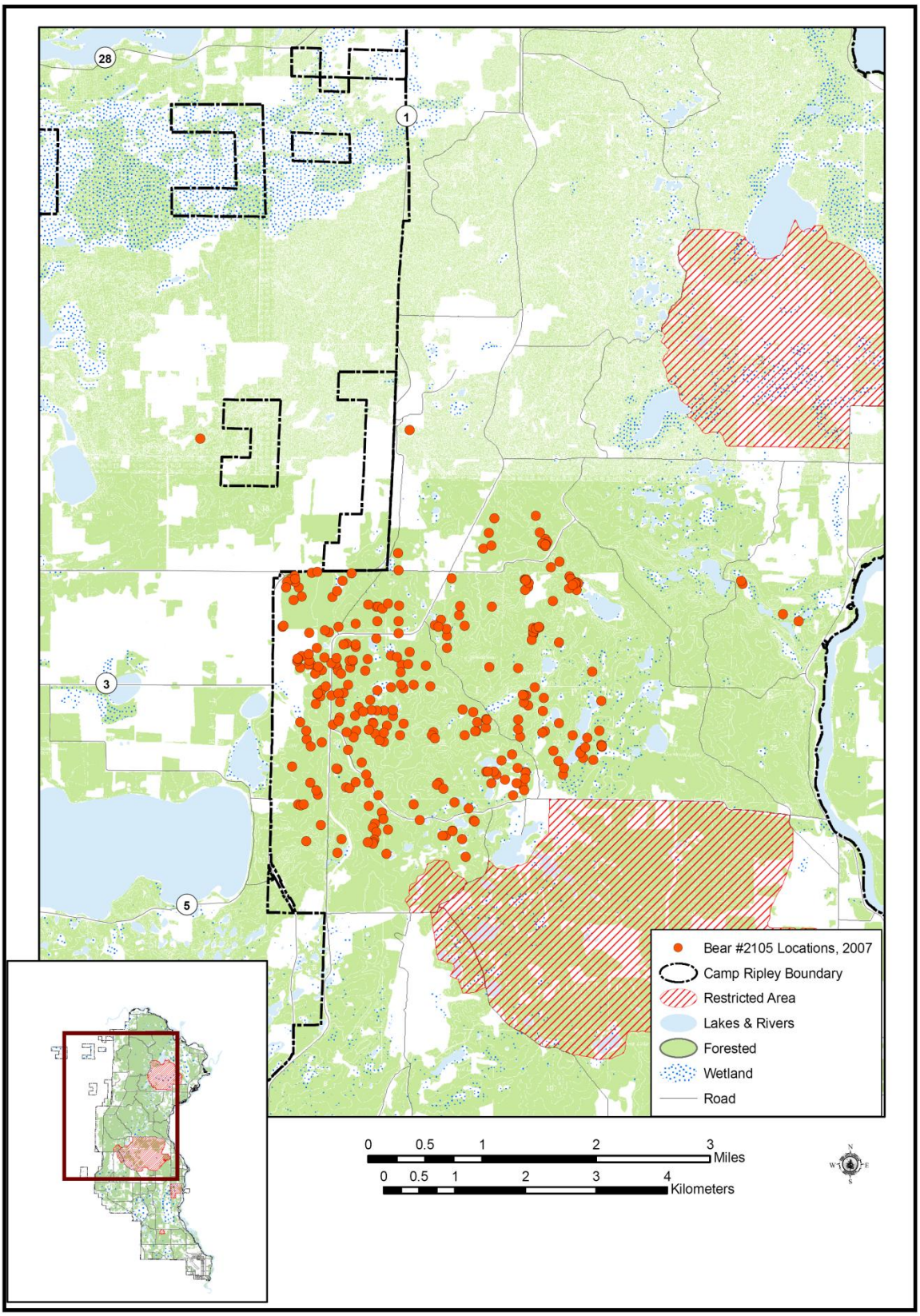


Figure 26. Locations for black bear #2105 at Camp Ripley, 2007.



Bat Surveys

Bat surveys were conducted using an ANABAT detector during the summer of 2007 at various locations throughout Camp Ripley. The ANABAT is a device that records bat calls remotely. Following initial setup, it will start recording automatically when it detects a bat call. Bat calls were recorded and then transferred to digital format. Calls are then reviewed and analyzed by MNDNR staff experienced with identification of ANABAT recordings. Previous surveys at Camp Ripley documented the presence of five bat species, they are: little brown myotis (*Myotis lucifugus*), big brown bat (*Eptesicus fuscus*), hoary bat (*Lasiurus cinereus*), silver-haired bat (*Lasionycteris noctivagans*), and red bat (*Lasiurus borealis*).

Bats were surveyed at the Marne Road Field, Commander's Cabin, Round Lake Rest Area, and Lake Alott Rest Area (Figure 27). Analysis of the 2007 ANABAT recordings have not been conducted by trained staff and will be reported with the 2008 bat results.

Prairie Vole (*Microtus ochrogaster*)

Prairie voles (*Microtus ochrogaster*) are listed as a species of special concern by the MNDNR. Typical habitats are grasslands with primarily native species and little accumulated litter (Merrill 2000). This species has been documented on Camp Ripley in past studies. One prairie vole was captured during small mammal trapping in 2001 on LCTA plot #4 (Figure 28). In July 2002, an effort was made to document additional occurrence of prairie voles on Camp Ripley. Trapping occurred at ten plots in grasslands that had been previously trapped, and in additional grassland areas where prairie voles were expected to occur. Forty Sherman live-traps were set in configurations of two or four parallel lines, depending upon grassland shape and size. Traps were set during the afternoon, checked and closed the next morning, and opened again in the afternoon. The traps were then checked and picked up the second morning, for a total of 80 trap nights per plot. No prairie voles were documented in 2002.

Again in 2007, an effort was made to document the occurrence of prairie voles. Trapping occurred at eight grassland plots. Five of the eight plots were in the same general area of the 2002 plots (plots #2, #4, #7, #8, and #9) and three were new sample areas where prairie voles were expected to occur. Twenty-five Sherman live-traps were set in configurations of five parallel lines, depending upon grassland shape and size. The 2002 schedule for setting and checking traps was followed for a total of 50 trap nights per plot. Sites were sampled from August 14 to August 22, 2007. Ten prairie voles were captured in 2007 (Figure 28).

Figure 27. Locations for ANABAT surveys at Camp Ripley, 2007.

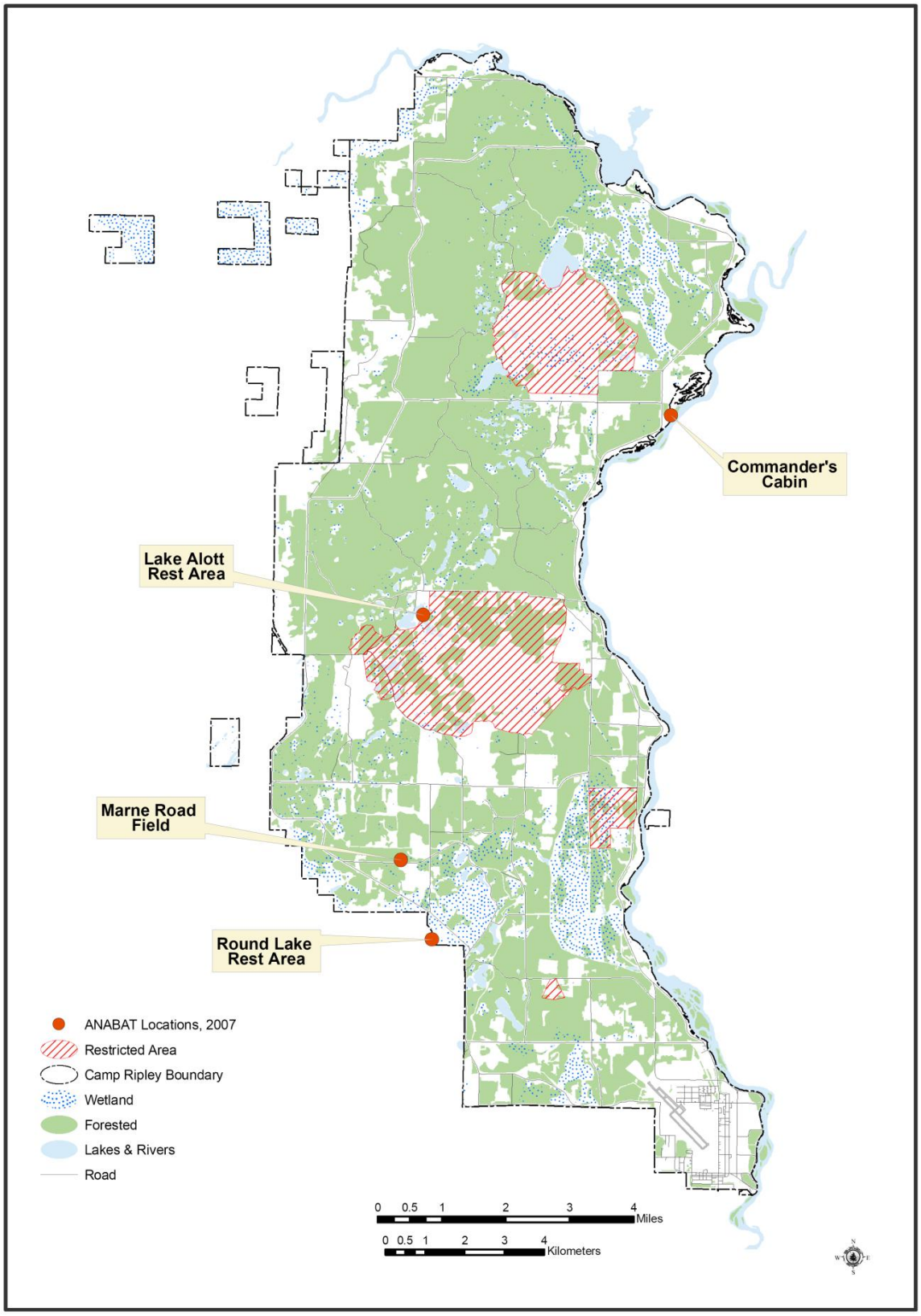
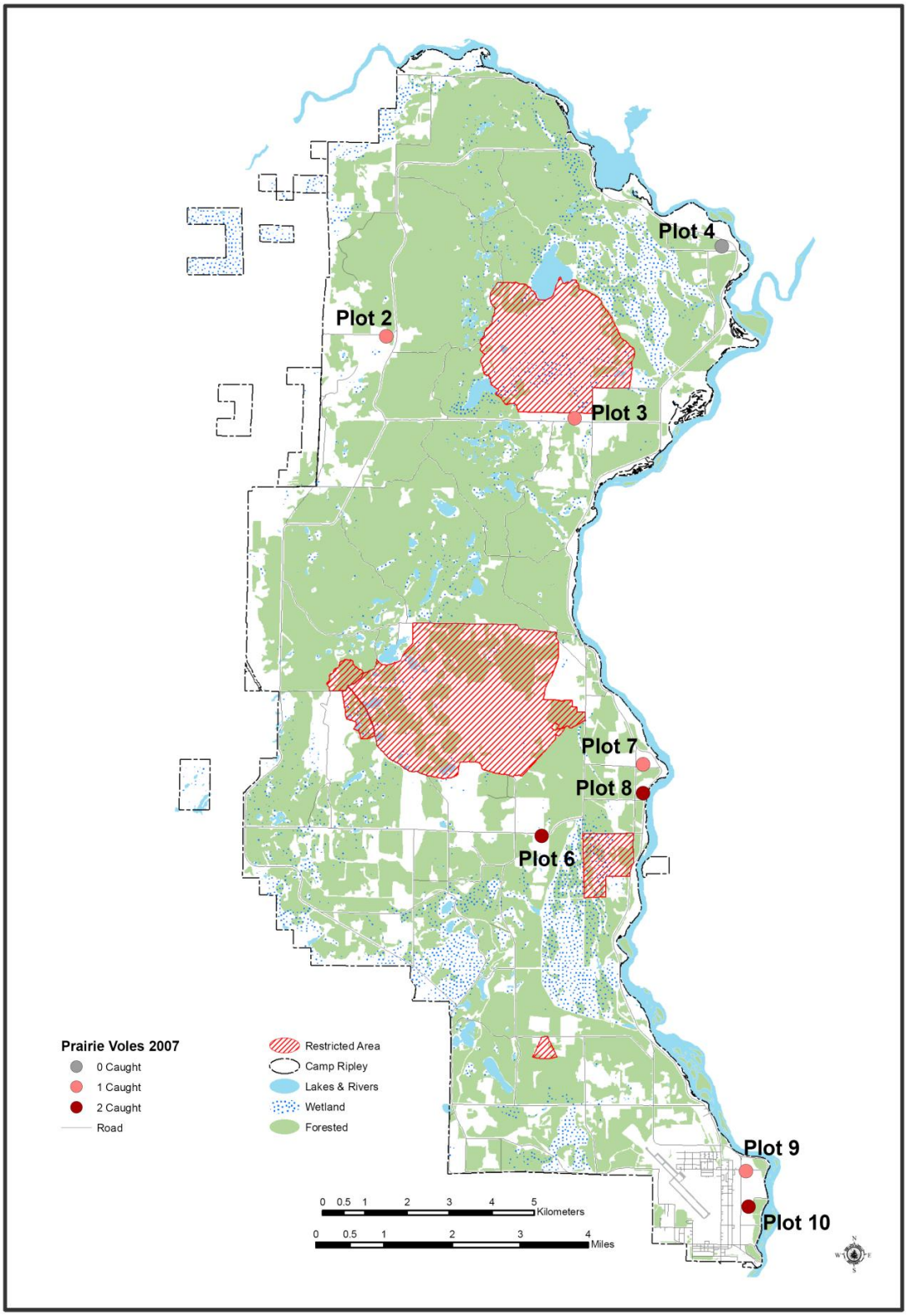


Figure 28. Sample sites and number of prairie voles captured at Camp Ripley, 2007.



Beaver (*Castor canadensis*)

Beaver are an important part of the natural ecosystems at Camp Ripley and AHATS. This species can have a large effect on the environment in which it lives. In a natural system, beavers block the flow of water, creating or enlarging wetland areas and trapping nutrients and helping to reduce flooding by holding and slowly releasing water. However, problems occur in localized areas of Camp Ripley and AHATS when beavers plug road culverts, causing water to flow over roads, damaging them in the process. When this occurs, a cooperative effort between the Environmental Office, MNDNR, and Camp Ripley DPW is initiated to identify problem areas, identify solutions for each area, and implement solutions.

All problem areas are inspected by the Environmental Office, and possible solutions are provided to Camp Ripley's DPW. Some areas require the removal of beaver through trapping. Trapping permits are issued by a local MNDNR conservation officer. During 2007, 27 beaver were removed from problem areas. Many problem areas can be addressed through the use of damage control structures, such as Clemson levelers and beaver deceivers. These devices have been used successfully at Camp Ripley in the past, and additional sites are targeted for these devices each year.

Beaver ponds throughout Camp Ripley provide habitat for Blanding's and other turtles as well as numerous reptiles and amphibians; it is important that these wetlands not be permanently drawn down in order to install these devices. Installation should occur after a temporary draw down, or during natural low-water levels. Research in east-central Minnesota investigated the effects of a draw down on turtle populations. The incidence of mortality was high after the draw down due to predation, road mortality and winterkill (Dorff Hall and Cuthbert 2000).

Camp Ripley Reptiles and Amphibians

Blanding's Turtles (*Emys blandingii*)

The Blanding's turtle is listed as a state threatened species by the MNDNR and is also a species in greatest conservation need. This species depends upon a variety of wetland types and sizes, and uses sandy upland areas for nesting. Surveys of Blanding's turtles have occurred at Camp Ripley since 1992. Because nest predation is extremely high, road surveys are conducted annually throughout known Blanding's habitats in order to find and protect nests. Surveyors spent 189 hours on traditional and exploratory routes from June 1 through June 21, 2007 (Table 8). Nineteen Blanding's turtles were observed this year (Figure 29). To aid in future identification, notches are filed into turtle scutes and each turtle is given a unique alpha code. Nine had been previously marked, eight were newly marked this year, and two were not marked. Turtles which were not marked were intentionally left undisturbed so nesting would not be hindered. Unfortunately, these turtles were not observed again. The standard protocol is to watch a turtle until it completes nesting, then capture and it and identify it. Three Blanding's turtle nests were protected and monitored through September (Figure 29). All three nests hatched, but the number

of turtles produced is unknown. Two incidental Blanding's turtle nests were also found, one was destroyed and the other hatched.

The first Blanding's turtles found were incidental observations before the nesting season. Two unmarked turtles, a male and a female, were found on May 3 in an area that had been burned the day prior. Because they were found in an area not typically searched during the annual survey period, radio transmitters were attached to both turtles in an attempt to determine which wetlands they were using. In addition, on May 8, a marked female (code:BDP) was found on Wonsan Road in the northeast corner of Camp.

The first nesting season Blanding's turtle was observed on June 3, 2007. Historically, turtles have been observed between June 2 and July 2. Spring air temperatures seem to affect the number of Blanding's turtles that will be observed in June (Figures 30 and 31, U.S. Department of Commerce 2008). Higher average temperatures during survey periods also correlate with an increase in turtle observations (Table 8). Research in Michigan concerning painted turtles (*Chrysemys picta*) supports this theory. Painted turtles on Beaver Island, in Michigan nested earlier when the previous spring temperatures were warmer (Rowe et al. 2003). Additionally, painted turtles which were allowed more time for basking ate more food, and passed that food more quickly through their bodies (Koper and Brooks 2000). Warmer spring temperatures not only allow turtles to grow larger, but also provide females with energy for producing and laying larger clutches, and for the travel required to deposit the eggs. The amount of precipitation prior to (Figure 32) or during the survey period (Figure 33) does not seem to affect the number of Blanding's observed.

Table 8. Summary of Blanding's turtle nest search surveys at Camp Ripley, 2000-2007.

Year	***Survey Period***	***First Female Blanding's Observed***	***First Blanding's Nest Found***	***Last Blanding's Observed***	***Number of Survey Hours***	***Number of Turtles Observed***	***Average Temperature During Survey Period***
2000	May 31-June 23	June 5	No nests found	June 14	91.5	11	64
2001	June 6-?	June 15	No nests found	June 27	79	9	68
2002	June 7-25	June 11	June 11	June 22	75	19	69
2003	June 6-22	June 9	June 11	June 17	129.5	10	65
2004	June 2-July 2	June 14	June 14	July 2	225	12	62
2005	June 6-23	June 10	June 12	June 17	225	18	69
2006	June 2-30	June 2	June 8	June 20	158	10	64
2007	June 1-21	June 3	June 7	June 20	189	19	70

Figure 29. Observations and nest locations of Blanding's and snapping turtle at Camp Ripley, 2007.

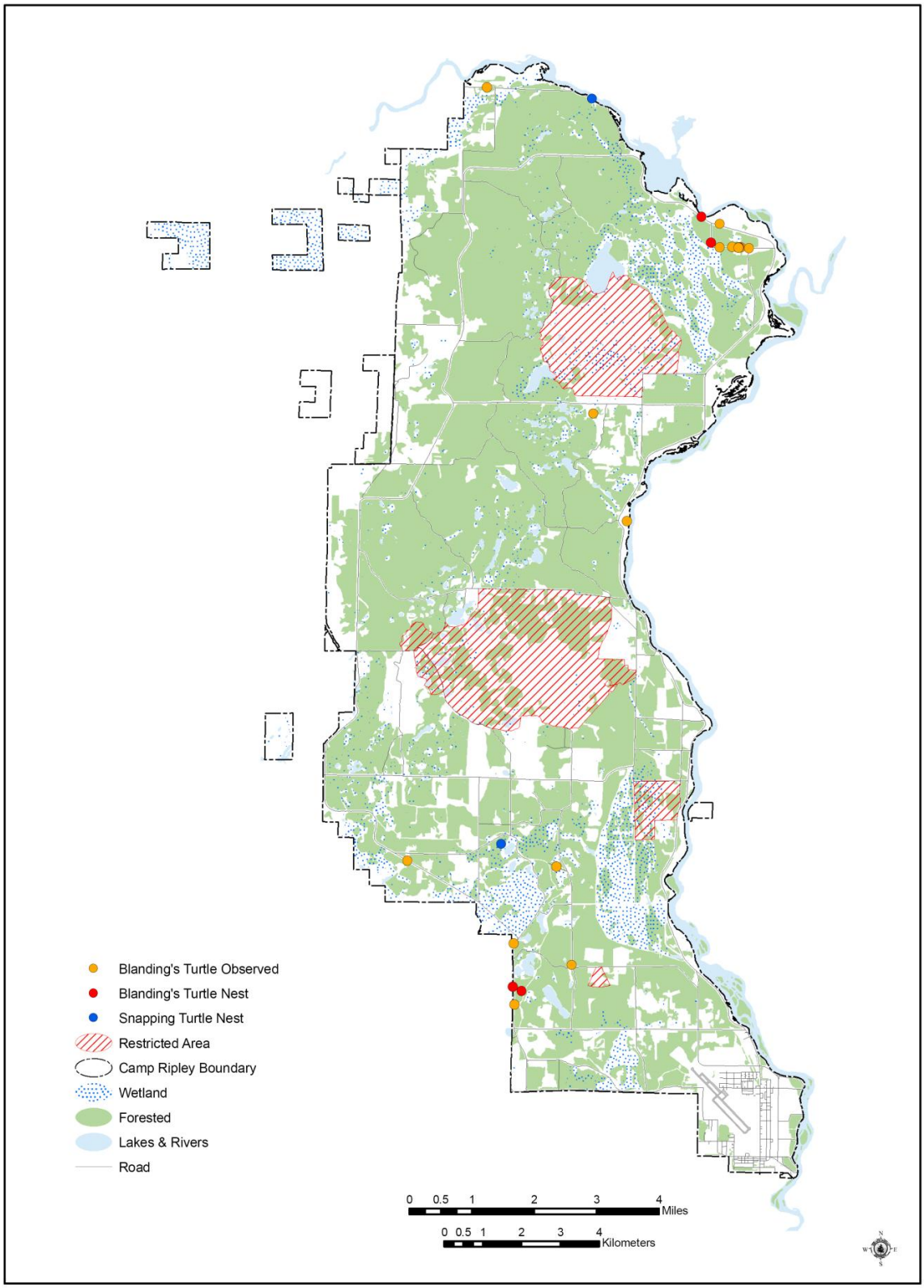


Figure 30.

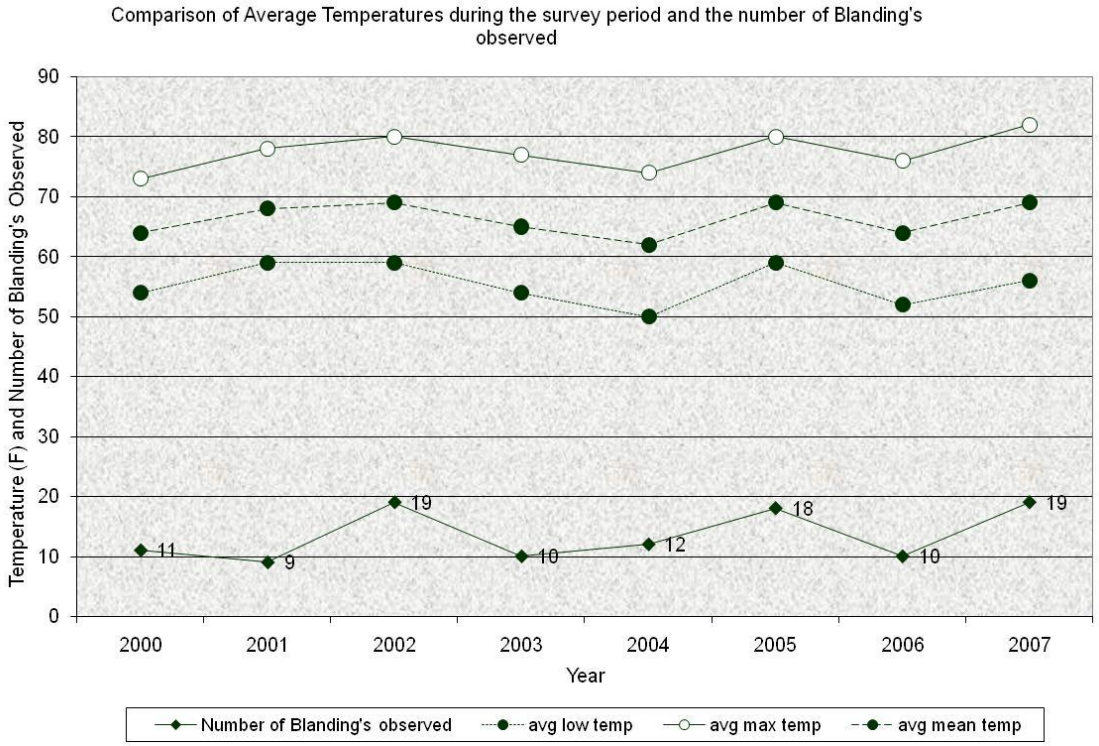


Figure 31.

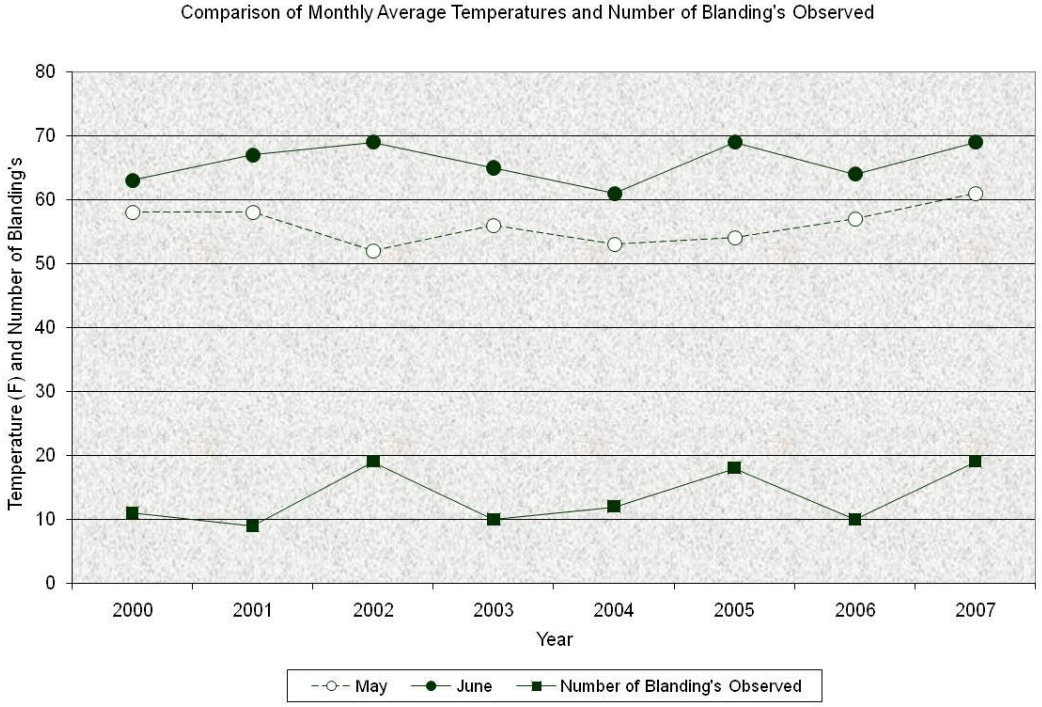


Figure 32.

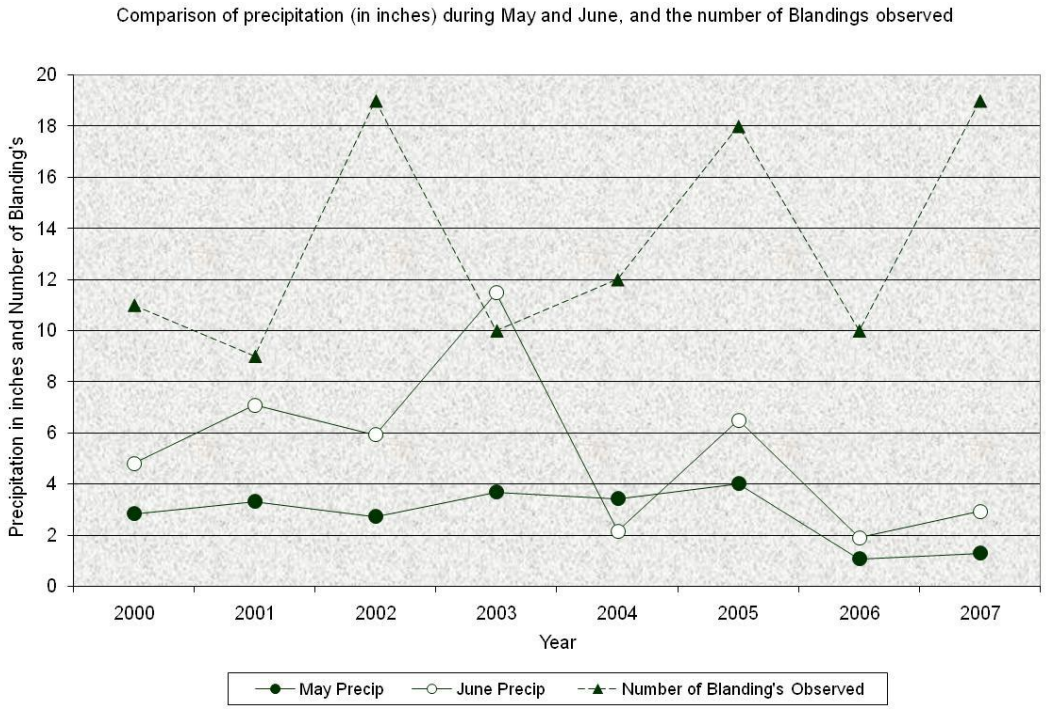
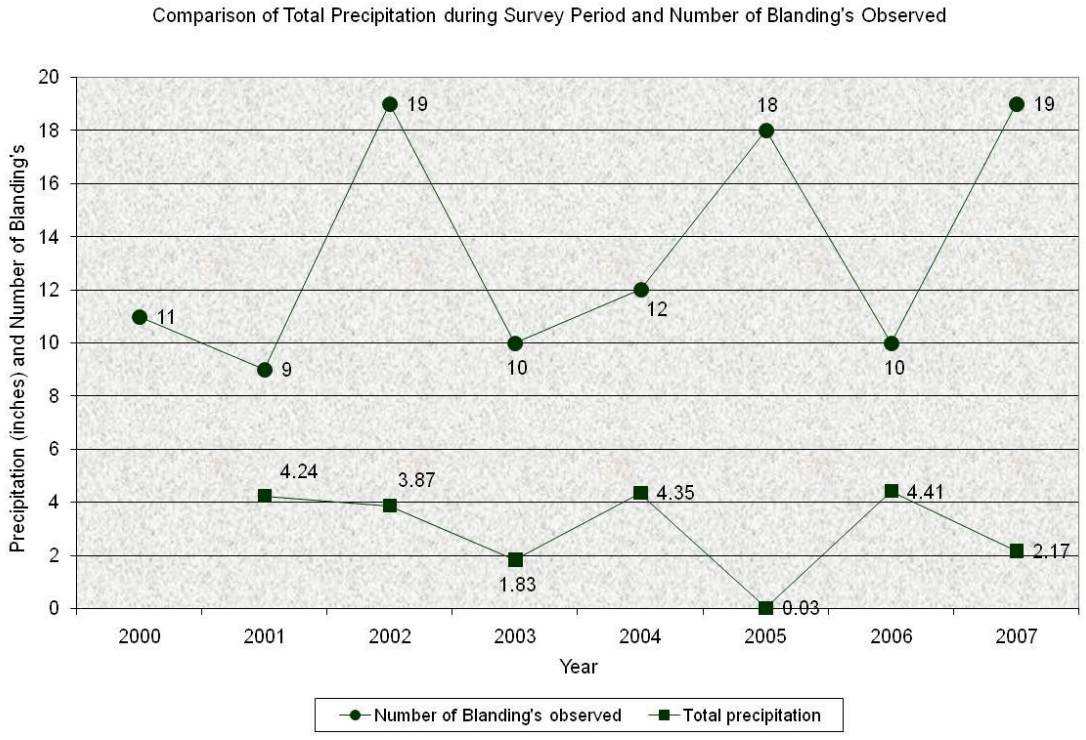


Figure 33.



