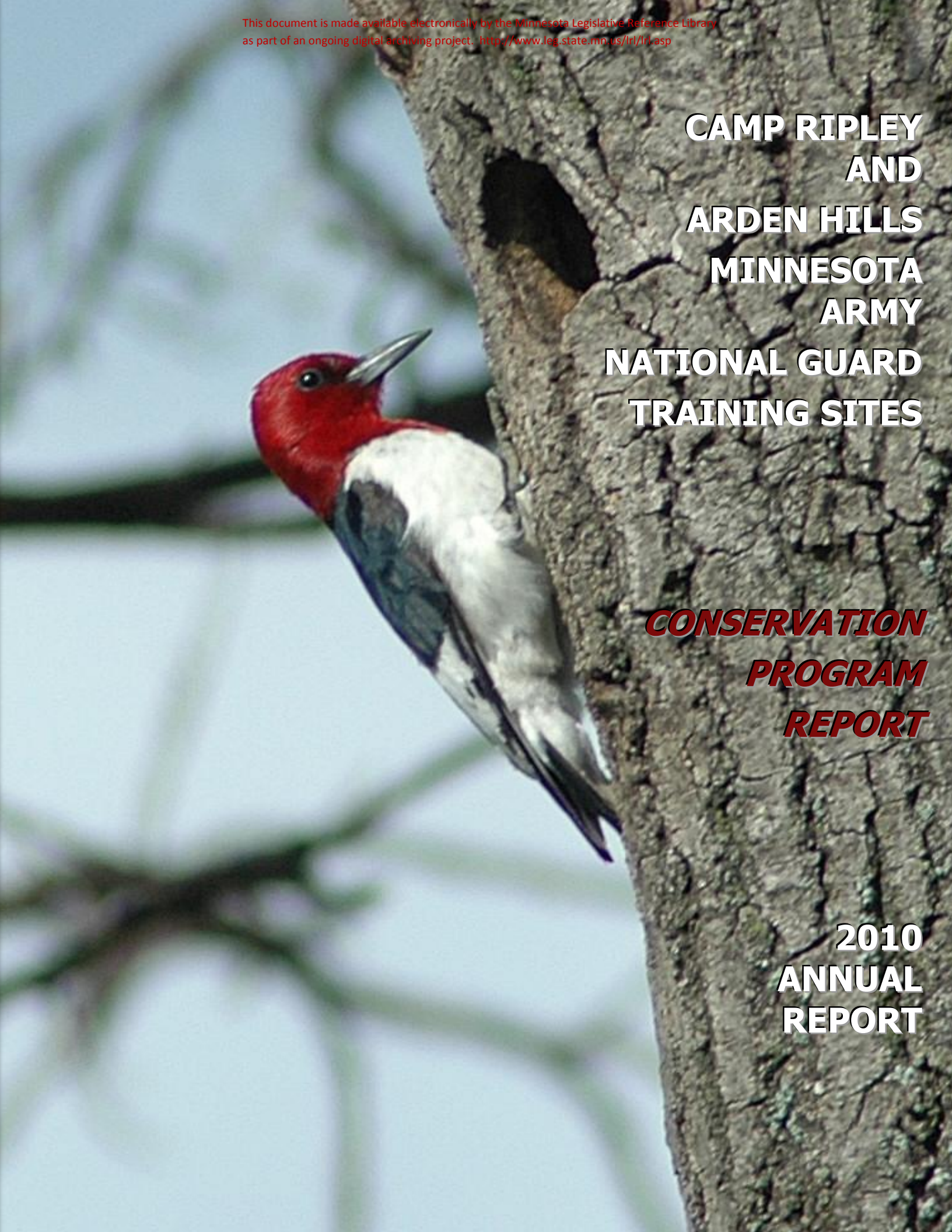

CAMP RIPLEY AND ARDEN HILLS MINNESOTA ARMY NATIONAL GUARD TRAINING SITES

CONSERVATION PROGRAM REPORT

2010 ANNUAL REPORT

Cover Photography: Red-headed woodpecker (*Melanerpes erythrocephalus*) at Cedar Creek Ecosystem Science Reserve, courtesy of Chet Meyers, Red-headed Woodpecker Recovery Project, Audubon Chapter of Minneapolis, Minnesota.

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

2010 Annual Report

January 1 – December 31, 2010

Brian J. Dirks, Animal Survey Coordinator
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Division of Ecological and Water Resources
Minnesota Department of Natural Resources
for the
Minnesota Army National Guard

MINNESOTA DEPARTMENT OF NATURAL RESOURCES
CAMP RIPLEY SERIES REPORT NO. 20

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Signature Page for Camp Ripley and AHATS INRMP updates.

Document Title:	**Approval:**
2010 Conservation Report	Scott A. St. Sauver Colonel, Minnesota Army National Guard Post Commander **Signature:** **Date:** 1/27/11
Approval: Mr. Joe Kurcinka Regional Director MN-DNR Central Region **Signature:** **Date:** 1/13/11	**Approval:** Tony Sullins, Field Supervisor USFWS , Twin Cities Field Office **Signature:** **Date:** 1/26/2011

Update/Review Requirements:

The 2010 Conservation Program Report provides Integrated Natural Resources Management Program (INRMP) accomplishments and therefore represents an annual update to the Camp Ripley and Arden Hills Army Training Site (AHATS) INRMPs. This report outlines accomplishments for the year of January 1 to December 31, 2010. The report summarizes accomplishments and provides updates to the goals and objectives for the INRMP's of the MNARNG, The program areas are as follows: natural resources, cultural resources, flora and fauna surveys, threatened and endangered species management, pest management, noise management, land use management, outreach and recreation.

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AHATS INRMP	Oct 2001	2010 Conservation Report

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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 Minnesota Army National Guard 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) from 1991 to 2006. The INRMP goals and objectives that have been accomplished are addressed in this report for the year January 1 to December 31, 2010; 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, natural resources, geographic information systems, outreach and recreation.

In 2010, the Minnesota State Historic Preservation Office (SHPO) concurred that demolition and construction projects on Camp Ripley, in Mankato, and at the Chisholm Armory would not impact any National Register of Historic Places eligible properties. Cultural field investigations were completed for Camp Ripley's demolition #5 range expansion and range operations center for the live fire convoy range. Two consultation meetings hosted at Leech Lake and Mille Lacs Lake resulted in refining the consultation agreement to a programmatic agreement concurred by all attending parties.

Six Nature Conservancy staff again assisted with the re-inventory of Camp Ripley forest stands. This year, the decision was made to finish the re-inventory in one year and discontinue the re-inventory phase. During the year, the crew completed re-inventory of 9,000 acres of forest stands. A total of 31,500 acres has been completed from 2003 to 2010. In 2010, four tracts of timber totaling 237 acres were offered for harvest at the sealed bid auction on Camp Ripley. Thirty-eight individuals acquired fuelwood permits from Range Control and MNDNR, Division of Forestry, harvesting 265 cords of wood in 2010. The Department of Military Affairs and Minnesota Department of Corrections again worked together to facilitate a fuelwood program for families of deployed soldiers. Tree planting was accomplished at Camp Ripley for reforestation activities whereby 6,600 white and Norway pine seedlings were planted. During the 2008 session, the Minnesota Legislature enacted legislation to allow the Adjutant General to accumulate Camp Ripley timber sale proceeds for the purposes of forest management and established the land fund. Expenditures from the land fund included forest regeneration and harvest treatment along with jack pine planting preparation.

Prescribed fire was implemented on Camp Ripley for hazard reduction (10,000 to 12,000 acres) and training enhancement (1,002 acres) burns. Wetland impacts from construction of the multipurpose machine gun range on West Range were mitigated. In 2010, the Department of Biological Sciences at St. Cloud State University began a project using assisted succession as a means to restore areas dominated by perennial invasive species, and continued to monitor and test control methods for invasive plant species at Camp Ripley.

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 participated in the Pillager area Christmas Bird Count and the Minnesota Breeding Bird Atlas project. Camp Ripley songbird surveys were conducted on 11 permanent plots; a total of 122 birds of 25 different species were counted. Additional bird species were monitored including osprey, red-headed woodpeckers, bluebirds, wood ducks, black terns, trumpeter swans, bald eagles, red-shouldered hawks, golden-winged warblers, and ruffed grouse.

In February, six wolves were captured via helicopter and radio-collared. Six of seven radio-collared wolves are on the south end of Camp; this situation enabled us to monitor pack movements and the development of new pack at Camp Ripley. These three packs of gray wolves were monitored through radio-telemetry throughout 2010. No known wolf mortality occurred on Camp.

Ground and aerial radio tracking were used to monitor reproductive success, movements and mortality of eleven collared black bears on Camp Ripley through 2010. Six scent stations were used to detect Canada lynx, cougars, and bobcats in 2010. Camp Ripley, in cooperation with Central Lakes College, continued research as part of the MNDNR fisher project; five fishers were radio-collared and monitored. Camp Ripley participated in a regional and nationwide acoustic survey to monitor bat population trends coordinated by the U.S. Army Engineer Research and Development Center. 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 again searched Camp Ripley for Blanding's turtles and their nests. Ten Blanding's turtles were observed and two nests were protected. Frog and toad monitoring surveys were conducted. Fish surveys were conducted on three Camp Ripley lakes and game fish were harvested from one lake for stocking. Spring muskellunge stocking occurred in two lakes. The Minnesota Department of Health conducted a tick borne disease study on Camp Ripley.

To date, 291 willing landowners have expressed interest in Camp Ripley's Army Compatible Use Buffer program. These landowners represent about 41,785 acres of land. Over 93 percent of the interested landowners desire permanent conservation easements rather than acquisition. ACUB accomplishments through 2010 are presented in this document.

Also included in this report is a summary of the Integrated Training Area Management program and how its five component programs are used to meet all environmental laws and regulations and to maintain and improve the condition of natural resources at Camp Ripley. A summary of Geographic Information Systems support of conservation programs and resource management plans is discussed.

In 2010, the environmental team gave presentations or tours to 110 groups totaling 4,139 people. Also in 2010, Camp Ripley hosted the sixth annual Disabled American Veterans (DAV) wild turkey hunt, second annual deployed soldiers archery turkey hunt, and the ninth annual youth archery hunt. Camp Ripley also held the fifth annual deployed soldiers archery deer hunt in conjunction with the nineteenth 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 2010.

Field work for three former farmstead sites and one pre-historic site has been completed at AHATS. All 1,500 acres have been evaluated for historic features and all undisturbed soils have been evaluated for pre-historic features. The Land Use Control Remedial Design for the New Brighton/Arden Hills Superfund Site passed the consistency test and was signed in 2010. Twenty semi-truck loads of biomass energy were hauled from AHATS.

AHATS was surveyed during the National Audubon Society's annual Christmas Bird Count and for the MNDNR's Minnesota Breeding Bird Atlas. Songbird surveys were conducted on 13 plots. State listed endangered Henslow's sparrows were documented in 2009 but not in 2010, and were observed four of the past six years. Trumpeter swans raised one cygnet during 2010. AHATS partnered on an urban wild turkey study conducted by a University of Minnesota graduate student. Habitat for plains pocket mice, a state special concern species, was enhanced at the AHATS gravel pit. Seventy-two white-tailed deer were counted during the AHATS aerial deer survey. A two-day road survey for Blanding's turtles resulted in one observation. AHATS participated in the statewide frog and toad monitoring survey. A butterfly survey was conducted by the Saint Paul Audubon Society on June 26, 2010, and one species new to the area were observed. AHATS hosted 83 participants in the fourth annual Urban Bird Fest of Ramsey County. At AHATS, the second deployed soldiers archery wild turkey hunt, fifth annual deployed soldiers archery deer hunt, and a volunteer 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) during calendar year 2010. 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, implementation, and annual updates of INRMPs is required by the Sikes Act (16 USC 670a et seq.), Army policy, 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 an 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 2009), operational 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 (1991 to 2006) that was completed annually by the Minnesota Department of Natural Resources (MNDNR) for the MNARNG.

RESPONSIBILITIES

Camp Ripley Command-Environmental (NGMN-CRE) personnel are responsible for Conservation Program planning and implementation for the MNARNG. This includes, but is not limited to, preparing plans, developing projects, implementing projects, conducting field studies, securing permits, geographic information system 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 MNARNG's Conservation Programs statewide. Environmental personnel who work directly for the Facilities Management Office (FMO) have statewide responsibility for MNARNG's compliance, restoration, and pollution prevention programs.

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 cooperative agreements with the MNDNR, Division of Ecological and Water Resources (Appendices C and D) and Division of Forestry, Saint Cloud State University, The Nature Conservancy, and Central Lakes College in Brainerd, Minnesota. 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, including: Minnesota Board of Water and Soil Resources, U.S. Fish and Wildlife Service, Minnesota Department of

Corrections, Minnesota Department of Transportation, Minnesota Department of Agriculture, Minnesota Department of Health, Minnesota Pollution Control Agency, Minnesota Deer Hunters Association, and Minnesota State Archery Association. Other partners include, the 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 2010, the Conservation Program of the MNARNG will be divided into the following program areas within each installation: cultural resources, natural resources, land use management, geographic information systems (GIS), and outreach and recreation.

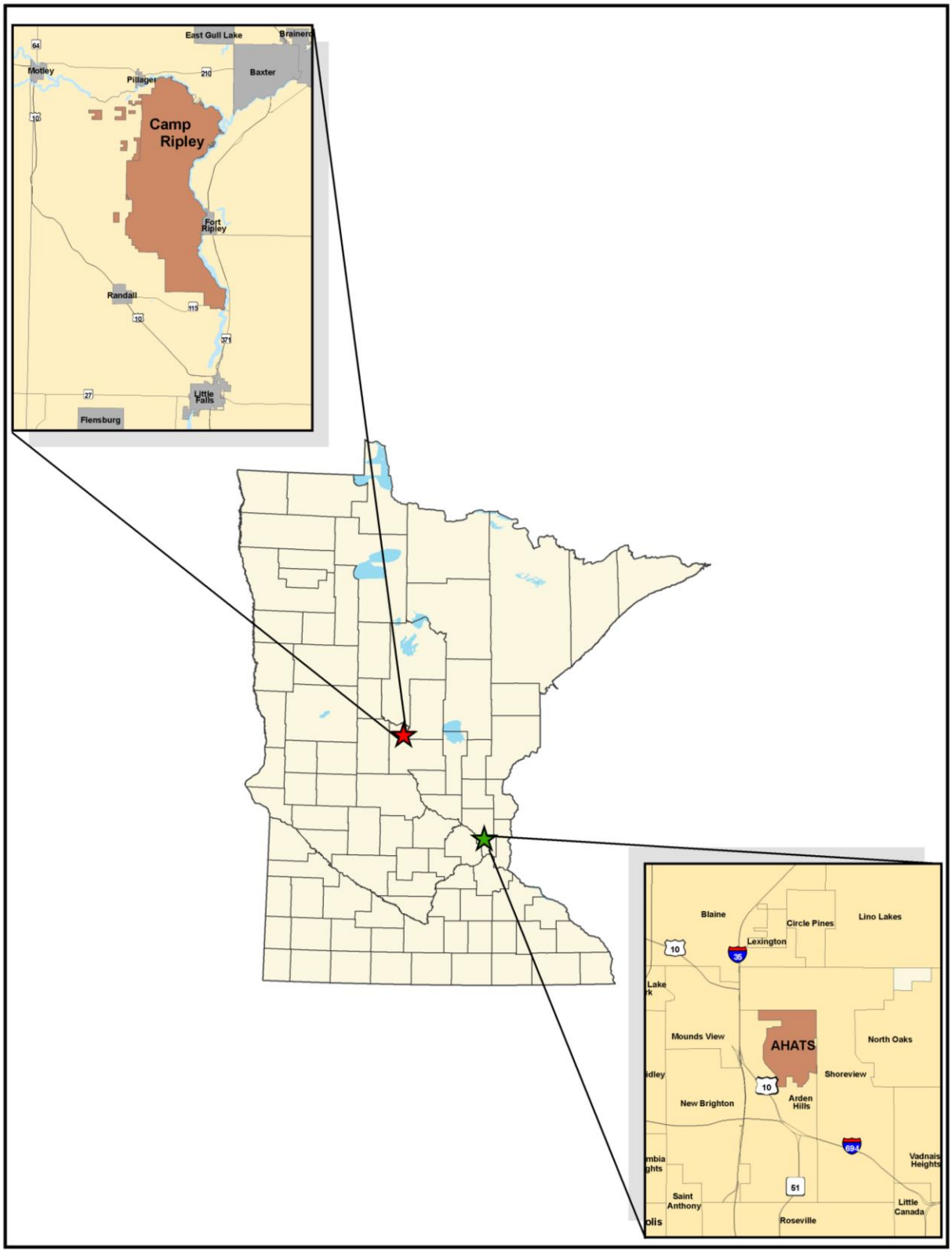
CAMP RIPLEY TRAINING SITE

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 52,699 acres (approx. 82 sq. miles) within Morrison County and 59 acres within Crow Wing County (52,758 acres total). Camp Ripley is bordered on the north by 8.5 miles of the Crow Wing River and on the east by 17 miles of the Mississippi River. Land ownership is 98 percent state land under the administration of the Minnesota Army National Guard (MNARNG), 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 Camp, 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.