Anuran Surveys

Frog and toad calling surveys were conducted by Bill Brown (Department of Military Affairs, Natural Resource Specialist) on April 27, May 28, and June 19, 2007. Three stops during the third time period were not available on south route, due to training activities, and therefore, were not surveyed. These surveys are conducted as part of a larger statewide survey, and have been conducted at Camp Ripley since 1993. Frog and toad abundance estimates are documented by the index level of their chorus, following Minnesota Herpetological Society guidelines (Moriarty, unpublished). If individual songs can be counted and there is no overlap of calls, the species is assigned an index value of 1. If there is overlap in calls the index value is 2, and a full chorus is designated a 3. Anuran surveys are performed at ten stops along two separate routes at Camp Ripley. The routes are traditionally conducted three times from April through July (Figure 34).

During the first survey period (April 15 – 30), a lower index of spring peepers (*Pseudacris crucifer*), western chorus frogs (*Pseudacris triseriata*), wood frogs (*Rana sylvatica*), and northern leopard frogs (*Rana pipiens*) were heard than in previous years (Figure 35, Table 9). During the second survey period (May 15-June 5), a higher index of gray treefrogs (*Hyla versicolor*), Cope's gray treefrogs (*Hyla chrysoscelis*), American toads (*Bufo americanus*) and spring peepers were heard (Figure 36). Since 1993, the third survey period frequently has not been surveyed due to training restrictions and weather constraints. The same species of frogs were located during the third survey period as in 2002 and 2005, the most recent years the routes have been available. In 2007, the gray treefrog index was higher than any previous years (1995, 1996, 2001, 2002, and 2005) during the third survey period. (Table 9).

Fewer spring peepers and gray treefrogs have been heard on statewide routes for the last few years (MNDNR 2005, Monstad 2006, MNDNR 2007), which corresponds with Camp Ripley data from the first survey period in 2007, but not the second survey period.

Figure 34. Anuran survey routes at Camp Ripley, 1994-2007.

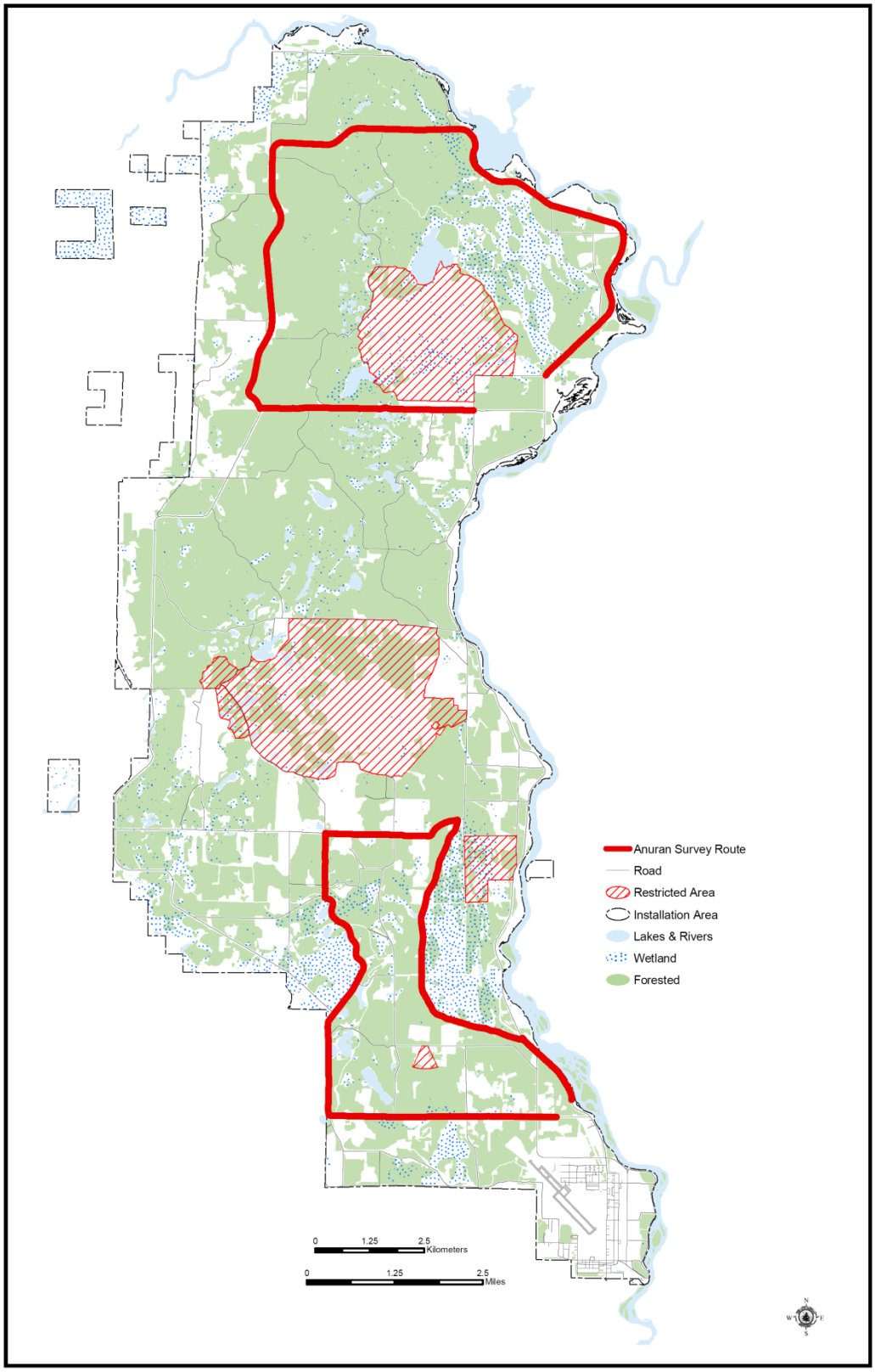


Figure 35. Average anuran index value during the first survey period at Camp Ripley, 1994-2007.

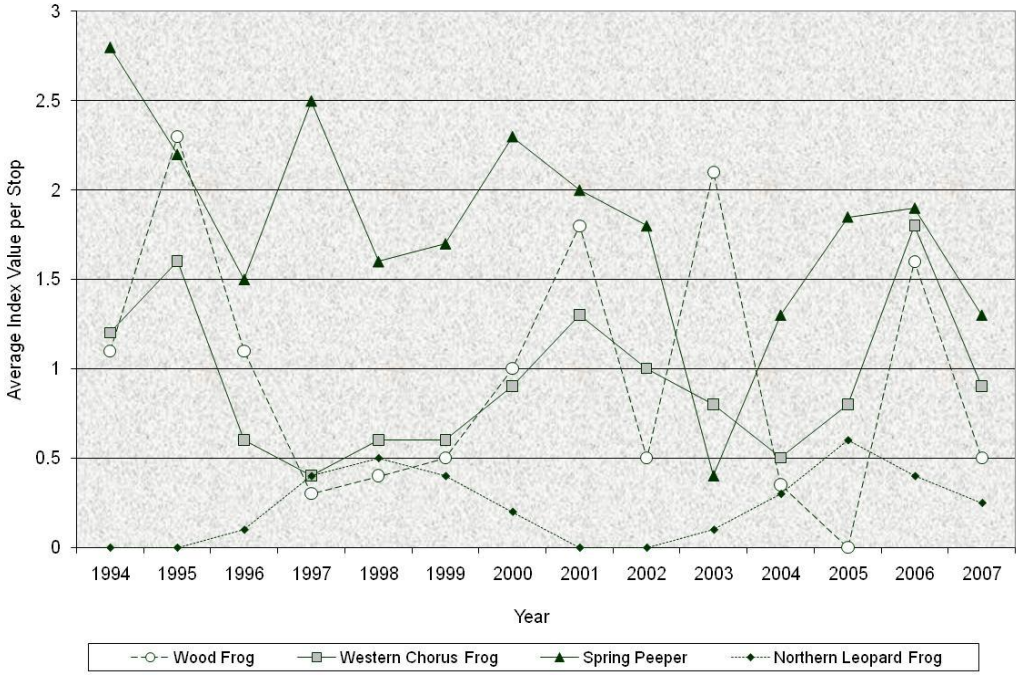


Figure 36. Average anuran index value during the second survey period at Camp Ripley, 1993-2007. Surveys were not conducted during the second survey period in 2005.

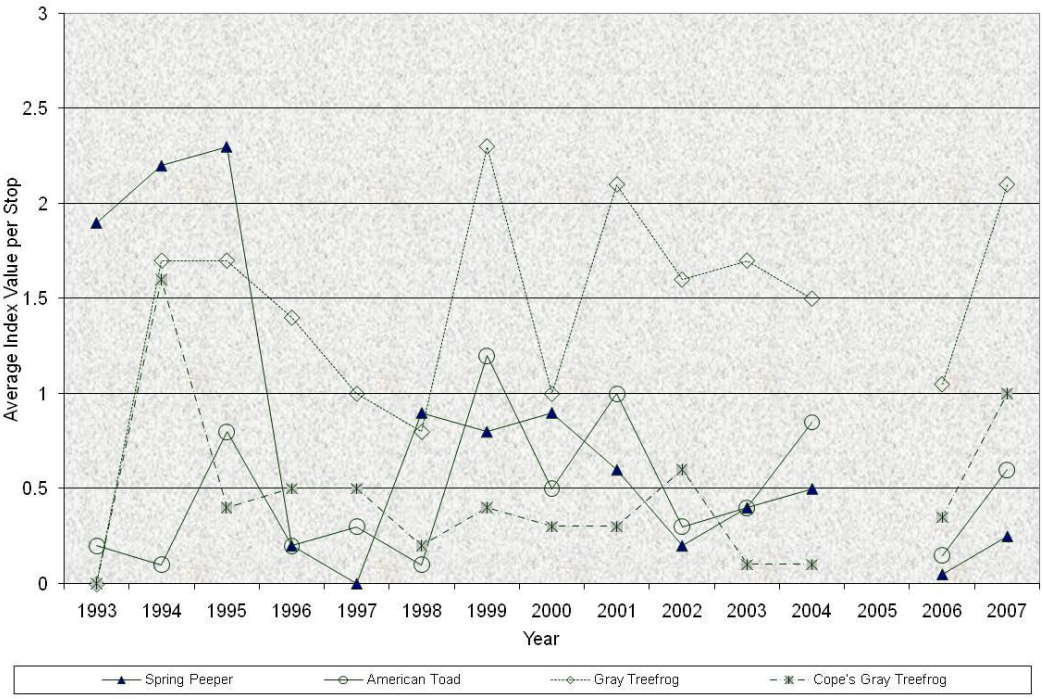


Table 9. Anuran survey data at Camp Ripley, 1993-2007.

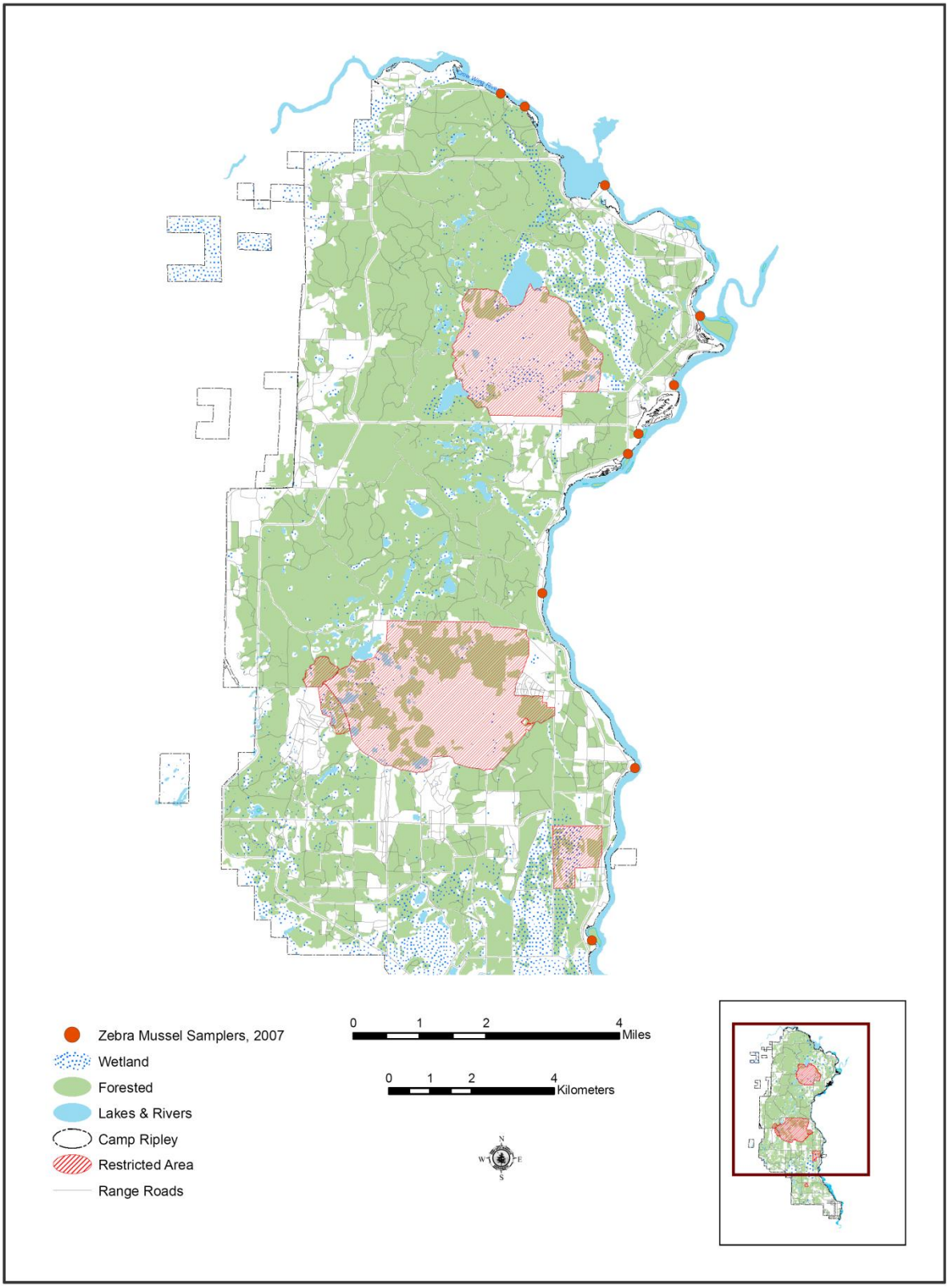
Survey Period 1	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Wood frog	*	1.1	2.3	1.1	0.3	0.4	0.5	1	1.8	0.5	2.1	0.35	0	1.6	0.5
Western chorus frog	*	1.2	1.6	0.6	0.4	0.6	0.6	0.9	1.3	1	0.8	0.5	0.8	1.8	0.9
Spring peeper	*	2.8	2.2	1.5	2.5	1.6	1.7	2.3	2	1.8	0.4	1.3	1.85	1.9	1.3
Northern leopard frog	*	0	0	0.1	0.4	0.5	0.4	0.2	0	0	0.1	0.3	0.6	0.4	0.25
American toad	*	0	0	0	0	0	0	0	0	0	0	0	0.8	0	0
Gray treefrog	*	0	0	0	0	0	0	0	0	0	0	0	1.35	0	0
Cope's gray treefrog	*	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mink frog	*	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Green frog	*	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Survey period 2	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**
Wood frog	2.4	0.1	0	0	0	0	0	0	0	0	0	0	*	0	0
Western chorus frog	0.4	0.1	0.2	0	0	0	0.1	0.2	0.2	0	0.2	0.2	*	0	0.05
Spring peeper	1.9	2.2	2.3	0.2	0	0.9	0.8	0.9	0.6	0.2	0.4	0.5	*	0.05	0.25
Northern leopard frog	0	0	0	0	0	0.1	0.1	0.3	0.1	0	0.1	0.1	*	0.1	0.05
American toad	0.2	0.1	0.8	0.2	0.3	0.1	1.2	0.5	1	0.3	0.4	0.85	*	0.15	0.6
Gray treefrog	0	1.7	1.7	1.4	1	0.8	2.3	1	2.1	1.6	1.7	1.5	*	1.05	2.1
Cope's gray treefrog	0	1.6	0.4	0.5	0.5	0.2	0.4	0.3	0.3	0.6	0.1	0.1	*	0.35	1
Mink frog	0	0	0	0.2	0.1	0.1	0	0	0	0	0	0	*	0	0
Green frog	0	0	0	0.1	0.1	0	0	0	0	0	0	0	*	0	0
Survey period 3	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**
Wood frog	*	*	0	0	*	*	*	*	0	0	*	*	0	*	0
Western chorus frog	*	*	0.1	0	*	*	*	*	0	0	*	*	0	*	0
Spring peeper	*	*	0	0	*	*	*	*	0	0	*	*	0	*	0
Northern leopard frog	*	*	0	0	*	*	*	*	0	0	*	*	0	*	0
American toad	*	*	0	0	*	*	*	*	0	0	*	*	0	*	0
Gray treefrog	*	*	0.2	0	*	*	*	*	0.2	0.3	*	*	0.25	*	0.4
Cope's gray treefrog	*	*	0	0	*	*	*	*	0	0.3	*	*	0.1	*	0.12
Mink frog	*	*	0.3	0.4	*	*	*	*	0	0.1	*	*	0.05	*	0.06
Green frog	*	*	0	0.3	*	*	*	*	0.3	0.1	*	*	0.25	*	0.06

Camp Ripley Zebra Mussels (Dreissena polymorpha)

Zebra mussels are native to Eastern Europe and Western Russia. They were first discovered in the Great Lakes in 1988. They are small barnacle-like animals that attach themselves as adults to surfaces such as boats, nets and other fishing equipment. Each female zebra mussel can produce as many as one million eggs per year. This species is a nuisance because it can "foul beaches, interfere with food webs, smother native mussels, clog water intakes, and are linked to fish and wildlife die-offs" (MNDNR 2006b). Zebra mussels were first located in 2005, north of Camp Ripley in Rice Lake, a reservoir of the Mississippi River in Brainerd. Since then, the Mississippi River from its confluence with the Pine River north of Brainerd, down to the Iowa border has been placed on the state list of infested waters. Mussels in the microscopic veliger stage could easily float down the Mississippi to the Camp Ripley area.

Ten zebra mussel samplers were placed on May 23 and 25, 2007 in the Crow Wing River and Mississippi River (Figure 37) to track expansion of zebra mussels. Three samplers were lost due to buoys being swept downstream during a high water event and two samplers were believed stolen near the Sylvan Dam area. Remaining samplers were examined on August 22, 2007 for evidence of zebra mussels; however, no zebra mussels were detected. In addition, all Mississippi River boat access sites are signed to alert users to the potential for zebra mussel contamination of their boats.

Figure 37. Locations of zebra mussel samplers at Camp Ripley, 2007.



AHATS Birds

Songbirds

Songbird surveys were conducted on 13 RTLA plots (Figure 38) on June 5, 2007. Surveys have been conducted on these plots since 2001. A total of 156 birds consisting of 44 different species were recorded. The average number of birds per plot was 12 and the average number of species per plot was 8.9 (Table 10 and Figure 39). More than 25 species in greatest conservation need, including 20 bird species, have been identified on AHATS (MNDNR 2006a). Trends of three grassland songbirds that are SGCN are presented in Figure 40. All three appear to be stable or increasing in number. Additional research will be directed toward identifying other SGCN species and management or conservation actions that could be implemented to benefit these species.

Grassland plots (*n*=7) contained 21 bird species and 66 total birds, while woodland plots (*n*=6) contained 34 species and 90 total birds. The average number of birds found on grassland plots was 9.4 and the average number of species per plot was 3.0. The average number of birds found on woodland plots was 15 and the average number of species per plot was 5.66 (Table 10, Figure 39). For the second year, clay colored sparrows (*Spizella pallida*) were the most abundant species recorded on grassland plots (Table 11). Grassland management at AHATS in recent years has involved prescribed burning and tree removal, which limits encroachment of trees and brush into grasslands. Grassland birds benefit from the absence of trees due to the lack of perches for predators and brown-headed cowbirds (*Molothrus ater)* (a brood parasite). Brushy grasslands are more suitable for edge species, such as the American goldfinch (*Carduelis tristis)*. The most abundant birds on woodland plots in 2007 were the house wren (*Troglodytes aedon)* and black-capped chickadee (*Poecile atricapillus)*.

Figure 38. Songbird survey Range Training Land Assessment (RTLA) plots at Arden Hills Army Training Site.

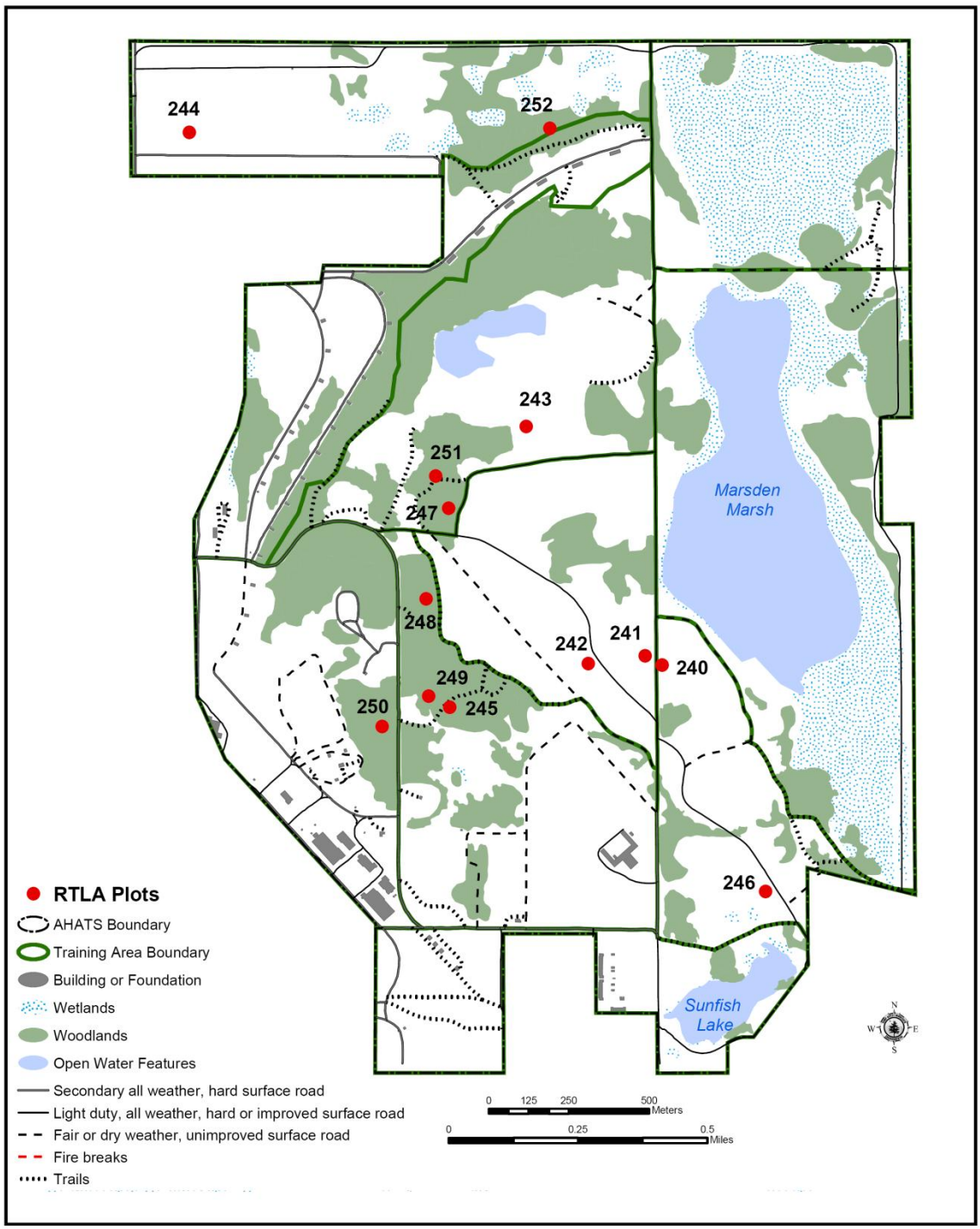


Table 10. Summary of songbird surveys at Arden Hills Army Training Site, 2000-2007.

Woodland Plots					
Year	**Number of Plots Surveyed**	**Total Number of Birds Documented**	**Total Number of Species Documented**	**Average Number of Birds per Plot**	**Average Number of Species per Plot**
2001	7	81	25	11.57	3.57
2002	7	78	28	11.14	4.00
2003	6	84	31	14.00	5.16
2004	6	88	36	14.66	6.00
2005	6	73	28	12.12	4.66
2006	6	74	32	12.13	5.33
2007	**6**	**90**	**34**	**15.00**	**5.66**
Grassland Plots					
Year	**Number of Plots Surveyed**	**Total Number of Birds Documented**	**Total Number of Species Documented**	**Average Number of Birds per Plot**	**Average Number of Species per Plot**
2001	7	37	18	5.28	2.57
2002	7	62	22	8.86	3.14
2003	7	39	17	5.57	2.43
2004	7	41	19	5.86	2.71
2005	7	67	23	9.57	3.28
2006	7	75	20	10.71	2.86
2007	**7**	**66**	**21**	**9.43**	**3.00**

Figure 39. Average number of songbird species per plot at Arden Hills Army Training Site, 2001 to 2007.

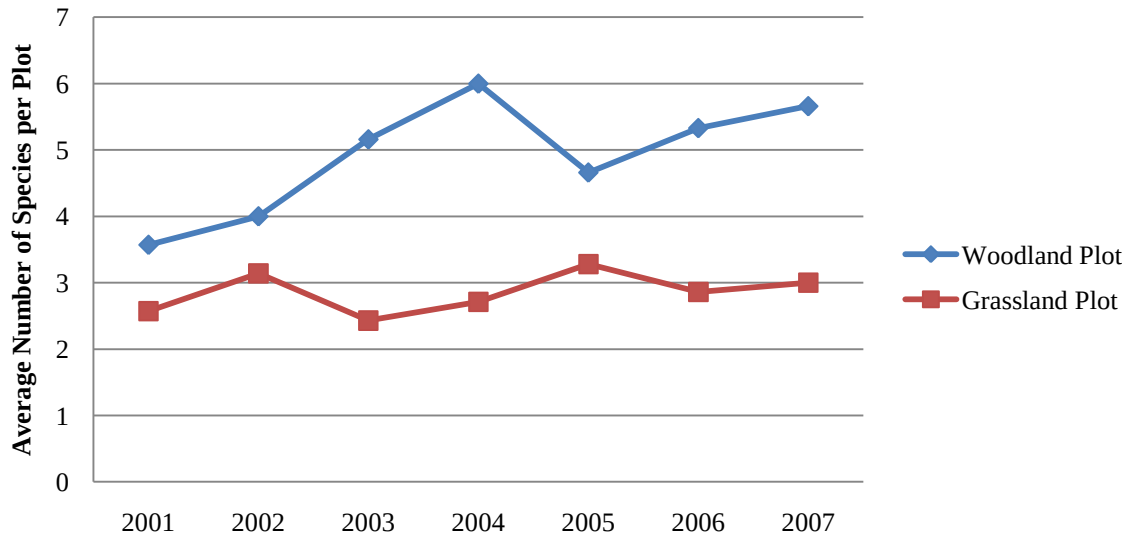


Figure 40. Selected grassland songbirds in greatest conservation need at Arden Hills Army Training Site, 2001 to 2007.

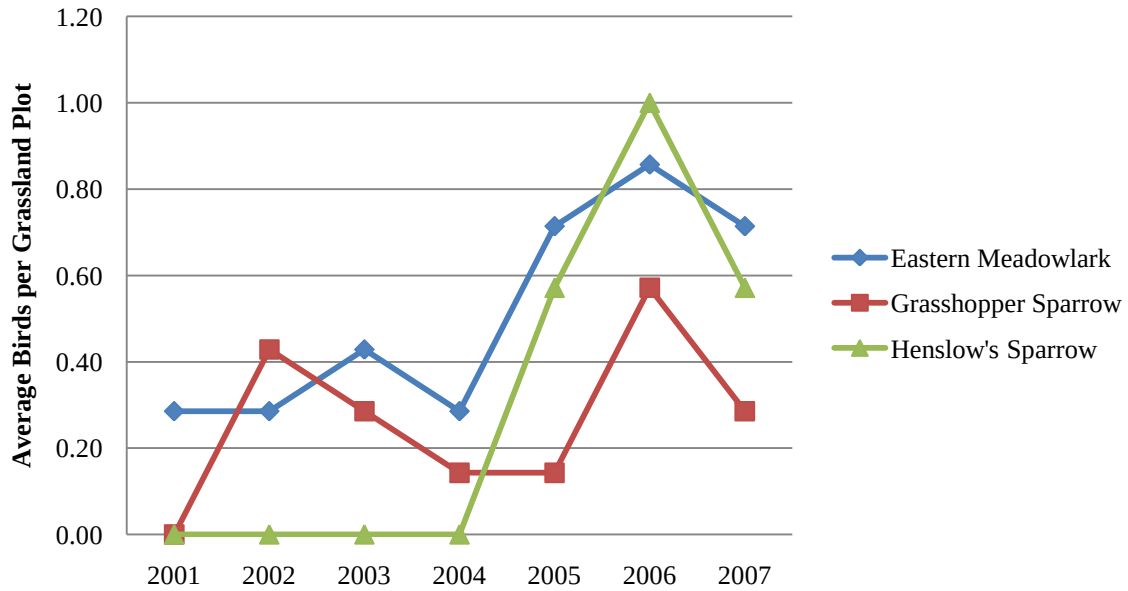


Table 11. Most abundant songbird s observed on plots at Arden Hills Army Training Site, 2001-2007. The number of birds documented is indicated in parenthesis below each species.

Grassland Plots (*n*=7)						
July 12, 2001	**July 1, 2002**	**June 17, 2003**	**June 29, 2004**	**June 1, 2005**	**June 2, 2006**	**June 5, 2007**
Clay-colored sparrow (6)	Red-winged blackbird (10)	Clay-colored sparrow (7)	American goldfinch (7)	American crow (10)	Clay-colored sparrow (8)	**Clay-colored sparrow (11)**
Sedge wren (5)	Brewer's blackbird (8)	Song sparrow (6)	Eastern kingbird (6)	American goldfinch (7)	Henslow's sparrow (7)	**Eastern bluebird, Eastern kingbird, Eastern meadowlark (5)**
Field sparrow (3)	Song sparrow (7)	Red-winged blackbird (4)	Field sparrow (5)	Sedge wren (6)	Eastern meadowlark (6)	**Henslow's sparrow (4)**
House wren (3)	Clay-colored sparrow (5)	Eastern meadowlark (3)	Black-capped chickadee (3)	Red-winged blackbird, Eastern meadowlark, Clay-colored sparrow (5)	Tree Swallow (5)	**Vesper sparrow (4)**
Woodland Plots (*n*=6)						
July 12, 2001	**July 1, 2002**	**June 17, 2003**	**June 29, 2004**	**June 1, 2005**	**June 2, 2006**	**June 5, 2007**
House wren (11)	Black-capped chickadee (7)	House wren (7)	American goldfinch (9)	House wren (8)	American robin (7)	**House wren (11)**
American goldfinch (10)	House wren (7)	American robin (7)	Eastern wood-pewee (7)	Red-eyed vireo (6)	Eastern wood-pewee (6)	**Black-capped chickadee (7)**
Eastern towhee (6)	American robin (6)	Black-capped chickadee (6)	American robin (6)	Eastern wood-pewee (6)	House wren (5)	**Red-winged blackbird (5)**
American robin (6)	Eastern wood-pewee (6)	American goldfinch (6)	House wren (5)	American robin (5)	Mourning dove, Northern cardinal, Red-winged blackbird (4)	**American goldfinch, Eastern wood-pewee, Great crested flycatcher, Northern cardinal (4)**

Henslow's sparrow (*Ammodramus henslowii*)

Henslow's sparrows were observed for the third year at AHATS during RTLA surveys on June 5, 2007. Henslow's sparrows were observed on three RTLA plots; #240, #241, and #242 (Figure 38). Henslow's sparrows are listed as endangered by the MNDNR and six other states, but are not listed by U.S. Fish and Wildlife Service. This species usually breeds in the grasslands to the south and east of Minnesota. The nationwide population of this grassland bird species has declined nearly 80 percent since 1966, due to habitat destruction and/or reforestation (National Audubon Society 2007). However, Henslow's sparrow sightings increased in the Minnesota region during the summer of 2005, the year they were first observed at AHATS. Possible causes for increased sightings may be due to a temporary population increase, a temporary population shift from another area, or a true population increase. Annual monitoring will provide information regarding their continued presence on AHATS.

Management for this species should provide for large areas of suitable habitat, prevention of disturbance during the breeding season, and the control of succession (Herkert et al. 2003). Suitable habitat is usually tall, dense grass with a deep litter layer and scattered tall forbs for perching. Periodic disturbance, such as prescribed fire, may be essential to maintaining suitable habitat; even though it will likely reduce the suitability of the grassland during the treatment year. Trees and shrubs should be eliminated in the center and along the edges of grassland areas to discourage predators and nest parasites such as the brown-headed cowbird. The grasslands where Henslow's sparrows were located should not all be burned in the same year, allowing some habitat to remain each year. These grasslands should be burned on a four or five year rotation, since it may take several years for the habitat to regain suitable structure for nesting Henslow's sparrows. Habitat requirements and management for Henslow's sparrows will be included in the development of future habitat restoration plans.

Trumpeter Swans (*Cygnus buccinator*)

A pair of trumpeter swans with seven cygnets was observed on Marsden Lake during 2007 (Figure 38); however, only five cygnets survived into the fall. Trumpeter swans are listed as a threatened species in Minnesota and have been monitored each year at Marsden Lake for presence and reproduction (Table 12). The MNDNR introduced a pair of wing-clipped trumpeter swans to the Marsden Lake wetland in 1993, and again in 1994. Seven young free-flying wild swans were observed at the wetland during the summer of 1994, presumably after observing the presence of the introduced pair. A wild pair nested at AHATS in 1995, and subsequently raised two cygnets in the wetland. This made AHATS the first site in Ramsey County in approximately 150 years to support the production of cygnets from wild birds.

Table 12. Trumpeter swans raised at AHATS since 1995.

Year	Cygnets Raised
1995	2
1996	3
1997	1
1998	5
1999	6
2000	0
2001	1
2002	0
2003	2
2004	3
2005	2
2006	7
2007	*5*
Total	**37**

AHATS Mammals

White-tailed Deer Aerial Survey

Aerial deer counts were conducted at the AHATS and Twin Cities Army Ammunition Plant properties on February 28, 2007. One hundred and twenty-four deer were counted on the properties during the survey (314). Since control of the deer population at AHATS and the surrounding area occurs primarily on the training site, management of this population will rely heavily on hunting pressure. Permit levels and hunter access will be adjusted according to the rise and fall of the deer population. (See Hunting Programs section in this document for hunt data summaries).

Table 13. Aerial surveys of White-tailed deer at the Twin Cities Army Ammunition Plant and Arden Hills Army Training Site, 1999-2007.

Year	1999	2000	2001	2002	2003	2004	2005	2006	2007
Deer Counted	41	47	30	--	30	47	--	84	**124**

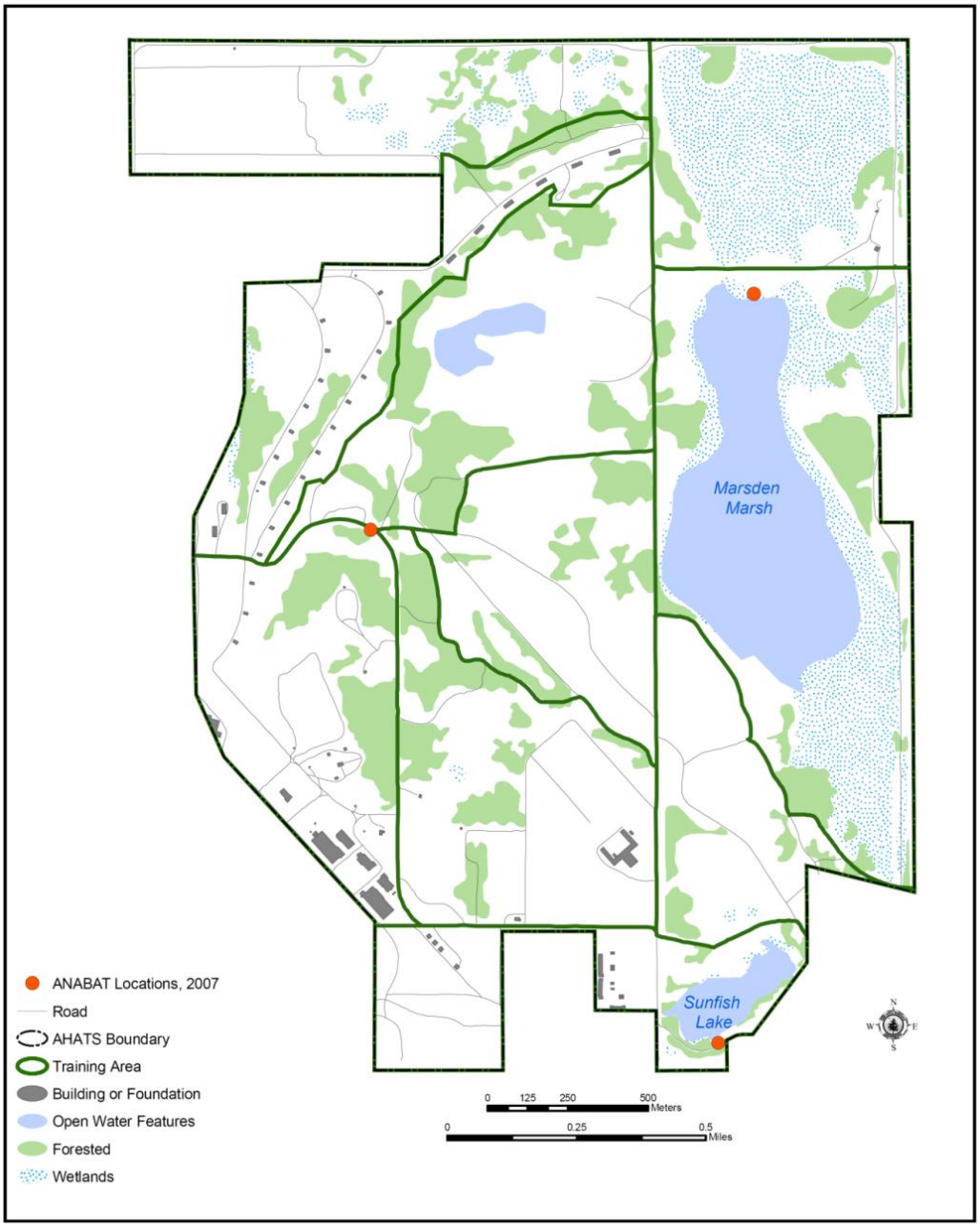
Bat Surveys

Bat surveys were conducted using an ANABAT detector during the summer of 2007 at three AHATS locations. The ANABAT is a device which records bat echolocation calls remotely. Following initial setup, it will start recording automatically when it detects a bat call. Bat calls

were recorded and then transferred to digital format. Calls are then reviewed and analyzed by MN MNDNR staff experienced with identification of ANABAT recordings.

Bats were surveyed at Sunfish Lake, Marsden Marsh, and on hill near the center of AHATS (Figure 41). Analysis of the 2007 ANABAT recordings have not been conducted by trained staff and will be reported with the 2008 bat results.

Figure 41. Locations of ANABAT surveys at Arden Hills Army Training Site, 2007.



AHATS Insects

Butterfly Survey

The Saint Paul Audubon Society conducted their annual survey for butterflies at AHATS on Saturday, June 30, 2008. Three new species were observed, the hackberry emperor (*Asterocampa celtis*), black dash (*Euphyes conspicua*), and dion skipper (*Euphyes dion*) (Table 14). More clouded sulphur (*Colias philodice*), orange sulphur (*Colias eurytheme*), and northern broken -dash (*Wallengrenia egeremet*) were observed this year than in the previous four years.

Table 14. Number of butterflies at Arden Hills Army Training Site, St. Paul Audubon Society, 2001-2007.

Common Name	Species	July 6, 2001	July 14, 2002	July 6, 2003	July 10, 2004	July 9, 2005	July 8, 2006	June 30, 2007
Black swallowtail	*Papilio polyxenes*	1				1	1	**1**
Eastern tiger swallowtail	*Papilio glaucus*	4				2		
Swallowtail species	*species undetermined*	1		1				
Checkered white	*Pontia protodica*	3						
Cabbage white	*Pieris rapae*		5			1		**1**
"Whites"	*Pieris species*					1		
Clouded sulphur	*Colias philodice*	?	2	8		2	6	**42**
Orange sulphur	*Colias eurytheme*	100s	35	1	1	1		**30**
Dainty sulphur	*Nathalis iole*	1						
American copper	*Lycaena phlaeas*		3				2	**2**
Gray copper	*Lycaena dione*	9	1	8				
Bronze copper	*Lycaena hyllus*							
Edward's hairstreak	*Satyrium edwardsii*			1				
Coral hairstreak	*Satyrium titus*	2	1	1	1			
Banded hairstreak	*Satyrium calanus*			1				
Striped hairstreak	*Satyrium liparops*	1						**1**
Hairstreak species	*species undetermined*			2				
Eastern tailed-blue	*Everes comyntas*	5	100's	4		6	32	**34**
'Summer' spring azure	*Celastrina ladon*	4	1	3				
Variegated fritillary	*Euptoieta claudia*	1		1				
Great spangled fritillary	*Speyeria cybele*	12	11	40	9	16	5	**13**
Aphrodite fritillary	*Speyeria aphrodite*	4	4	dozens	19	10	14	**2**
Regal fritillary	*Speyeria idalia*							
Silver-bordered fritillary	*Boloria selene*							
Fritillary species	*species undetermined*	32	10	14	14+		14	**28**
Silvery checkerspot	*Chlosyne nycteis*				1			
Pearl crescent	*Phyciodes tharos*	11			1			
Northern crescent	*Phyciodes selenis*			7	2		1	
Northern pearl crescent	*Phyciodes*					1	1	**7**
Crescent species	*species undetermined*		2	4				

Common Name	Species	July 6, 2001	July 14, 2002	July 6, 2003	July 10, 2004	July 9, 2005	July 8, 2006	June 30, 2007
Baltimore checkerspot	*Euphydryas phaeton*	15		6	13	5	4	**10**
Question mark	*Polygonia*		1				2	
Silvery checkerspot	*Chlosyne nycteis*				1			
Eastern comma	*Polygonia comma*			1			3	
Mourning cloak	*Nymphalis antiopa*	2	2	5	2	5		**3**
American lady	*Vanessa virginiensis*	6	2	1		1		**4**
Painted lady	*Vanessa cardui*	5						
Vanessa species			1					
Red admiral	*Vanessa atalanta*	12+		3			2	**11**
Common buckeye	*Junonia coenia*	7	1			1		**6**
Red-spotted purple	*(Limenitis a . astyanax)*							
Viceroy	*Limenitis archippus*	1	2	5		1		
Hackberry emperor	*Asterocampa celtis*							**2**
Northern pearly-eye	*Enodia anthedon*	2	4	7	1	5	9	**5**
Marsh-eyed brown	*Satyrodes eurydice*	46	15-20	22	3	5	32	**26**
Little wood satyr	*Megisto cymela*							
Common ringlet	*Coenonympha tullia*	4						
Common wood nymph	*Cercyonis pegala*	dozens	dozens	100-	100+	36	104	**173**
Monarch	*Danaus plexippus*	11	10	11	1	17	64	**38**
Silver-spotted skipper	*Epargyeus clarus*	2	2	1	1	1	2	**2**
Least skipper	*Ancyloxypha numitor*							
European skipper	*Thymelicus lineola*	6		dozens	2	1		**5**
Northern cloudy skipper	*Thorybes pylades*							
Tawny-edged skipper	*Polites themistocles*	4						**1**
Long dash	*Polites mystic*							**1**
Delaware skipper	*Atrytone logan*	4	7	11	1	4	7	**2**
Northern broken -dash	*Wallengrenia egeremet*	1		2			3	**15**
Mulberry wing	*Poanes massasoit*	1	1	1	3	1	6	**1**
Hobomok skipper	*Poanes hobomok*							
Dion skipper	*Euphyes dion*							**1**
Black dash	*Euphyes conspicua*							**3**
Dun skipper	*Euphyes vestris*	1		3			8	**4**
Skipper species					1		4	**2**

AHATS Other Wildlife Observations

Table 15. Bird species observed at Arden Hills Army Training Site, during St. Paul Audubon Society's annual butterfly survey, June 30, 2007.

Family	Scientific Name	Common Name
Gaviidae	*Gavia immer*	Common loon
Ardeidae	*Ardea herodias*	Great blue heron
	Casmerodius albus	Great egret
	Butorides striatus	Green-backed heron

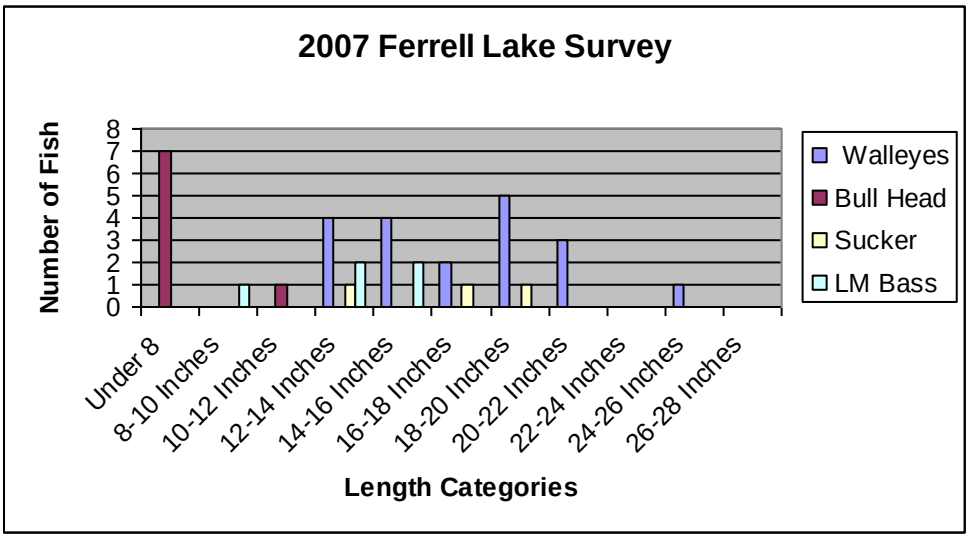
Family	Scientific Name	Common Name
Anatidae	*Cygnus buccinator*	Trumpeter swan
	Aix sponsa	Wood duck
Accipitridae	*Pandion haliaetus*	Osprey
	Circus cyaneus	Northern harrier
	Haliaeetus leucocephalus	Bald eagle
	Buteo jamaicensis	Red-tailed hawk
Columbidae	*Zenaida macroura*	Mourning dove
Picidae	*Melanerpes carolinus*	Red-bellied woodpecker
	Colaptes auratus	Northern flicker
Tyrannidae	*Empidonax traill*	Willow flycatcher
	Sayornis phoebe	Eastern phoebe
	Myiarchus crinitus	Great crested flycatcher
Hirundinidae	*Tachycineta bicolor*	Tree swallow
	Riparia riparia	Bank swallow
Corvidae	*Cyanocitta cristata*	Blue jay
	Corvus brachyrhynchos	American crow
Paridae	*Parus atricaillus*	Black-capped chickadee
Sittidae	*Sitta carolinesis*	White-breasted nuthatch
Troglodytidae	*Troglodytes aedon*	House wren
	Cistothorus platensis	Sedge wren
Turdidae	*Sialia Sialis*	Eastern bluebird
	Turdus migratorius	American robin
Mimidae	*Dumetella carolinensis*	Gray catbird
	Toxostoma rufum	Brown thrasher
Vireonidae	*Vireo gilvus*	Warbling vireo
	Vireo olivaceus	Red-Eyed vireo
Parulidae	*Dendroica petechia*	Yellow warbler
	Geothlypis trichas	Common yellowthroat
Emberizidae	*Spizella passerina*	Chipping sparrow
	Spizella pallida	Clay-colored sparrow
	Spizella pusilla	Field sparrow
	Melospiza melodia	Song sparrow
Icteridae	*Agelaius phoeniceus*	Red-winged blackbird
	Icterus galbula	Baltimore oriole
	Icterus spurius	Orchard oriole
	Molothrus ater	Brown-headed cowbird
Fringillidae	*Carpodacus mexicanus*	House finch
	Carduelis tristis	American goldfinch
Passeridae	*Passer domesticus*	House sparrow

FISHERIES

Lake Surveys

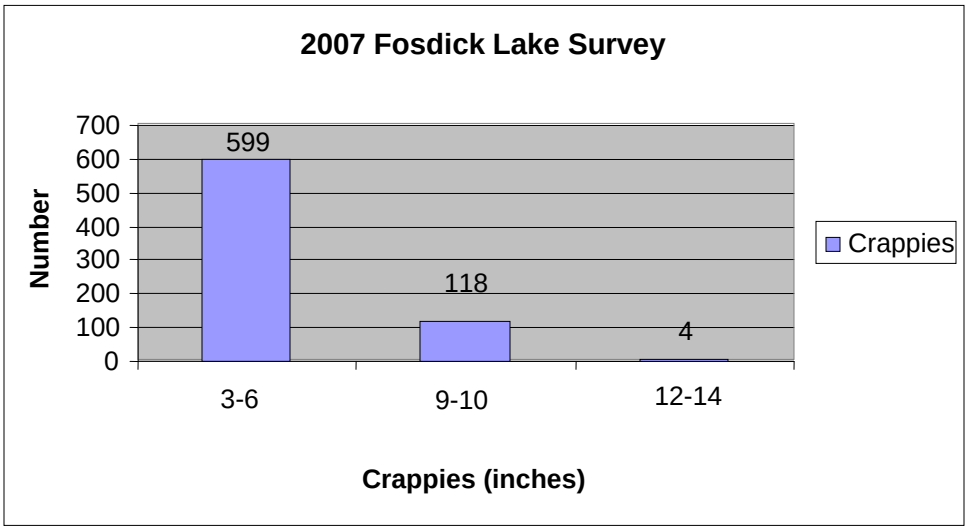
Two lakes were surveyed during the spring of 2007. On April 25, 2007, ten "hoop" trap nets were lifted from Ferrell Lake to determine fish present. About 800 sunfish were trapped of all sizes and four other species of fish were found (Figure 42).

Figure 42. Ferrell Lake survey at Camp Ripley, 2007.



On April 27, 2007, ten "hoop" trap nets were lifted from Fosdick Lake to determine fish presence. The nets contained the following: 4, 12-14 inch crappies; 118, 9-10 inch crappies; and 599, 3-6 inch crappies. One 20 inch walleye was also trapped and measured (Figure 4).

Figure 43. Fosdick Lake survey at Camp Ripley, 2007.



Spring Harvest

Several lakes were test netted by MNARNG to determine if they had walleye fingerlings present. Two lakes, Cockburn and Rapoon, showed evidence of walleye fingerlings. Those lakes were then harvested (Table 16).

Table 16. Spring walleye harvest at Camp Ripley, 2007.

Lake Name	Harvest Amount	Rate	Stocking Location
Cockburn Lake	107 fingerlings	8/lb (13.4 lbs)	Ferrell Lake
Rapoon Lake	1132 fingerlings	46/lb (24.6 lbs)	Ferrell Lake

Fall Harvest

Two lakes, Muskrat and Coon Stump, were harvested by MNDNR for walleye fingerlings (Table 17).

Table 17. Fall walleye harvest at Camp Ripley, 2007.

Lake Name	Harvest Amount	Rate	% Return
Muskrat Lake	6,838 fingerlings	43/lb (159 lbs)	6.8%
Coon Stump Lake	3,172 fingerlings	26/lb (110 lbs)	6.3%

Two lakes, Frog Lake and Miller Pond, were harvested by MNDNR for muskies. In 2007, harvest for Frog Lake was 13 yearlings and Miller Pond was 14 yearlings and 29 adults.

CAMP RIPLEY PEST MANAGEMENT

Tick Borne Diseases

Tick-borne diseases (TBD) are a significant cause of human morbidity in Minnesota, with over 1,000 cases reported to Minnesota Department of Health (MDH) annually in recent years. The primary vector for TBD in Minnesota is the black-legged tick (i.e., deer tick, *Ixodes scapularis*). Small mammals play an important role in the TBD cycle; both as hosts for the vectors and by maintaining and transmitting infections to ticks, which do not transmit infections vertically between generations. Prevention and control of zoonotic diseases requires a clear understanding of each of the components involved in the natural transmission cycle in order to understand their net effect on human disease risk.

In the summer of 2007, Camp Ripley Environmental staff participated in a project that was conducted in partnership with the MDH. The purpose of the project is to further characterize the role of rodents as reservoir hosts for TBD in Minnesota. Three sites were chosen in Minnesota based on their status as areas previously sampled by MDH and as known endemic areas of TBD.

At Camp Ripley, live trapping for small mammals was done at two sites between June 5 and July 22, 2007. A total of 100 traps were set out each of four nights over the two-month span, resulting in 23 captures (5.75% success). A total of three genera were represented, white-footed mice (*Peromyscus*), chipmunks (*Tamias),* and voles (*Clethrionomys*); all of which were collected for blood testing and tick removal. Mammal specimens were tested by polymerase chain reaction (PCR) analyses for evidence of *Borrelia burgdorferi* (Lyme Disease), *Anaplasma phagocytophilum (*Human Anaplasmosis*),* and *Babesia microti* (Babesiosis) the agents of the three most commonly reported tick-borne diseases in Minnesota. Ticks were removed from the specimens and later counted and identified for each mammal. Six of the 23 (26%) mammal specimens tested positive for one of the three pathogens including two with multiple infections (Table 18). Tick identification indicated large numbers of black-legged ticks parasitizing small mammal hosts, with few American dog ticks (i.e., wood tick, *Dermacentor variabilis*) attached during the same time period (Table 20).

Table 18. Small mammal infection prevalence at Camp Ripley, 2007.

	Prevalence					
Species	***Borrelia burgdorfer***		***Anaplasma phagocytophilum***		***Babesia microti***	
	#	**%**	**#**	**%**	**#**	**%**
White-footed mice *(Peromyscus* spp.) (n=18)	3	17	2	11	2	11
Eastern chipmunk *(Tamias striatus)* (n=4)	0	0	1	25	0	0
Red-backed vole *(Clethrionomys gapperi*) (n=1)	0	0	0	0	0	0
All Species (*n*=23)	**3**	**13**	**3**	**13**	**2**	**9**

Table 19. Small mammals tick load at Camp Ripley, 2007.

	Average Tick/Host			
Species	***Ixodes* larvae**	***Ixodes* nymphs**	***Dermacentor* larvae**	***Dermacentor* nymphs**
Peromyscus spp (*n*=18)	83 (range 19-73)	18 (range 1-92)	0.9 (range 0-5)	0.06 (range 0-1)
Tamias striatus (*n*=4)	13 (range 0-46)	34 (range 4-12)	0 (range 0)	0.3 (range 0-1)
Clethrionomys gapperi (*n*=1)	16	2	1	4
All Species (*n*=23)	**67.8**	**19**	**0.739**	**0.26**

Land Use Management

CAMP RIPLEY ARMY COMPATIBLE USE BUFFER (ACUB)

Introduction

Section 2811 of the Fiscal Year Department of Defense Authorization Act, passed 2 December 2002, created 10 United States Code (U.S.C.) section mark (§) 2684a, which authorizes a military installation to enter into an agreement with state, local government, or private conservation organizations to limit encroachment on lands neighboring the installation. Subsequently, the Headquarters Department of the Army, Director of Training, issued guidance pursuant to a memorandum dated 19 May 2003, subject: Army Range and Training Land Acquisitions and Army Compatible Use Buffers. The memorandum defines the requirements of an Army Compatible Use Buffer (ACUB) proposal in order for an installation to execute any land acquisition.

Intent

The effects of population encroachment have been felt by military installations across the country. Each installation has had to find creative ways to deal with these issues. The most common solution has been restrictions placed on units training, which degrades training realism. Since encroachment has yet to become critical, Camp Ripley has not limited commanders in the field from meeting their training objectives. However, this could change quickly. Acquiring the interest in lands around Camp Ripley will ensure unrestricted training to its users far into the future. It's the unrestricted, quality training and facilities at Camp Ripley that keeps military units coming back. Of the 53,000 acres that comprise Camp Ripley, about 50,000 acres are available

for maneuver training space. This allows units that require large amounts of training space to become proficient on their weapon systems.

Purpose

The purpose of the Camp Ripley Army compatible Use Buffer (ACUB) program, known locally as "*Central Minnesota Prairie to Pines Partnership…preserving our heritage"*, is to create and enhance a natural buffer around Camp Ripley by taking advantage of available opportunities to prevent encroachment and enhance conservation and land management. By securing a buffer, Camp Ripley can continue to offer and provide critically important, high quality military training and operations to ensure combat readiness, as well as mitigate community development encroachment around the Training Site. Through implementation of Camp Ripley's proposal, Camp Ripley will also be contributing to preserving the local heritage and enhancing a regional conservation corridor.

Update

Because encroachment is a priority issue for the Minnesota Army National Guard, an ACUB proposal was prepared for Camp Ripley and subsequently approved by the Army and National Guard Bureau (NGB) in May 2004. Since then, the following accomplishments have occurred:

- Given the complimentary relationship that ACUB offers from a land management perspective and the long-standing partnerships that MNARNG has enjoyed with the MNDNR and the Minnesota Board of Water and Soil Resources (BWSR), both agencies graciously accepted an invitation to assist in implementing ACUB through a Cooperative Agreement with NGB.

- In addition to the MNDNR and BWSR, 20 partners have expressed a willingness to assist in implementing ACUB including, in some cases, committing their own funds.

- To date, 175 willing landowners have enrolled in ACUB. These landowners represent about 25,000 acres of land. Over 90 percent of the interested landowners desire permanent conservation easements rather than acquisition.

- Federal funding in the amount of $7,156,000 has been awarded to the Camp Ripley ACUB since 2004. Following is a distribution of the funds between MNDNR and BWSR:

MNDNR		**BWSR**	
$500,000	FY 2004	----------	FY 2004
$1,000,000	FY 2005	----------	FY 2005
$500,000	FY 2006	$500,000	FY 2006
$749,000	FY 2007	$1,000,000	FY 2007
$600,000	FY 2007 year end NGB	$2,307,000	FY 2007 year end NGB
$3,349,000	**TOTAL MNDNR**	**$3,807,000**	**TOTAL BWSR**

- Funding decisions relative to specific parcels is based on ranking criteria that are weighted for military considerations (77%) and ecological considerations (23%).

- The ACUB accomplishments from FY 2004 (start) through FY 2007 for MNDNR and BWSR are presented below and depicted in the figure that follows (Figure 44).