Since 1994, when Camp Ripley first started tracking utilization with a military scheduling program, more than four million man days of training has occurred at Camp Ripley. Organizations include: All branches of the military, many international military units, as well as civilians from a variety of organizations including federal, state and local law enforcement agencies. Camp Ripley supports the state mission for military 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.

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



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 training mission and natural resources management program.

Population studies of flora and fauna are an ongoing part of the installation's INRMP, that was completed in December of 2003 (Minnesota Army National Guard 2003) with annual updates in 2007 (Dirks et al. 2008), 2008 (Dirks and Dietz 2009), 2009 (Dirks and Dietz 2010), and 2010 (Appendix A). The data obtained will be used to help manage the natural resources on Camp Ripley.

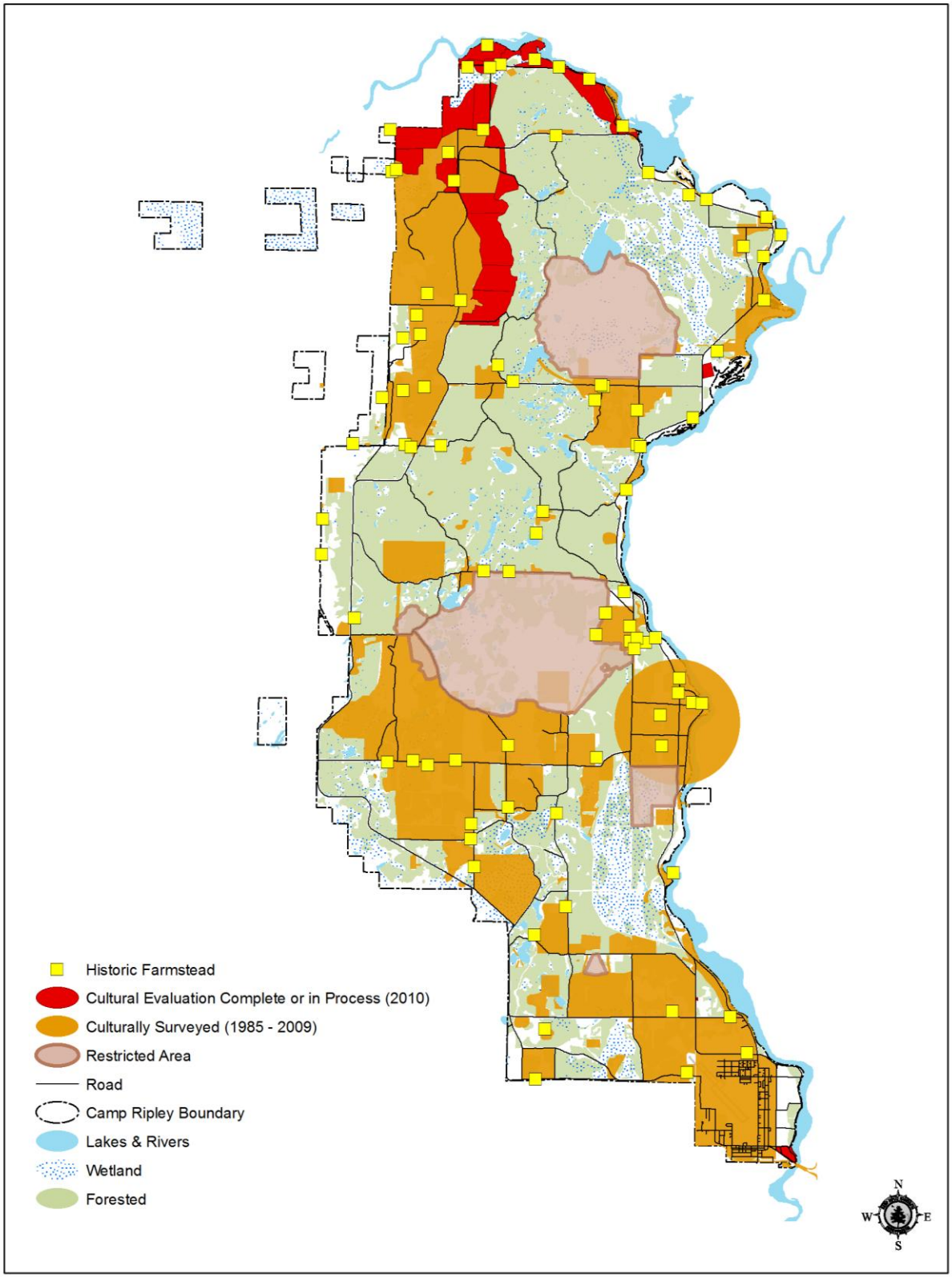
CULTURAL RESOURCES

During 2010, the Minnesota State Historic Preservation Office (SHPO) responded with concurrence on several projects previously submitted for their review. The SHPO concurred that no National Register of Historic Places eligible properties would be impacted by the demolition of Camp Ripley building numbers 5-62, 6-57, 6-58, 10-3, 10-71, 10-86, 10-171 and 10-172, nor the Camp Ripley Y-4 (North) tactical training base project, the Camp Ripley multipurpose machine gun range, and the Camp Ripley digital multipurpose training range at Center Range. The SHPO also concurred that no National Register of Historic Places eligible properties would be impacted by construction of the Mankato facilities maintenance shop and the construction of a parking lot adjoining the Chisholm Armory.

Heritage Sites, a cultural resources consulting company, also completed the field investigations for Camp Ripley's demolition #5 range expansion in Training Area #73 and the Range Operation Center for the Live Fire Convoy Range. Field work was also completed for the Stillwater and Bloomington Armory expansions. Heritage Sites also began field work to complete evaluation of 3,136 acres remaining to be surveyed in Camp Ripley's K-1 maneuver area as well as initiating field work for cultural evaluation of campground improvements at De Parcq Woods. At the end of 2010, 18,995 acres on Camp Ripley had been evaluated for prehistoric and historic sites or received concurrence documentation from the SHPO and the Tribes (Figure 2). In addition, all spatial data was recorded in the GIS database.

The Consultation Agreement developed by MNARNG and the Tribal consulting partners was again the subject of two consultation meetings hosted at Leech Lake in May and at Mille Lacs Lake in July. Prior to the meetings, the MNARNG leadership met with the Minnesota SHPO and joined in a conference call to the cultural staff and attorney from National Guard Bureau to get resolution of issues surrounding the completion of document signing. The two consultation meetings completed refining of the consultation agreement to a Programmatic Agreement concurred to by all attending parties. The agreement meets the stipulations set forth by National Guard Bureau in May and the signing awaits National Guard Bureau determination of sufficiency from the Advisory Council on Historic Protection.

Figure 2. Culturally evaluated areas and farmstead locations at Camp Ripley, 1985-2010.



NATURAL RESOURCES

Natural resource planning is an integral part of the Conservation Program for the MNARNG. The MNARNG uses the INRMP as the guidance documents for implementing the Conservation Program. The planning process used in developing the INRMP 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 MNARNG's 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 INRMP not only satisfies the military mission but also provides 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 present their annual accomplishments and work plans for the next year. Please refer to Appendices E for the 2010 Camp Ripley annual meeting minutes.

Forestry

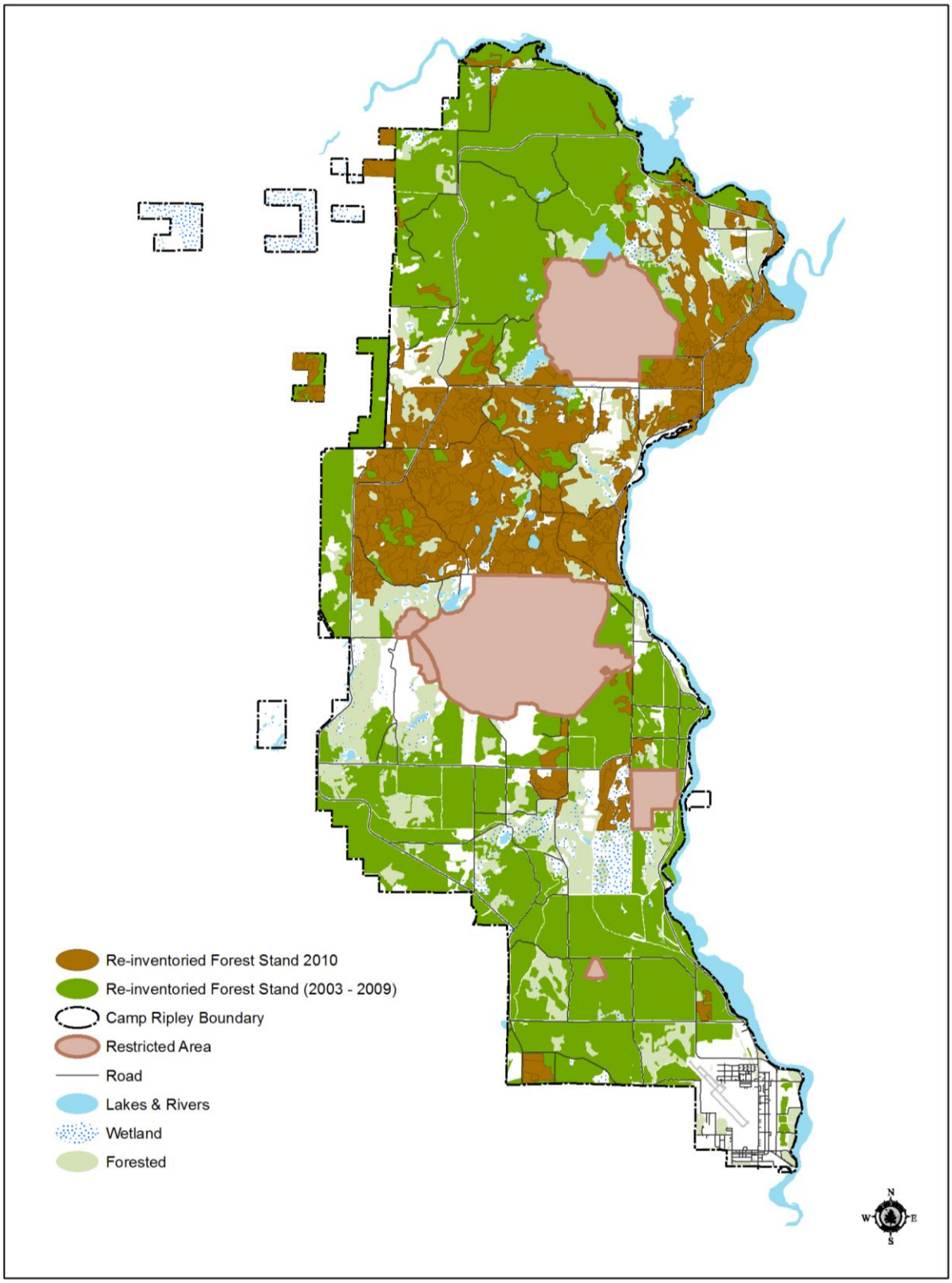
Forest Inventory

From 2003 to 2009, at least ten percent of the forest inventory database was re-inventoried annually. However, in 2010 the decision was made to finish the re-inventory in one year and discontinue the re-inventory phase. The inventory crew consisted of The Nature Conservancy's (TNC) Land Steward and two technicians, as part of the original Cooperative Agreement with TNC. In October, TNC added three additional crew members to facilitate the completion of stands being re-inventoried. During 2010, forest re-inventory of approximately 9,000 acres was completed for a total of approximately 31,500 acres (2003-2010) (Figure 3). The Forest Inventory Module database will no longer be dynamic but reflect only the changes submitted as alterations. Ultimately, if the forest inventory data needs to be updated to reflect growth and mortality, a new Camp Ripley-wide inventory will need to be initiated.

A supplemental forest metric data (canopy height, diameter at breast height (dbh), basal area, stem density, and volume) has also been derived from our 2007 Light Detection and Ranging (LiDAR) data set (Dirks and Dietz 2010). These forest metrics for Camp Ripley and the Army Compatible Use Buffer (see section in report) project area has been revised based upon an updated set of statistical models.

In 2008, the original set of LiDAR derived forest metrics for Camp Ripley were based upon the statistical models generated by Wes Newton, U.S. Geological Service Statistician, for a mixed forest landscape in central Maine. In the spring/summer 2009 an assessment was conducted to evaluate the accuracy of these forest metric estimates. The evaluation was based upon 40 bird plots and 40 random points across multiple land cover types within the project area. A wandering quarter method was used to select trees randomly in each of four quadrants (NE, NW, SW, and SE)

Figure 3. Forest stands re-inventoried at Camp Ripley, 2003-2010.



beginning from the plot center. Trees were defined as stems ≥ 10 cm dbh with saplings defined as stems < 10 cm dbh. Trees and saplings were sampled separately for dbh (m), canopy height (m), and ground-to-live canopy height (m) (trees only), as well as distance to nearest neighbor (m), which allowed for estimation of stem densities within each plot.

Using the results of this evaluation, Wes Newton was able to adjust the statistical models to more accurately estimate forest metrics across the Camp Ripley landscape. Updated models were applied to the 2007 Camp Ripley LiDAR dataset and a new set of forest metrics were generated for Camp Ripley and the ACUB project area.

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 forest resources across all lands in the United States. In 1999, Forest Inventory and Analysis began transitioning to a sampling design in which a 6,000 acre hexagonal grid is 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. Each year, one-fifth of the plots, called a 'panel' are measured (Table 1 and Figure 4). Plots are randomly selected and those occurring within impact areas are not surveyed.

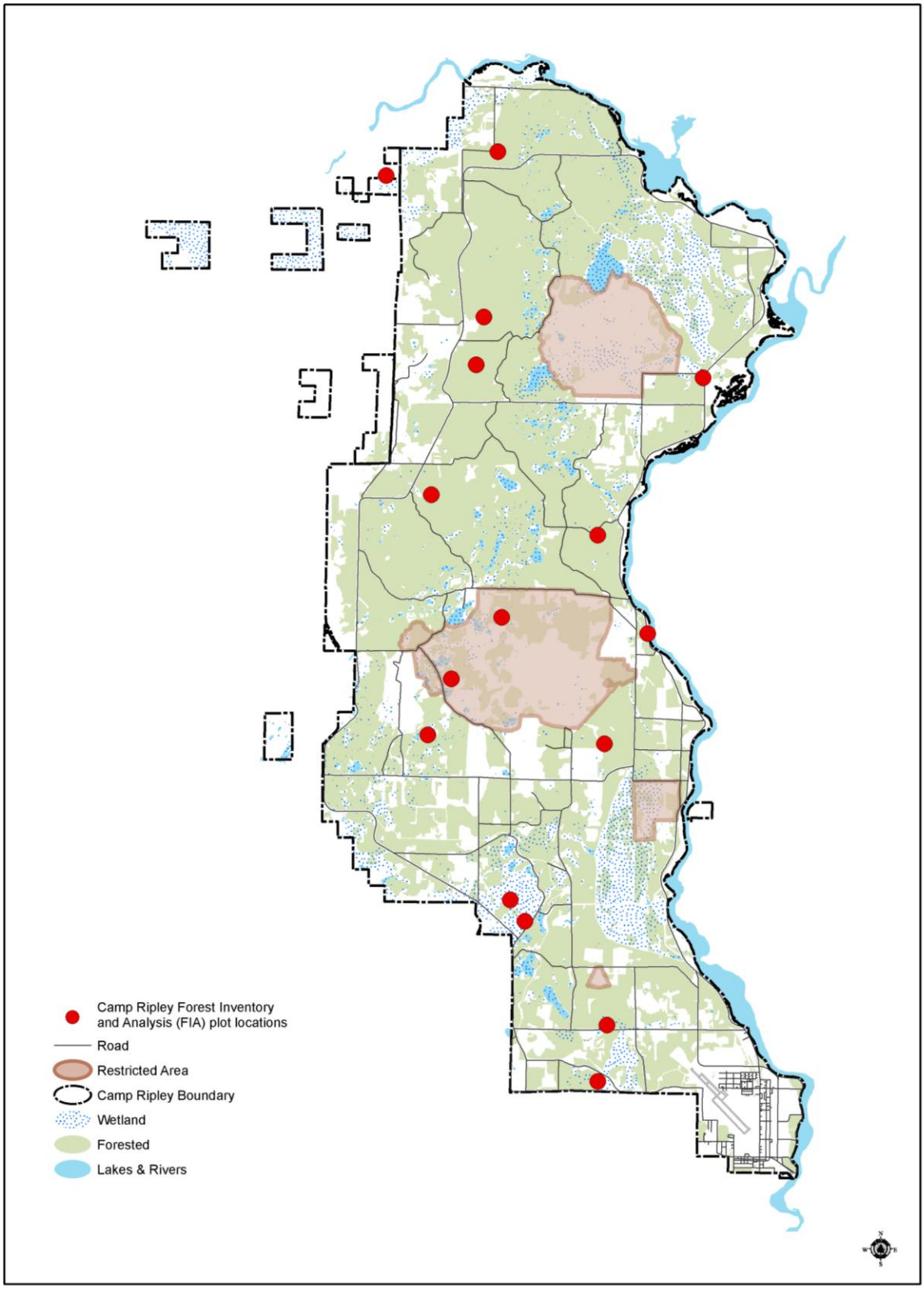
Table 1. Schedule of number of plots on the Forest Inventory and Analysis sample grid at Camp Ripley, 2008-2012.