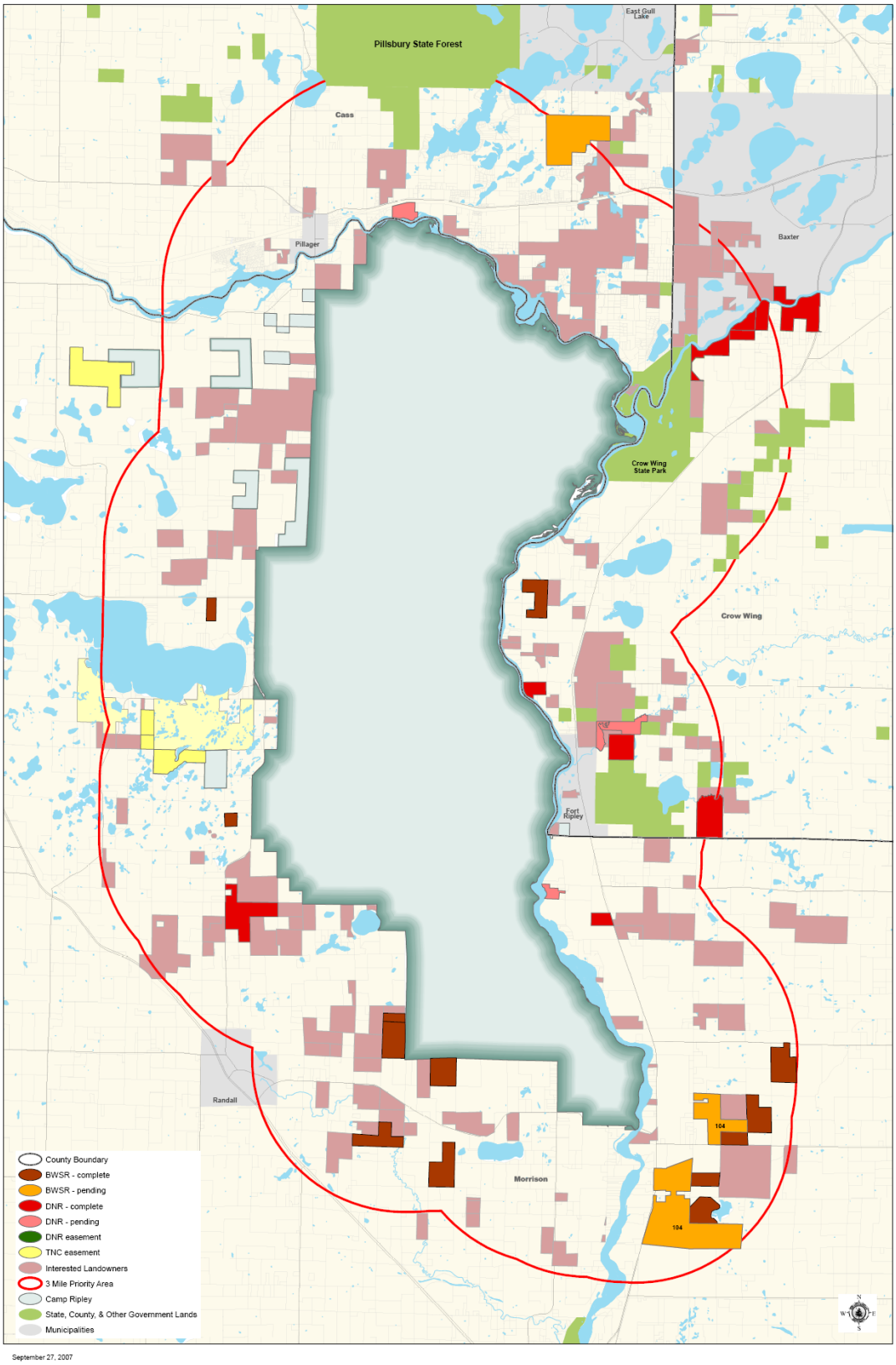
DNR

- 14 land deals
- 1,702 acres
- $3.349 million

BWSR

- 11 land deals
- 2,311 acres
- $3.807 million

Figure 46. Status of Camp Ripley ACUB through fiscal year 2007.



Outreach and Recreation

One of Camp Ripley's missions is to add value to the community. The environmental team does this by being active in many special events. Camp Ripley staff has been active in such activities as the Morrison County Water Festival, Earth Day, National Public Lands Day, and Habitat Day.

The Camp Ripley's environmental team has also been very involved in a job shadow program. The shadow program provides an out-of-classroom experience for those students interested in the natural resources field. The environmental team provides about 20 different natural resource options including large mammal radio telemetry, fisheries, forest inventory and bird surveys to name a few. Our desire is to ensure that each student realizes a valuable learning experience while shadowing with Camp Ripley environmental personnel. Camp Ripley is also available for environmental presentations and tours. In 2007, the environmental team gave presentations or tours to 138 groups totaling 6,296 people and 676 man hours. A majority of these presentations occur in the Environmental Learning Center at Camp Ripley.

SALVAGE PERMITS

Camp Ripley maintains two permits for the purpose of salvaging animals for the Environmental Learning Center, they are: State of Minnesota salvage permit No. 14815 and Federal Fish and Wildlife Permit MB776466-0. No fauna was salvaged in 2007.

HUNTING PROGRAMS

Camp Ripley has had a very active hunting program since 1954, below are the hunting results for the 2007 hunting season.

Camp Ripley Disabled American Veteran Firearms Wild Turkey Hunt

Camp Ripley hosted the third annual Disabled American Veterans (DAV) turkey hunt on April 25-26, 2007. The hunt was organized and conducted by the Veterans Administration and Minnesota Chapter of the National Wild Turkey Federation with support from Camp Ripley staff and

Table 20. Disabled American Veterans wild turkey hunts at Camp Ripley, 2005-2007.

Year	Turkeys Harvested	Hunter Success	Permits Issued	Number of Hunters	Dates	Largest Turkey (Lbs)
2005	11	58%	22	19	May 3-4	24
2006	12	48%	26	25	April 25-26	22.5
2007	**15**	**52%**	**31**	**29**	**April 25-**	**23.5**
Total	**38**		**79**	**73**		
Avg.	**13**	**52%**	**26**	**24**		

MNDNR. Twenty-nine hunters participated in this year's turkey hunt. Fifteen hunters were successful, for a 52 percent success rate (Table 20).

Camp Ripley Disabled American Veterans Firearms Deer Hunt

The sixteenth annual Disabled American Veterans firearms deer hunt on Camp Ripley was held October 3-4, 2007. This year 59 hunters participated in the hunt. The weather was warm, with no precipitation. Eighteen deer were killed (Table 21). The largest deer taken was a 168 pound buck.

Table 21. Disabled American Veterans firearms white-tailed deer hunt at Camp Ripley, 1992-2007.

Year	Deer Harvested	Percent Hunter Success	Buck	Does	Fawns	Permits Issued	Number of Hunters	Dates	Largest Deer (lbs)
1992	7	37%	4	2	1	19	19	Oct. 14-15	152
1993	11	35%	5	4	2	31	31	Oct. 13-14	132
1994	14	35%	3	3	8	42	40	Oct. 12-13	185
1995	6	15%	1	5	0	40	39	Oct. 11-12	142
1996	9	23%	3	4	2	40	39	Oct. 9-10	132
1997	9	23%	2	2	5	40	38	Oct. 8-9	152
1998	11	30%	2	5	4	39	37	Oct. 7-8	129
1999	8	23%	4	3	1	38	35	Oct. 6-7	137
2000	14	37%	5	5	4	40	38	Oct. 4-5	181
2001	4	11%	1	1	2	45	38	Oct. 10-11	123
2002	12	26%	3	8	1	46	46	Oct. 9-10	144
2003	10	20%	4	6	0	50	48	Oct. 8-9	160
2004	15	33%	6	7	2	48	45	Oct. 6-7	184
2005	12	24.5%	3	7	2	52	49	Oct. 5-6	152
2006	9	19.5%	2	6	1	50	46	Oct. 4-5	146
2007	**18**	**31%**	**7**	**8**	**3**	**59**	**59**	**Oct. 3-4**	**168**
Total	**179**		**55**	**76**	**38**		**647**		
Avg.	**11**	**28%**	**3**	**5**	**2**		**40**		**151**

Camp Ripley Deployed Soldiers Archery Deer Hunt

The second annual deployed soldier's archery deer hunt was held in conjunction with the DAV firearms hunt on Camp Ripley. Permits were issued to soldiers that have been mobilized to support the Global War on Terrorism since September 11, 2001. Soldiers were allowed to hunt in any non-restricted areas north of Cassino Road. One hundred and fifty permits were available, 124 hunters applied and 59 hunters participated in this year's hunt. Ten deer were taken, for a success rate of 17 percent (Table 22).

Table 22. Deployed soldier's archery deer hunt at Camp Ripley, 2006-2007.

Year	Deer Harvested	Percent Hunter Success	Buck	Does	Fawns	Permits Issued	Number of Applicant	Number of Hunters	Dates	Largest Deer (lbs)
2006	6	15	3	3	0	100	59	39	Oct 4-5	92
2007	**10**	**17**	**1**	**6**	**3**	**150**	**123**	**59**	**Oct 3-4**	**175**

Camp Ripley Youth Archery Deer Hunt

The sixth annual youth archery hunt was held October 6-7, 2007. The weather was reasonably warm (75 degrees on Saturday and Sunday) but windy (7-21 mph). Participants were allowed to hunt in any non-restricted areas north of Cassino Road. The hunt was coordinated by the Minnesota Deer Hunter's Association (MDHA), the Minnesota State Archery Association (MSAA), Camp Ripley (Department of Military Affairs), and the Minnesota Department of Natural Resources. A total of 150 permits were issued with 136 hunters participating in 2007 (Table 23). Youth hunters harvested 19 deer, for a success rate of nearly 14 percent. Each hunter was required to have completed a safety course, and have an adult mentor present while hunting.

Table 23. Youth archery white-tailed deer hunt at Camp Ripley, 2002-2007.

Year	Deer Harvested	Percent Hunter Success	Bucks	Does	Fawns	Permits Issued	Number of Applicant	Number of Hunters	Dates	Largest Deer (lbs)
2002	13	14.9	5	3	5	100	267	87	Oct 12-13	168
2003	10	7.7	4	5	1	150	216	132	Oct 11-12	118
2004	9	7.1	1	7	1	150	217	127	Oct 9-10	126
2005	20	15	8	12	0	152	219	133	Oct 8-9	196
2006	13	9.7	5	6	2	150	259	133	Oct 7-8	127
2007	**19**	**14**	**6**	**5**	**8**	**150**	**234**	**136**	**Oct 6-7**	**141**

AHATS Youth Archery Deer Hunt

Fifty-five hunters participated in the two youth archery deer hunts at Arden Hills. The hunts were held October 18 to 19, and October 20 to 21, 2007. Thirty youth hunters were allowed for each 2-day hunt. During the two, 2-day hunts eight deer were harvested (Table 24).

Table 24. Youth archery white-tailed deer hunt at Arden Hills Army Training Site, 2003-2007.

Year	Deer Harvested	Buck	Does	Fawns	Number of Hunters	Dates
2003	9	6	2	1	57	Oct 16-19
2004	5	2	3	0	56	Oct 21-24
2005	11	5	5	1	56	Oct 20-23
2006	9	4	5	0	52	Oct 19-22
2007	**8**	**3**	**4**	**1**	**55**	**Oct 18-21**

The hunt runs smoothly due to Minnesota Deer Hunters Association and Minnesota State Archery Association volunteers. Volunteers that assisted with the youth hunts were allowed access to hunt deer at AHATS November 23 to 25, 2007. Thirty deer were harvested during the volunteer hunt (Table 25).

Table 25. Volunteer archery white-tailed deer hunt at Arden Hills Training Site, 2003-2007.

Year	Deer Harvested	Buck	Does	Fawns	Number of Hunters	Dates
2003	13	6	6	1	18	Nov 28-30
2004	6	4	2	0	19	Nov 26-28
2005	9	6	2	1	26	Nov 25-27
2006	19	9	6	4	26	Nov 24-26
2007	**30**	**10**	**15**	**5**	**35**	**Nov 23-25**

AHATS Deployed Soldiers Deer Hunt

In 2007, the second annual deployed soldiers archery deer hunt was held on October 3 to 5, October 5 to 7, October 8 to 10, October 29 to 31, and December 7 to 9. Permits were issued to soldiers that have been mobilized to support the Global War on Terrorism since September 11, 2001. Soldiers were allowed to hunt in any non-restricted areas on AHATS. Five, three-day hunts were allowed. All 124 applicants for either the Camp Ripley or the AHATS deployed soldier hunts were allowed to hunt (Table 26).

Table 26. Deployed soldier's archery white-tailed deer hunt at Arden Hills Army Training Site, 2006-2007.

Year	Deer Harvested	Buck	Does	Fawns	Number of Hunters
2006	7	2	5	0	33
2007	**13**	**4**	**5**	**4**	**55**

General Public Archery Deer Hunt

An annual archery deer hunt has been held at Camp Ripley since 1954. This hunt draws nationwide attention. It is one of the largest archery deer hunts in the United States, and provides the opportunity to pursue one of Ripley's notoriously large bucks. Hunters are allowed to apply for one of two, 2-day seasons. This year, the hunts were held on October 18-19, and 27-28. For the fourth year, hunters were permitted to use a bonus tag, allowing them to take a second antlerless deer. In 2007, the number of permitted hunters was 5,014.

A total of 4,294 hunters participated in the 2007 archery hunts (Table 27). There were 476 deer taken during the two hunts. Hunter success was slightly higher than 11 percent which is greater than the long-term average of 8 percent; however, this increased hunter success is likely due to the use of bonus tags. Approximately 68 percent of the harvested animals were does and fawns.

Table 27. General public archery white-tailed deer hunts at Camp Ripley, 1981-2007.

Year	Deer Taken	Buck	%	Does	%	Fawns	%	Permits Issued	# of Hunters	% Success	1st Season	2nd Season	Largest Deer (lbs)
1981	153	48	31	45	29	60	39	2587	1972	7.8	OCT.10-25	3 Weekends	272
1982	200	67	34	86	43	47	23	3000	2274	8.8	OCT. 23-24	OCT. 30-31	236
1983	237	89	38	94	40	54	22	3500	2831	8.4	OCT. 8-9	OCT. 15-16	253
1984	387	162	42	151	39	74	19	4500	3815	10.1	OCT. 6-7	OCT. 27-28	238
1985	278	118	42	113	41	47	17	5000	3996	7.0	OCT. 12-13	OCT. 27-28	257
1986	257	106	41	83	32	68	26	5000	3940	6.5	OCT. 11-12	OCT. 25-26	243
1987	284	122	43	91	32	71	25	5000	4112	6.9	OCT. 10-11	OCT. 24-25	250
1988	241	91	38	101	42	49	20	5000	4090	5.9	OCT. 8-9	OCT. 22-23	262
1989	215	95	44	75	35	45	21	4000	3136	6.9	OCT. 17-18	OCT. 28-29	226
1990	301	137	46	115	38	49	16	3500	2585	11.6	OCT. 27-28	NOV. 17-18	225
1991	219	87	40	90	41	42	19	4000	2217	9.9	OCT. 19-20	NOV. 30-DEC. 1	232
1992	406	228	56	140	35	38	9	4500	3156	12.9	OCT. 31-NOV. 1	NOV. 21-22	224
1993	287	147	51	82	29	58	20	5000	4127	7.0	OCT. 21-21	OCT. 30-31	237
1994	267	136	51	95	36	36	13	4000	3158	8.5	OCT. 20-21	OCT. 29-30	237
1995	247	102	41	100	41	45	18	4500	3564	6.9	OCT. 19-20	OCT. 28-29	256
1996	160	78	49	55	34	27	17	4000	3154	5.1	OCT. 17-18	OCT. 26-27	248
1997	142	67	47	57	40	18	13	3000	2316	6.1	OCT. 16-17	OCT. 25-26	243
1998	189	116	61	50	26	23	12	3000	2291	8.2	OCT. 15-16	OCT.31- NOV. 1	249
1999	203	100	49	83	41	20	10	3000	2335	8.7	OCT. 21-22	OCT. 30-31	251
2000	375	228	61	109	29	38	10	4000	3128	12.0	OCT. 19-20	OCT. 28-29	247
2001	350	192	55	126	36	32	9	4500	3729	9.4	OCT. 18-19	OCT. 27-28	272
2002	324	186	57	102	31	36	11	4500	3772	8.6	OCT. 17-18	OCT. 26-27	235
2003	318	161	51	120	38	37	11	4500	3810	8.3	OCT. 16-17	OCT. 25-26	247
*2004	484	218	45	206	43	60	12	4521	3836	12.4	OCT. 21-22	OCT. 30-31	235
*2005	477	186	39	218	46	73	15	4522	3813	12.5	OCT.20-21	OCT.29-30	245
*2006	514	165	32	241	47	108	21	5009	4351	11.8	OCT. 19-20	OCT. 28-29	244
***2007**	**476**	**150**	**32**	**228**	**48**	**98**	**20**	**5014**	**4294**	**11.1**	**OCT. 18-19**	**OCT. 27-28**	**255**

*Years when bonus tag use allowed.

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Appendix A: Camp Ripley Integrated Natural Resources Management Plan Updated Goals and Objectives.

ADMINISTRATION

Section	Goal	Created	Objectives	Created	Comments	2008-2012 Updates	Created
INRMP	**Ensure adequate funding and resources to implement INRMP**	**1/1/2003**	**Hire staff to provide full time support for ITAM and ecosystem management at Camp Ripley**	**1/1/2003**	**4 DMA staff involved in Conservation and ITAM Programs at Camp Ripley**	**Maintain 4 DMA Staff to support the implementation of the Conservation and ITAM Programs at Camp Ripley**	**3/26/2008**
		1/1/2003	**Formalize a Cooperative Agreements between MNARNG and the MNDNR for the management and protection of Camp Ripley's natural and cultural resources and enforcement of applicable laws and regulations**	**1/1/2003**	**DNR Agreement 13 Feb, 2006** **Gene Merriam** **USFWS Mutual Letter 20 April, 2006 Charlie Wooley**	**Update and Execute Cooperative Agreement between MNARNG and the MNDNR for the management and protection of Camp Ripley's natural and cultural resources and enforcement of applicable laws and regulations**	**3/26/2008**
		1/1/2003	**Conduct an annual meeting of the Cooperative Planning Committee to review the annual work plans and for presenting an annual report of accomplishments from the preceding year**	**1/1/2003**	**Meeting Conducted 20 Feb, 2008**	**Conduct an annual meeting of the Natural Resources Planning Committee for review the annual work plans and for presenting an annual update of INRMP accomplishments from the preceding year**	**3/26/2008**
		1/1/2003	**Conduct long-range natural resources planning at the same time as site development planning for military training**	**1/1/2003**	**INRMP Planning-update meeting, 3-26-08. Captured annual accomplishments and updates for INRMP's**	**Annually integrate long-range natural resources planning with site development planning for the military mission**	**3/26/2008**
		1/1/2003	**To utilize contracts for services in conducting special natural resources projects at Camp Ripley whenever internal resources are not adequate to meet objectives (e.g. MNDNR, TNC, SCSU, etc.**	**1/1/2003**	**Current Contracts:** **MNDNR- Eco-services 1.5 employees** **SCSU-GIS-1**	**Maintain current contracts for services in conducting special natural resources projects at Camp Ripley whenever internal resources are not adequate to meet objectives (e.g. MNDNR, TNC, SCSU)**	**3/26/2008**

ADMINISTRATION							
Section	**Goal**	**Created**	**Objectives**	**Created**	**Comments**	**2008-2012 Updates**	**Created**
					employee **SCSU-TNC 1 land steward, 4 crew members.**		
		1/1/2003	**Maintain administration of the INRMP development, implementation, and updating through the Environmental Office.**	**1/1/2003**		**Maintain administration of the INRMP development, implementation, and updating through the Camp Ripley Environmental Office.**	**3/26/2008**
					New Objective	**Create an annual Conservation-INRMP update report. Update , review and obtain signatures at annual meeting with MNDNR and USFWS**	**3/26/2008**
					New Objective	**In 2008 establish a Land Fund account and a charter - bylaws for implementation**	**3/26/2008**

FORESTRY							
Section	**Goal**	**Created**	**Objectives**	**Created**	**Comments**	**2008-2012 Updates**	**Created**
Forestry	**Maintain Forest Vegetation Inventory for land management planning, for monitoring changes**	**1/1/2003**	**Maintain current imagery and technology to efficiently portray and sample the forest vegetation to quantify and evaluate tree status from on site visits.**	**1/1/2003**	**Last imagery was 2006. LIDAR project conducted 2007-2008.**	**Update aerial imagery in 2011.**	**3/26/2008**

FORESTRY

Section	Goal	Created	Objectives	Created	Comments	2008-2012 Updates	Created
		1/1/2003	Verify, measure, and evaluate changes to the forest landscape through annual alterations or updates	1/1/2003	Little Falls DNR Forestry staff has and does the alteration updates annually	Little Falls DNR Forestry will verify, measure, and evaluate changes to the forest landscape attributed to annual alterations	3/26/2008
		1/1/2003	Re-inventory through field verification additional forest stands so that along with alterations a minimum of 10 percent or 3000 acres of the forested area is updated annually	1/1/2003	To date 15,908 acres have been re-inventoried.	Re-inventory through field verification additional forest stands so that along with alterations a minimum 4500acres of the forested area is updated annually	3/26/2008
Forestry	Provide and maintain a mature forest base with sufficient opportunity for diverse military training exercises that challenge soldiers and leaders to operate in the restrictive terrain of a heavily forested northern landscape	1/1/2003	Reduce the area made unavailable to effective training use by limiting clear-cuts to those areas being salvaged from natural disturbance such as wild fire or storm damage and limit regeneration harvest of over-aged aspen stands to those selected as appropriate for exceptional circumstances	1/1/2003	Site specific	Encourage clear cutting on aspen stands identified through DFC determination to be part of Installation aspen base.	3/26/2008
		1/1/2003	Emphasize the character and quality of the Training Site landscape by 'blending-in' where possible the improvements to the training environment such as bivouac areas, maneuver corridors, and firing points	1/1/2003	Continue to address where needed	Continue to develop mission-scape to characterize the landscape as it supports the military mission of Camp Ripley (Reference ITAM Plan)	3/26/2008
		1/1/2003	Increase the acreage of longer-lived tree species by thinning out the aspen trees through commercial timber sales while retaining canopy density of 60 percent or more to discourage re-sprouting	1/1/2003	Delete Objective	Delete Objective	3/26/2008

FORESTRY

Section	Goal	Created	Objectives	Created	Comments	2008-2012 Updates	Created
		1/1/2003	Increase the number of areas available for bivouac and maneuver by reducing stocking levels conducive to concealment use so as to provide the option of resting heavily used bivouac sites	1/1/2003	Delete Objective	Delete Objective	3/26/2008
		1/1/2003	Apply emerging technology to pre-commercially thin young conifer plantations and aspen regeneration making those areas accessible to training use while developing future concealment area	1/1/2003	Ongoing, Jack pine stand west of Y-2 FOB treated with gyro-track initially.	Apply emerging technology to pre-commercially thin young conifer plantations and aspen regeneration making those areas accessible to training use while developing future concealment area	3/26/2008
		1/1/2003	Create additional maneuver corridors by thinning forest stands along some existing trail-ways providing for wider maneuver corridors without sacrificing concealment opportunity	1/1/2003	Maneuver K1 Project	Create additional maneuver corridors in Maneuver K1 by thinning forest stands along some existing trail-ways providing for wider maneuver corridors without sacrificing concealment opportunity	3/26/2008
		1/1/2003	Reduce forest encroachment in grassland and open areas available for maneuver by prescribed burning or mechanical removal	1/1/2003	Delete Objective Addressed in Grassland objectives		3/26/2008
		1/1/2003	Develop artillery firing-points with sufficient woody buffer or distance from the Training Site perimeter so as to minimize noise issues by maintaining laterally dense conifer buffers	1/1/2003	Delete Objective, Addressed in Grassland objectives		3/26/2008
		1/1/2003	Maintain conifer visual buffers to outside highway traffic on west side of the Training Site; and establish conifer plantings within the Mississippi and Crow Wing River corridors as visual and noise	1/1/2003	Red pine plantations along Hwy # 1 were commercially thinned and white spruce underplanted. White	Maintain conifer visual buffers to outside highway traffic on west side of the Training Site; and establish conifer plantings within the Mississippi and Crow Wing River	3/26/2008

FORESTRY							
Section	**Goal**	**Created**	**Objectives**	**Created**	**Comments**	**2008-2012 Updates**	**Created**
			buffers to the increasing numbers of homeowners developing along the river shores		**Spruce also planted along HWY 1 near Normandy intersection**	**corridors as visual and noise buffers to the increasing numbers of homeowners developing along the river shores**	
		1/1/2003	**Encourage the natural transition of the even-aged forest types to longer-lived species by extending the age of regeneration-harvest consideration to the threshold age when the stand will be evaluated to determine the Desired Future Forest Composition as follows**	**1/1/2003**		**Encourage the natural transition of the even-aged forest types to longer-lived species by extending the age of regeneration-harvest consideration to the threshold age when the stand will be evaluated to determine the DFC Composition as follows**	**3/26/2008**
Forestry	**Balance the forest diversity on the Training Site by maintaining the integrity of the historic representation of forest composition**	**1/1/2003**	**Increase the acreage of the white pine type by stimulating and encouraging the white pine component in those stands where the species is represented as a subsidiary species or part of the understory by utilizing acceptable timber stand improvement techniques**	**1/1/2003**	**Implementation begun in TA#50 with significant removal of aspen overstory from emerging white pine understory.**	**Increase by 50 acres the white pine type by stimulating and encouraging the white pine component in those stands where the species is represented as a subsidiary species or part of the understory by utilizing acceptable timber stand improvement techniques**	**3/26/2008**
		1/1/2003	**Retain the present composition level of the jack pine type as a critical ecosystem component by continued intensive reforestation and protection efforts in those stands where harvest has been necessary as well as cutover areas formerly occupied by the species**	**1/1/2003**	**Attempted regeneration unsuccessful. Projects still ongoing. Present delay due to lack of funding mechanism of reforestation and forest development projects.**	**Retain the present composition level of the jack pine type as a critical ecosystem component by continued intensive reforestation and protection efforts in those stands where harvest has been necessary as well as cutover areas formerly occupied by the species**	**3/26/2008**
		1/1/2003	**Explore innovative reforestation techniques such as seeding or drilling of jack pine to lessen the impact of**	**1/1/2003**	**Ongoing, Two deer exclosures installed but reforestation**	**Explore 2 innovative reforestation techniques in 2009 such as seeding or drilling of jack pine to lessen the**	**3/26/2008**

FORESTRY							
Section	**Goal**	**Created**	**Objectives**	**Created**	**Comments**	**2008-2012 Updates**	**Created**
			herbivory; and under-planting of shade-tolerant hardwoods and conifers to rejuvenate heavily used bivouac sites		**efforts unsuccessful for other reasons.**	**impact of herbivory; and under-planting of shade-tolerant hardwoods and conifers to rejuvenate heavily used bivouac sites**	
		1/1/2003	**Emphasize management techniques that maintain and regenerate oak and northern hardwood types by transitioning some stands out of even-aged regimes**	**1/1/2003**	**Objective implemented with one good site index stand of red oak thinned north of Lake Allot Road.**	**Delete Objective**	**3/26/2008**
		1/1/2003	**Encourage the retention and proliferation of red and white pine inclusions throughout the oak and northern hardwood types**	**1/1/2003**		**Delete Objective**	**3/26/2008**
		1/1/2003	**Identify those sites and promote management systems that address the inevitability of retaining a portion of aspen/birch type acres reflective of the species historic presence in the landscape beyond those stands originating from natural disturbance**	**1/1/2003**		**Delete Objective**	**3/26/2008**
		1/1/2003	**Continue to monitor the presence and condition of butternut trees as part of cooperative research studies promoted by the U.S. Forest Service- North Central Station, MNDNR, and CRC-EN, examining the potential of phenotypic disease resistance in the population to butternut canker**	**1/1/2003**	**Ongoing. Initial assessment made by USFS North Central Research Station. However recent evidence indicates continued decline in mature butternut population.**	**In 2010 monitor the presence and condition of butternut trees as part of cooperative research studies promoted by the U.S. Forest Service-North Central Station, MNDNR, and Camp Ripley, examining the potential of phenotypic disease resistance in the population to butternut canker**	**3/26/2008**

FORESTRY

Section	Goal	Created	Objectives	Created	Comments	2008-2012 Updates	Created
Forestry	**Emphasize and protect ecosystem values identified as intrinsic to forest management on the Camp Ripley Training Site and adjoining landscapes through expertise shared by MNDNR-Ecological Services Division**	**1/1/2003**	**Maintain committed partnership with The Nature Conservancy, sharing as an adjoining landholder, through common planning efforts and cross-linked goal emphasis**	**1/1/2003**		**Maintain committed partnership with The Nature Conservancy, sharing as an adjoining landholder, through common planning efforts and cross-linked goal emphasis**	**3/26/2008**
		1/1/2003	**Continue protection of special habitats for Threatened and Endangered species such as the Bald Eagle, Red-shouldered Hawk, Eastern Blanding's Turtle, and others as appropriate; as well as facilitating studies to ensure their continued success**	**1/1/2003**	**Ongoing. One timber harvest area in TA#56 specifically designed to encourage red-shouldered hawk presence.**	**In 2009 develop a checklist that verifies that all land use restrictions and protections are met when implementing forest management practices.**	**3/26/2008**
		1/1/2003	**Comply with protection to Mississippi River Corridor as recommended in the Mississippi Headwaters Comprehensive Plan and Ordinance and extend the same intent of protection to the Crow Wing River Corridor**	**1/1/2003**	**A checklist will be created to address this**	**Delete objective**	**3/26/2008**
		1/1/2003	**Offer Cultural Resource protection by applying the Camp Ripley Cultural Resource Settlement Model during considerations of forest stand treatments; apply additional protection to cultural features as recommended in the Voluntary Site-level Forest Management Guidelines**	**1/1/2003**	**A checklist will be created to address this**	**Delete objective**	**3/26/2008**
		1/1/2003	**Protect wetland areas by managing filter strips along forest stand edges bordering wetlands and road or trail crossings as**	**1/1/2003**	**A checklist will be created to address**	**Delete objective**	**3/26/2008**

FORESTRY							
Section	**Goal**	**Created**	**Objectives**	**Created**	**Comments**	**2008-2012 Updates**	**Created**
			recommended in the Voluntary Site-level Forest Management Guidelines and the Best Management Practices for Water Quality in Forest Management		**this**		
		1/1/2003	**Apply aesthetic guidelines along primary travel corridors recommended in the Voluntary Site-level Forest Management Guidelines as though the Training Site were open to public view**	**1/1/2003**	**A checklist will be created to address this**	**Delete objective**	**3/26/2008**
		1/1/2003	**Control invasive exotic species within the forest ecosystem for the purpose of improving and sustaining training area lands and eradication of exotic species**	**1/1/2003**	**Ongoing as problems are identified**	**Control invasive exotic species within the forest ecosystem for the purpose of improving and sustaining training area lands and eradication of exotic species**	**3/26/2008**
Forestry	**Clearly communicate the administrative procedures and constraints for commercial timber sales, SDP work projects, and firewood permits as controlled by Camp Ripley, administered by the MNDNR-Forestry Office Little Falls, monitored by the CRC-EN Training Area Coordinator, and set forth through Statutory authority or DOD regulation**	**1/1/2003**	**During the DFC determination, develop thorough understanding of the expectations for the condition and appearance to follow harvest or treatment**	**1/1/2003**	**Ongoing but need to be expanded and communicated clearly especially military input and goal establishment through site development planning.**	**In 2008 create a Stand Exam Evaluation Process which delineates responsibilities, time frames and expectations for the condition and appearance to follow harvest or treatment**	**3/26/2008**
		1/1/2003	**Publish the terms and conditions of timber sales with the prospectus explaining the time limits for removal of product and post harvest treatment requirements**	**1/1/2003**	**Complete, time limits reduced from five years to two years for completion of harvest**	**Delete Objective**	**3/26/2008**