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 five years.

The Phase 3 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, downed woody materials, and soil attributes. Additionally, soil samples are collected, sent to a laboratory for chemical analysis, and then completely destroyed.

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



Timber Sales

In early September, the annual timber auction was conducted by the MNDNR Forestry at Range Control. Five tracts were prepared for sale; however, one tract (B011352) was withdrawn prior to the auction. The auction results are listed in Table 2 and Figure 5. Even with the depressed markets for wood products, there was considerable interest in the sale and bidding was lively.

The status of existing permits on Camp Ripley is listed below (Tables 2-4):

Table 2. Camp Ripley timber sales, 2010.

Permit #	Acres	Biomass (tons)*	Cords/Species	Revenue	Successful Bidder
B011349	125.8	960	757 Norway pine 490 Birch 850 Aspen 435 Red oak 75 Maple 27 White pine 25 Basswood 3 Jack pine 2 American elm	$ 61,231.90	Sappi
B011350	78.9	1,020	1145 Aspen 575 Red oak 150 Paper birch 58 Maple 35 Bur & White oak 12 Norway pine	$ 49,233.65	Sappi
B011351	10.5	Unknown	279 Aspen 59 Paper birch 16 Maple 1 Basswood	$ 5,825.30	CTP Chipping
B011353	22	260	300 Aspen 88 Paper birch 46 Red maple 40 Basswood 37 Red oak	$ 8,618.40	Edin Logging, Inc.
2010 TOTAL	**237.2**		**5,505 cords**	**$124,909.25**	

*Biomass is not totaled into final cords due to different units & whether it is included or added in to sale.

Figure 5. Location of timber sales at Camp Ripley, 2010.

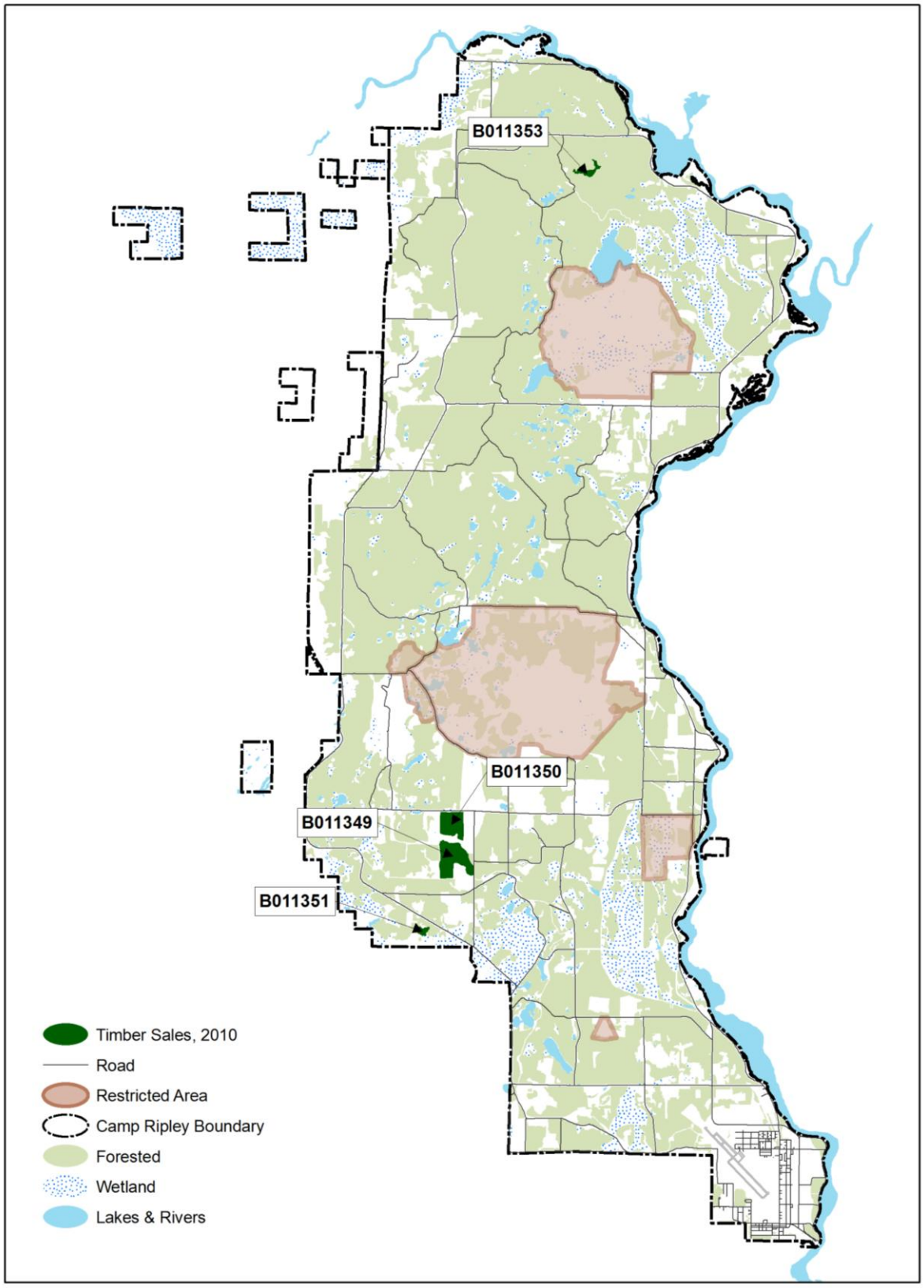


Table 3. Timber sale update at Camp Ripley, 2010.

Permit Holder	Permit Number	Date Closed	Volume Harvested	Actual Receipts
2008 Sales				
Great Northern Logging	X011138	Active	735 cds	$ 17,532.00
Edin Logging	X011140	11/4/09	1033 cds	$ 34,940.50
Sawyer Logging	X011141	5/28/10	1143 cds	$ 22,536.36
Informal Sales				
Kent Ginter	F010358	4/6/10	212 cds	$ 2,541.00
Edin Logging, Inc	F010431	4/8/10	445 cds	$ 6,819.00
Edin Logging, Inc	F010486	5/28/10	30 cds	$ 165.00
2009 Sales				
Hodgden Logging	B011023	3/11/10	325 cds	$ 5,689.84
Hodgden Logging	B011024	Uncut	961 cds	$ 14,913.60
Edin Logging	B011025	Uncut	1017 cds	$ 14,046.74
Edin Logging	B011026	Active	1192 cds	$ 16,214.00
Bill Madsen	B011027	5/28/10	341 cds	$ 3,687.90
Edin Logging**	B011028	Active	2283	$ 29,372.04
Fletcher Trucking**	B011029	Uncut	726	$ 11,167.17
2010 Sales				
Sappi	B011349	Active	2664 cds	$ 42,575.13
Sappi**	B011350	Active	1975	$ 53,443.67
CTP Chipping**	B011351	Active	355	$ 5,825.30
Edin Logging**	B011353	Uncut	511	$ 8,618.40

** Denotes biomass sale, volume is measured in 1,000 pounds

Table 4. Timber sale summary at Camp Ripley, 2002-2010[a].

Year	2002	2004	2005	2006	2007	2008	2009	2010
Acres	189	218.5	217	139	188	641	402	**237**
Volume	1500 cds.	4040 cds.	4412 cds.	3140 cds.	3624 cds.	12,893 cds.	6,482 cds.	**5,505 cds**
Appraised Value	$25,357.50	$86,943.00	$114,123.00	$85,705.00	$67,140.00	$206,326.00	$87,895.00	**$78,846.30**
Sold Value	$52,632.00	$230,140.00	$413,321.30	$133,740.00	$125,483.56	$406,703.38	$99,786.36	**$124,909.25**
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 Tactical Training Base (TTB) Development (10 ac.)	Regenerate Aspen (133 ac.) Military Corridor Development (43 ac.) Range Development (464 ac.)	Regenerate Aspen (258 ac.) Military Corridor Development (83 ac.) Pine Thinning (61 ac.)	Regenerate Aspen (32.5 ac.) Digital Multipurpose Training Range (Center Range) (204.5 ac.)

[a] No timber sales occurred during 2003.

Fuelwood Permits

For the permit period from April 1, 2010 through December 31, 2010, there were 38 individuals that acquired fuelwood permits (23 – 5 cord and 15 – 10 cord) from Range Control and MNDNR, Forestry Division, totaling $1,325.00.

In August of 2010, the Sentence to Serve crew leaders returned to Camp Ripley for their annual chainsaw training. The area selected this year was the airfield over-run. Over 100 individuals participated in the week long training exercise, and cut down nearly 300 trees. In September, Sentence to Serve crews returned to Camp Ripley and along with troop labor and Department of Public Works personnel, transported firewood to the enclosed area behind the DPW shop designated as the collection site for firewood for families of deployed soldiers. There the Sentence to Serve crews cut the trees into firewood lengths and split the wood into firewood for another very successful joint venture between Camp Ripley and the Department of Corrections to benefit the families of deployed soldiers.

The Camp Ripley firewood policy has been rewritten to better clarify the regulations governing fuel wood permits and collection (Dirks and Dietz 2010, Appendix G).

Tree Planting

Reforestation activities on Camp Ripley involved planting 3,300 white pine and 3,300 Norway pine seedlings on the 9.2 acre site of stand 242JP44. In late October, the seedlings were protected by bud-capping and the application of "Plantskydd" to minimize deer browsing.

Insects and Diseases

Other than the impacts on hardwood trees resulting primarily from the two-lined chestnut borer (*Agrilus bilineatus*), no significant presence of insect or disease problems were noted on Camp Ripley for the year 2010.

Land Fund

During the 2008 session, the Minnesota Legislature enacted legislation (MS 190.25 subd. 3A; Dirks and Dietz 2010, Appendix H and I) to allow the Adjutant General to appropriate funds from a special revenue fund. This fund was created to accumulate the proceeds resulting from timber sales on Camp Ripley for the purposes of forest development. The legislation provides a funding source for forest management activities, including timber harvest and reforestation on Camp Ripley.

During 2010, the members of the Sustainable Range Program committee reviewed the Land Fund Plan 2010-2020. All of the projects listed for 2010 and 2011 were evaluated making changes where appropriate. Early in 2011 the committee will reconvene to evaluate the proposed harvest site and planting areas for plan years 2012 and 2013.

The potential income is outlined below (Table 5):

Table 5. Timber sales receipts for Camp Ripley land fund as of November 30, 2010.

Year	Permit#	Expires	Status	Sold Value	Bid Guarantee	Security	Added Timber	Over/Under Run	Final Amount
2008									
	X011138	Mar-2011	Not Started	$17,532.00	$2,629.80				
	X011139		Closed	$15,231.78				$662.10	$15,893.88
	X011140		Closed	$34,940.50			$0.00		$34,940.50
	X011141		Closed	$32,530.10				(-$9,993.74)	$22,536.36
	B010655		Closed	$157,773.00				(-$38,572.28)	$119,200.72
	B010656		Closed	$153,830.43				$7,735.90	$161,566.33
								2008 Subtotal	**$354,137.79**
2009									
	B011023		Closed	$6,332.45				(-$642.62)	$5,689.83
	B011024	Mar-2011	Not Started	$14,913.60	$2,237.04				
	B011025	Mar-2011	Not Started	$14,046.74	$2,107.01				
	B011026	Mar-2011	Partially Cut	$16,214.00	$2,432.10	$13,781.90			
	B011027		Closed	$3,687.90					$3,687.90
	B011028	Mar-2011	Partially Cut	$33,424.40	$5,013.66	$28,410.74	$710.00		
	B011029	Mar-2011	Not Started	$11,167.17	$1,675.08				
								2009 Subtotal	**$9,377.73**
2010									
	B011349	Mar-2012	Partially Cut	$61,231.90	$9,184.79	$52,047.11			
	B011350	Mar-2012	Partially Cut	$49,233.65	$7,385.05	$41,848.60			
	B011351	Mar-2012	Partially Cut	$5,825.30	$802.65	$5,022.65			
	B011353	Mar-2012	Not Started	$8,618.40	$1,101.00				
								2010 Subtotal	**$0.00**
SUBTOTALS					**$34,568.18**	**$141,111.00**	**$710.00**	**(-$40,810.64)**	
								Subtotal for Closed 2008 - 2009 Auction Sales	**$363,515.52**
								Subtotal received to date for Closed Sales + Bid Guarantees + Securities+ Added Timber	**$539,904.70**

Table 5. Timber sales receipts for Camp Ripley land fund as of November 30, 2010.

Year	Permit#	Expires	Status	Sold Value	Bid Guarantee	Security	Added Timber	Over/Under Run	Final Amount
Informal Sales									
	F010486								$165.00
	F010431								$6,819.00
	F010358								$2,541.00
	F010384								$440.00
	F010385								$600.00
	F010327								$465.64
								Informal Sales Subtotal	**$11,030.64**
Fuelwood Permits (9/25/08 - 11/30/10)									
	52 (5 cords)		$25/each						$1,300.00
	29 (10 cords)		$50/each						$1,450.00
								Fuelwood Permits Subtotal	**$2,750.00**
								GRAND TOTAL RECEIPTS (9/1/2008 to 11/30/2010)	**$553,685.34**

The 2010 expenses to date from the land fund are in Table 6. Note: See Forest Development Proposals for more details.

Table 6. Scope of work for forest development, Camp Ripley, 2010.

Project Number	Project Description	Estimated Cost
CR-Dev10-003	Site Prep for jack pine planting in 324JP44.	$ 2,500.00
CR-Dev10-004*	Regeneration treatment on stand 214A54.	$ 5,060.00
CR-Dev10-005	Regeneration treatment on stand 203A66.	$ 4,840.00
CR-Dev10-006	Regeneration treatment on stand 277A55.	$14,760.00
CR-Dev10-007	Regeneration treatment on stand 2141A57.	$ 2,420.00
CR-Dev10-009	Supplies: paint, flagging for timber sale development	$ 500.00
CR-Dev10-010	Type mapping, check-cruising and FIM updates for Re-inventory acres	$ 3,000.00
CR-Dev10-011	Harvest treatment on stand 1898A55 for Range Expansion.	$12,540.00
CR-Dev10-012	Harvest treatment on stand 1960A57 for Range Expansion.	$ 3,520.00
CR-Dev10-013	Harvest treatment on stand 1947A56 for Range Expansion.	$ 1,320.00
CR-Dev10-014	Harvest treatment on stand 1895NP57 for Range Expansion.	$ 3,960.00
CR-Dev10-015	Harvest treatment on stand 1938NP59 for Range Expansion.	$ 1,320.00
CR-Dev10-016	Harvest treatment on stand 1842A55 for Range Expansion	$ 4,000.00
	TOTAL	**$ 59,740.00**

* Project Number CR-Dev10-004 (Stand 214A54) will be pulled for treatment per Department of Military Affairs request of 3 May 2010.

The encumbrances to date from the land fund are in Table 7.

Table 7. Camp Ripley land fund encumbrances, 2009-2010.

Land Fund Encumbrances			
Date	**Description[a]**	**Category**	**Amount**
5/6/2009	IAA with DNR-Forestry	Professional services	$20,000.00
8/13/2009	IAA with DNR-Forestry	Professional services and tree planting	$12,700.00
7/29/2010	IAA with DNR-Forestry	Professional services	$59,740.00
11/10/2010	IAA with DNR-Forestry	Professional services (2011)	$59,930.00
8/20/2009	Supplies	Forestry supplies	$3,492.88
1/14/2010	Supplies	Forestry supplies	$68.00
3/25/2010	Supplies	Forestry supplies	$52.74
		TOTAL	**$155,983.62**

[a]IAA – Interagency Agreement

The scope of work for 2011 is found in Table 8.

Table 8. Minnesota Department of Natural Resources, Camp Ripley forest development scope of work and breakdown of costs, 2011.