FORESTRY

Section	Goal	Created	Objectives	Created	Comments	2008-2012 Updates	Created
					removals.		
		1/1/2003	Maintain a single POC as the MNDNR forester for all timber sales, firewood permits, or stand treatment contracts. Internal communications should be through the Training Area Coordinator	1/1/2003	Ongoing, especially effective with TAC responsibility.	Maintain a single POC as the MNDNR forester for all timber sales, firewood permits, or stand treatment contracts. Internal communications should be through the Training Area Coordinator	3/26/2008
		1/1/2003	Maintain thorough communications with DPW-Roads and Grounds supervisor for all standards to achieve for forestry treatments or timber access road work being completed by CRC-FMO in compliance with Voluntary Site-level Forest Management Guidelines	1/1/2003	Needs much more concentration.	Maintain thorough communications with DPW-Roads and Grounds supervisor for all standards to achieve for forestry treatments or timber access road work being completed by CRC-FMO in compliance with Voluntary Site-level Forest Management Guidelines	3/26/2008
		1/1/2003	Respond to Site Development Plan proposals as first priority for planning and execution with commercial timber sales given first option of consideration as well as consideration for work projects for MNDOC-Sentence-to-Serve and MNDNR-MCC	1/1/2003	Ongoing and especially effective with application of STS projects.	Respond to Site Development Plan proposals as first priority for planning and execution with commercial timber sales given first option of consideration as well as consideration for work projects for MNDOC-Sentence-to-Serve and MNDNR-MCC	3/26/2008
		1/1/2003	Conduct annual review of Forest Management Plan accomplishments and future proposals with MNDNR-Forestry Office, CRC-EN, and military training staff	1/1/2003	Ongoing but needs re-emphasis.	In 2008 conduct annual review of Forest Management Plan accomplishments and future proposals with MNDNR-Forestry Office, CRC-EN, and military training staff	3/26/2008

FORESTRY

Section	Goal	Created	Objectives	Created	Comments	2008-2012 Updates	Created
			Establish a land fund account in conjunction with MNDNR that captures the proceeds from timber sales on Camp Ripley. The fund will be used to support forest development projects and other natural resources management projects.		Complete Move land fund budget information under admin	Delete Objective	3/26/08
Forestry	Monitor fire danger levels and control wildfires	1/1/2003	Develop a fire management plan to evaluate vegetation for specific fuels management and wildfire prevention needs	1/1/2003		In 2008 develop a fire management plan to evaluate vegetation for specific fuels management and wildland fire suppression needs	3/26/2008
		1/1/2003	Implement fuels management and wildfire prevention practices within 3 years of plantation evaluation.	1/1/2003	Addressed in Wildland Fire Plan	Delete Objective	3/26/2008
		1/1/2003	Minimize the fine fuel loads in areas of live munitions firing and impact areas during periods of high fire danger	1/1/2003	Addressed in Wildland Fire Plan	Delete Objective	3/26/2008
		1/1/2003	Develop a written fire fighting training plan, including appropriate suppression strategies in natural areas, for Range Control and Facilities Engineer personnel	1/1/2003	Addressed in Wildland Fire Plan	Delete Objective	3/26/2008
		1/1/2003	Develop a SOP on pre-suppression and suppression manning for wildfire control	1/1/2003	Addressed in Wildland Fire Plan	Delete Objective	3/26/2008
		1/1/2003	Develop a plan to improve both the safety and suppression equipment available to Camp Ripley fire fighting personnel	1/1/2003	Addressed in Wildland Fire Plan	Delete Objective	3/26/2008

FORESTRY

Section	Goal	Created	Objectives	Created	Comments	2008-2012 Updates	Created
Forestry	To manage the North Central Hills Area (G), the North Hills Subunit of the Northwest Maneuver Area (K2), and the Mud Lake Wetlands Area (J) as natural areas (Training Areas 56, 65, 73, 74, 75, 76, 78).	1/1/2003	Develop a fire management plan to evaluate vegetation for specific fuels management and wildfire prevention needs	1/1/2003	Addressed in Wildland Fire Plan	Delete goal and objective	3/26/2008

GRASSLANDS

Section	Goal	Created	Objectives	Created	Comments	2008-2012 Updates	Created
Grasslands	Restore and manage the grassland communities for the purposes of military training, protection of species, native prairie restoration, and soil stabilization	1/1/2003	Establish a schedule for an assessment of the grassland compartments	1/1/2003	Continue	In 2008and 2009 implement RTLA assessments 2 and 8 to evaluate all grasslands larger than 5 acres.	3/26/2008
		1/1/2003	Evaluate and prioritize the grassland compartments for the maintenance or promotion of native species	1/1/2003	Continue	In 2009 evaluate and prioritize the grassland compartments for management needs based on previous years assessments	3/26/2008
		1/1/2003	Control invasive exotic species within the grassland ecosystem for the purpose of improving and sustaining training area lands and	1/1/2003	Continue	2010-2011 based on the RTLA assessments, define and initiate practices to maintain the grassland compartments to meet training capability needs, native prairie restoration and to control invasive -	3/26/2008

GRASSLANDS							
Section	**Goal**	**Created**	**Objectives**	**Created**	**Comments**	**2008-2012 Updates**	**Created**
			eradication of exotic species			**exotic species within the grassland ecosystem for the purpose of improving and sustaining training area lands.**	
		1/1/2003	**Define and initiate practices to maintain the grassland compartments**	**1/1/2003**	**Delete, addressed above in objective 3**	**Delete objective**	**3/26/2008**
		1/1/2003	**Implement management practices in accordance with Camp Ripley Native Grass Plan, which identifies the burn, harvest and seeding rotation schedule for grasslands on Camp Ripley**	**1/1/2003**	**Delete, addressed above in objective 3**	**Delete objective**	**3/26/2008**
		1/1/2003	**Use RTLA protocols, visual monitoring, photo point monitoring, and SRP surveys to monitor animals, vegetation, and erosion status of the grassland ecosystem**	**1/1/2003**	**Delete**	**Delete objective**	**3/26/2008**
		1/1/2003	**Update Native grass management plan, dated 1997**	**1/1/2003**	**No longer need a separate plan.** **RTLA Protocol will provide management direction**	**Delete objective**	**3/26/2008**

WETLANDS

Section	Goal	Created	Objectives	Created	Comments	2008-2012 Updates	Created
Wetlands	**Protect, restore, and manage wetland communities on Camp Ripley for the protection of wetland-dependent species and intrinsic value in accordance with federal, state, and local laws and regulations**	**1/1/2003**	**Obtain all necessary permits required by the "Federal" Clean Water Act (CWA) and "State" Wetland Conservation Act (WCA) before project implementation**	**1/1/2003**	**Three wetland permits were obtained during 2003-2007. In 2003 permit number 2003-3212 was obtained to stabilize a 150 x 80 ft section of the Mississippi shoreline near a storm water outlet. In 2004 permit number 2004-3228 was obtained to install a 32' long by 12' wide cable concrete boat ramp on Lake Alott. In 2004 permit number 2004-3229 was obtained to install a 32' long by 12' wide cable concrete boat ramp on Round Lake. Authority to repair damage to the cable, concrete landing / bridge crossing on the Mississippi River was obtained from the MNDNR on 22 August, 2007. The maintenance work will fall within the original dimensions of Permit Number 1993-3039.**	**Obtain all necessary permits required by the "Federal" Clean Water Act (CWA) and "State" Wetland Conservation Act (WCA) before project implementation**	**3/26/2008**
		1/1/2003	**Control invasive species within the wetland ecosystem for the purpose of improving and sustaining training area lands and eradication of exotic species**	**1/1/2003**	**Evaluating and identifying if problems exist**	**In 2009 complete SCSU Study and implement control measures identified in findings for the protection of the wetland ecosystem for the purpose of improving and sustaining training area lands and eradication of exotic species**	**3/26/2008**
		1/1/2003	**Develop a written procedure for compliance with state, federal, and local laws**	**1/1/2003**	**Addressed in Objective 1**	**Delete Objective**	**3/26/2008**

WETLANDS							
Section	**Goal**	**Created**	**Objectives**	**Created**	**Comments**	**2008-2012 Updates**	**Created**
			and regulations				
		1/1/2003	**Identify and protect sensitive flora and fauna wetland species and their habitats**	**1/1/2003**		**Delete Objective**	**3/26/2008**
New Goal	**Explore wild rice enhancement**	**3/26/2008**	**In 2008 identify 3areas for wild rice enhancement**	**3/26/2008**			

IMPROVED GROUNDS							
Section	**Goal**	**Created**	**Objectives**	**Created**	**Comments**	**2008-2012 Updates**	**Created**
Improved Grounds	**Protect and develop improved grounds for functional and aesthetic qualities in the Cantonment area of Camp Ripley.**	**1/1/2003**	**Develop a landscape management plan to include maps, assessments and guidelines for maintenance, improvements and tree location**	**1/1/2003**	**Initial plan developed but implantation in need of funding mechanism. Improvements need to be made in diseased tree removal. Plan needs to be followed.**	**In 2009 develop a landscape management plan to include maps, assessments and guidelines for maintenance, improvements and tree location**	**3/26/2008**
		1/1/2003	**Conduct an annual inspection on all boulevards, sidewalks, and facilities for dead, dying or high-risk trees and have them removed**	**1/1/2003**	**Ongoing but removal needs to be addressed**	**In 2010 conduct an annual inspection on all boulevards, sidewalks, and facilities for dead, dying or high-risk trees and have them removed**	**3/26/2008**

IMPROVED GROUNDS

Section	Goal	Created	Objectives	Created	Comments	2008-2012 Updates	Created
		1/1/2003	Develop and maintain a tree nursery to supply landscaping needs as it relates to the landscape plan	1/1/2003	Initially established but needs invigorating. Recent plantings have failed due to droughty conditions. Needs irrigation, needs funding mechanism .	Maintain a tree nursery to supply landscaping needs as it relates to the landscape plan	3/26/2008
		1/1/2003	Monitor and control exotic and invasive species	1/1/2003	SCSU study, add there management guidelines and explain the program	In 2009 complete SCSU Study and implement control measures identified in findings for the protection of the improved grounds in the cantonment area.	3/26/2008
		1/1/2003	Annual update to the cantonment tree management plan	1/1/2003		In 2010 start an annual update of the landscape management plan	3/26/2008

LAND USE

Section	Goal	Created	Objectives	Created	Comments	2008-2012 Updates	Created
Land Use	Identify and develop land use opportunities for the public	1/1/2003	To conduct two, two-day, general public bow hunts for White-tailed deer in cooperation with MNDNR Wildlife	1/1/2003	Ongoing since 1954	In 2008 conduct two, two-day, general public bow hunts for White-tailed deer in cooperation with MNDNR Wildlife	3/26/2008
		1/1/2003	To conduct an annual youth archery deer hunt in	1/1/2003	On going 7th year in	In 2008 conduct the two- day youth archery deer hunt in cooperation	3/26/2008

LAND USE

Section	Goal	Created	Objectives	Created	Comments	2008-2012 Updates	Created
			cooperation with MNDNR Wildlife		2008	with MNDNR Wildlife	
		1/1/2003	To conduct one, two-day, Disabled American Veterans hunt for deer	1/1/2003	Ongoing 17th year in 2008	In 2008 conduct the, two-day, Disabled American Veterans deer hunt	3/26/2008
		1/1/2003	To conduct other non-motorized public recreation events such as skiing, nature hikes, touring, dog-trailing or horseback trail riding as opportunities arise	1/1/2003	Ongoing, skiing, talk	To conduct other non-motorized public recreation events such as skiing, nature hikes, touring, dog-trailing or horseback trail riding as opportunities arise	3/26/2008
		1/1/2003	To maintain the following six recreation areas for picnicking, fishing or both: Area #1 De Parcq Woods Picnic Area, Area #2 Mississippi River Picnic Area, Area #3 Mississippi River Picnic Area, Area #4 Lake Alott Fishing Access, Area #5 Sylvan Dam Picnic Area, Area #6 Round Lake Picnic Area	1/1/2003		Maintain the following six recreation areas for picnicking, fishing or both: Area #1 De Parcq Woods Picnic Area, Area #2 Mississippi River Picnic Area, Area #3 Mississippi River Picnic Area, Area #4 Lake Alott Fishing Access, Area #5 Sylvan Dam Picnic Area, Area #6 Round Lake Picnic Area	3/26/2008
		1/1/2003	To maintain approximately 21.5 miles of cross-country ski trails	1/1/2003		To maintain approximately 21.5 miles of cross-country ski trails	3/26/2008
		1/1/2003	To conduct a Biathlon Race biennially	1/1/2003		To conduct a Biathlon Race biennially	3/26/2008
		1/1/2003	Investigate likelihood of sport	1/1/2003	Turkey hunt started in	Delete objective	3/26/2008

LAND USE							
Section	**Goal**	**Created**	**Objectives**	**Created**	**Comments**	**2008-2012 Updates**	**Created**
			hunting wild turkeys		**2005**		
			Establish DAV Turkey hunting opportunities	**1/1/2005**	**Ongoing 4th year in 2008**	**In 2008 conduct the, two-day, Disabled American Veterans turkey hunt**	**3/26/2008**
			Establish Deployed soldier hunting opportunities	**1/1/2006**	**Ongoing 3rd year in 2008**	**In 2008 conduct the, two-day, Deployed soldier deer hunt**	**3/28/2008**
					New Objective	**In 2008 negotiate with MN Power regarding the use the management of the MN Power land located on the northern edge of Camp Ripley just south of the Crow-Wing River**	**3/28/2008**
					New Objective	**In 2008 and 2009 develop a new Access in Fosdick Lake to allow for better access to the lake.**	**3/28/2008**
Land Use	**Monitor the impact of development both on and off the installation**	**1/1/2003**	**Work with the communities and landowners to develop an Army Compatible Use Buffer (ACUB) for Camp Ripley**	**1/1/2003**	**ACUB approved in May 2004 fully implemented since 2004, created separate goals and objectives for program 175 Interested landowners since ACUB approval.**	**Change Goal to:** **Minimize land use conflicts on and off the installation** **Change Objective to: Annually enroll 5-10 land owners annually in the ACUB Program.**	**3/26/2008**
			Partner with MNDNR and MNBWSR to implement	**1/1/2005**	**Cooperative Agreements have been executed between NGB**	**Continue to partner with MNDNR and MNBWSR to implement**	**3/26/08**

LAND USE							
Section	**Goal**	**Created**	**Objectives**	**Created**	**Comments**	**2008-2012 Updates**	**Created**
			ACUB.		**and MNDNR and BWSR**	**ACUB.**	
			Secure funding to implement ACUB and subsequently enroll land in the program.	**1/1/2005**	**Received $7.156 million to date (2004-2007) and leveraged $42 million. 21,500 acres enrolled consistent with ACUB. Completed 25 land deals to date.**	**Continue to secure funding to implement ACUB and subsequently enroll land in the program.**	**3/26/08**
		1/1/2003	**Continue to work with The Nature Conservancy on land transfer regarding the Crow Wing River property owned by MN Power**	**1/1/2003**		**In 2009 to work with The Nature Conservancy on a land transfer regarding the Crow Wing River property owned by MN Power**	**3/26/2008**
		1/1/2003	**Develop partnerships to protect natural resources around Camp Ripley**	**1/1/2003**		**Continue to develop partnerships to protect natural resources around Camp Ripley**	**3/26/2008**

WILDLIFE-MAMMALS							
Section	**Goal**	**Created**	**Objectives**	**Created**	**Comments**	**2008-2012 Updates**	**Created**
Wildlife	**Maintain white-tailed deer population levels consistent with biological diversity, carrying capacity, and military training needs**	**1/1/2003**	**In cooperation with the MNDNR develop a system of monitoring white-tailed deer population levels**	**1/1/2003**	**On-going. Currently conducting annual helicopter surveys.**	**In 2009 implement 3rd year of helicopter survey.**	**3/26/2008**

WILDLIFE-MAMMALS

Section	Goal	Created	Objectives	Created	Comments	2008-2012 Updates	Created
		1/1/2003	Use information from past research, together with deer harvest data and surveys, to provide a basis for determining population goals and management objectives	1/1/2003	Addressed in new objective below.	Delete objective	3/26/2008
		1/1/2003	In coordination with the MNDNR, review deer data and establish a harvest goal	1/1/2003		In 2009 and after aerial survey results, and harvest data information coordinate with the MNDNR, to review deer data and establish a harvest goal	3/26/2008
		1/1/2003	Provide public hunting opportunities as appropriate	1/1/2003	Addressed in Land Use	Delete objective	3/26/2008
		1/1/2003	Develop and accomplish hunts according to procedures consistent with MNARNG policy	1/1/2003	Addressed in Land Use	Delete objective	3/26/2008
		1/1/2003	Monitor for Chronic Wasting Disease	1/1/2003	Collected samples in 2002 & 2003 Not needed unless required by state.	Delete objective	3/26/2008
Wildlife	Manage the Camp Ripley black bear population at a level that is within acceptable levels of nuisance activity	1/1/2003	Continue to monitor the reproductive success, movements, and mortality of bears on Camp Ripley	1/1/2003	Continue to monitor the reproductive success, movements, and mortality of bears on Camp Ripley	Change goal to: Continue to monitor the reproductive success, movements, and mortality of bears on Camp Ripley	3/26/2008

WILDLIFE-MAMMALS

Section	Goal	Created	Objectives	Created	Comments	2008-2012 Updates	Created
						Change objective to: In 2008 monitor the 10 bears that are currently collared	
		1/1/2003	Continue to monitor nuisance bear activity in accordance with the Range Regulations	1/1/2003	Continue to record nuisance activity.	Continue to monitor nuisance bear activity in accordance with the Range Regulations	3/26/2008
	New Objective					In 2008 participate in statewide mark and recapture study using tetracycline baits	
Wildlife	Monitor populations of furbearers for comparison with state and regional data	1/1/2003	Conduct MNDNR scent-post surveys on Camp Ripley annually.	1/1/2003	Annual – DNR started on Camp in 1985. Conducted by Camp Ripley staff since 2002	In 2008 conduct MNDNR scent-post surveys on Camp Ripley.	3/26/2008
		1/1/2003	Use additional techniques to determine the presence of rare or unusual species (e.g. pine marten, fisher).	1/1/2003	Prairie vole survey, scent post survey (cats), fisher study started in 2007	From 2008-2010 participate in state wide fisher study	3/26/2008
Wildlife	Manage feral animals at Camp Ripley	1/1/2003	Develop and implement a written Standard Operating Procedure (SOP) for reporting and handling of feral animals at Camp Ripley	1/1/2003	Rename 'Nuisance Animal Control' – rewrite document for range regulations	In 2008 update range regulation to address nuisance animal control	3/26/2008
Wildlife	Manage beaver populations at Camp Ripley	1/1/2003	Install Clemson levelers in problem areas to prevent the washout of dikes and roads	1/1/2003	Continue to use non-lethal control methods as practical. Install additional levelers and	In 2008 Install 3 Clemson levelers and 1 deceiver in problem areas to prevent the washout of dikes and	3/26/2008

WILDLIFE-MAMMALS							
Section	**Goal**	**Created**	**Objectives**	**Created**	**Comments**	**2008-2012 Updates**	**Created**
					deceivers as needed, review existing levelers and deceivers for needed maintenance	roads	
		1/1/2003	Remove nuisance beaver	1/1/2003	Annual by permit using Camp Ripley trappers on targeted problem areas	In 2008 continue to remove nuisance beaver as needed	3/26/2008
		1/1/2003	Develop beaver management guidelines	1/1/2003	Guidelines are stated on permit	In 2009 develop nuisance beaver management guidelines.	3/26/2008
Wildlife				3/26/2008	Annual by permit using Camp Ripley personnel on targeted problem areas	New Goal: Manage porcupine populations at Camp Ripley Objective: In 2008 obtain a permit to target problems areas for porcupines and harvest nuisance porcupines	3/26/2008

WILDLIFE-BIRDS							
Section	**Goal**	**Created**	**Objectives**	**Created**	**Comments**	**2008-2012 Updates**	**Created**
Wildlife	Monitor bird populations on Camp Ripley	1/1/2003	Continue a monitoring program for songbirds on RTLA plots during the spring/summer of 2002 and continue to	1/1/2003	Annual songbird surveys conducted on 90	In 2008 conduct point-count surveys on 90 plots	3/26/2008

WILDLIFE-BIRDS							
Section	**Goal**	**Created**	**Objectives**	**Created**	**Comments**	**2008-2012 Updates**	**Created**
			monitor every year		**plots**		
		1/1/2003	**Survey additional plots in unique habitats as needed**	**1/1/2003**	**On-going**	**Delete Objective**	**3/26/2008**
		1/1/2003	**Continue to update species lists of resident birds found on Camp Ripley each year**	**1/1/2003**	**Species list is updated annually**	**Continue to update species lists of resident birds found on Camp Ripley each year**	**3/26/2008**
		1/1/2003	**Monitor turkey and grouse populations on Camp Ripley**	**1/1/2003**	**Turkey gobbling counts on ruffed grouse routes, mail survey of archery deer hunters in 2005 & 2006. Annual ruffed grouse surveys.**	**In 2008 Monitor turkey and grouse populations on Camp Ripley**	**3/26/2008**
		1/1/2003	**Monitor Blue Heron Rookery**	**1/1/2003**	**Surveyed for use each year, no formal survey**	**In 2008 monitor Blue Heron Rookery**	**3/26/2008**
		1/1/2003	**Provide public hunting as appropriate**	**1/1/2003**	**Delete objective, move to land use**	**Delete Objective**	**3/26/2008**
Wildlife	**Continue to make bluebird-nesting boxes available for cavity nesting songbird species at the Camp Ripley Cemetery**	**1/1/2003**	**Determine the appropriate number of bluebird nesting boxes to be maintained**	**1/1/2003**	**28 nest boxes are maintained.** **Currently NPLD proposal in for more nest boxes**	**In 2008 determine the appropriate number of bluebird nesting boxes to be maintained**	**3/26/2008**
		1/1/2003	**Annually repair, replace, or add nesting boxes as necessary to maintain optimum**	**1/1/2003**	**Houses are maintained,**	**Annually maintain and repair the 28 bluebird**	**3/26/2008**

WILDLIFE-BIRDS

Section	Goal	Created	Objectives	Created	Comments	2008-2012 Updates	Created
			number of available boxes		repaired and monitored annually	nesting boxes	
		1/1/2003	Continue to enlist the help of volunteers for annual maintenance and monitoring of nesting boxes	1/1/2003	Annual maintenance by volunteers	Continue to enlist the help of volunteers for annual maintenance and monitoring of nesting boxes	3/26/2008
Wildlife	Monitor raptor populations on Camp Ripley	1/1/2003	Conduct a survey for owls in 2004 and continue to monitor every five years	1/1/2003	Annual surveys started in 2003	In 2008 conduct a survey for owls	3/26/2008
		1/1/2003	Continue to monitor nesting success of ospreys using the Sylvan Lake nesting platform	1/1/2003	Annual monitoring	In 2008 monitor nesting success of ospreys on Camp Ripley	3/26/2008
Wildlife	Maintain species diversity, distribution of waterfowl populations within Camp Ripley	1/1/2003	Conduct maintenance checks and production surveys of all known duck nesting boxes. Repair and replace nesting boxes as needed	1/1/2003	8 Nesting boxes were added to Ferrell Lake, known nesting boxes are maintained annually	In 2009 conduct maintenance checks and production surveys of all known duck nesting boxes. Repair and replace nesting boxes as needed	3/26/2008
		1/1/2003	Improve duck nesting success by relocating unused nesting boxes	1/1/2003	8 Nesting boxes were added to Ferrell Lake	In 2009 improve duck nesting success by relocating unused nesting boxes	3/26/2008
		1/1/2003	Develop a monitoring program for waterfowl and shorebirds	1/1/2003	Reviewed and dismissed ,Delete objective	Delete Objective	3/26/2008
		1/1/2003	Create and implement management plans	1/1/2003		Delete Objective	3/26/2008

WILDLIFE-BIRDS

Section	Goal	Created	Objectives	Created	Comments	2008-2012 Updates	Created
			when needed.				
Wildlife	To protect waterfowl from potential injury due to ingestion of white phosphorus munitions compounds in the impact areas.	1/1/2003	Maintain the ban on the firing of white phosphorus munitions into wetland located in the Leach and Hendrickson impact areas indefinitely	1/1/2003	Maintain the ban on the firing of white phosphorus munitions into wetland located in the Leach and Hendrickson impact areas indefinitely	Maintain the ban on the firing of white phosphorus munitions into wetland located in the Leach and Hendrickson impact areas indefinitely	3/26/2008
		1/1/2003	Improve the ability of forward artillery observers to distinguish wetlands in the impact areas by providing aerial photos with wetland delineations and grid coordinates at the observation points	1/1/2003		Improve the ability of forward artillery observers to distinguish wetlands in the impact areas by providing aerial photos with wetland delineations and grid coordinates at the observation points	3/26/2008
Wildlife	Control nuisance bird problems	1/1/2003	Install bird deterrent devices on buildings at Camp Ripley	1/1/2003	Installed for swallow control in 2002 – no new requests Install bird deterrent devices on buildings at Camp Ripley as needed	Install bird deterrent devices on buildings at Camp Ripley were needed	3/26/2008

REPTILES AND AMPHIBIANS-INVERTEBRATES-FISHERIES

Section	Goal	Created	Objectives	Created	Comments	2008-2012 Updates	Created
Reptiles &Amphibians	**Continue to monitor the presence and abundance of reptiles and amphibians**	**1/1/2003**	**Continue a monitoring program for reptiles and amphibians at five locations during the summer of 2006 and continue to monitor every five years**	**1/1/2003**	**Drift fence survey conducted in 2004.**	**In 2008 Review effectiveness of drift-fence surveys. Investigate alternative methods for 2009.**	**3/26/2008**
		1/1/2003	**Continue to conduct annual anuran call surveys**	**1/1/2003**	**Annual survey**	**In 2008 conduct annual anuran call surveys**	**3/26/2008**
Invertebrates	**Continue to monitor the presence and abundance of terrestrial and aquatic invertebrates**	**1/1/2003**	**Continue to survey for rare invertebrate species**	**1/1/2003**	**Conducted as needed**	**Delete Objective**	**3/26/2008**
		1/1/2003	**Surveys were conducted in 1997 for butterflies – establish schedule for continuing these surveys**	**1/1/2003**	**Conducted as needed**	**Delete Objective**	**3/26/2008**
		1/1/2003	**Surveys were conducted in 1997 and 1998 for tiger beetles and jumping spiders – establish schedule for continuing these surveys**	**1/1/2003**	**Resurveyed known sites in 2003 & 2006.**	**Delete Objective**	**3/26/2008**
		1/1/2003	**A two-year survey for dragonflies was completed in 1999 – establish schedule for continuing these surveys**	**1/1/2003**	**Conducted as needed**	**Delete Objective**	**3/26/2008**
		1/1/2003	**Determine need for additional invertebrate surveys and establish schedule**	**1/1/2003**	**Conducted as needed**	**In 2009determine need for additional invertebrate surveys and establish schedule**	**3/26/2008**
Fisheries	**Protect, establish, manage and enhance the fisheries program at Camp Ripley**	**1/1/2003**	**Conduct lake surveys and write individual lake management plans for all lake basins that contain fish**	**1/1/2003**	**Surveys are conducted every other year.**	**In 2009 Write management plans for each Lake**	**3/26/2008**

REPTILES AND AMPHIBIANS-INVERTEBRATES-FISHERIES

Section	Goal	Created	Objectives	Created	Comments	2008-2012 Updates	Created
					Need plans		
		1/1/2003	Establish a water quality monitoring program for all lake basins that contain fish	1/1/2003	Currently no water quality monitoring on these lakes	Delete objective	3/26/2008
		1/1/2003	Continue population enhancement through fish stocking as deemed by lake management plans	1/1/2003	Continue to stock based on what is available in lakes in spring of each year.	Annually, continue population enhancement through fish stocking as deemed by lake management plans	3/26/2008
		1/1/2003	Continue Creel Census program through Range Control for all fishable areas on and adjacent to Camp Ripley	1/1/2003	Creel census program is established.	Continue Creel Census program through Range Control for all fishable areas on and adjacent to Camp Ripley	3/26/2008
		1/1/2003	Survey new lake basins for their ability to support a fishery	1/1/2003		Delete objective	3/26/2008
		1/1/2003	Continue to allow fishing opportunities as training permits	1/1/2003		Continue to allow fishing opportunities as training permits	3/26/2008
		1/1/2003	Conduct relevant studies as deemed necessary to support the fisheries program	1/1/2003		Delete objective	3/26/2008
Fisheries	Continue to allow a rearing program by DNR fisheries in Camp Ripley	1/1/2003	Establish schedules for fish rearing activities on lake and pond use at Camp Ripley	1/1/2003		Establish schedules for fish rearing activities on lake and pond use at Camp Ripley	3/26/2008

THREATENED AND ENDANGERED SPECIES

Section	Goal	Created	Objectives	Created	Comments	2008-2012 Updates	Created
T & E Species	Manage and protect species that are listed as threatened or endangered by the federal government or species listed by the State of Minnesota	1/1/2003	Continue to monitor resident and transient threatened and endangered species that may be present at Camp Ripley	1/1/2003	Continue to monitor resident and transient threatened and endangered species that may be present at Camp Ripley	In 2008continue to monitor resident and transient threatened and endangered species that may be present at Camp Ripley	3/26/2008
		1/1/2003	Continue to monitor gray wolf populations and movements and integrate monitoring with the Minnesota Gray Wolf Management Plan	1/1/2003	Continue to monitor gray wolf populations and movements and integrate monitoring with the Minnesota Gray Wolf Management Plan and USFWS Post-delisting Monitoring Plan	In 2008 monitor gray wolf populations and movements and integrate monitoring with the Minnesota Gray Wolf Management Plan	3/26/2008
		1/1/2003	Continue a monitoring program specifically for Blanding's Turtles	1/1/2003	Continue a monitoring program specifically for Blanding's Turtles	In 2008 continue a monitoring program for Blanding's Turtles	3/26/2008
		1/1/2003	Continue to monitor bald eagle nests and provide protection to nests in accordance with the ARNG Training Site Policy on	1/1/2003	Continue to monitor bald eagle nests and	In 2008 continue to monitor bald eagle nests and provide protection to nests in	3/26/2008

THREATENED AND ENDANGERED SPECIES

Section	Goal	Created	Objectives	Created	Comments	2008-2012 Updates	Created
			Bald Eagle Management		**provide protection to nests in accordance with the ARNG Training Site Policy on Bald Eagle Management.**	**accordance with the ARNG Training Site Policy on Bald Eagle Management**	
		1/1/2003	**Determine factors limiting the abundance of targeted species**	**1/1/2003**		**Delete objective**	**3/26/2008**
		1/1/2003	**Educate users about the presence and importance of protected species**	**1/1/2003**	**On-going**	**Educate users about the presence and importance of protected species**	**3/26/2008**
			New Objective	**3/26/2008**		**In 2008 and 2009 determine the presence/absence of the Canada Lynx**	**3/26/2008**
T & E Species	**Protect populations and habitats of special concern and other rare nongame wildlife species and prevent their decline to threatened or endangered status**	**1/1/2003**	**Update the Protected Species Management Plan (Merrill 2000) for Camp Ripley**	**1/1/2003**		**In 2008 update the Protected Species Management Plan for Camp Ripley**	**3/26/2008**
		1/1/2003	**Expand bird surveys to include wetland species and late winter/early spring nesters, including waterfowl**	**1/1/2003**	**Addressed**	**Delete objective**	**3/26/2008**
		1/1/2003	**Continue to monitor red-shouldered hawks to provide additional data on population, nest locations, and provide management**	**1/1/2003**	**On-going. Graduate research project completed 2005**	**In 2008 continue to monitor red-shouldered hawks to provide additional data on population, nest locations,**	**3/26/2008**

THREATENED AND ENDANGERED SPECIES

Section	Goal	Created	Objectives	Created	Comments	2008-2012 Updates	Created
			recommendations		and management plan developed	and provide management recommendations	
		1/1/2003	Continue to analyze RTLA bird survey data, including population and species diversity trends, habitat comparisons and correlations with types and intensities of use, and management guidelines	1/1/2003	Included in Animal Survey Annual Report	In 2009 continue to analyze RTLA bird survey data, including population and species diversity trends, habitat comparisons and correlations with types and intensities of use, and management guidelines	3/26/2008
		1/1/2003	Continue to monitor rare songbird species (e.g. hooded and cerulean warblers)	1/1/2003	Addressed in new objective	Delete objective	3/26/2008
		1/1/2003	Continue to monitor mussel species on the Mississippi and Crow Wing Rivers	1/1/2003	Addressed in new objective	Delete objective	3/26/2008
		1/1/2003	Continue to monitor rare or unusual bird species (e.g. yellow rail, trumpeter swan)	1/1/2003	Addressed in new objective	Delete objective	3/26/2008
		1/1/2003	Expand prairie vole surveys to include potential habitat areas not yet surveyed	1/1/2003	Addressed in new objective	Delete objective	3/26/2008
		1/1/2003	Develop a written Standard Operations Procedure for handling of injured or ill wildlife discovered at Camp Ripley	1/1/2003	Is part of Range Regulations?	Delete objective	3/26/2008
			New objective	3/26/2008		In 2009 Identify SGCN species and potential management actions	3/26/2008

RTLA							
Section	**Goal**	**Created**	**Objectives**	**Created**	**Comments**	**2008-2012 Updates**	**Created**
RTLA-Floral	**Monitor floral resources on Camp Ripley**	**1/1/2003**	**Continue a floral inventory and monitoring program at Camp Ripley**	**1/1/2003**		**Delete objective**	**3/26/2008**
		1/1/2003	**Continue a monitoring program for RTLA plots on all plots every third year**	**1/1/2003**	**Dismissed, new RTLA assessments**	**Delete objective**	**3/26/2008**
		1/1/2003	**Establish new core plots as deemed necessary by land managers at Camp Ripley**	**1/1/2003**	**Dismissed, new RTLA assessments**	**Delete objective**	**3/26/2008**
		1/1/2003	**Establish special use plots as deemed necessary by land managers at Camp Ripley**	**1/1/2003**	**Dismissed, new RTLA assessments**	**Delete objective**	**3/26/2008**
		1/1/2003	**To update the floristic inventory and herbarium collection of all known plants in Camp Ripley**	**1/1/2003**	**Dismissed, new RTLA assessments**	**Delete objective**	**3/26/2008**
	New Goal					**Provide military trainers and land managers with the necessary technical and analytical information to integrate doctrinally based training**	
			New objective			**In 2008 implement RTLA Assessments #1,2 and 5**	
			New objective			**In 2009 Implement RTLA assessments # 1,**	

RTLA							
Section	**Goal**	**Created**	**Objectives**	**Created**	**Comments**	**2008-2012 Updates**	**Created**
						2, 3, 4, 6	
RTLA-Fauna	**Monitor fauna (Birds, Mammals, and Reptiles and Amphibians) resources on Camp Ripley**	**1/1/2003**	**Continue a monitoring program for small mammals on core plots during the summer of 2006 and continue to monitor every fifth year**	**1/1/2003**	**Completed in 2006**	**In 2011 continue a monitoring program for small mammals on core plots during the summer**	**3/26/2008**
		1/1/2003	**Continue a monitoring program for birds on 30 core plots/year with a complete count of all 90 plots every forth year**	**1/1/2003**	**Annual survey on 90 plots Covered under 'Birds'**	**Delete Objective**	**3/26/2008**
		1/1/2003	**Continue to monitor reptiles and amphibians using call surveys (annual) on established routes. Conduct drift fence surveys on core plots during the summer of 2006 and continue to monitor every fifth year**	**1/1/2003**	**Annual anuran survey. Drift fence survey conducted in 2004. Addressed under wildlife**	**Delete objective**	**3/26/2008**
		1/1/2003	**Establish new core plots as deemed necessary by land managers at Camp Ripley**	**1/1/2003**		**Delete objective**	**3/26/2008**
		1/1/2003	**Establish special use plots as deemed necessary by land managers at Camp Ripley**	**1/1/2003**		**Delete objective**	**3/26/2008**
RTLA	**Provide information to land managers about the status of natural and cultural resources on Camp Ripley**	**1/1/2003**	**From the baseline data, monitor the flora and fauna resources, and analyze data for trends and impacts to natural and cultural resources. Include identification of possible sources of changes and trends**	**1/1/2003**		**In 2008 analyze RTLA assessments data to determine land capability and condition, to include recommendations for management**	**3/26/2008**

RTLA							
Section	**Goal**	**Created**	**Objectives**	**Created**	**Comments**	**2008-2012 Updates**	**Created**
		1/1/2003	**Provide an annual report that describes exactly what was done on the sample sites, provides a brief status of the program, and include any additional information that could highlight impacts on training and resource management**	**1/1/2003**	**Continue**	**In 2009 create an ITAM annual report which documents the accomplishments for that preceding year.**	**3/26/2008**
		1/1/2003	**Provide standard data items that support training land management and land use decisions**	**1/1/2003**	**New RTLA assessments**	**Delete objective**	**3/26/2008**
		1/1/2003	**Provide data input to the Camp Ripley site development plan utilizing documents such as the INRMP, Integrated Pest Management Plan, Integrated Cultural Resources Management Plan and the Range Facility Management Support System**	**1/1/2003**	**Continue**	**In 2008 provide information to the Camp Ripley SDP, INRMP, IPMP, ICRMP, and Range Regulations**	**3/26/2008**

GIS							
Section	**Goal**	**Created**	**Objectives**	**Created**	**Comments**	**2008-2012 Updates**	**Created**
GIS	**Achieve and maintain compliance with all mandated GIS requirements**	**1/1/2003**	**Complete FGDC standard metadata for all published data**	**1/1/2003**	**Completed/ On-going**	**Complete metadata for all new and updated layers prior to loading into GDB.**	**3/26/2008**
		1/1/2003	**Become fully compliant with the CADD/GIS Technology Center's Spatial**	**1/1/2003**	**Completed/ On-going**	**Maintain compliance with SDSFIE.**	**3/26/2008**

GIS							
Section	**Goal**	**Created**	**Objectives**	**Created**	**Comments**	**2008-2012 Updates**	**Created**
			Data Standards				
		1/1/2003	**Convert spatial data to geodatabase and SDE feature formats**	**1/1/2003**	**Completed**	**Delete Objective.**	**3/26/2008**
		1/1/2003	**Develop and implement process to resolve GIS/CAD data format and coordinate system issues**	**1/1/2003**	**Does not pertain to INRMP**	**Delete Objective.**	**3/26/2008**
			New Objective			**Provide appropriate data and documentation in the required format for all Army and NGB data requests.**	**3/26/2008**
GIS	**Maintain the MNARNG geographic database with sufficient completeness, consistency and accuracy for reliable query, analysis and application development**	**1/1/2003**	**Evaluate existing spatial data sets for completeness consistency and accuracy and prioritize each for update, recapture, deletion or archive**	**1/1/2003**	**Completed**	**Delete Objective.**	**3/26/2008**
		1/1/2003	**Maintain geographic user data needs assessments**	**1/1/2003**	**On-going**	**Identify data requirements and procedures in support of environmental/INRMP initiatives. Capture status and update frequency for each required layer. Record in CRC-SE GIS Plan.**	**3/26/2008**
		1/1/2003	**Update Forest Inventory spatial data layer based on annual review**	**1/1/2003**	**Currently maintained in FIM**	**House a current copy of the Camp Ripley forest inventory in the GDB. The source of this layer**	**3/26/2008**

GIS							
Section	**Goal**	**Created**	**Objectives**	**Created**	**Comments**	**2008-2012 Updates**	**Created**
						should be the DNR FIM.	
		1/1/2003	**Create survey quality boundary layers for MNARNG properties including Camp Ripley, AHATS, and all TACC and OMS properties**	**1/1/2003**	**Completed**	**Delete Objective.**	**3/26/2008**
		1/1/2003	**Update encroachment layer on a 5-year schedule**	**1/1/2003**	**Encroachment features no longer need to be tracked in GIS. Focus is on environmental and military criteria to determine priority.**	**Maintain ACUB data layers.**	**3/26/2008**
		1/1/2003	**Collect digital aerial photography for Camp Ripley and AHATS on a 5-year schedule**	**1/1/2003**	**Now provided by NGB**	**House current copies of the Camp Ripley and AHATS aerial photos in the GDB.**	**3/26/2008**
		1/1/2003	**Collect digital aerial photography for TACC's and OMS's on a 10-year schedule**	**1/1/2003**	**Does not pertain to INRMP**	**Delete Objective.**	**3/26/2008**
		1/1/2003	**Collect statewide Farm Service Agency digital orthophotography on a 2-year schedule**	**1/1/2003**	**Accessible online through WMS**	**Ensure copies of digital statewide aerial photos are available to environmental staff.**	**3/26/2008**
		1/1/2003	**Evaluate existing ArcView projects for their purpose. Prioritize and prepare each for conversion to ArcGIS 8.x format, archive, or deletion and complete the necessary**	**1/1/2003**	**Completed**	**Delete Objective.**	**3/26/2008**

GIS							
Section	**Goal**	**Created**	**Objectives**	**Created**	**Comments**	**2008-2012 Updates**	**Created**
			process				
GIS	**Maintain hardware and software systems appropriate for the info management needs of Camp Ripley**	**1/1/2003**	**Develop an operational GIS plan including standards, policies, and procedures**	**1/1/2003**	**Taylor to CRC-SE GIS requirements.**	**Develop CRC-SE GIS Plan. Include data, software, and hardware requirements.**	**3/26/2008**
		1/1/2003	**Upgrade GIS computers on a 3-year schedule**	**1/1/2003**	**J6 replacement cycle is now on a 5 year rotation.**	**Replace GIS computers on a 5-year schedule.**	**3/26/2008**
		1/1/2003	**Maintain geographic user hardware needs assessments.**	**1/1/2003**	**On-going**	**Identify hardware needs for sustainment of data requirements. Record in CRC-SE GIS Plan**	**3/26/2008**
		1/1/2003	**Maintain documentation of existing and needed hardware/software configurations (including integration with other information systems**	**1/1/2003**	**No longer needed. Will be discussed in CRC-SE GIS Plan**	**Delete Objective.**	**3/26/2008**
GIS	**Develop, implement, and maintain applications to meet the info needs of the MNARNG user community**	**1/1/2003**	**Develop user-friendly applications with query, analysis, and print capability for MNARNG spatial data through the IMS.**	**1/1/2003**	**Taylor to INRMP**	**Develop a user-friendly web application through ArcGIS Server to support data access needs to help achieve select INRMP goals and objectives.**	**3/26/2008**
		1/1/2003	**Develop applications for data access through Camp Ripley kiosk system**	**1/1/2003**	**Does not pertain to INRMP**	**Delete Objective**	**3/26/2008**
		1/1/2003	**Develop IMS application to display current training area activity based on RFMSS**	**1/1/2003**	**Does not pertain**	**Delete Objective**	**3/26/2008**

GIS							
Section	**Goal**	**Created**	**Objectives**	**Created**	**Comments**	**2008-2012 Updates**	**Created**
			database		**to INRMP**		
		1/1/2003	**Develop and implement process for storage and output of common digital maps**	**1/1/2003**	**Not complete/ Continue effort**	**-Same-**	**3/26/2008**
		1/1/2003	**Develop GIS training plans for various levels of Camp Ripley user groups**	**1/1/2003**	**Does not pertain to INRMP**	**Delete Objective**	**3/26/2008**
	New Goal					**Ensure geospatial data and applications support MNARNG enterprise GIS initiatives.**	**3/26/2008**
			New Objective			**Participate in the GIS Working Group.**	**3/26/2008**
			New Objective			**Coordinate development and acquisition of geospatial data and applications with other users through the MNARNG GIS Working Group.**	**3/26/2008**
			New Objective			**Make appropriate geospatial data available in a centralized location to reduce redundancy.**	**3/26/2008**
			New Objective			**Store data in an organized structure allowing end users to more easily locate appropriate data layers.**	**3/26/2008**

TRI-LRAM

Section	Goal	Created	Objectives	Created	Comments	2008-2012 Updates	Created
TRI	Provide military trainers and land managers with the necessary technical and analytical information for them to meet their requirements	1/1/2003	Prioritize projects based on RTLA and other studies. Balance LRAM, RTLA, TRI, and EA prioritization based on requirements and anticipated funding guidance	1/1/2003	SRP committee helps set priorities	In 2008 the SRP committee will prioritize projects based on RTLA and other studies. Balance LRAM, RTLA, TRI, and SRA prioritization based on requirements and anticipated funding guidance	3/26/2008
		1/1/2003	Accommodate as appropriate secondary land uses such as forestry, hunting, fishing, and recreation while ensuring that land use is in support of and/or compatible with training requirements	1/1/2003	Continue	Accommodate as appropriate secondary land uses such as forestry, hunting, fishing, and recreation while ensuring that land use is in support of and/or compatible with training requirements	3/26/2008
		1/1/2003	Establish a TRI working group (Committee). This committee will be used for decision-making and the dissemination of information	1/1/2003	Established SRP Committee	Delete objective	3/26/2008
		1/1/2003	Continue the Training Area Coordinator (TAC) position	1/1/2003	Addressed in ADMIN section	Delete objective	3/26/2008
TRI	Optimize training land management decisions by coordinating mission requirements and land maintenance activities	1/1/2003	Advise on the allocation of land to support current and projected training mission requirements	1/1/2003	Continue	Advise on the allocation of land to support current and projected training mission	3/26/2008

TRI-LRAM

Section	Goal	Created	Objectives	Created	Comments	2008-2012 Updates	Created
	with training and land carrying capacity					requirements	
		1/1/2003	Coordinate usage with external organizations, supporting agencies, tenant activities, and higher headquarters	1/1/2003	TAC Position	The TAC position will coordinate usage with external organizations, supporting agencies, tenant activities, and higher headquarters	3/26/2008
		1/1/2003	Use RTLA monitoring, LRAM execution, RFMSS, RTLP-AS, and supplemental information from conservation and/or environmental staff to evaluate land condition status and trends, land condition problem areas, and required corrective actions	1/1/2003	Addressed in new RTLA assessments	Delete objective	3/26/2008
		1/1/2003	Develop a sensitivity map using cultural resource and natural resource information including soils, vegetation, wildlife, and archeological data to identify sensitive resources on Camp Ripley	1/1/2003	Created	Delete objective	3/26/2008
		1/1/2003	Support the development and/or revision of the INRMP and ICRMP by providing training requirements data from the military to ensure the INRMP and ICRMP support the installation training mission	1/1/2003	The military mission information will be gathered from the Range Master Plan	Support the development and/or revision of the INRMP and ICRMP by providing training requirements data from the military to ensure the INRMP and ICRMP support the installation training mission	3/26/2008
LRAM	Sustain the soil resources to ensure	1/1/2003	Continue the site assessment to identify areas for	1/1/2003	RTLA	In 2008 implement	3/26/2008

TRI-LRAM							
Section	**Goal**	**Created**	**Objectives**	**Created**	**Comments**	**2008-2012 Updates**	**Created**
	long-term military use		**redesign, rehabilitation, and/or repair**		**assessment #1**	**RTLA assessment #1**	
		1/1/2003	**Develop a scope of work for the projects that include a site description, photo, and resources required**	**1/1/2003**	**complete**	**Delete objective**	**3/26/2008**
		1/1/2003	**Execute projects, as resources are made available**	**1/1/2003**	**Addressed ITAM Plan**	**Delete objective**	**3/26/2008**
		1/1/2003	**Evaluate the effectiveness of the completed projects**	**1/1/2003**	**Addressed ITAM Plan**	**Delete objective**	**3/26/2008**
		1/1/2003	**Ensure that completed projects receive adequate preventative maintenance**	**1/1/2003**	**Addressed ITAM Plan**	**Delete objective**	**3/26/2008**
		1/1/2003	**Apply BMP for design and execution of LRAM to ensure that the rehabilitation, repair, and maintenance results are commensurate with the applied resources**	**1/1/2003**	**Addressed ITAM Plan**	**Delete objective**	**3/26/2008**

SRA							
Section	**Goal**	**Created**	**Objectives**	**Created**	**Comments**	**2008-2012 Updates**	**Created**
SRA	**Minimize resource damage by educating the land users of how their activities might impact the environment**	**1/1/2003**	**Educate land users of their environmental stewardship responsibilities**	**1/1/2003**	**Range Regulations, outreach on web site, CD, Env. museum briefs**	**Continue to educate land users of their environmental stewardship responsibilities**	**3/26/2008**

SRA

Section	Goal	Created	Objectives	Created	Comments	2008-2012 Updates	Created
		1/1/2003	Update Educational Materials such as the Soldier Field Cards, Leader Handbooks, Video and Posters/Photos	1/1/2003	Laminated map of Ripley and AHATS Complete, delete objective	In 2009 re-assess educational materials such as the Soldier Field Cards, Leader Handbooks, Video and Posters/Photos	3/26/2008
		1/1/2003	Conduct Environmental Briefings (Pre-camp conferences, trainer workshops, Training Area Coordination Briefings, schools, and civilian organizations)	1/1/2003	Information is provided to all the listed briefings, also approx 140 outreach presentations are provided.	Conduct Environmental Briefings (Pre-camp conferences, trainer workshops, Training Area Coordination Briefings, schools, and civilian organizations)	3/26/2008
		1/1/2003	Promote compliance with Camp Ripley environmental regulations	1/1/2003	Update range regulation annually	Promote compliance with Camp Ripley environmental regulations	3/26/2008
SRA	Instill a sense of pride and stewardship for those that use Camp Ripley natural and cultural resources	1/1/2003	Improve public relations through SRA by communicating our success at sustaining mission activities	1/1/2003	Outreach Program	Improve public relations through SRA by communicating our success at sustaining mission activities	3/26/2008
		1/1/2003	Convey installation mission and training objectives to environmental professionals and the public	1/1/2003	Outreach Program	Convey installation mission and training objectives to environmental professionals and the public	3/26/2008
		1/1/2003	Continue to implement a public	1/1/2003	Outreach Program	Continue to implement a public education	3/26/2008

SRA							
Section	**Goal**	**Created**	**Objectives**	**Created**	**Comments**	**2008-2012 Updates**	**Created**
			education program			**program**	
		1/1/2003	**Promote participation in national events such as National Public Lands Day, Arbor Day and Earth Day**	**1/1/2003**	**Participate in all three to include water festival**	**Continue participation in national events such as National Public Lands Day, Arbor Day and Earth Day**	**3/26/2008**
		1/1/2003	**Participate in the State of Minnesota and Department of Defense Award programs**	**1/1/2003**	**Applying for 2008 conservation award**	**In 2008 apply for conservation award**	**3/26/2008**

Appendix B: Arden Hills Army Training Site Integrated Natural Resources Management Plan Updated Goals and Objectives.

ADMINISTRATION							
Section	**Goal**	**Created**	**Objectives**	**Created**	**Comments**	**2008-2012 Updates**	**Date**
INRMP	**Ensure adequate staffing and resources to fully manage and protect AHATS's natural resources**	**8/1/2007**	**Maintain an Environmental Specialist to provide full time support for ITAM and Conservation Program at AHATS**	**8/1/2007**	**2 DMA staff involved in Conservation and ITAM Program at AHATS**	**Maintain two DMA staff to implement the Conservation and ITAM Programs at AHATS**	**4/9/2008**
		8/1/2007	**Maintain a Cooperative Agreement between MNARNG and MNDNR for the management and protection of AHATS's natural resources and enforcement of applicable laws and regulations**	**8/1/2007**	**DNR Agreement 13 Feb, 2006 Gene Merriam** **USFWS Mutual Letter 24 August, 2007** **Tony Sullins**	**Maintain a Cooperative Agreement between MNARNG and MNDNR for the management and protection of AHATS's natural resources and enforcement of applicable laws and regulations**	**4/9/2008**
					New Objective	**Maintain administration of the INRMP development, implementation, and updating through the Camp Ripley Environmental Office.**	**4/9/2008**
					New Objective	**Create an annual Conservation-INRMP update report. Update , review and obtain signatures at annual meeting with MNDNR and USFWS**	**4/9/2008**

RTLA

Section	Goal	Created	Objectives	Created	Comments	2008-2012 Updates	Date
RTLA	Monitor floral resources on AHATS	8/1/2007	To complete a re-inventory survey on all core and special use plots at AHATS and continue to re-inventory every five years.	8/1/2007	Re-assess monitoring protocol for vegetation	In 2009 Re-assess monitoring protocol for vegetation	4/9/2008
		8/1/2007	Establish new core plots as deemed necessary by land managers at AHATS	8/1/2007	Re-assess monitoring protocol for vegetation	Delete objective	4/9/2008
		8/1/2007	Establish special use plots as deemed necessary by land managers at AHATS	8/1/2007	Re-assess monitoring protocol for vegetation	Delete objective	4/9/2008
RTLA	Monitor faunal (Birds, Mammals, and Reptiles and Amphibians) resources on AHATS	8/1/2007	Continue a monitoring program for mammals on core plots.	8/1/2007	Last surveyed 2001 Re-assess need for this survey	In 2009 Re-assess monitoring protocol for mammals	4/9/2008
		8/1/2007	Continue an annual monitoring program for birds on core plots.	8/1/2007	Annual Assessment	In 2008 continue an annual monitoring program for birds on core plots.	4/9/2008
		8/1/2007	Develop a monitoring survey for reptiles and amphibians.	8/1/2007	Re-assess monitoring protocol	In 2009 Re-assess monitoring protocol for reptiles and amphibians.	4/9/2008
		8/1/2007	Establish new core plots as deemed necessary by land managers at AHATS	8/1/2007	Re-assess monitoring protocol	Delete objective	4/9/2008
		8/1/2007	Establish special use plots as deemed necessary by land managers at AHATS	8/1/2007	Re-assess monitoring protocol	Delete objective	4/9/2008
RTLA	Provide information to land managers about the status of natural and cultural resources on AHATS	8/1/2007	From the baseline data, monitor the floral and faunal resources, and analyze data for trends and impacts to natural and cultural resources. Include identification of possible sources of changes and trends	8/1/2007	Re-assess monitoring protocol	In 2009 Re-assess RTLA monitoring protocol	4/9/2008

RTLA							
Section	**Goal**	**Created**	**Objectives**	**Created**	**Comments**	**2008-2012 Updates**	**Date**
		8/1/2007	**Provide an annual report that describes exactly what was done on the sample sites, provides a brief status of the program, and includes any additional information that could highlight impacts on training and resource management**	**8/1/2007**	**Annual Conservation Report**	**In 2009 create an ITAM annual report which documents the accomplishments for that preceding year.**	**4/9/2008**
		8/1/2007	**Provide information to support training land management and land use decisions**	**8/1/2007**		**Delete objective**	**4/9/2008**
		8/1/2007	**Provide data input to the AHATS Master Plan utilizing documents such as the INRMP, Integrated Pest Management Plan, Integrated Cultural Resources Management Plan and the Range Facility Management Support System**	**8/1/2007**	**Continue**	**In 2008 provide information to the Camp Ripley SDP, INRMP, IPMP, ICRMP, and Range Regulations**	**4/9/2008**
RTLA	**Provide comprehensive GIS support for AHATS**	**8/1/2007**	**Conduct a GIS needs assessment to determine application, data, and equipment requirements to support environmental management at AHATS**	**8/1/2007**	**Continue**	**In 2009 conduct a GIS needs assessment to determine application, data, and equipment requirements to support environmental management at AHATS**	**4/9/2008**
		8/1/2007	**Develop and provide access to applications, data and equipment identified in needs assessment**	**8/1/2007**	**Continue**	**In 2010 develop and provide access to applications, data and equipment identified in needs assessment**	**4/9/2008**
		8/1/2007	**Ensure data layers meet attribute and metadata standards.**	**8/1/2007**	**Continue**	**Ensure data layers meet attribute and metadata standards.**	**4/9/2008**

RTLA							
Section	**Goal**	**Created**	**Objectives**	**Created**	**Comments**	**2008-2012 Updates**	**Date**
		8/1/2007	**Include GIS requirements for AHATS into a statewide GIS Plan**	**8/1/2007**	**Continue**	**Include GIS requirements for AHATS into a statewide GIS Plan**	**4/9/2008**

TRI							
Section	**Goal**	**Created**	**Objectives**	**Created**	**Comments**	**2008-2012 Updates**	**Date**
TRI	**Provide military trainers and land managers with the necessary technical and analytical information for them to meet their requirements**	**8/1/2007**	**Prioritize projects based on RTLA and other studies. Balance LRAM, RTLA, TRI, and EA prioritization based on requirements and anticipated funding guidance**	**8/1/2007**	**Completed during AHATS SRP Committee Meetings**	**In 2008 the SRP committee will prioritize projects based on RTLA and other studies. Balance LRAM, RTLA, TRI, and SRA prioritization based on requirements and anticipated funding guidance**	**4/9/2008**
		8/1/2007	**Accommodate as appropriate secondary land uses such as forestry, hunting, fishing, and recreation while ensuring that land use is in support of and/or compatible with training requirements**	**8/1/2007**	**Continue, outreach, Hunt Program, Viewing Areas**	**Accommodate as appropriate secondary land uses such as forestry, hunting, fishing, and recreation while ensuring that land use is in support of and/or compatible with training requirements**	**4/9/2008**
TRI	**Optimize training land management decisions by coordinating mission requirements and land maintenance activities with training and land**	**8/1/2007**	**Advise on the allocation of land to support current and projected training mission requirements**	**8/1/2007**	**Continue**	**Advise on the allocation of land to support current and projected training mission requirements**	**4/9/2008**

TRI							
Section	**Goal**	**Created**	**Objectives**	**Created**	**Comments**	**2008-2012 Updates**	**Date**
	carrying capacity						
		8/1/2007	**Coordinate usage with external organizations, supporting agencies, tenant activities, and higher headquarters**	**8/1/2007**	**Continue, Operations Office implements this objective**	**The TAC position will coordinate usage with external organizations, supporting agencies, tenant activities, and higher headquarters**	**4/9/2008**
		8/1/2007	**Use RTLA monitoring, LRAM execution, RFMSS, RTLP-AS, and supplemental information from conservation and/or environmental staff to evaluate land condition status and trends, land condition problem areas, and required corrective actions**	**8/1/2007**	**Addressed in new RTLA assessments**	**Delete objective**	**4/9/2008**
		8/1/2007	**Support the development and/or revision of the INRMP and ICRMP by providing training requirements data from the military to ensure the INRMP and ICRMP support the installation training mission**	**8/1/2007**	**The military mission information will be gathered from the Range Master Plan**	**Support the development and/or revision of the INRMP and ICRMP by providing training requirements data from the military to ensure the INRMP and ICRMP support the installation training mission**	**4/9/2008**
TRI	**Ensure adequate staffing and resources to full manage and protect AHATS's natural resources**	**8/1/2007**	**Maintain Training Area Coordinator to provide full time support for TRI needs at AHATS**	**8/1/2007**	**Current position funded through operations,**	**Maintain Training Area Coordinator to provide full time support for TRI needs at AHATS**	**4/9/2008**

LRAM							
Section	**Goal**	**Created**	**Objectives**	**Created**	**Comments**	**2008-2012 Updates**	**Date**
LRAM	**Insure adequate staffing and resources to fully manage and protect AHATS's natural resources.**	**8/1/2007**	**Maintain an LRAM Coordinator to provide full time support for LRAM at AHATS**	**8/1/2007**	**Position currently resides at AHATS** **Addressed under admin**	**Delete objective**	**4/9/2008**
LRAM	**Sustain soil resources to ensure long-term military use**	**8/1/2007**	**Employ a Site Assessment type methodology to identify areas for redesign, rehabilitation, and/or repair**	**8/1/2007**	**RTLA Assessment # 1** **Protocol addressed under RTLA**	**In 2008 implement RTLA assessment #1**	**4/9/2008**
		8/1/2007	**Develop a scope of work for the projects that includes a site description, photo, and resources required**	**8/1/2007**	**Complete, RTLA Assessment # 1 protocol**	**Delete objective**	**4/9/2008**
		8/1/2007	**Execute projects, as resources are made available**	**8/1/2007**	**Addressed ITAM Plan and TRI portion**	**Delete objective**	**4/9/2008**
		8/1/2007	**Evaluate the effectiveness of the completed projects.**	**8/1/2007**	**Addressed ITAM Plan**	**Delete objective**	**4/9/2008**
		8/1/2007	**Ensure that completed projects receive adequate preventative maintenance**	**8/1/2007**	**Addressed ITAM Plan**	**Delete objective**	**4/9/2008**
		8/1/2007	**Apply best management practices for design and execution of LRAM to ensure that the rehabilitation, repair, and maintenance results are commensurate with the applied resources.**	**8/1/2007**	**Addressed ITAM Plan**	**Delete objective**	**4/9/2008**