Project #	Project Description	Estimated Cost
CR-Dev11-002	Interplanting jack pine and white pine on stand 324JP54	$ 1,900.00
CR-Dev11-003	Regeneration treatment & seed collection on stand 902JP45	$ 7,560.00
CR-Dev11-004	Harvest treatment on stand 614 JB56	$ 2,850.00
CR-Dev11-005	Regeneration treatment on stand 228WP56	$ 3,160.00
CR-Dev11-006	Regeneration treatment on stand 865A56	$ 6,020.00
CR-Dev11-007	Regeneration treatment on stand 1860A64	$ 2,215.00
CR-Dev11-008	Regeneration treatment on stand 1871A59	$ 1,900.00
CR-Dev11-009	Regeneration treatment on stand 958A56	$ 1,265.00
CR-Dev11-010	Regeneration treatment on stand 237A52	$ 1,900.00
CR-Dev11-011	Regeneration treatment on stand 798A44	$ 1,900.00
CR-Dev11-012	Regeneration treatment on stand 629A54	$ 1,580.00
CR-Dev11-013	Forest Health treatment on stand 1352O57	$ 4,430.00
CR-Dev11-014	Harvest treatment on stand 294O54 for Demo #5	$,100.00
CR-Dev11-015	Assessment for planting needs on stand 2821	$ 600.00
CR-Dev11-016	Forest health treatment on stand 790O56	$10,950.00
CR-Dev11-017	Supplies: paint, flagging for timber sale development	$ 1,000.00
CR-Dev11-018	Type mapping assessment, check-cruising and FIM updates for re-inventory acres	$ 5,000.00
CR-Dev11-019	Assessment for regeneration needs on stand 124JP55	$ 600.00
	TOTAL	**$59,930.00**

Vegetation Management

Prescribed Fire

Camp Ripley uses prescribed fire as a management tool to enhance the military training environment (also known as mission-scape). Prescribed fire target areas include native prairie grass enhancement, woody encroachment, seed production, brush control, fuel-hazard reduction, forest management, and to improve habitat for threatened and endangered species and species in greatest conservation need. The management strategy for prescribed fire on Camp Ripley is provided within the Integrated Wildland Fire Management Plan (Minnesota Army National Guard 2009).

Two types of prescribed burns are conducted at Camp Ripley; hazard reduction and military mission enhancement. 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 military training exercises. A large wetland complex (Training Area 65) is also burned biennially for 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 a year, not all hazard reduction burns are completed annually due to weather constraints.

Camp Ripley consists of 11 maneuver areas divided into 80 training areas of which 70 contain designated burn units. These burn units are dynamic in respect to size and shape but are directly related to a military land use. Burn plans are carefully written for each burn unit and reviewed by Department of Public Works (DPW) and local MNDNR Forestry personnel prior to execution of the burn. Camp Ripley DPW partnered with environmental staff and The Nature Conservancy to implement prescribed fire on these units.

The 2010 prescribed burn units in the original design were not conducive to quality management of time and resources. The units were, in some cases, combined with adjacent units to form a larger burn unit that could be managed from roadways and trails. This process eliminated the need for break installation and better suits the need for reducing encroachment in grasslands by allowing fire to run through transition zones into forested areas. Enlarging and combining burn units into a larger unit also saves money by reducing the amount of staff time since the unit is surrounded by a road 33 feet in width and is more secure. Therefore, there were fewer burn units but more acreage burned in 2010 (Table 9 and Figure 6).

Table 9. Completed burn units, Camp Ripley, 2010.

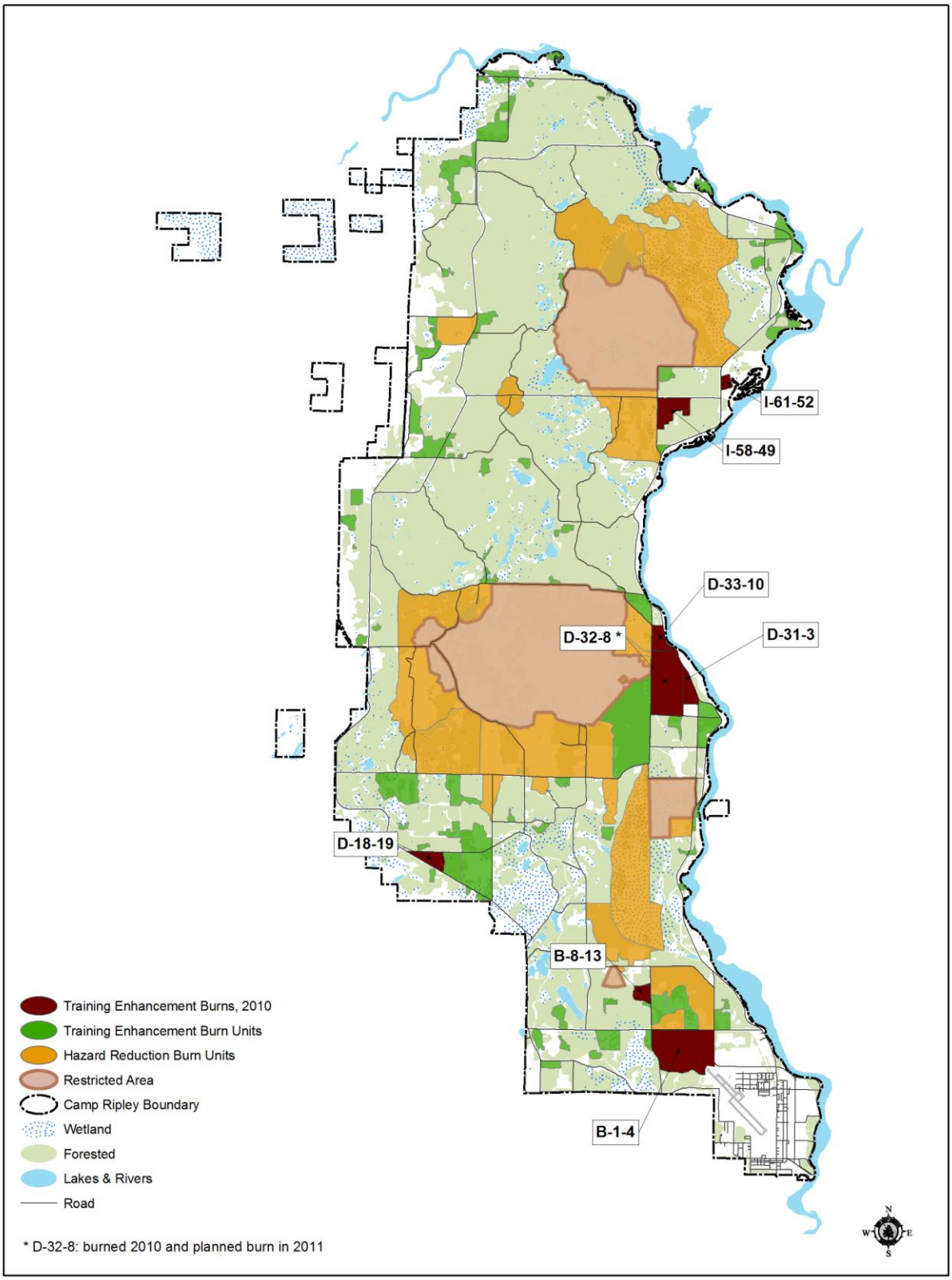
Training Area	Maneuver Area	Unit Name	Acres Grass	Acres Forest	Total Acres
1	B	B-1-4	142	251	393
8	B	B-8-13	14	31	45
18	D	D-18-19	17	43	60
32	D	D-32-8	102.4	213	315.4
33	D	D-33-10	19	39	57.5
58	I	I-58-49	108		108
61	I	I-61-52	22		22
		Total	**442**	**590**	**1,002**

All goals and objectives were achieved on all burn units which demonstrate the effectiveness of phenological timing of the burn events**.** The mission enhancement burns were completed by The Nature Conservancy prescribed fire crew under the direction of RxB2 burn boss Tom Rothleutner, DPW Supervisor.

Invasive Plants

Invasive species are alien species, not native to the ecosystem, whose introduction does or is likely to cause economic or environmental harm or harm to human health. Invasive species have contributed to 42 percent of endangered and threatened species declines. In the United States 100 million acres (an area approximately the size of California) suffer from invasive plant infestations, and the annual cost of invasive species due to their impacts and control is five percent of the world's economy (The Nature Conservancy 2009). Federal agencies have been asked (Executive Order 13112) to prevent the introduction of invasive species, control existing populations, monitor populations, provide for restoration of native species, conduct research on invasive species, and promote public education of invasive species (U.S. Department of Agriculture 2009). In response to this Executive Order, Environmental Office staff contracted with St. Cloud State University to begin an assessment of invasive plant species on Camp Ripley.

Figure 6. Training enhancement units burned at Camp Ripley, 2010.



The MNARNG receives federal funding and is required to be in compliance with this executive order. In 2002, an agreement was signed between St. Cloud State University (SCSU) and the MNARNG for the development of a long-term management plan for invasive plant species at Camp Ripley. Graduate students have conducted research on species distribution and appropriate control methods including herbicide combinations and prescribed fire in experimental plots. Eighteen terrestrial invasive plant species have been identified at Camp Ripley (Table 10) including three species that this project will be addressing: leafy spurge, common tansy, and spotted knapweed. These three species are a threat due to their highly aggressive, opportunistic nature, and large distributions at Camp Ripley.

Table 10. Invasive plant species on Camp Ripley Army Training Site (Babski 2002).

Family	Scientific Name	Common Name	Camp Ripley
Brassicaeae	*Berteroa incana*	Hoary alyssum	X
Poaceae	*Bromus inermis*	Smooth brome	X
Asteraceae	*Carduus nutans*	Musk thistle	X
Asteraceae	*Centurea maculosa*	Spotted knapweed	X
Asteraceae	*Chrysopsis villosa* var. *foliosa*	Golden aster	X
Asteraceae	*Cirsium arvense*	Canada thistle	X
Euphorbiaceae	*Euphorbia esula*	Leafy spurge	X
Asteraceae	*Grindelia squarrosa*	Gum weed	X
Guttiferae	*Hypericum perforatum*	St. Johnswort	X
Fabaceae	*Melilotus alba*	White sweet clover	X
Fabaceae	*Melilotus officinalis*	Yellow sweet clover	X
Poaceae	*Phalaris arundinacea*	Reed canary grass	X
Poaceae	*Phragmites australis*	Common reed	X
Rhamnaceae	*Rhamnus cathartica*	Buckthorn	X
Caryophyllaceae	*Saponaria officinalis*	Bouncing bet	X
Asteraceae	*Tanacetum vulgare*	Tansy	X
Anacardiaceae	*Toxicodendron radicans*	Poison ivy (native)	X
Ulmaceae	*Ulmus pumila*	Siberian elm	X

Restoration Project for Spotted Knapweed and Common Tansy Areas

A restoration project at Camp Ripley was established in the spring of 2010 by graduate student Jamie Hanson and field assistant Kayla Malone in coordination with the Environmental Office, SCSU, and the Department of Public Works. This project is addressing the effectiveness of using assisted succession as a means of restoring areas dominated by perennial invasive species: common tansy and spotted knapweed. Restoring these areas into a native plant community is necessary to be compliant with Executive Order 13112, as a recipient of federal funds. This restoration project, will continue through fall 2012, and incorporate site manipulation of four seedbed preparations, two cover

crop types, and two seed dispersal methods for each of these invasive species. The cover crop used for the sites was Canada wild rye (*Elymus canadensis*). The sites exist within Training Area 18. They are 100 square meter areas, with four replicates for each invasive species. Grass and forb surveys were also conducted in the control areas. An initial invasive plant percent cover survey was completed in 2010. Follow-up percent cover surveys will be conducted later in the manipulated and control sites. An increase in the establishment of native grasses will be achieved by introducing a competitive cover crop immediately upon intentional disturbance of these invaded areas, followed by the seeding of native grasses. The native grasses that will be seeded include big bluestem (*Andropogon gerardii*), little bluestem (*Andropogon scoparius*), indiangrass (*Sorghastrum nutans*), side-oats grama (*Bouteloua curtipendula)*, switch grass (*Panicum virgatum)*, kalm's brome (*Bromus kalmii*), June grass (*Koeleria cristata*), and sand dropseed (*Sporobolus cryptandrus)*. In October 2010, a dormant native grass seeding was completed. If successful, these methods may be applied on a larger scale in other restoration endeavors.

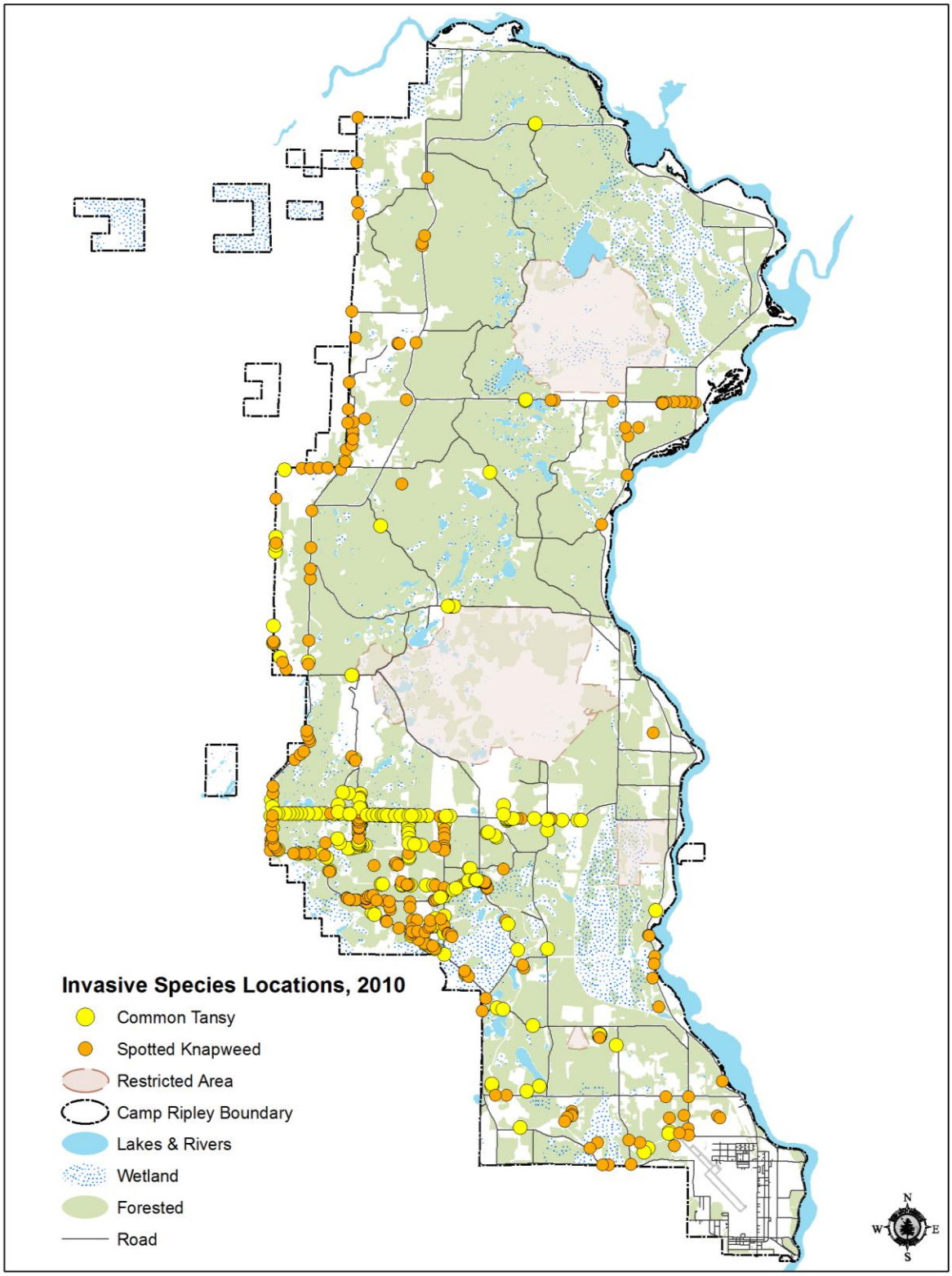
Spotted Knapweed Herbicide and Prescribed Fire Integrated Management Project

During the 2010 growing season, a large scale spotted knapweed study was performed by SCSU student, Alan Einck. The study integrates prescribed burning and herbicide to test a new integrated management strategy. This project included prescribed fire followed by an application of an herbicide (Milestone VR® provided by DowAgro©.) The preliminary biological results showed a drastic reduction in the percent cover of spotted knapweed in the integrated plots as compared to the controls. The final results from the study will be available after the 2011 growing season when second year post treatment data is collected. Also, a native shrub inventory was taken on the herbicide application only plots to assure that the herbicide being applied would not be detrimental to the native plant population.