SRA							
Section	**Goal**	**Created**	**Objectives**	**Created**	**Comments**	**2008-2012 Updates**	**Date**
SRA	**Minimize resource damage by educating the land users of how their activities might impact the environment.**	**8/1/2007**	**Educate land users of their environmental stewardship responsibilities**	**8/1/2007**	**Range Regs, briefings to incoming units**	**Continue to educate land users of their environmental stewardship responsibilities**	**4/9/2008**
		8/1/2007	**Conduct Environmental Briefings (Pre-camp conferences, trainer workshops, schools, and civilian organizations).**	**8/1/2007**	**Continue, TAC Position involved in briefing users**	**Conduct Environmental Briefings (Pre-camp conferences, trainer workshops, Training Area Coordination Briefings, schools, and civilian organizations)**	**4/9/2008**
		8/1/2007	**Promote compliance with AHATS environmental regulations.**	**8/1/2007**	**TAC Position involved in promoting compliance**	**Promote compliance with Camp Ripley environmental regulations**	**4/9/2008**
SRA	**Instill a sense of pride and stewardship for those that use AHATS's natural and cultural resources**	**8/1/2007**	**Improve public relations through SRA by communicating successes at sustaining mission activities**	**8/1/2007**	**Continue**	**Improve public relations through SRA by communicating our success at sustaining mission activities**	**4/9/2008**
		8/1/2007	**Convey installation mission and training objectives to environmental professionals and the public**	**8/1/2007**	**Continue**	**Convey installation mission and training objectives to environmental professionals and the public**	**4/9/2008**
		8/1/2007	**Establish and implement a public education program.**	**8/1/2007**	**Continue**	**Continue to implement a public education program**	**4/9/2008**

ECOSYSTEM BASED MANAGEMENT

Section	Goal	Created	Objectives	Created	Comments	2008-2012 Updates	Date
Wetlands	**Protect, restore, and manage wetland communities on AHATS for the protection of wetland-dependent species and intrinsic value in accordance with federal, state, and local laws and regulations**	**8/1/2007**	**Obtain all necessary permits required by the CWA and WCA before project implementation**	**8/1/2007**	**Continue to obtain permits as required**	**Obtain all necessary permits required by the "Federal" Clean Water Act (CWA) and "State" Wetland Conservation Act (WCA) before project implementation**	**4/9/2008**
		8/1/2007	**Identify and protect sensitive flora and fauna wetland species and their habitats**	**8/1/2007**	**Delete, all ready covered in T & E species**	**Delete objective**	**4/9/2008**
		8/1/2007	**Identify, monitor and control exotic and invasive species.**	**8/1/2007**	**Continue SCSU Project**	**In 2009 complete SCSU Study and implement control measures identified in findings for the protection of the wetland ecosystem for the purpose of improving and sustaining training area lands and eradication of exotic species**	**4/9/2008**
Grasslands	**Restore and manage the grassland communities for the purposes of military training, protection of native species, oak savannah restoration, and soil stabilization**	**8/1/2007**	**Develop and implement a plan for re-establishment of oak savanna**	**8/1/2007**	**Projects are part of the NRDA assessment, see in appendix ?**	**In 2009 start a process to implement NRDA projects if funding is received**	**4/9/2008**
		8/1/2007	**Complete levels four and five of the MLCCS**	**8/1/2007**	**Delete, wait until restoration projects are complete**	**Delete objective**	**4/9/2008**

ECOSYSTEM BASED MANAGEMENT							
Section	**Goal**	**Created**	**Objectives**	**Created**	**Comments**	**2008-2012 Updates**	**Date**
		8/1/2007	**Continue to evaluate and prioritize the grassland compartments for the maintenance and promotion of native species.**	**8/1/2007**	**Continue**	**In 2009 evaluate and prioritize the grassland compartments for management needs based on previous years assessments**	**4/9/2008**
		8/1/2007	**Implement management practices in accordance with the grassland management table (Appendix G). Refer to Figure 17, which identifies the burn rotation schedule for grasslands on AHATS**	**8/1/2007**		**In 2009 complete SCSU Study and implement control measures identified in findings for the protection of the grasslands for the purpose of improving and sustaining training area lands and eradication of exotic species**	**4/9/2008**
		8/1/2007	**Reevaluate the burn schedule and add additional grassland parcels as needed**	**8/1/2007**	**Addressed in updated objective**	**Delete objective**	**4/9/2008**
		8/1/2007	**Ensure adequate fire breaks and other safety procedures are in place**	**8/1/2007**	**Continue**	**Ensure adequate fire breaks and other safety procedures are in place**	**4/9/2008**
		8/1/2007	**Identify, monitor and control exotic and invasive species.**	**8/1/2007**	**Addressed in updated objective**	**Delete objective**	**4/9/2008**
		8/1/2007	**Create a Vegetation Management Committee, which will develop detailed management regimes for each training area at AHATS, and create a Vegetation Management Plan for AHATS.**	**8/1/2007**	**Met 5- 27- 2008 to discuss vegetation management issues, created 5 projects for NRDA assessment**	**Maintain a Vegetation Management Committee, which will develop detailed management regimes for each training area at**	**4/9/2008**

ECOSYSTEM BASED MANAGEMENT							
Section	**Goal**	**Created**	**Objectives**	**Created**	**Comments**	**2008-2012 Updates**	**Date**
					funding.	**AHATS, and create a Vegetation Management Plan for AHATS.**	
Woodlands	**Manage the woodland communities for the purposes of military training and restoration of the oak savannah habitat type**	**8/1/2007**	**Develop and implement a plan for reestablishment of oak savanna**	**8/1/2007**	**Addressed in updated objective**	**Delete goal and objective**	**4/9/2008**
		8/1/2007	**Complete levels four and five of the MLCCS**	**8/1/2007**	**Delete, wait until restoration projects are complete**	**Delete objective**	**4/9/2008**
		8/1/2007	**Evaluate and prioritize the forest stands for appropriate maintenance**	**8/1/2007**	**Addressed in updated objective**	**Delete objective**	**4/9/2008**
		8/1/2007	**Identify, monitor and control exotic and invasive species.**	**8/1/2007**	**Addressed in updated objective**	**Delete objective**	**4/9/2008**
		8/1/2007	**Continue sanitation and control of oak wilt infected trees.**	**8/1/2007**	**Addressed in updated objective**	**Delete objective**	**4/9/2008**
		8/1/2007	**Establish a schedule for an assessment of the forest vegetation.**	**8/1/2007**	**Addressed in updated objective**	**Delete objective**	**4/9/2008**
		8/1/2007	**Create a Vegetation Management Committee, which will develop detailed management regimes**	**8/1/2007**	**Addressed in updated objective**	**Delete objective**	**4/9/2008**

PLANTED OR CULTIVATED VEGETATION NEAR BUILDINGS and BORDERS

Section	Goal	Created	Objectives	Created	Comments	2008-2012 Updates	Date
Cantonment	**Protect and develop landscaped grounds for functional and aesthetic qualities in the urban area of AHATS**	**8/1/2007**	**Develop a landscape management plan that includes maps, assessments and guidelines for maintenance, improvements and plantings**	**8/1/2007**	**Created 5 projects as part of the NRDA assessment, see in appendix ?**	**Delete objective**	**4/9/2008**
		8/1/2007	**Conduct an annual inspection on all boulevards, sidewalks, and facilities for dead, dying or high-risk trees and have them removed**	**8/1/2007**	**Addressed in updated objective**	**Delete objective**	**4/9/2008**
		8/1/2007	**Develop and maintain a tree nursery to supply landscaping needs as it relates to the landscape plan**	**8/1/2007**	**Trees were planted in Spring of 2007 and more will be planted fall 2008**	**In 2008 maintain a tree nursery to supply future landscaping needs**	**4/9/2008**
		8/1/2007	**Identify, monitor and control exotic and invasive species.**	**8/1/2007**	**Continue SCSU Project**	**In 2009 complete SCSU Study and implement control measures identified in findings for the protection of the cantonment area for the purpose of improving and sustaining training area lands and eradication of exotic species**	**4/9/2008**
		8/1/2007	**Plant native tree, shrub and grass species for visual obstruction near borders. Plant species and planting locations will be coordinated with the MN DNR**	**8/1/2007**	**Addressed in updated objective**	**Delete objective**	**4/9/2008**

FISH AND WILDLIFE MANAGEMENT (Mammals)

Section	Goal	Created	Objectives	Created	Comments	2008-2012 Updates	Date
White-tail Deer	Monitor and maintain a viable deer population	8/1/2007	Conduct annual aerial surveys in winter to determine the size of the deer herd	8/1/2007	Completed in March 08, No longer needed	Delete Objective	4/9/2008
		8/1/2007	Use information from past research, together with deer harvest data and aerial surveys, to provide a basis for determining management objectives	8/1/2007	Continue	In 2009 use information from past research, together with deer harvest data and aerial surveys, to provide a basis for determining management objectives	4/9/2008
		8/1/2007	Coordinate with the MNDNR to review deer data and establish a harvest goal.	8/1/2007		Delete objective	4/9/2008
		8/1/2007	Provide public hunting opportunities as appropriate	8/1/2007	Youth Hunt Deployed Soldier Hunt	In 2008 conduct the, two-two day, Youth archery deer hunts	4/9/2008
		8/1/2007	Develop and accomplish hunts according consistent with MNARNG policy	8/1/2007	Continue	In 2008 conduct five two-day, Deployed soldier archery deer hunts	4/9/2008
			New Objective			In 2008 conduct one three-day, "Volunteer" archery deer hunt	4/9/2008
Nuisance Animal Control	Monitor and removal of nuisance and feral animals	8/1/2007	Conduct scent post surveys to track population levels as needed	8/1/2007	Continue	In 2009 conduct scent post surveys to track population levels as	4/9/2008

FISH AND WILDLIFE MANAGEMENT (Mammals)							
Section	**Goal**	**Created**	**Objectives**	**Created**	**Comments**	**2008-2012 Updates**	**Date**
						needed	
		8/1/2007	**Record observations of nuisance and feral animal species.**	**8/1/2007**	**Continue**	**Annually record observations of nuisance and feral animal species.**	**4/9/2008**
		8/1/2007	**Eliminate entry points for feral animals**	**8/1/2007**	**Continue**	**Eliminate entry points for feral animals**	**4/9/2008**
		8/1/2007	**Remove nuisance and feral animals as needed**	**8/1/2007**	**Continue**	**Remove nuisance and feral animals as needed**	**4/9/2008**

FISH AND WILDLIFE MANAGEMENT (Birds-Herps-Inverts-T & E Species)							
Section	**Goal**	**Created**	**Objectives**	**Created**	**Comments**	**2008-2012 Updates**	**Date**
Birds (Nesting Structures)	**Continue to make nesting structures available**	**8/1/2007**	**Map and number existing nesting structures**	**8/1/2007**	**Need to review status**	**In 2009 map and determine the number of existing nesting structures**	**4/9/2008**
		8/1/2007	**Determine the appropriate number of nesting structures to be maintained**	**8/1/2007**		**Delete Objective**	**4/9/2008**
		8/1/2007	**Repair, replace, or add nesting structures as necessary.**	**8/1/2007**	**Continue**	**In 2010 repair, replace, or add nesting structures as necessary.**	**4/9/2008**
		8/1/2007	**Enlist the help of volunteers for annual maintenance and monitoring of nesting structures**	**8/1/2007**	**Continue**	**In 2009 enlist the help of volunteers for annual maintenance and monitoring of nesting**	**4/9/2008**

FISH AND WILDLIFE MANAGEMENT (Birds-Herps-Inverts-T & E Species)

Section	Goal	Created	Objectives	Created	Comments	2008-2012 Updates	Date
						structures	
Songbirds	Monitor songbird populations on AHATS	8/1/2007	Conduct annual surveys for songbirds on RTLA plots.	8/1/2007	Continue	Conduct annual surveys for songbirds on RTLA plots.	4/9/2008
		8/1/2007	Establish and survey additional plots in unique habitats.	8/1/2007	As needed	Delete objective	4/9/2008
Reptiles and Amphibians	Continue to monitor the presence and abundance of reptiles and amphibians	8/1/2007	Continue to support an annual anuran survey through the MNDNR	8/1/2007	Annual	Continue to support an annual anuran survey through the MNDNR	4/9/2008
		8/1/2007	Investigate new methods for monitoring reptiles and amphibians at AHATS	8/1/2007	Continue	In 2009 investigate new methods for monitoring reptiles and amphibians at AHATS	4/9/2008
		8/1/2007	Implement a survey protocol for monitoring reptiles and amphibians at AHATS	8/1/2007		Delete Objective	4/9/2008
Invertebrates	Continue to monitor the presence and abundance of terrestrial and aquatic invertebrates	8/1/2007	Continue to support the Audubon Society's July butterfly survey	8/1/2007	Continue	Continue to support the Audubon Society's July butterfly survey	4/9/2008
		8/1/2007	Continue to survey for rare invertebrate species	8/1/2007	To be reviewed	In 2009 investigate whether any invertebrate studies or inventories are needed	4/9/2008
		8/1/2007	Establish a schedule for and continue tiger beetle and jumping spider surveys	8/1/2007	Addressed in updated objective	Delete objective	4/9/2008
		8/1/2007	Establish a schedule for and repeat the ground	8/1/2007	Addressed in	Delete objective	4/9/2008

FISH AND WILDLIFE MANAGEMENT (Birds-Herps-Inverts-T & E Species)							
Section	**Goal**	**Created**	**Objectives**	**Created**	**Comments**	**2008-2012 Updates**	**Date**
			beetle survey		**updated objective**		
		8/1/2007	**Continue to survey for dragonfly species**	**8/1/2007**	**Addressed in updated objective**	**Delete objective**	**4/9/2008**
		8/1/2007	**Determine need for additional invertebrate surveys and establish schedule**	**8/1/2007**	**Addressed in updated objective**	**Delete objective**	**4/9/2008**
T & E Species	**Manage and protect species that are listed as threatened or endangered by the federal government or the State of MN**	**8/1/2007**	**Manage and protect habitats inhabited by the plains pocket mouse**	**8/1/2007**	**Surveyed in 03, 04, 07**	**In 2009 survey habitats inhabited by the plains pocket mouse and make management recommendations**	**4/9/2008**
		8/1/2007	**Monitor the presence and reproductive success of trumpeter swans**	**8/1/2007**	**Continue, annual survey**	**In 2009 monitor the presence and reproductive success of trumpeter swans**	**4/9/2008**
		8/1/2007	**Continue a monitoring program specifically for Blanding's Turtles**	**8/1/2007**	**Continue, annual survey**	**Continue a monitoring program specifically for Blanding's Turtles**	**4/9/2008**
		8/1/2007	**Determine factors limiting the abundance of targeted species.**	**8/1/2007**		**Delete objective**	**4/9/2008**
		8/1/2007	**Educate users about the presence and importance of protected species**	**8/1/2007**		**Delete objective**	**4/9/2008**
		8/1/2007	**Monitor for the presence of bald eagles**	**8/1/2007**	**Continue**	**Annually monitor for the presence of bald eagles**	**4/9/2008**
		8/1/2007	**Monitor for the presence of the Henslow's sparrow. Identify, manage and protect**	**8/1/2007**	**Annual survey – longer burn**	**In 2010 monitor for the presence of the**	**4/9/2008**

FISH AND WILDLIFE MANAGEMENT (Birds-Herps-Inverts-T & E Species)							
Section	**Goal**	**Created**	**Objectives**	**Created**	**Comments**	**2008-2012 Updates**	**Date**
			habitats inhabited by the Henslow's sparrow.		**rotation to improve habitat**	**Henslow's sparrow.**	

LAND USE							
Section	**Goal**	**Created**	**Objectives**	**Created**	**Comments**	**2008-2012 Updates**	**Date**
Land Use	**Identify and develop appropriate land use opportunities**	**8/1/2007**	**Develop security protocols to allow public access to AHATS for recreation and educational activities**	**8/1/2007**	**Protocol developed as per range regulation.**	**Continue to allow public access to AHATS for recreation and educational activities**	**4/9/2008**
		8/1/2007	**Continue to foster relationships with local interest groups that want to help maintain and develop AHATS natural resources.**	**8/1/2007**	**Continue**	**Continue to foster relationships with local interest groups that want to help maintain and develop AHATS natural resources.**	**4/9/2008**

Appendix C: Camp Ripley annual meeting minutes, 2007.

On 13 February 2007 the MNARNG, MNDNR, U. S. Fish and Wildlife Service and The Nature Conservancy had the Annual "Conservation" Meeting for Camp Ripley. The objectives of the meeting were to discuss 2006 accomplishments and 2007 work plans. Those in attendance were as follows:

Department of Military Affairs:

COL Richard Weaver, Post Commander
MAJ Jay Morsching, Operations Officer
MAJ Keith Ferdon, Training Area Coordinator
Mr. Bill Brown, Natural/Cultural Specialist
Mr. Jay Brezinka, Natural Resource Planner
Mr. Craig Erickson, GIS Manager

Department of Natural Resources:

Mr. Joe Kurcinka, Regional Director (St. Paul)
Mr. John Korzeniowski, Area Forestry Manager (Little Falls)
Mr. Jason Kern, Area Forester (Little Falls)
Mrs. Joyce Kuske, Conservation Officer (Little Falls)
Mr. Brian Dirks, Ecological Services (Camp Ripley)
Mrs. Pam Perry, Ecological Services (Brainerd)
Mr. Marty Anderson, Wildlife (Brainerd)
Mr. Paul Roth, Manager Crow-Wing Park
Mr. Mark Hauck, Community Assistance

The Nature Conservancy:

Mr. Todd Holman, Regional Director (Cushing)
Mr. Tim Notch, Land Steward (Cushing)

A presentation by Maj. Jay Morsching regarding the future direction on range development kicked off the meeting. Progress reports and work plans were given first by the DMA and then by the DNR, and The Nature Conservancy. An update was then given on the Light Detection and Ranging (LiDAR) and Army Compatible Use Buffer (ACUB) programs. Some of the key issues, highlights, and projects for the Conservation Program on Camp Ripley are listed below.

Wildlife

1. All hunts were very successful including the 1st Deployed Soldier Hunt.
2. Sixty-five nuisance beavers were removed.
3. New Camp Ripley species – Northern Myotis – Species of Special Concern (MN)
4. Biological Opinion Regarding Eagles Nest near Proposed Urban Assault Course location.

Vegetation (Forestry and Grasslands)

1. Continue native grass seed harvest on Camp Ripley in 2007.
2. Complete a fire management plan for Camp Ripley 2007.
3. Continue to investigate the Jack Pine bud worm problem.
4. Continual mechanical thinning where needed (Gyro-trac).
5. Re-inventory approx. 3000 acres.

Fisheries

1. Harvested 67,033 walleyes and 1,722 Muskies in 2006 from Camp Ripley.
2. Operate Cockburn, Coon Stump, Long, Muskrat and Rapoon for walleye rearing and Frog, and Bass for Muskies.
3. Lake assessment on Ferrell and Fosdick Lake
4. Improve access into Muskrat Lake.

Other Topics or Issues

1. Military Land Fund (DMA will continue to work).
2. Site Prep for Gladden Hwy Project.
3. Mussel survey in this region of the state.
4. Mutual Agreement from USFWS for AHATS INRMP.
5. Audubon Bird Area Nomination.
6. ACUB Funding Allocation.
7. Update Camp Ripley INRMP 2008-2012.

The issues listed above are discussed through-out this document in the appropriate program areas.

Appendix D: Landing/Bridge Crossing permit documentation, 2007.

MEMO

To: Dr. Lee Barber and Mr. Brett Wood, NGB-ART

Date: 10 August 2007

Subject: Mississippi River Bridge Crossing Repair

Attached is image of a project for which we are seeking approval for consideration of FY 2007 year end funding. I realize that you may or may not have year-end funding available but in the event that you do we would greatly appreciate your consideration in the matter:

Project Number 1: Mississippi River bridge crossing site restoration. The site is used routinely for assembling and conducting a portable bridge crossing training exercise. It represents only one of two major bridge crossings sites in the country for training troops in this regard. Due to the impact of using very large/heavy wheeled and track vehicles in assembling and conducting bridging exercises, the existing cable concrete has been damaged over an area encompassing about 200' by 25' or about 5,000 square feet (See attached image). Mr. Tom Rothleutner and our DPW crew is prepared to make the needed repairs using an oversized cable concrete which is more resilient to heavy vehicles. In addition, the crew will use a longer and more secure anchor compared to that which was used initially. The total estimated cost for the materials and subsequent project is $35,000. Our desire to move on this ASAP coincides with the drought condition of the river which enables our crew to make the needed repairs without entering the water. We have requested a waters permit from the MNDNR and should be ready as soon as funds are available.

In closing, if year-end funding is not available I would appreciate your consideration of these projects as part of the FY 2008 WAM which I will insert upon getting

Thanks in advance for your attention in this matter. Look forward to meeting with Brett next week to discuss this further if necessary.

Marty Skoglund, Camp Ripley Environmental Supervisor

Camp Ripley Headquarters

15000 Hwy 115

Little Falls, MN 56345

Telephone: (320) 616-2722

Cable Concrete Repair
At
River Crossing Site

Appendix E: Camp Ripley Bald Eagle Biological Opinion, 2007.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Twin Cities Field Office
4101 American Blvd E.
Bloomington, Minnesota 55425-1665

Colonel Richard A. Weaver
Post Commander
Minnesota Army National Guard
15000 Highway 115, Camp Ripley
Little Falls, Minnesota 56345-4173
Attn: Jay Brezinka

AUG - 7 2007

Re: Biological Opinion Regarding the Effects of Design and Construction of a New Urban Assault Course at Camp Ripley in Little Falls, Minnesota on the Threatened Bald Eagle *(Haliaeetus leucocephalus)*

Dear Colonel Weaver:

The enclosed document transmits the Fish and Wildlife Service's biological opinion based on our review of the proposed construction of a new urban assault course at Camp Ripley in Little Falls, Minnesota and its effects on the bald eagle *(Haliaeetus leucocephalus)* in accordance with section 7 of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.). This letter provides only a summary of the findings included in the Biological Opinion. A complete discussion of the effects analysis is provided in the Biological Opinion.

This Biological Opinion is based on information provided in the Biological Assessment for the proposed project (Biological Assessment of an Eagle Nest on the Camp Ripley Military Training Site). In addition, other sources of information were also used in formulating this Biological Opinion, including site visits and communication between Camp Ripley Environmental Office staff and Twin Cities Ecological Services Field Office staff. The complete administrative record for this consultation is on file at the Twin Cities Ecological Services Field Office.

After reviewing all the available information on the location, timing of construction, and facility operation, along with the anticipated effects of the proposed action and the best available information on the status, distribution, and life history of the bald eagle, it is the Service's biological opinion that the action, as proposed, is not likely to jeopardize the continued existence of the species.

This Biological Opinion includes reasonable and prudent measures along with terms and conditions that the Service believes will minimize the impacts of incidental take of bald eagles resulting from the proposed project. In order to be exempt from the prohibitions of section 9 of the ESA, the Minnesota Army National Guard must comply with the terms and conditions, which implement the reasonable and prudent measures.

If you have any questions concerning this biological opinion, please contact me at (612) 725-3548 x201, or Fish and Wildlife Biologist Nick Rowse at (612) 725-3548 x210.

Sincerely,

Tony Sullins
Field Supervisor

Enclosure

BIOLOGICAL OPINION
on the Effects of Design and Construction of a New Urban Assault Course at Camp Ripley in Little Falls, Minnesota, on the Threatened Bald Eagle (*Haliaeetus leucocephalus*)

DESCRIPTION OF PROPOSED ACTION

The Minnesota Army National Guard (MNARNG) is in the final planning phase for design and construction of a new Urban Assault Course (UAC) range. The UAC range is to be located between three existing live fire ranges: North Range and two Known Distance 25 Meter Ranges (B1-B2). New construction of the UAC is planned for FY2007. The primary purpose of the proposed UAC is to provide squad and platoon-size units with a facility to train and evaluate urban operation tasks. Enclosure #3 shows the locations of the existing ranges and proposed range. With the exception of Station 3-Grenadier Gunnery—the UAC is not intended for live fire training. Site conditions make this the most appropriate area for the UAC. They are as follows.

- the site covers approximately 50 acres of generally flat grassland and gently sloping mixed hardwoods,
- the topography of the chosen site is very well suited for the UAC,
- the site has an existing road network and the main access road is an improved all access road suitable for two-way, low speed traffic,
- the site is adjacent to the North Range which contains support buildings such as a classroom and latrine facility,
- the site is adjacent to two existing ranges; any live fire will be directed towards a third range (Hendrickson Range/impact area),
- no wetlands occur within the footprint of the site, and
- no cultural aspects are associated with the site

STATUS OF THE SPECIES

The bald eagle will become delisted from the federal list of threatened and endangered species on August 8, 2007 http://www.fws.gov/migratorybirds/baldeagle.htm, when it will still be protected under the Bald and Golden Eagle Protection Act of 1940, as amended and the Migratory Bird Treaty Act.

Though once endangered, the bald eagle population in the lower 48 States has increased considerably in recent years. Regional bald eagle populations in the Pacific Northwest, Great Lakes, Chesapeake Bay, and Florida have increased five-fold in the past 20 years. Bald eagles are now repopulating areas throughout much of the species' historic range that were unoccupied only a few years ago. As of 2000, there were approximately 6471 pairs of bald eagles in the lower 48 states. In Minnesota, bald eagle populations have grown from 115 active nests in 1973 to an estimated 1312 in 2006 (Baker & Monstad 2006). Nesting bald eagles are now present throughout most of the state.

Species Description

The bald eagle is well known as our Nation's symbol. Its large and powerful appearance is distinguished by its white head and tail contrasting against its dark brown body. The fledgling bald eagle is generally dark brown except the underwing linings which are priinarily white. Between fledging and adulthood, the bald eagle's appearance changes with feather replacement each summer. The bald eagle's distinctive white head and tail are not apparent until the bird fully matures, at 4 to 5 years of age. The female bald eagle usually weighs 10 to 14 pounds in the northern sections of the continent and is larger than the male, which weighs 8 to 10 pounds. The wings span 6 to 7 feet. The northern birds are larger and heavier than southern birds, with the largest birds in Alaska and Canada, and the smallest in Arizona and Florida.

Life History

The bald eagle is a bird of aquatic ecosystems, frequenting large lakes, rivers, estuaries, reservoirs and some coastal habitats. It feeds primarily on fish, but waterfowl, gulls, cormorants, and a variety of carrion may also be consumed. Adults use the same breeding territory, and often the same nest, year after year. They may also use one or more alternate nests within their breeding territory. The nesting season is approximately six months. Eggs are incubated for approximately 35 days and fledging takes place at 11 to 12 weeks old. Parental care may extend 4 to 11 weeks after fledging (Wood et al. 1998). - Young eagles may wander randomly for years before returning to nest in their natal areas.

Bald eagles select trees that are large in both diameter and height for nesting. In Minnesota, bald eagles use at least eleven species of trees for nesting (Grier and Guinn 2003). In northern Minnesota, white pines (*Pinus strobus*), red pines (*P. resinosa*), and quaking aspen (*Populus tremuloides*) are especially important (Mathisen 1983). Height and projection above the tree canopy has long been recognized as an important feature of bald eagle nest trees. In a recent study, however, Grier and Guinn (2003) found that tree diameter was more important than height in Minnesota. The 119 nest trees they measured were typically larger in diameter than other trees in the stands, but frequently not the tallest – mean diameters at breast height (DBH) were 46 centimeters (cm) and 44 cm for white pines (n = 35) and red pines (n = 10), respectively. This was smaller than the mean diameter of 77 cm reported by Mathisen (1983) based on measurements of 262 bald eagle nest trees on the Chippewa National Forest. The differences in mean diameter of nest trees between the two studies may suggest that eagles are nesting in smaller trees as nesting density increases. Eagles seek wintering (non-nesting) areas offering an abundant and readily available food supply with suitable night roosts. Night roosts typically offer isolation and thermal protection from winds.

Population Dynamics

Bald eagles are long-lived and populations are more sensitive to changes in survival than to changes in reproduction (Grier 1980). The longest living bald eagle known in the wild was reported near Haines, Alaska as 28 years old (Schempf 1997). Bald eagles from

Arizona are known to have exceeded 12 years of age (Hunt et al. 1992). Therefore, mature bald eagles that forego reproduction may reproduce in future years if they survive. Nevertheless, extreme declines in reproduction may still lead to population declines, but the rate of such declines may be highly influenced by survival rates (Grier 1980).

ENVIRONMENTAL BASELINE

Status of the Species within the Action Area

Since 1991, according to observation made by staff of the Camp Ripley Environmental Office, there have been between two and five active nests within Camp Ripley, and the number of bald eagles fledged has varied from one to eight. The bald eagle nesting season started out strong in 2006, with a pair of eagles on each of five nests throughout Camp Ripley. The five nests on Camp produced only one fledgling. Three eagle nests within one mile of the Camp Ripley boundary are also monitored. Two of the three were occupied in 2006; but only one was successful, fledging one young.

A sixth bald eagle nest (Enclosure 1.) was discovered near the North Range complex during a helicopter flight for prescribed burns during April of 2006. Two adult eagles occupied the nest through mid-April. An adult bald eagle was found dead under a power line in the vicinity of the nest on April 22nd, reported to the USFWS and sent to the Eagle Repository in Colorado. This nest was abandoned soon after, and no chicks were fledged. During the spring and summer of 2007, bald eagles nested at the North Range complex nest, producing two fledgling birds.

EFFECTS OF THE ACTION

Three gunnery ranges near the proposed construction site are currently used by both military and civilian customers for live fire training. The construction and use of the UAC and the use of the three nearby ranges will increase the amount of human and vehicle activity near the nest. This increased activity may create additional noise and dust. Weapons will be fired on all four ranges, which will create additional noise. However, bald eagles constructed this nest at a time when the ranges were being utilized for civilian and military training, so they may have a higher tolerance for human activity.

Construction is proposed to begin in the fall of 2007 and could extend into the next breeding season. The nest will be monitored throughout the fall of 2007 and spring of 2008 to determine if it is being actively utilized by bald eagles. Efforts will be made to follow the National Bald Eagle Management Guidelines (May 2007) as set forth by the USFWS. The guidelines state that blasting and other activities that produce extremely loud noises should be avoided within ½ mile of active nests, unless greater tolerance to the activity (or similar activity) has been demonstrated by the eagles in the nesting area. This nesting pair has been found to be very tolerant of loud noises as shown by successful nesting within ½ mile of active gunnery ranges.