Roadside Herbicide Treatments

During 2010, roadsides were sprayed with either Escort® for common tansy, Milestone® for spotted knapweed and Opensight® for areas where there was a combination of both plant species and also for patches of leafy spurge. Three areas of leafy spurge were identified on the northwest side of the airfield and chemically treated. Additionally, a larger infestation in Training Area 58 was sprayed with herbicide. Smaller singular infestations of spotted knapweed and tansy were sprayed along the most commonly traveled roadsides down-range. The treated areas were less than 100 m^2. Larger-scale areas of infestation were marked for treatments planned for the 2011 growing season (Figure 7).

Figure 7. Roadside survey of common tansy and spotted knapweed at Camp Ripley, as of September 22, 2010.



Distribution Maps for Common Tansy and Spotted Knapweed

Roadsides and trails were surveyed from mid-September through October 2010. Any identified target invasive populations were recorded as individual plots using GPS. These points were used to create general distribution maps of target invasive populations present on Camp Ripley (Figure 7). Mapping efforts did not address existing leafy spurge populations.

Further updating of distribution maps are necessary to estimate control efforts needed in the coming growing seasons. GPS points will show species, location, and size of infestations. Further mapping will require finding both locations of invasive plants and sizes of infestations. Rates of spread may also need to be quantified from previously estimated distributions.

Integrated Management of Invasive Plant Species Website

The Invasive Plants Website was originally created by Joe Carlyon, SCSU student, for public use through SCSU. This website includes experimental plot locations on which different herbicide application tests were run. Data collection for these experimental plot studies is currently complete. Website updates will include: closing of these plot locations, distribution map updates, and other necessary website updates (<http://web.stcloudstate.edu/invasiveplants/>).

Airfield Vegetation Management

The purpose of managing vegetation on the airfield is ultimately to minimize bird and other wildlife occupancy on the airfield. However, it is also of interest to the invasive species program participants to ensure that invasive species are not entering and spreading on the airfield. As a joint effort, members from the invasive species team and the Camp Ripley Airfield Office have discussed options for ecologically sound vegetation management of this important component of Camp Ripley. Future collaboration could ensure that airfield land management is done in an appropriate and cost-efficient manner.

Invasive Species Management Program Development

A full-scale invasive species management program has not yet been established at Camp Ripley. While research is an important and integral part of any management program, the need for a full-scale long-term control and management program is apparent. Many factors of this program need more development to ensure that Camp Ripley is responding appropriately to the environmental and ecological threat that invasive species present. A technical report was completed in December 2010 that details the necessary steps towards implementing a large-scale management plan for reducing invasive species' impacts on Camp Ripley. *Technical Report: Integrated Invasive Terrestrial Plant Species Management Program Recommendations for Camp Ripley Military Training Site* has been submitted to the Environmental Office and includes target species descriptions, previously applied

procedures, seed dispersal sources, a prioritization system for management activities, treatment strategies, and a schedule of 2011 project activities and future monitoring recommendations. This comprehensive program for establishing long-term control, eradication, and restoration efforts is in the first stages of implementation. In accordance with this plan, a variety of control methods are being considered. Many of these control methods are being inferred from previous internal research and external sources. Cost of future control methods are being determined which will include labor and supplies required for this program to be effective.

Spring and summer 2011 will be the first growing season that a large-scale program of control treatments can be initiated in the field. Objectives for 2011 activities include the following:

- Update distribution maps of target invasive plant species' populations.
- Determine rate of spread of populations of target invasive species from 2002 to 2010.
- Revisit previously infested sites that contained leafy spurge and chemically treat any re-emerging stands in Training Area 58 and on the northern edge of the airfield.
- Produce educational materials, such as a brochure, that can be used to inform personnel on Camp Ripley about the threat of invasive species.

Water Resources

Wetland Resources

During 2010, Camp Ripley was planning to overlay a multipurpose machine gun range on West Range. This project resulted in three wetlands (11,683 square feet) being impacted (Figure 8). Prior to any wetland alterations, Camp Ripley obtained permits and created an implementation plan that was approved by the Morrison County Soil and Water Conservation District (Appendix G). The mitigation plan was to restore wetlands at a 2:1 ratio of impacted wetlands. Mitigation for the West Range project impacts occurred adjacent to a wetland complex near D-Range (Figure 9). The landscape behind D-Range is dotted with a complex of small, shallow basin wetlands. In 2008, an old berm, located within a wetland basin, was abandoned during improvements to D-Range. This old berm was excavated in 2008 resulting in a restored wetland whereby 40,000 yards of soil was removed, and used for the new D-Range berm (Dirks and Dietz 2009).

In 2010, additional fill (approximately 1,300 yards) material was removed from the abandoned berm within the D-Range restored wetland. In addition to removing the berm, additional soil was excavated until the water table was reached which was only about 2 to 3 feet below grade. This excavated soil was used to fill in and around the West Range impacted wetlands. The West Range wetland soil was also scraped (approximately 1,300 yards) from the impacted wetlands and used as a fresh seed bank for the restored wetland near D-Range. The purpose of spreading the West Range wetland soil into the restoration site is to accelerate the growth of wetland plants which help mimic the natural functions of a wetland. A total of 37,891.4 square feet of wetland was restored.

Figure 8. West Range multipurpose machine gun range wetland impacts at Camp Ripley, Minnesota, 2010.

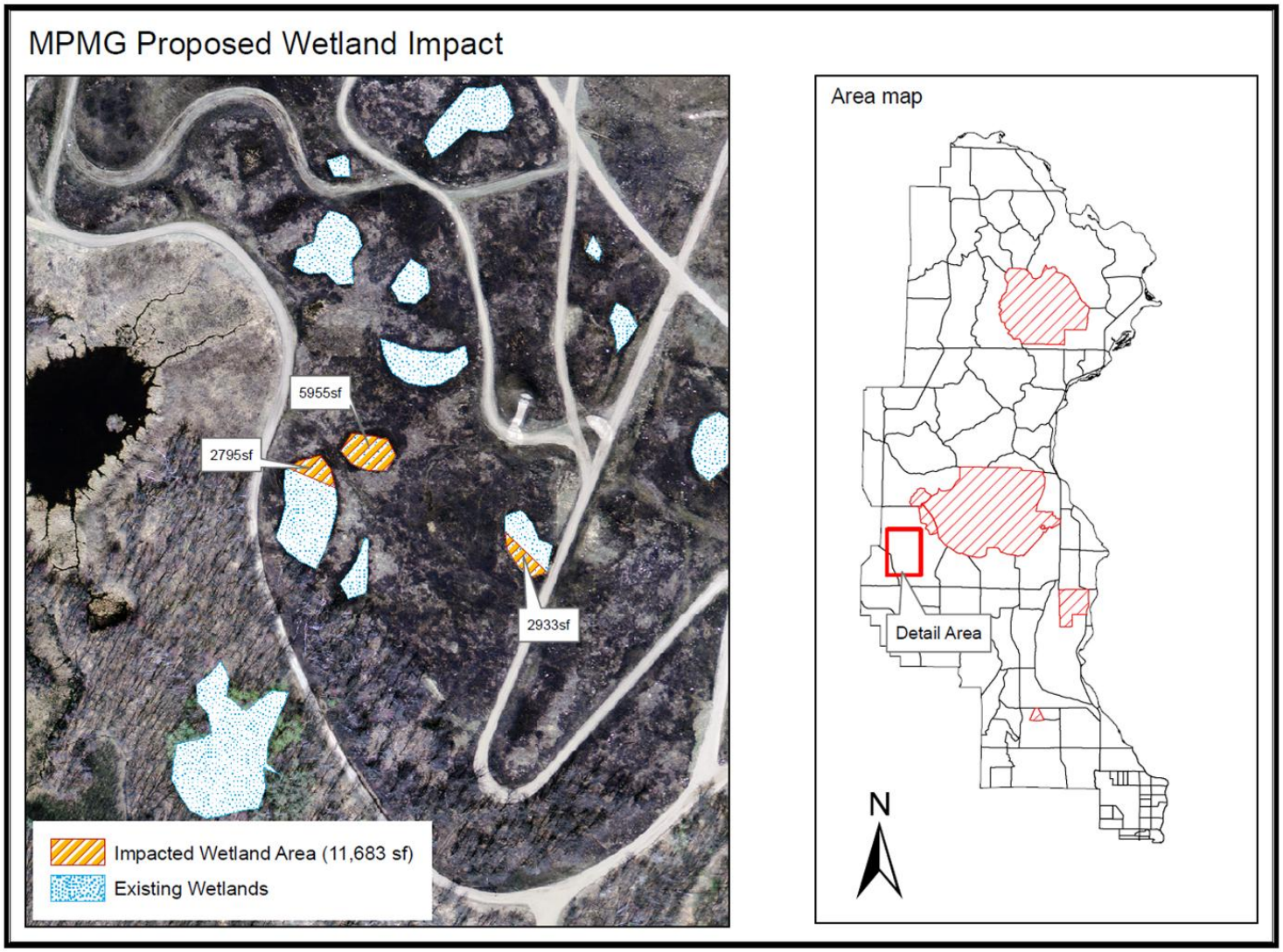
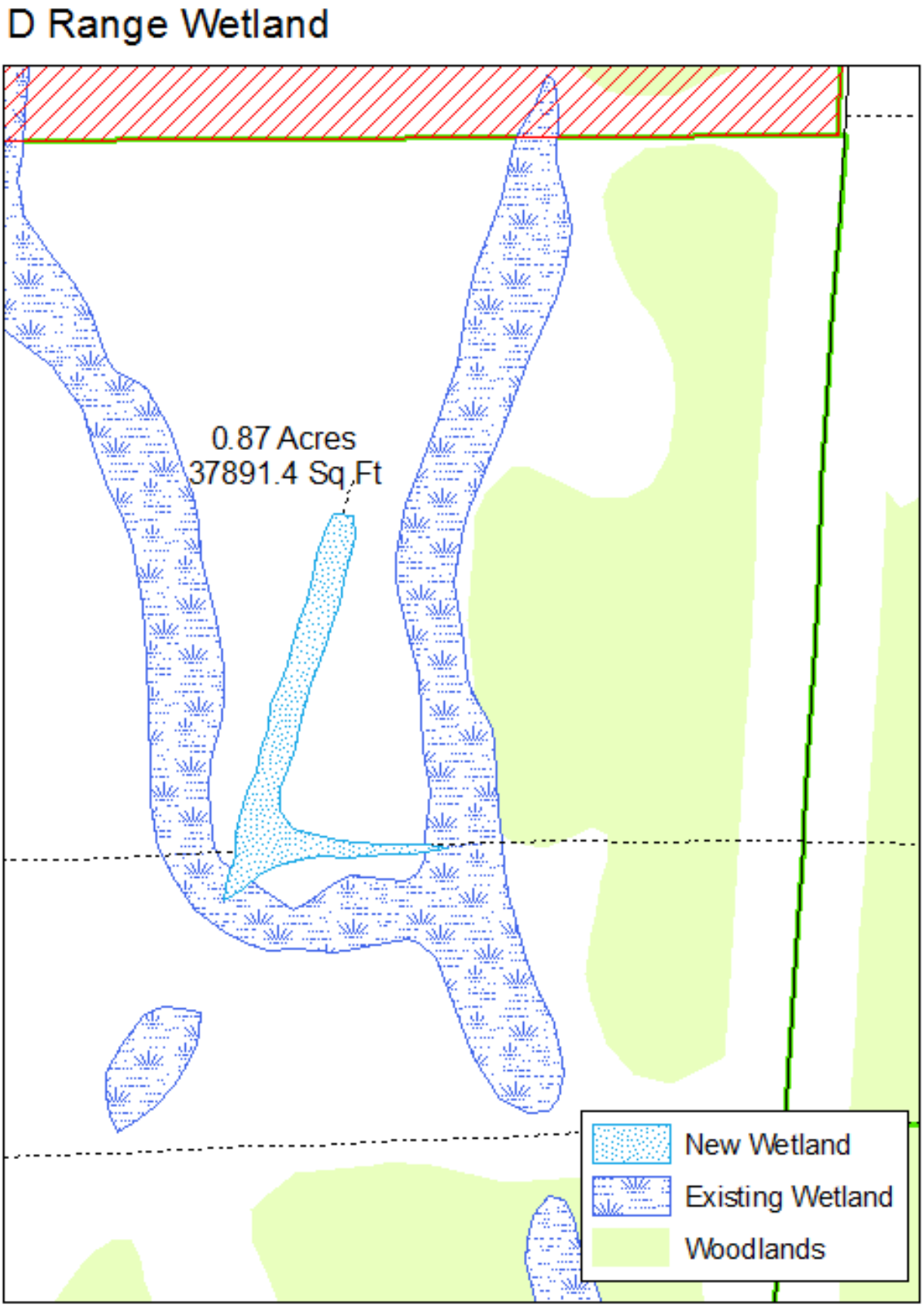


Figure 9. D-Range wetland mitigation for West Range multipurpose machine gun range at Camp Ripley, 2010.



Wildlife

Species in Greatest Conservation Need

Species in greatest conservation need (SGCN) 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. One of the federal requirements of the Comprehensive Wildlife Conservation Strategy to manage species in greatest conservation need 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 provides direction and focus for sustaining SGCN into the future (MNDNR 2006).

In Minnesota, 292 species meet the definition of species in greatest conservation need. All listed species (federal and state) are included on the SGCN list. This set of SGCN includes mammals, birds, reptiles, amphibians, fish, insects, and mollusks, and represents about one-quarter of the nearly 1,200 animal species in Minnesota that were assessed for this project (MNDNR 2006). More than 65 SGCN species, including 51 bird species of which 28 are songbirds, have been identified on Camp Ripley (Appendix H). 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.

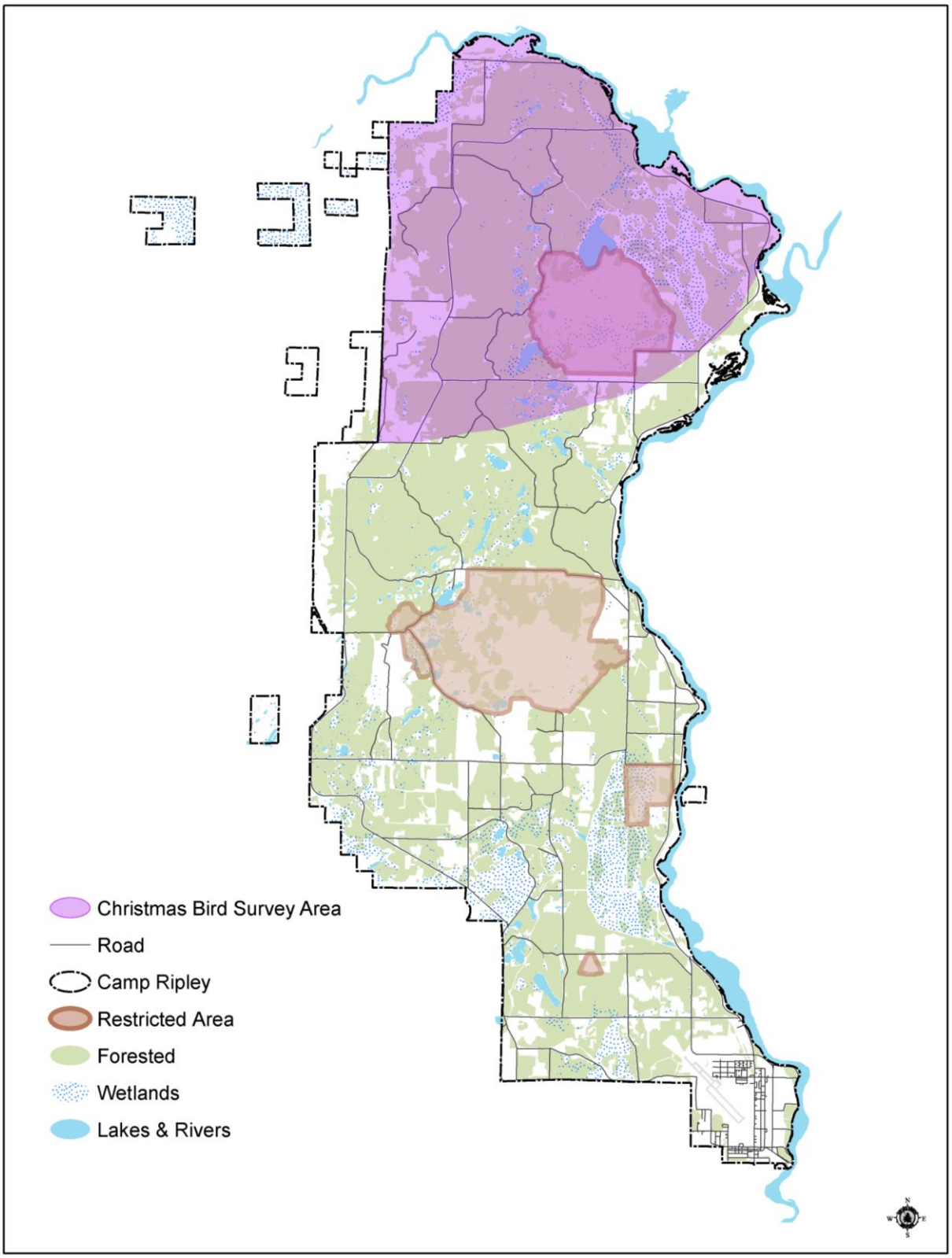
Birds

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. 2008). Counts occur within predetermined 15-mile diameter circles located across North America, Mexico, and South America. The northwest portion of Camp Ripley is within one of these circles (CBC census code: MNPL; Figure 10). Each count is conducted during a single calendar day within two weeks of Christmas (December 14 to January 5). The Pillager census was started in 1999, and the census has occurred 11 times (Minnesota Ornithologists' Union 2010). CBC data is primarily used to track winter distribution patterns and population trends of various bird species.

The Pillager CBC occurred on January 1, 2010, and was conducted by Bill Brown, Camp Ripley Environmental Office, and a volunteer, Terri Botz. The count lasted four hours. The skies were clear, the high temperature was three degrees Fahrenheit and the low was -11 degrees, with calm winds (USDC and NOAA 2008). Most of the river was frozen, concentrating the few waterfowl in a short stretch of open water below the Sylvan Dam. The total number of birds counted this year was the highest since 2005 (Table 11), and the diversity of species counted was similar to 2006. Cackling geese were observed for the first time on Camp Ripley during the CBC. Trumpeter swans (*Cygnus buccinator*) were present in the highest numbers ever recorded. The increase in trumpeter swans was likely due to the Crow Wing River conditions, as the river was only open near the base of the dam.

Figure 10. Christmas bird count area within Camp Ripley.



The low species diversity and number of birds observed this year was likely due to bitter cold, decreased access to roadways because of snow conditions, and potentially fewer observer teams.

Table 11. Christmas bird count data from Camp Ripley, 2002-2008[a], 2010.

Species	Scientific Name	2002	2003	2004	2005	2006	2007	2008	2010
Cackling goose	*Branta hutchinsii*	0	0	0	0	0	0	0	**7**
Canada goose	*Branta canadensis*	6	344	110	81	2	4	11	**0**
Trumpeter swan	*Cygnus buccinator*	0	3	20	28	26	49	60	**69**
Mallard	*Anas platyrhynchos*	0	1	70	0	20	0	0	**0**
Common merganser	*Mergus merganser*	0	0	10	0	4	12	0	**0**
Ruffed grouse	*Bonasa umbellus*	1	1	3	2	0	0	0	**0**
Wild turkey	*Meleagris gallopavo*	0	25	10	5	0	0	0	**11**
Bald eagle	*Haliaeetus leucocephalus*	6	2	13	3	4	11	0	**0**
Northern goshawk	*Accipiter gentilis*	0	0	0	2	0	0	0	**0**
Red-tailed hawk	*Buteo jamaicensis*	0	0	0	1	0	0	0	**0**
Rough-legged hawk	*Buteo lagopus*	2	3	1	0	0	0	0	**0**
Golden eagle	*Aquila chrysaetos*	0	0	1	1	0	0	0	**0**
Barred owl	*Strix varia*	1	0	0	0	0	0	0	**0**
Belted kingfisher	*Megaceryle alcyon*	0	0	1	1	0	0	0	**2**
Red-bellied woodpecker	*Melanerpes carolinus*	0	1	0	0	0	0	0	**0**
Downy woodpecker	*Picoides pubescens*	2	1	1	0	1	0	0	**0**
Hairy woodpecker	*Picoides villosus*	0	1	0	0	0	0	0	**0**
Pileated woodpecker	*Dryocopus pileatus*	1	5	0	0	1	0	0	**1**
Northern shrike	*Lanius excubitor*	3	0	1	1	0	0	0	**0**
Blue jay	*Cyanocitta cristata*	4	20	8	1	3	0	0	**1**
American crow	*Corvus brachyrhynchos*	4	2	13	3	2	3	3	**6**
Common raven	*Corvus corax*	1	4	0	0	0	0	0	**1**
Black-capped chickadee	*Parus atricaillus*	11	9	6	9	12	1	1	**2**
Red-breasted nuthatch	*Sitta canadensis*	6	0	1	3	1	0	0	**0**
White-breasted nuthatch	*Sitta carolinesis*	1	4	5	0	3	0	0	**0**
Bohemian waxwing	*Bombycilla garrulus*	0	30	0	0	0	0	0	**0**
Cedar waxwing	*Bombycilla cedrorum*	0	3	0	0	0	0	0	**0**
American tree sparrow	*Spizella arborea*	0	20	0	0	0	0	0	**9**
Dark-eyed junco	*Junco hyemalis*	0	1	0	0	0	0	0	**0**
Northern cardinal	*Cardinalis cardinalis*	1	0	0	0	0	0	0	**0**
Common redpoll	*Acanthis flammea*	0	0	0	32	0	0	0	**0**
# Observers		5	3	Unk.	3	4	3	2	**2**
TOTAL # INDIVIDUALS		52	480	274	171	79	80	75	**109**
TOTAL # SPECIES		15	20	17	15	12	6	4	**10**

[a] Due to unsafe road conditions and bitter cold weather, no Christmas Bird Count was conducted on Camp Ripley in 2009.

Songbirds

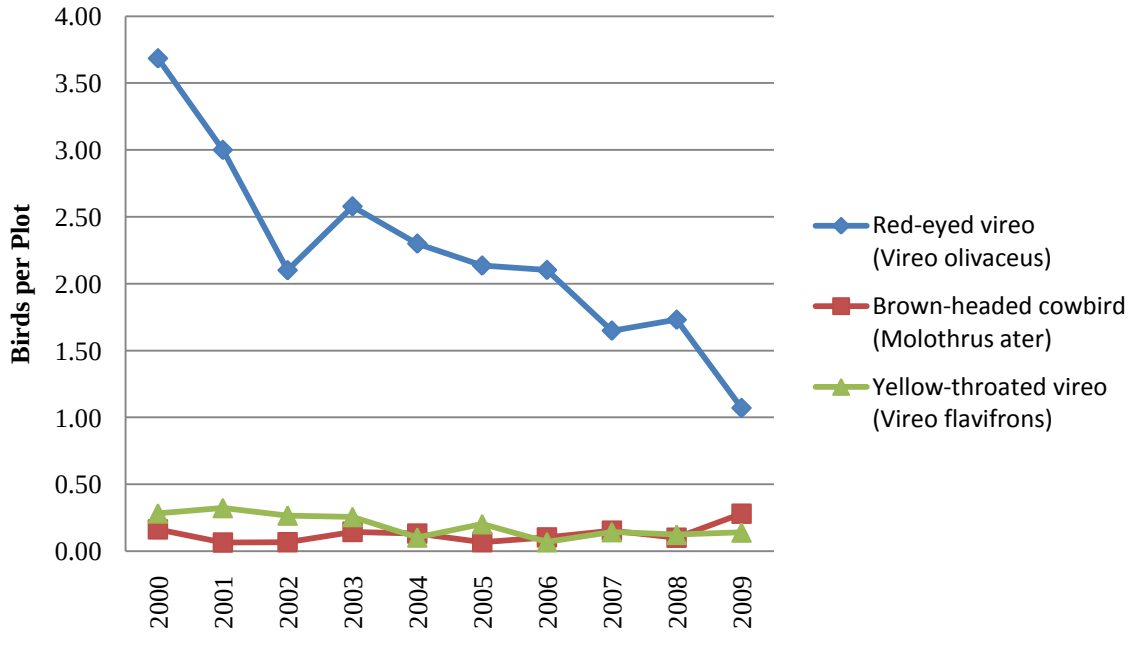
Songbirds are excellent indicators of habitat change because of the large number of species, the relative ease with which they can be detected and identified in the spring breeding season, and the large variety and diversity of habitats they inhabit (Sauer et al. 2000). Songbird surveys have been conducted on permanent plots (formerly Land Condition-Trend Analysis (LCTA) and Range Training Land Assessment (RTLA) (Tazik et al. 1992)) throughout Camp Ripley since 1993 (Figure 12). 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 alterations due to gravel pit expansion or development, and installation or expansion of military training ranges and parking lots.

Totals and Trends

Camp Ripley provides important breeding and migratory habitat for many species in greatest conservation need birds. Fifty-one SGCN birds have been identified on Camp Ripley; which includes both breeding and transient species (Appendix J). Thirty SGCN birds including water birds, raptors, and songbirds are known to breed on Camp.

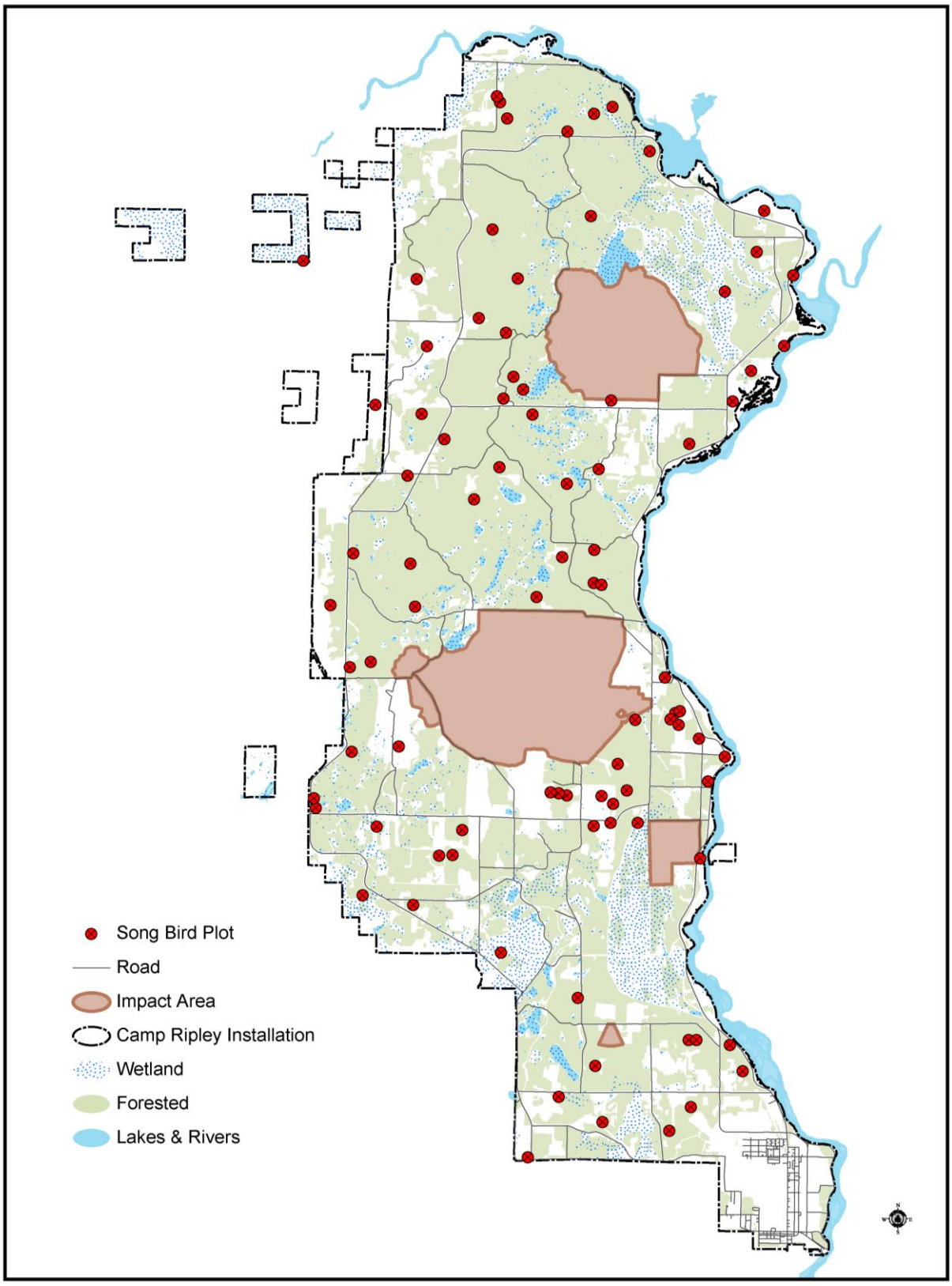
In the past, red-eyed vireos were much more numerous than any other species detected on survey plots. However, the number of red-eyed vireos per plot and the total number on all plots have declined by more than 70 percent since 2000 (Figure 11). However, the ovenbird one of the most common forest bird species on Camp Ripley, and a species in greatest conservation need, has shown

Figure 11. Selected songbird average birds per plot, Camp Ripley, 2000-2009.



* In 2001 and 2002 only 31 and 30 plots were surveyed respectively.
* In 2010 only 11 permanent plots were surveyed therefore the data is not included.

Figure 12. Permanent songbird survey plot locations at Camp Ripley.



an increasing trend since 2000. In fact, the average number of ovenbirds per plot and total number of ovenbirds counted had more than doubled by 2007 and increased substantially again in 2009 (Dirks and Dietz 2010). 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 since 2000 (Sauer et al. 2008), but not to the same extent as on Camp Ripley.

Ovenbirds have the capability to use a number of different plant communities for breeding. However, certain vegetative structural characteristics of ovenbird territories have been identified. Vegetation features from ovenbird territories show a more closed canopy, larger trees, less ground cover, and smaller conifer basal area than adjacent areas of unoccupied forest. Of primary importance for breeding is a large area of contiguous, interior forested habitat (Van Horn and Donovan 1994). Except for ground cover, these are similar requirements for red-eyed vireos. Red-eyed vireos are usually absent from sites where understory shrubs are sparse or lacking. Both species are more abundant in forest interior than near edges; which indicates they are susceptible to forest fragmentation.

To investigate the reason for the decline in red-eyed vireo numbers the first consideration was the potential impact of changes in the quantity and/or quality of available habitat. Although habitat alteration may impact small segments of a population, its impact on individual species throughout Camp Ripley is difficult to determine. For example, timber harvest has the potential to benefit or negatively impact ovenbirds and red-eyed vireos on Camp Ripley. Because they require unfragmented forest types and near complete canopy cover, clearcuts could negatively impact both species. Thinning or selective tree harvest has the potential to favor ground nesting ovenbirds by leaving most of the canopy cover and opening up the forest floor; this same forestry practice may negatively impact red-eyed vireos by removing understory nesting sites. Other changes in habitat due to increased use of prescribed fire in wooded areas, mechanical removal of subcanopy woody plant species, and range development on Camp all have the potential to impact available red-eyed vireo habitat.

To determine if habitat alterations were responsible for the significant decrease in red-eyed vireo numbers on Camp Ripley a subsample of permanent songbird plots was selected. First, only forest habitat songbird plots surveyed in 2009 were selected, and then those plots with the highest total number of red-eyed vireos from 2000-2009. Finally, to try to eliminate other factors that may have contributed to the decline, only plots in areas that had not been altered or disturbed (timber harvest, range development etc.) in recent years were selected. The purpose of choosing these plots was to determine if plots with a high density of red-eyed vireos on unaltered plots exhibited this decline. The results show that even those plots with the greatest number of red-eyed vireos in undisturbed sites exhibited a similar decline (Figure 13). Other factors that were considered were the impact of nest parasitism by brown headed cowbirds (*Molothrus ater*), however the number of cowbirds per plot has not changed significantly since 2000 (Figure 14). Observer error or changes in methodology were also considered, however bird plots have been surveyed primarily by the same people since 2000 and no significant changes in methodology have been made during that time.

Figure 13. Red-eyed vireos (*Vireo olivaceus*) per plot, Camp Ripley, 2000-2010.