With the construction of the UAC, human activity near this nest site will increase. Modifications to the land such as visual screening closest to the eagles nest could reduce adverse effects on the bald eagles nesting success. Large trees and native grasses will be planted adjacent to the UAC to create a visual buffer between the nest and human activity. Guidelines followed during construction will be determined by the activity or inactivity at the bald eagle nest. This nest will continue to be monitored throughout the summer of 2007 and thereafter to assess bald eagle activity at the nest. The North Range and the two known distance ranges are burned annually to reduce fire hazards, but not directly adjacent to the nest tree (>100 feet). In the past, the woodland where the bald eagle's nest is located was also burned. With the construction of the UAC, a firebreak road will be installed around that woodland and the new UAC. This will protect not only the nest and tree, but also the flammable structures in the new UAC.

Despite the recent nest success of the affected eagle pair in the vicinity of loud noises and human activity, the additional noise and activity could cause the eagle pair to abandon the nest. This would result in the abandonment and loss of one to two eggs or eaglets during the 2008 season. During future nesting seasons the eagle pair could also abandon future nesting attempts, resulting in the loss of one to two eggs or eaglets. In addition, a fire caused by the proposed action could kill or damage the nest tree or disturb the adult eagles. Therefore, we anticipate the loss of up to two eggs or eaglets during the operation of the UAC as a result of nest abandonment over the next five years.

Effects of Interrelated or Interdependent Actions

Interrelated actions are those that are a part of a larger action and depend on the larger action for their justification. Interdependent actions are those that have no independent utility apart from the action under consideration. All potential effects of the proposed action on bald eagles are considered in earlier sections.

Cumulative Effects

Cumulative effects include the effects of future State, tribal, local or private actions that are reasonably certain to occur in the action area considered in this Opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act. We are aware of no actions that are reasonably certain to occur in the action area that are substantially different from current activities. No cumulative effects are expected due to the short time frame to construct the UAC.

CONCLUSION

After reviewing the current status of bald eagles, the environmental baseline for the action area, the construction of the UAC and its subsequent usage as a training site, it is the Service's Opinion that the action, as proposed, is not likely to jeopardize the continued existence of the bald eagle. The proposed action would affect one of

approximately 1312 bald eagle nests in Minnesota. No critical habitat has been designated for this species; therefore, none will be affected.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm is further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Harass is defined by the Service as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement. We anticipate that the measures proposed to avoid or minimize any adverse effects during construction of the UAC will prevent any incidental take.

AMOUNT OR EXTENT OF TAKE

The Service anticipates that up to two eggs or eaglets will be taken during the construction and operation of the UAC during each of the five nesting seasons from 2008 through 2012.

REASONABLE AND PRUDENT MEASURES

The measures described below are non-discretionary, and must be implemented by the agency in order for the exemption in Section 7(o)(2) to apply. The Minnesota Army National Guard has a continuing duty to implement the activity covered by this incidental take statement. If the Minnesota Army National Guard fails to adhere to the terms and conditions of the incidental take statement, the protective coverage of Section 7(o)(2) may lapse.

The Service believes the following reasonable and prudent measures are necessary and appropriate to minimize take of bald eagles:

1. Maximize the effectiveness of visual screens near the nest to reduce impacts to nesting bald eagles.
2. Reduce the potential effects of pedestrians on the nesting pair.
3. Reduce the potential hazard from fire to the nest tree.

TERMS AND CONDITIONS

In order to be exempt from the prohibitions of Section 9 of the Act, the Minnesota Army National Guard must comply with the following terms and conditions which implement the reasonable and prudent measures described above. These terms and conditions are non-discretionary.

RPM 1 - Maximize the effectiveness of visual screens near the nest to reduce impacts to nesting bald eagles.

Term and Condition: Large trees and native grasses will be planted adjacent to the UAC to create a visual buffer between the nest and human activity. Complete plantings before the 2008 nesting season.

RPM 2 - Reduce the potential effects of pedestrians on the nesting pair.

Term and Condition: Place orange flagging between the UAC and the nest tree with signage to keep human disturbance to the nesting eagles at a minimum during the nesting season.

RPM 3 - Reduce the potential hazard from fire to the nest tree.

Term and Condition: The North Range and the two known distance ranges are burned annually to reduce fire hazards, but not directly adjacent to the nest tree (>100 feet). Clear dead woody vegetation from within 100 feet of the base of the nest tree during the non-nesting season to reduce fire hazard to the nest tree.

The reasonable and prudent measures, with their implementing terms and conditions, are designed to minimize the impact of incidental take that might otherwise result from the proposed action. If, during the course of the action, this level of incidental take is exceeded, such incidental take represents new information requiring reinitiation of consultation and review of the reasonable and prudent measures provided. The Minnesota Army National Guard must immediately provide an explanation of the causes of the taking and review with the Service the need for possible modification of the reasonable and prudent measures.

REINITIATION NOTICE

This concludes formal consultation on the proposed action. As provided in 50 CFR §402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the action that may affect listed species or critical habitat in a matter or to an extent not considered in this biological opinion; (3) the agency action is

subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this biological opinion; or (4) a new species not covered by this opinion is listed or critical habitat designated that may be affected by this action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take should cease pending reinitiation.

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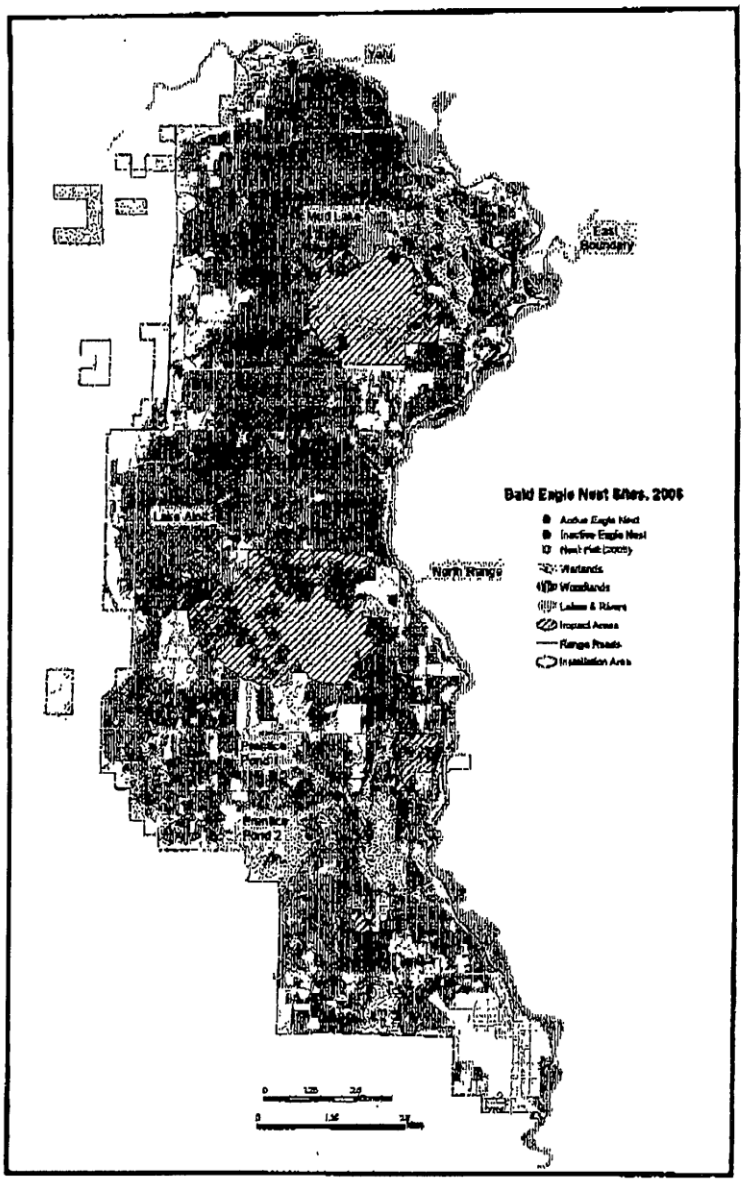
Enclosure #1 Camp Ripley Bald Eagles Nest Locations



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Appendix F: Analysis of Camp Ripley's 2007 aerial deer survey.

STATE OF MINNESOTA

DEPARTMENT OF NATURAL RESOURCES

Biometrics Unit, 5463-C West Broadway

Forest Lake, MN 55025

Phone: 651-296-2703, Fax: 651-296-5202

Email: john.giudice@dnr.state.mn.us

Memorandum

To: Julie DeJong & Brian Dirks

From: John Giudice

Date: 17 July 2007

Re: Analysis of Camp Ripley's 2007 aerial deer survey

INTRODUCTION

In March 2006 a helicopter survey of white-tailed deer was conducted within the boundaries of Camp Ripley, MN. The goal was to produce a population estimate that was within ±25% of the true population size with $\alpha = 0.10$. Secondarily, investigators wanted information on the spatial distribution of deer within Camp Ripley and potential habitat associations (for improving future surveys). A 2-D systematic quadrat sampling design (D'Orazio 2003) was used to minimize deer movements among 1-km^2 sample plots (due to survey disturbance) and because information on deer distribution and potential stratification variables were lacking for the Camp Ripley area. Counts were not adjusted for visibility bias; thus, estimates of population size and density were viewed as minimum values. However, visibility bias was minimized by using a helicopter and allowing survey intensity to vary as a function of cover and deer numbers (e.g., Gassaway et al. 1986). Furthermore, 75% of the sampling frame had <13% conifer cover and only 3 plots had >30% (max = 50%) conifer cover. Fifty percent of the sampling frame contained predominately deciduous woody cover. Thus, given adequate snow cover, visibility conditions were relatively good on most plots. The survey was repeated in 2007, but the sampling frame was expanded to include plots adjacent to Camp Ripley that were considered potential wintering areas in past surveys (1996 and 1997).

METHODS

As noted above, aerial deer surveys conducted in 2006 and 2007 used similar methodologies (see Table 1, below). The primary difference was modification of the sampling frame in 2007 to include peripheral plots that were classified as potential wintering areas in previous surveys (see Fig. 1, below). In addition, a uniform plot size (1 km^2) was used in 2007 (plot size varied along the Camp Ripley boundary in 2006). Snow cover during the survey was better in 2007 than in 2006, although survey conditions deteriorated quickly (J. DeJong, personal communications). The winter (Dec-Mar) of 2007 was colder and had less precipitation than in 2006, but both winters were relatively mild in terms of deer winter severity (at least compared to 1996-1997).

Table 1. Attributes of the 2006 and 2007 aerial deer surveys of Camp Ripley.

Attribute	2006	2007
Sampling design	2-D systematic	2-D systematic
Sampling frame		
Total plots	228	277
Area (mi^2)	79.1	106.8
Plot size (km^2)	Variable (range: 0.27-1.0)	Uniform (1.0)
Sample		
Plots (n)	59	81
Sampling rate	0.26	0.29
Survey effort & timing		
Total days	2	3
Survey dates	Mar 14-15	Mar 9-13
Aircraft	Bell OH-58A	Bell OH-58A
Survey crew		
Pilot	M. Trenholm	M. Trenholm
Observers	J. DeJong, T. Notch	J. DeJong, T. Notch, B. Dirks
Conditions		
Snow cover	Poor	Poor
Winter severity	Mild	Mild

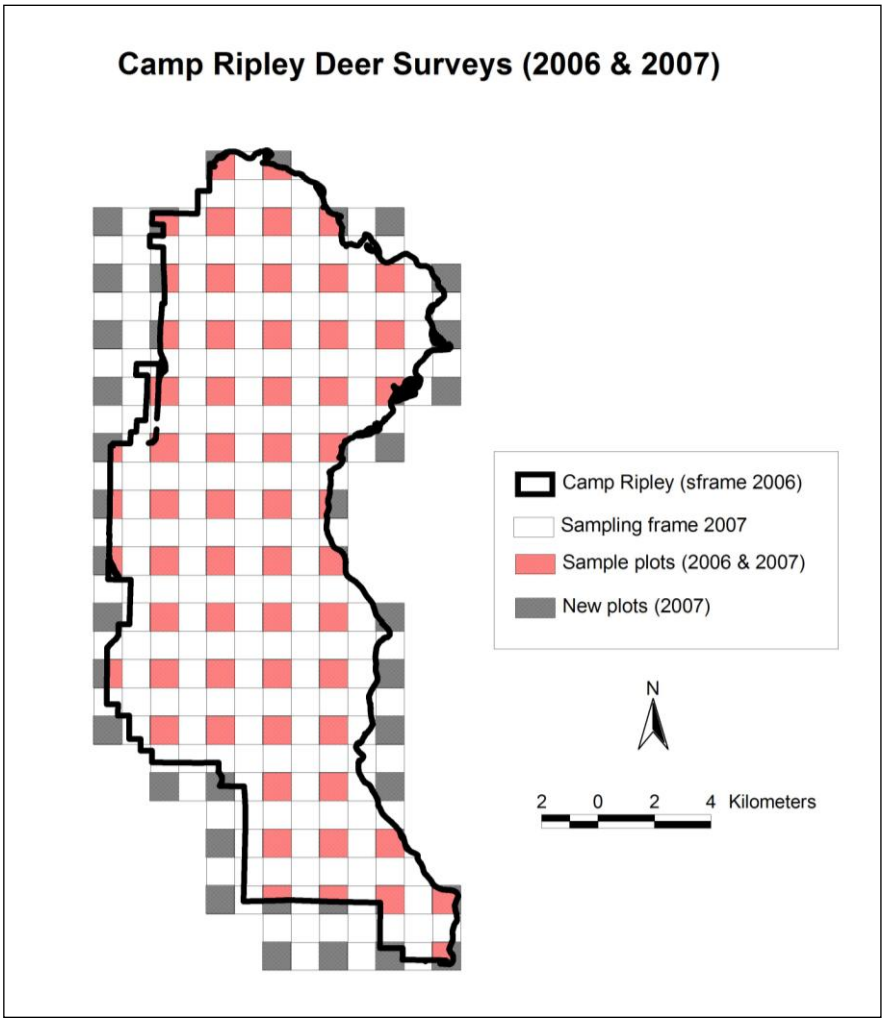

Figure 1. Sampling frames and plots for Camp Ripley deer surveys, 2006-2007.

In both years, minimum population size was estimated as the product of the sample mean and total plots in the sampling frame. Deer density (deer/mi^2) was estimated by dividing the population estimate by the area (mi^2) of the sampling frame. Variance formulas for simple random sampling can be used to estimate the variance of population estimates from 2-D systematic samples, but such estimates will be biased if counts are spatially correlated (D'Orazio 2003). Therefore, I used R-code modified after D'Orazio (2003) to estimate the variance of the estimated population total after adjusting for spatial correlation (Geary's C statistic).

RESULTS

Population Estimates & Sample Statistics

	2006	2007
Sample plots	59	81
Total plots	228	277
Sampling rate	0.26	0.29
Groups detected	76	288
Mean group size	6.0	2.9
Total deer detected	458	827
Mean deer/plot	7.8	10.2
Range (deer/plot)	0 - 143	0 - 55
SE (mean deer/plot)[a]	2.68	0.80
Geary's C (values <1 indicate positive spatial correlation)	1.199	0.980
Population estimate[b]	1,770	2,828
90% CI (population total)	747 - 2,791	2,460 - 3,198
CV (%)	34.6	7.8
Relative error (%)	57.7	13.1
Estimated density (deer/mi^2)	22	26
90% CI (deer/mi^2)	9 - 34	23 - 30

[a] Adjusted for estimated spatial correlation (D'Orazio 2003).

[b] Population estimates are not directly comparable because the sampling frame was expanded in 2007.

Spatial Distribution

Deer were more evenly dispersed and group sizes were smaller in 2007 than in 2006 (Fig. 2). Deer distributions in 2007 were not correlated with major wintering areas identified in 1997 (DelGiudice 1997), whereas 75% of deer observations in 2006 were in or near wintering area #2 and #4 (see Fig. 2 and 3). It is not entirely clear why deer distributions differed substantially in 2006 and 2007, but it may have partly reflected differences in winter severity preceding the surveys and habitat and weather conditions during the surveys.

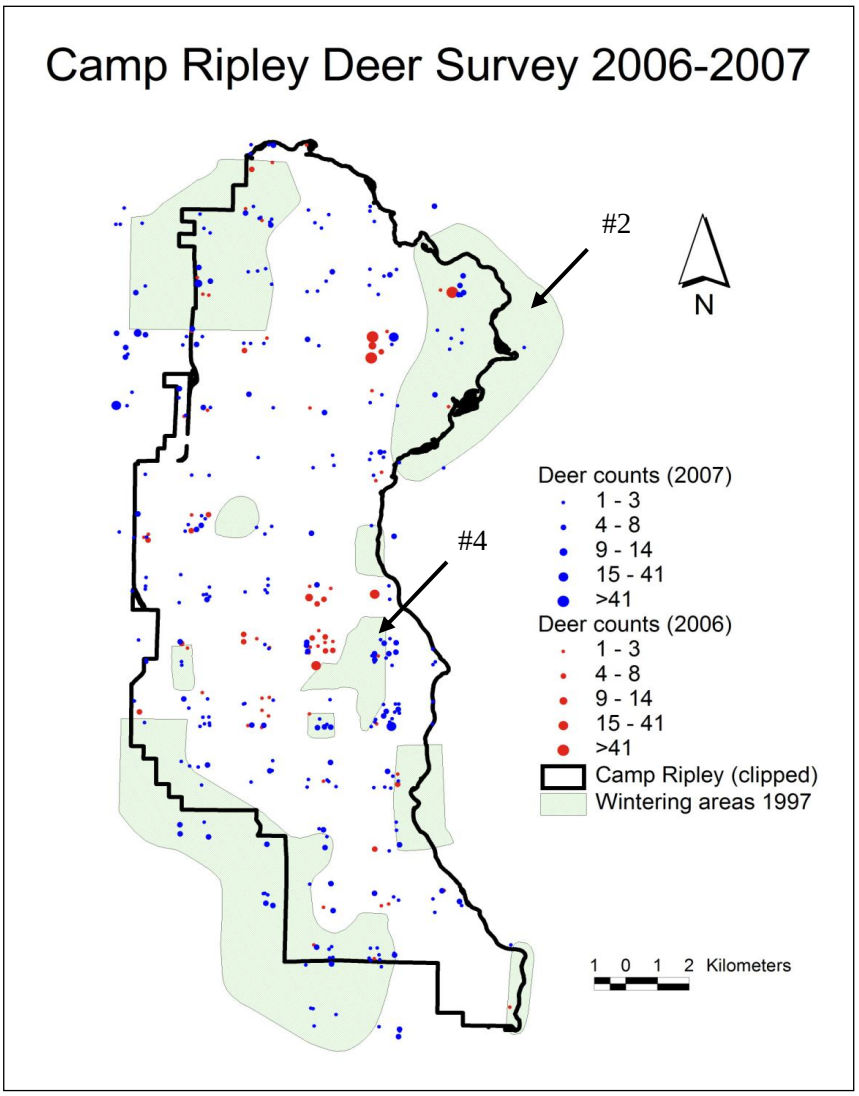

Figure 2. Distribution of deer observed (total per plot) in Camp Ripley aerial surveys, 2006-2007.

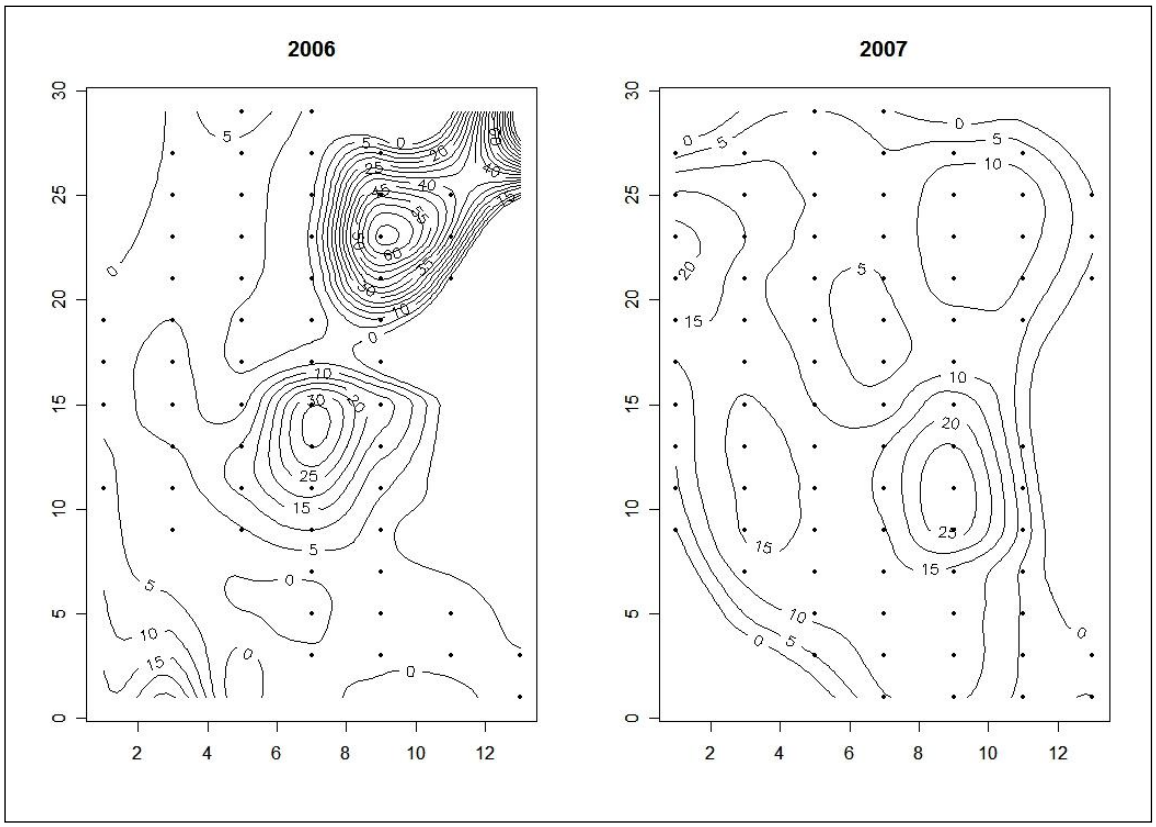

Figure 3. Contour plots of observed deer numbers (per plot) in Camp Ripley aerial surveys, 2006-2007. Black dots are sample plots and contour numbers are predicted deer numbers (based on Contour and Loess functions in program R's graphic and stats packages, version 2.5.1). X and Y axes are column and row coordinates of plots, respectively, beginning in the southwest corner of the sampling frame.

Habitat Associations

There were no strong, consistent, or easily interpretable relationships between deer counts and cover type in either 2006 or 2007 (Fig. 4). This may partly reflect differences in average detection probability among cover types (especially dense conifer cover or cattails). However, habitat associations were inconsistent between years. For example, in 2006 more deer were counted in grassland-wetland cover than was expected based on availability, whereas deer counts in 2007 appeared to be distributed randomly with respect to cover (Fig. 5). The lack of strong, consistent habitat associations probably have more to do with relatively mild winters than sightability differences (also see Spatial Distribution, above).

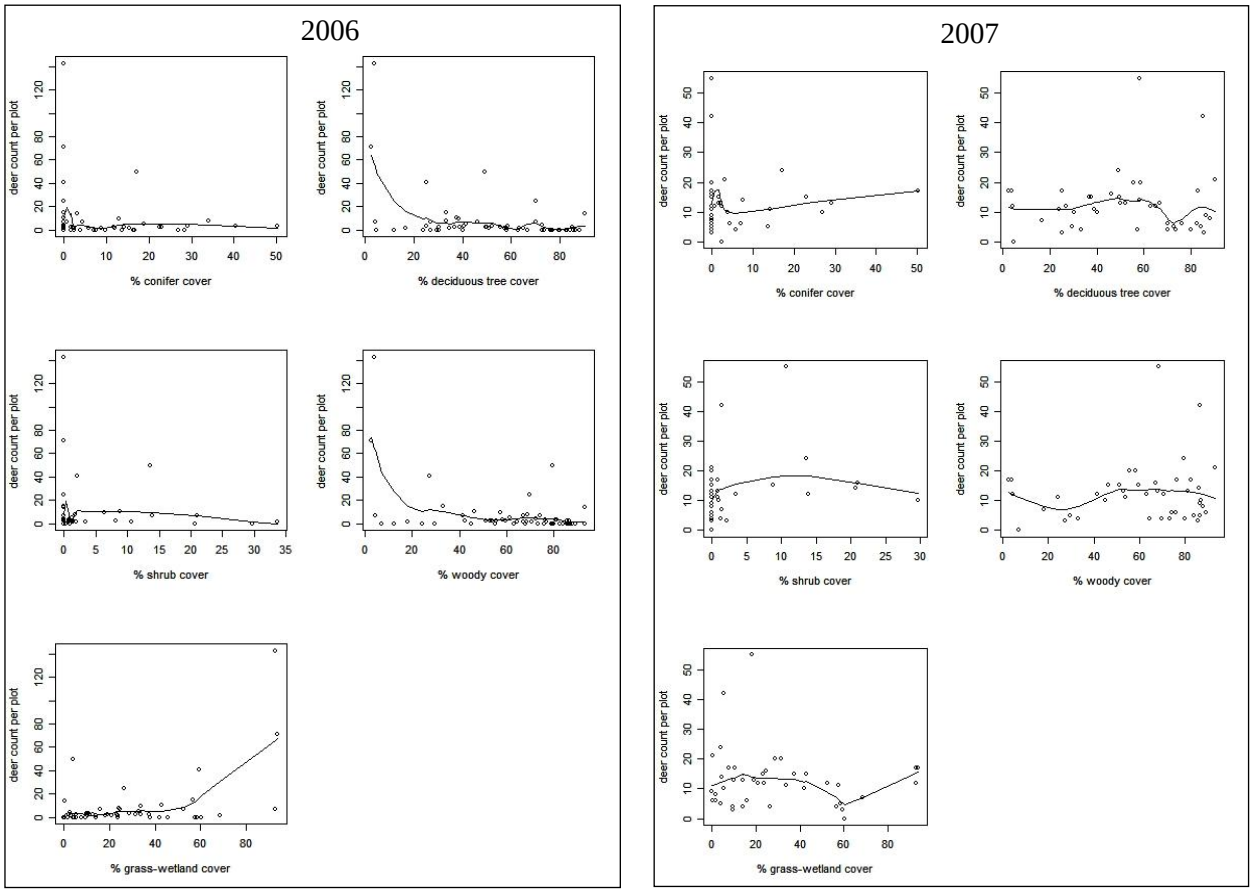

Figure 4. Scatter plots of deer counts and habitat composition in sample plots. Lines were fit with Friedman's SuperSmoother in program R's stat package, version 2.5.1. Note: vegetation data were missing or incomplete for plots located on and outside the boundary of Camp Ripley; thus, peripheral plots were excluded from scatter plots in 2007.

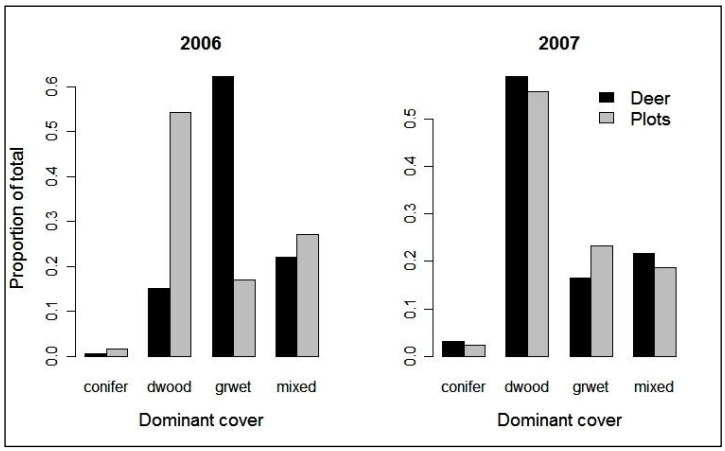

Figure 5. Proportion of deer observed by dominant cover type (comprising >50% of plot area) compared to the relative distribution of dominant cover types (by plot) within the sampling frames.

SUMMARY & POINTS-TO-PONDER

1. The 2007 population estimate was very precise (CV = 8%), especially when compared to the poor precision in 2006 (CV = 34%). The dramatically improved precision in 2007 was primarily due to a more even distribution of deer counts among sample plots (no extreme counts) and a larger sample size (81 vs. 59 plots). This result reiterates the importance of minimizing variation in deer counts among plots. Unfortunately, the improved precision was a function of deer distribution more than our sampling design. Thus, poor precision is likely in future surveys if deer form large groups (clumped distribution) and the location of such groups is not predictable (if predictable the variance could be reduced via sampling design, e.g., stratification or dual-frame sampling).

2. Conducting a less intensive pre-survey is one option that could be used to reduce the likelihood of obtaining a population estimate with poor precision (caused by deer forming large groups). Typically the pre-survey is conducted with a fixed-wing aircraft and each plot (the entire sampling frame) is quickly classified according to the relative number of deer observed while flying along fixed transects that more-or-less bisect a row or column of plots. Obviously the proportion of animals detected and counted will be much lower than in the helicopter survey, but imperfect count data from the pre-survey can be valuable for quickly and easily stratifying the sampling frame, especially if the location of large groups is not highly predictable from one year to another (e.g., due to lack of strong habitat associations). Of course, precision will be best if animals do not move (among strata) between the pre-survey and the more intensive sample survey. Thus, the intensive sample survey should be conducted as soon as possible after completing the pre-survey. This method worked well for estimating the population size and distribution of deer in and around the recent TB-positive-cattle zone (~160 mi^2) in north-central Minnesota. I recommend that you contact Bob Wright if you are interested in estimates of cost and flight time for the TB aerial deer survey.

3. Dominant vegetation types within plots was not strongly predictive of deer numbers in either 2006 or 2007. Thus, stratification by vegetation type is not recommended (i.e., the gain in precision would be marginal at best). However, you could try dividing your sampling frame into 2 strata based on Fig. 3 (where stratum 1 = plots located in and around wintering areas #2 and #4, and stratum 2 = all other plots) and then draw a simple random sample from each stratum. Or, if economically and logistically feasible, the pre-survey-stratification approach (see item #2) is worth considering. Of course, an added benefit of the systematic survey is

that it provides you with data on the distribution of deer throughout Camp Ripley, which may be valuable information in its own right.

4. Always be cognizant of the distinction between the statistical and biological populations. Movement and distribution of deer in and around Camp Ripley (the biological populations) may vary substantially within and among years. I think expanding your sampling frame to include potentially important peripheral areas was a good idea. However, absolute differences in population estimates for Camp Ripley (the statistical population) should be viewed cautiously, especially if there are weather or other events that may have influenced the number and distribution of deer using Camp Ripley during the survey (i.e., compared to other survey years). This is a common interpretation challenge with many big-game surveys.

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