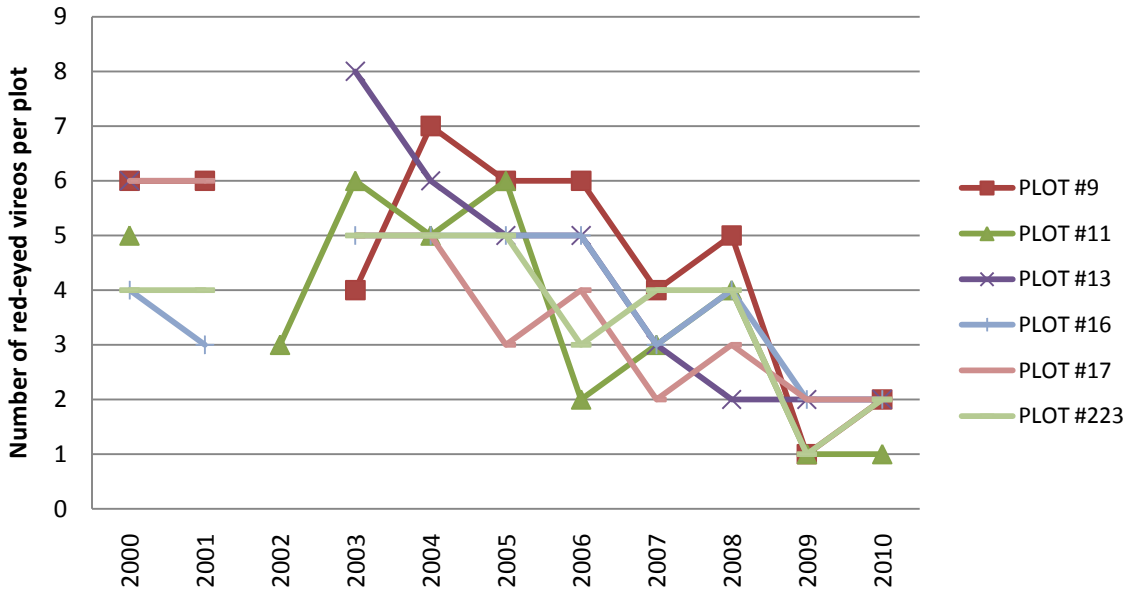
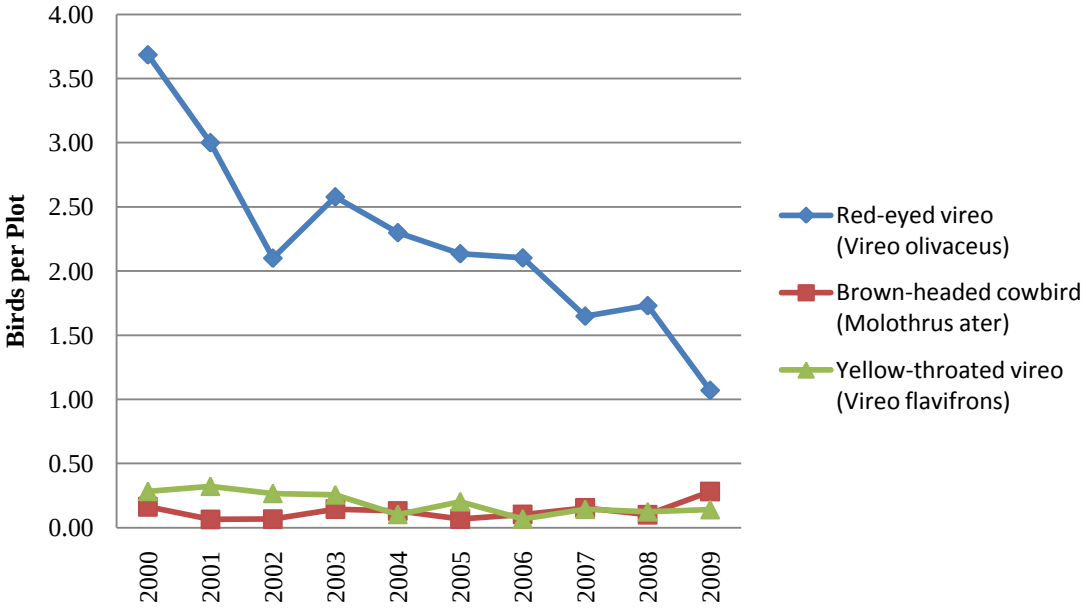


Figure 14. Selected songbird average birds per plot, Camp Ripley, 2000-2009.



* In 2001 and 2002 only 31 and 30 plots were surveyed respectively.
* In 2010 only 11 permanent plots were surveyed therefore the data is not included.

Because of the high level of military training on Camp and poor survey weather conditions in June, 2010, songbird surveys were conducted on only 11 permanent plots (Table 12). With the limited amount of access the main focus was to survey the six plots identified in previous years as being undisturbed sites with high numbers of red-eyed vireos. The number of red-eyed vireos on these six plots has dropped from a total of 30-33 through 2005 to 9 in 2009 and 11 in 2010. This drop is very noticeable in the field when counts changed from 4-8 red-eyed vireos on each plot to 1-2 on each plot. Research will continue to try to identify the cause of this change in the number of red-eyed vireos on Camp Ripley.

Table 12. Songbird survey data Camp Ripley, 2000-2010.

Year	Field Surveyors	Number of Permanent 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	Dirks/Brown	92	1002	66	10.89	6.43
2001	Dirks/Brown	31	316	46	10.19	5.77
2002	Dirks/Brown /DeJong	30	258	42	8.6	5.83
2003	Dirks/Brown /DeJong	90	823	68	9.14	5.37
2004	Dirks/Brown / Burggraff	107	1129	64	10.55	6.14
2005	Dirks/Brown /DeJong	89	897	61	10.08	6.20
2006	Dirks/Brown /DeJong	88	802	64	9.11	5.84
2007	Dirks/Brown /DeJong	91	994	71	10.92	7.02
2008	Dirks/Brown	89	875	70	9.83	6.60
2009	Dirks	57	563	63	9.87	7.26
2010	Dirks	11	122	25	*	*

* Not calculated due to low number of plots surveyed in 2010.

Prescribed burning has been used for many years to maintain open areas for military training and to reduce the incidence of wild fires on firing ranges. Recently fire has also been used to enhance training by managing and restoring native grasses and reducing woody encroachment into grasslands and controlling understory woody vegetation in select woodland areas. In 2010, a pilot project was initiated to look at the affects of prescribed burning on grassland and forest breeding birds. Permanent and new bird plots were selected in burned and unburned areas with similar habitat. Again because of adverse weather conditions and military training too few plots (n=3) were surveyed to allow for analysis.

Minnesota Breeding Bird Atlas

The Minnesota Breeding Bird Atlas (MNBBA) is a bird conservation project that identifies every bird species and where it breeds in the state. The results will produce baseline data for monitoring bird populations and support local and statewide conservation planning. The project will be active in Minnesota from 2009 to 2013. The MNBBA uses breeding bird observations from both professionals and citizen scientists. Minnesota is one of seven states that have not developed an atlas. The project is sponsored by the MNDNR, U.S. Fish and Wildlife Service, Minnesota Ornithologists' Union, Audubon Minnesota, and Legislative-Citizen Commission on Minnesota Resources.

Breeding bird observations are recorded based upon blocks of 9 miles^2 that cover the entire state. Camp Ripley is either fully or partially covered by 18 blocks. In late July 2010, interns recorded 104 bird observations for blocks within Camp Ripley (Figure 15).

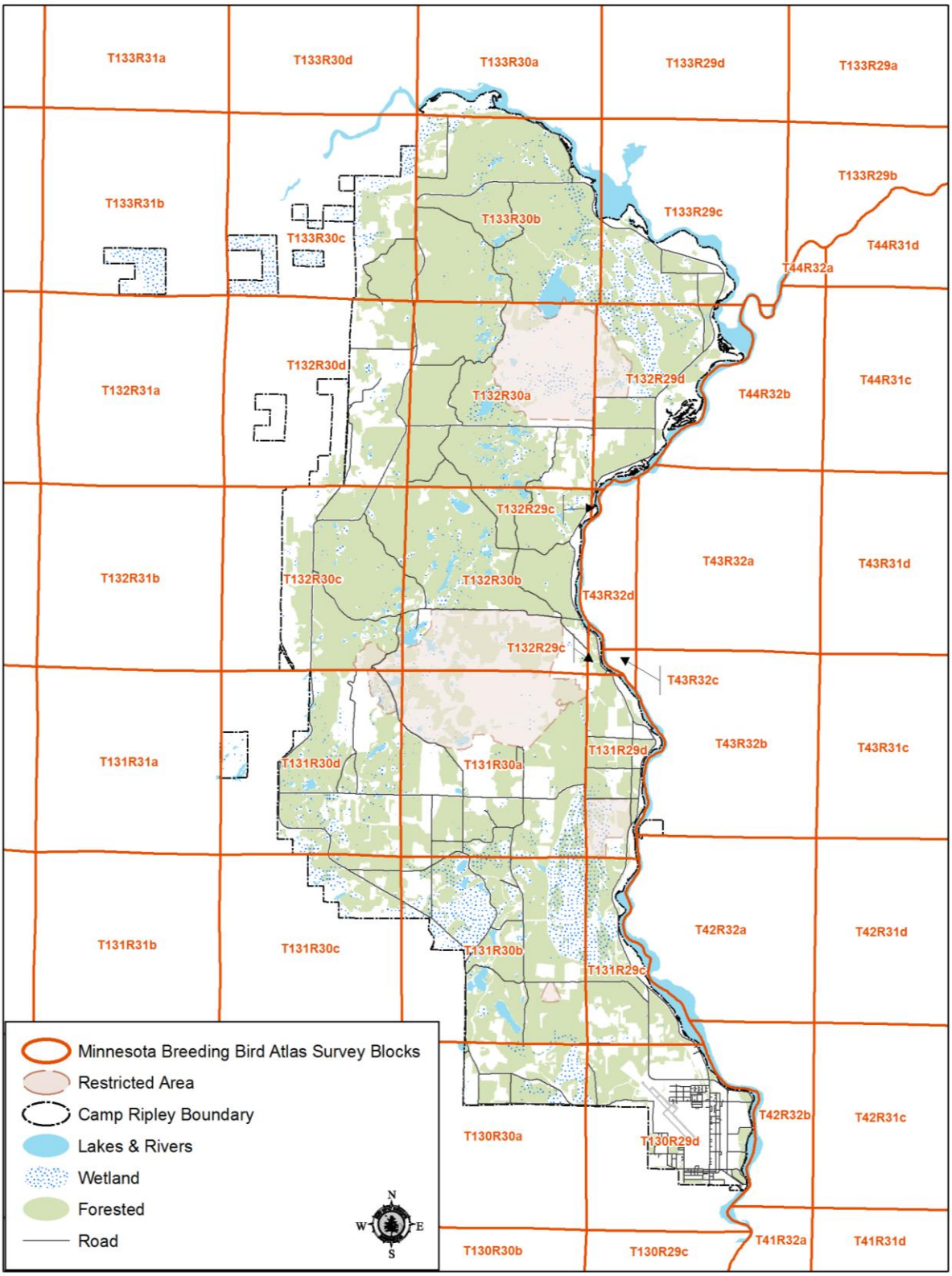
Bald Eagle (*Haliaeetus leucocephalus*)

In 2007, the bald eagle was removed from the list of endangered and threatened species under the Federal Endangered Species Act. In the lower 48 states, Minnesota has the most nesting pairs at approximately 1,300. 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 the NGB Eagle Policy Guidance (Dirks and Dietz 2009), Bald and Golden Eagle Protection Act (USFWS 2008a), and Bald Eagle Management Guidelines (USFWS 2007).

Bald eagles are closely monitored at Camp Ripley (Dirks et al. 2010). Since 1991, two to six territories have been active within Camp Ripley, fledging from one to nine young annually (Table 13). The bald eagle nesting season in 2009 and 2010 was not as productive as 2007 or 2008. In late March 2010, bald eagles occupied seven of eight territories throughout Camp Ripley (Figure 16). The Lake Alott territory was confirmed inactive. Bald eagles in the Mud Lake and North Range territories initiated egg incubation but did not fledge young. The Yalu and East Boundary pairs did not initiate nesting activity. The Rest Area 3, Prentice Pond, and Tamarack Lake territories each fledged one young.

A U.S. Fish and Wildlife permit (MB217435-0) for the North Range eagle nest was received on June 11, 2009. This permit is a "bald eagle take exempted under Endangered Species Act" permit. The permit provides for incidental take as it relates to disturbance during the construction of the Urban Assault Course on Camp Ripley. The permit expires on December 31, 2012.

Figure 15. Minnesota breeding bird atlas blocks, Camp Ripley.



In 2008, the East Boundary Road territory was active in the spring but the nest fell down and the pair began to build a new nest approximately 200 meters south of the original nest. No further construction occurred on this new nest during 2009 and 2010. In 2009, one new alternate eagle nest was discovered along Chorwan Road approximately 400 yards northwest of the East Boundary nest. No nesting activity occurred in the territory in 2009 or 2010. A U.S. Fish and Wildlife eagle take permit (MB00059A-0) (Appendix I) was obtained in 2010 for the East Boundary territory's alternate nest on Chorwan Road for the construction of the Tactical Training Base in the spring of 2010 (see the Bald Eagle Permits section below for additional information).

Four eagle territories within one mile of the Camp Ripley boundary are also monitored. A new territory was discovered near Lake Alexander. Three of the four territories were active and 2 young each were fledged on the County #47 and Lake Alexander territories. The East River territory was not active.

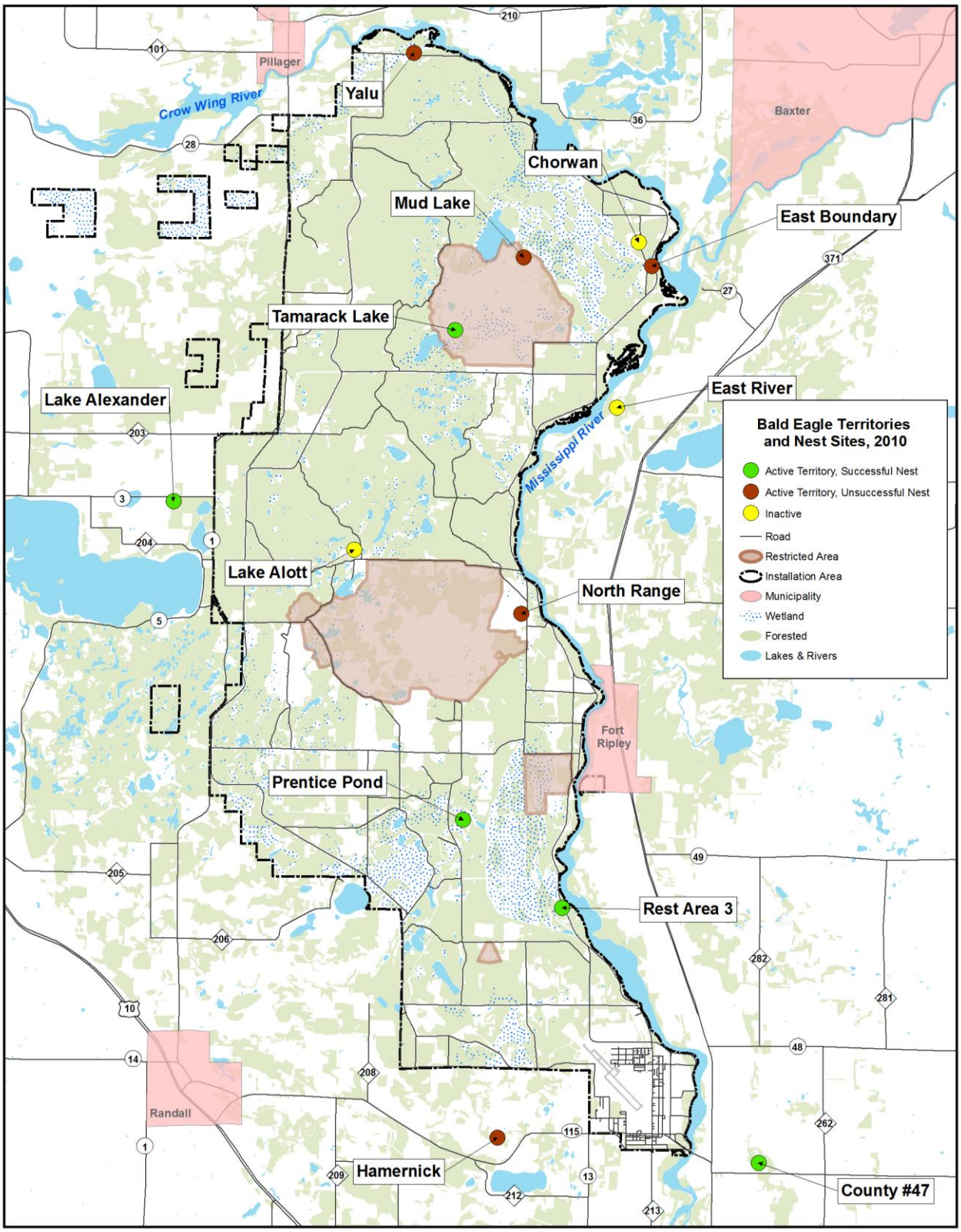
An injured or sick bald eagle was observed on December 20, 2010 in Training Area 49 just off of East Boundary Road. The eagle was captured and taken to Wild and Free, wildlife rehabilitation program in Garrison, Minnesota. The veterinarian at Wild and Free believed the eagle had lead poisoning and transferred the bird to the University of Minnesota's Raptor Center, College of Veterinary Medicine in St. Paul for rehabilitation.

Table 13. Bald eagle nests and fledglings at Camp Ripley, 1991-2010.

Year	Number of Active Territories	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
2008	5	5
2009	4	2*
2010	**6**	**3**

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

Figure 16. Bald eagle territories and nest status at and near Camp Ripley, Minnesota, 2010.



Bald Eagle Permits

The Minnesota Army National Guard obtained a Federal Fish and Wildlife Permit authorizing them to disturb a bald eagle nest, under the Bald and Golden Eagle Protection Act, during the construction of the Tactical Training Base (TTB, also known as a Forward Operating Base) in Training Area 64 adjacent to Chorwan Road (Appendix I). In addition, continued nest abandonment or loss of eagle productivity may be caused due to annual use of the TTB by approximately 500 soldiers for military readiness.

Some avoidance, minimization, and mitigation measures outlined in the permit included educating military personnel using the TTB of the presence of bald eagles and protection afforded eagles, implementing refuse control to prevent attracting eagles to garbage, and monitoring eagle use of the East Boundary bald eagle nest territory in which the Chorwan nest is found (Figure 16). Weekly presence and absence monitoring will need to occur from January 1 to March 1, and if no activity is noted during this period monitoring will continue every three weeks until March 31. All monitoring activities will occur for the next three years (2011 to 2013).

The Minnesota Army National Guard also began the process to obtain a programmatic take permit, under the Bald and Golden Eagle Protection Act, from the U.S. Fish and Wildlife Service that would allow unintentional disturbance of bald eagle nests on Camp Ripley. The U.S. Fish and Wildlife Service is reviewing the permit application due to the wide scope of the permit.

Osprey (*Pandion haleaetus*)

Ospreys were observed on the nest platform on Sylvan Reservoir in April 2010. Ospreys continued to occupy the area through July but it was not determined if they raised any young.

Red-shouldered Hawk (*Buteo lineautus*)

Population Survey

The red-shouldered hawk is uncommon in Minnesota and has declined markedly in the northern states since the 1940s. Work in Iowa suggests that the main causes of the population decline are habitat reduction and fragmentation (Bednarz and Dinsmore 1982). The red-shouldered hawk is listed as a state special concern species and a SGCN (Dirks et al. 2010).

In 2004 and 2005, a red-shouldered hawk study was conducted on Camp Ripley (Henneman 2006). The 2009-2010 survey used a subset (2009, n=64; 2010, n=81) of the same call-broadcast points used in 2005 by Henneman (2006) (n=130). A subset of call points was selected due to staff constraints to complete the full call broadcast survey (n=130) conducted during 2004-2005. Call point subset selection criterion were: 1) positive response points during 2004 and 2005 (Dirks and Dietz 2010), and 2) points selected were close to existing roads or trails. Survey techniques used in 2009-2010 were described in Henneman (2006), with two exceptions. To minimize staff time and increase the number of call points surveyed, all calls were broadcast at the nearest location to the roadway rather than to walk to the specific 2004 or 2005 point location. In addition, once a red-shouldered

hawk responded at a survey call point that point was considered occupied and sampling ceased. The call point identification number for 2009-2010 is the same number used by Henneman (2006).

In 2010, a total of 81 call-broadcast points were sampled from March 23 to May 18 (pre-incubation period). Eighty-one points (100%) were included in the analysis because either a positive response was recorded or they were sampled ≥4 times (Table 14 and Figure 17). Seventy-nine percent of these call-broadcast points were occupied in 2010, similar to 2009. Occupancy for red-

Table 14. Red-shouldered hawk call-broadcast surveys, Camp Ripley, 2004, 2005, 2009, and 2010.

Year	No. of call broadcast stations	No. of call broadcast stations sampled ≥4 times	No. of stations with ≥ 1 red-shouldered hawk detection	Apparent Occupancy
2004[a]	90	80	65	72.2%
2005[a]	130	80[b]	87[b]	66.9%
2009	64	61[c]	49[c]	76.5%
2010	**81**	**81[c]**	**64[c]**	**79.0%**

[a] Dirks, B. and J. DeJong. 2006. Animal Surveys at the Camp Ripley and Arden Hills Minnesota Army National Guard Training Sites: 2005 Annual Report. Minnesota Department of Natural Resources Camp Ripley Series Report Number 15. 88pp. and Henneman 2006.

[b] In 2004/2005, positive response call points were sampled up to five times.

[c] In 2009 and 2010, positive response call points were considered occupied and sampling ceased.

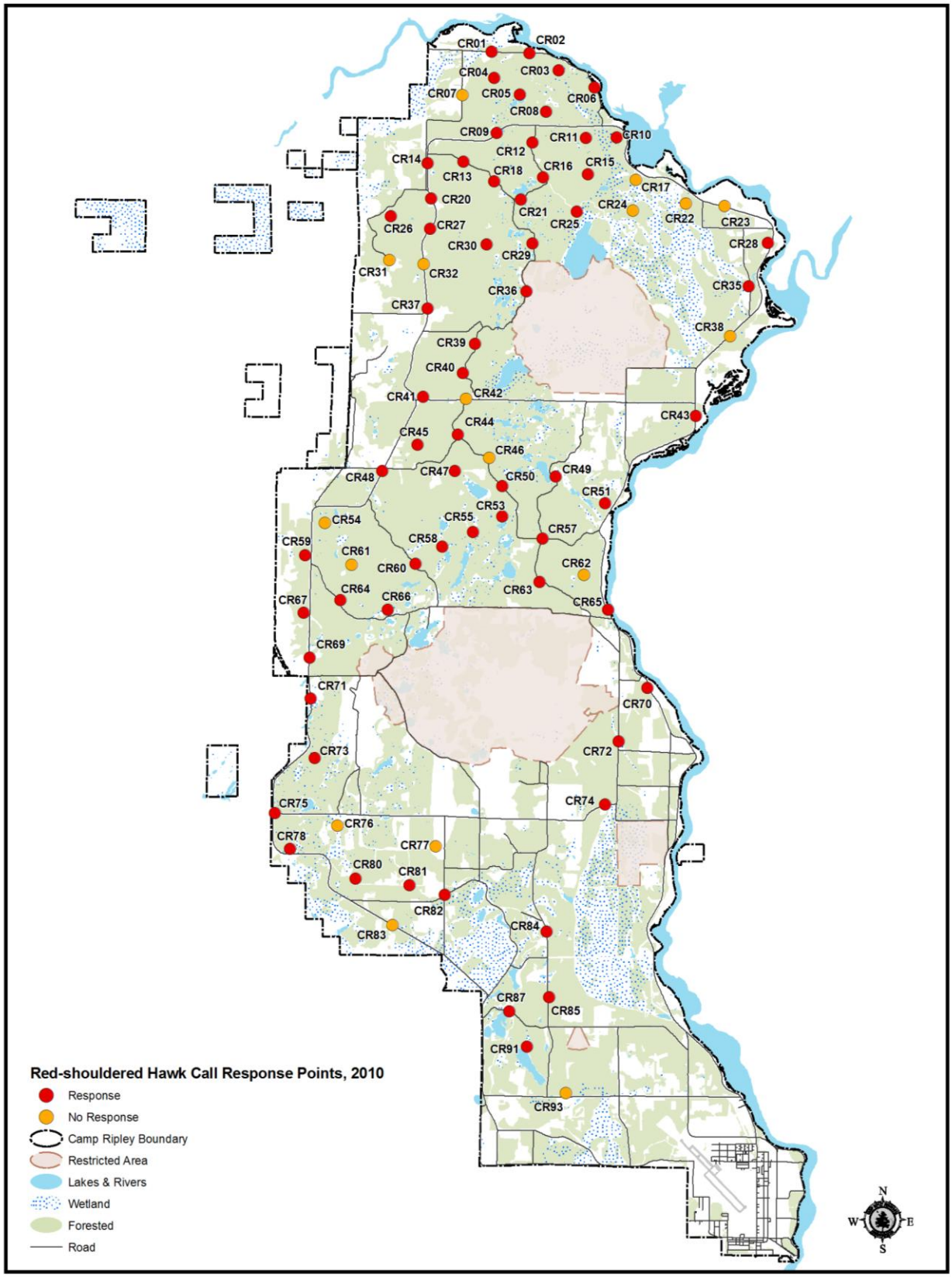
shouldered hawks at Camp Ripley was similar to 2004, but higher than in 2005. In 2005, more of the southern portion of Camp Ripley was surveyed where fewer red-shouldered hawks reside due to habitat differences; therefore, the occupancy would be lower. In 2009, eight call points were south of Normandy Road (Figure 17) whereas 33 points were in 2005 (Dirks and Dietz 2010). In addition, in 2009, the subset of sampled points included only those responsive points from 2004 and 2005, which may have increased the positive responses. In 2010, all points sampled in 2009 plus four more call points were added south of Normandy Road. Future call-broadcast surveys should use a random sample of the existing call points.

Light Detection and Ranging (LiDAR) Nest Model

The following section was prepared by Julie DeJong who is a former Camp Ripley Environmental Office animal survey assistant. Julie is currently a PhD candidate at South Dakota State University in Brookings.

Red-shouldered hawks are a species of special concern in Minnesota, where they occur at the northernmost extent of their range in North America. Declines of this species have been attributed to the loss and/or alteration of habitat (Coffin and Pfannmuller 1988, Bloom et al. 1993, Crocoll 1994). Typical nest sites for this species are in contiguous, mature, closed canopy, wet hardwood forests (Jacobs and Jacobs 2002).

Figure 17. Red-shouldered hawk call-broadcast survey responses, Camp Ripley, 2010.



Past research at Camp Ripley has ranged from smaller scale nest tree and nest site characteristics to landscape characteristics. However, management plans have only been able to provide large generalized areas which may contain red-shouldered hawks. Coarse grain (landscape) and fine grain (nest site) characteristics must both be taken into account for a species with such particular nest site requirements and landscape preferences. Geographic Information System (GIS) allows for the use of both characteristics when predicting habitat suitability.

Understanding the relationship between red-shouldered hawk nest sites and forest stand structure at Camp Ripley can help resource biologists to better manage this landscape. Therefore, the primary goal for this study was to use Forest Inventory Data, wetland data and LiDAR (Light Detection and Ranging) data to better understand habitat components at red-shouldered hawk nest sites and predict suitable habitat at Camp Ripley and within the Army Compatible Use Buffer. The secondary goal was to provide biologists with a tool (model) which can be used to help direct survey efforts and resource planning.

Light detection and ranging images are derived from the emission and subsequent detection of laser lights from a low-flying aircraft. This technology has been used to measure canopy heights, canopy cover, stem density, and other forest stand data.

The red-shouldered hawk nests used for analysis in this project were from Carlene Henneman's research conducted at Camp Ripley from 2004-2005 (Henneman 2006). Only those nests within the ACUB area have been included in analysis. Information from the Camp Ripley Forest Inventory Database was used to derive the following metrics throughout Camp Ripley: main tree species, main species tree mean diameter at breast height, main species mean basal area, age of stand, and stand total basal area. Forest Inventory Data was only available for the Camp Ripley property, not for the ACUB buffer zone, which is primarily privately owned land. Wetland data was provided by the Camp Ripley Environmental Office, and is maintained and produced by the MNDNR. LiDAR data was obtained from a 2007 acquisition by Camp Ripley (Merrick 2007). Jason Stoker, USGS-EROS, processed the LiDAR data with LP360, which is a LiDAR extension in ArcGIS. The XYZ data sets, including intensities for each of the four returns, were created in the vertical datum NAVD88 and horizontal datum NAD83 (Universal Transverse Mercator [UTM] Zone 15 in U.S. feet). An estimate of canopy closure (Focal canopy) was derived for all of the coverage area. The XYZ LiDAR data was extracted for nest sites and random points.

To help determine which forest and LiDAR metrics were most important for red-shouldered hawks, 26 random points were generated which were at least 0.8 km apart in forested areas within the ACUB boundary. All the layers of the Forest Inventory, LiDAR metrics and wetlands were sampled (by computer) at each of 48 nest sites, and at each of 27 randomly selected sites. This data was first analyzed to determine if the various metrics were correlated. T-tests and ANOVA statistics were used to compare variables at random sites to those of nest sites.

LiDAR metrics were compared at 48 red-shouldered hawk nests from Camp Ripley, Pillsbury State Forest and The Nature Conservancy property (Lake Alexander Preserve) to metrics at 27 randomly selected points from forested areas within Camp Ripley and the ACUB buffer. The canopy height (HAG_Z) for red-shouldered hawk nests ranged from 0 to 83.8 feet. After reviewing the nest

sites with "0" readings, one nest site was located on a road, which is likely due to GPS receiver error, and another nest site was located directly on the edge of a wetland. Focal canopy measurements are derived from HAG_Z measurements, so those sites also have a measurement of zero for focal canopy at those sites. The mean elevation at nest sites (1325.7 feet) was higher than that at random sites (1250.9 ft). Hawk nests also tended to be in areas of greater slope than random sites. Focal canopy had a higher variability at nest sites than at random sites. This is due to the fact that some hawk nests at Camp Ripley were located near openings, whether they were grassy openings, roads or wetlands. However, the mean canopy closure for hawk nests was 97%, compared to 94% mean closure for random sites. All canopy estimates (i.e., HAG_Z, HLC_Z, LOLC_Z) were higher for hawk nest sites than for random sites, indicating hawks were selecting forested areas with taller trees, higher canopies, and a nearly closed canopy.

Forest Inventory metrics were only available on the Camp Ripley property. Since 18 randomly selected sites were located outside the Camp Ripley boundary, those sites were removed from statistical analyses involving forest inventory data. Forest stands containing hawk nests tended to have trees that were older, taller, had greater basal area, and had a greater dbh for the main tree species in that stand. The majority of hawk nests were found in stands containing oak as the main species. Belleman (1998) located 34% of red-shouldered hawk nests at Camp Ripley in oak trees, 26% in aspen, and 5% in paper birch trees.

A layer was created in ArcGIS which calculated the distance of each cell from a wetland in the MNDNR wetland layer. Wetland distance was calculated from each hawk nest and randomly selected site. Hawk nests tended to be closer to wetlands (mean distance 896 feet) than randomly selected sites (mean distance 1507 feet).

A priori (deductive) models were constructed based on previous findings from red-shouldered hawk research at Camp Ripley and throughout the species range. These models were fitted to the data, statistically analyzed and then applied in ARCMAP in order to predict possible suitable nesting areas in Camp Ripley and the ACUB buffer zone. Separate models were built for use within or outside of the Camp Ripley boundary. One set of models include LiDAR, Forest Inventory and DNR Wetland data, because all of this data has been acquired within Camp Ripley's boundary, and hence, could only be applied within Camp Ripley's boundary. The other set of models include only LiDAR and DNR Wetland Data, because the data existed within the ACUB buffer outside of the Camp Ripley boundary. The latter models can be used throughout Camp Ripley and the ACUB buffer area. Many combinations of models were run, but only those with the highest statistical support were included in the final analysis.

The best model contained the following metrics: elevation, slope, wetland distance, canopy closure, and Main Species DBH. This model indicates that the best nesting sites have a shorter distance to water, a canopy that is not entirely closed, has a higher elevation, larger slope, and contains larger main tree species. The second best model is similar to the first, but does not contain the wetland distance variable. These models should be useful for finding suitable red-shouldered hawk nest sites within Camp Ripley boundaries. Unfortunately, there were no strong models for use in the ACUB boundary area. The best model (after many combinations of factors) consisted of elevation, slope, wetland distance, and LOLC_Z. This was a very weak model, which should be used with caution

when predicting suitable habitat for nesting red-shouldered hawks. However, the resulting map from this model does mimic the best overall model, and may be helpful in The Nature Conservancy and Lake Alexander area.

The next step for this project will be to validate these habitat suitability models on the ground. Randomly selected sites within high, medium, and low suitability areas will be searched using call-broadcast surveys in the early spring 2011, while hawks are still highly territorial.

For more detailed information on this study, please see the full report on file at the Camp Ripley Environmental Office (DeJong 2010).

Ruffed Grouse (*Bonasa umbellus*)

Ruffed grouse drumming counts were conducted on two survey routes (#38 and #39) as part of the MNDNR survey throughout Minnesota's ruffed grouse range. The data is used as an index to track grouse population trends across the state. Route #38, the official MNDNR survey route, has been run since 1979. Route #39 was added by Camp Ripley in 1998 (Figure 18). Drumming counts are conducted for four minutes at ten points along each route.

The official count for route #38 occurred on April 28, 2010. Three drums were heard on eight stops in 2010, the number of drums has continued to decline since 2008 (Figure 19). Minnesota experienced an unseasonably warm spring in 2010. Therefore, conducting the ruffed grouse count on Camp Ripley in late April was likely past peak drumming and may have caused the lower numbers. Camp Ripley's ruffed grouse population decreased after a high in 1998 but began to rebound in 2003, which is similar to the Little Elk route in the Little Falls area (Figure 20). Higher ruffed grouse populations were found throughout most of Minnesota during 2009 but were lower in 2010 (Figure 21). Four grouse were heard drumming on ten stops along route #39, surveyed on April 27, 2010. Counts on this route have been low since 2001 but increased substantially in 2007, fell again during 2008, and decreased slightly in 2010 (Figure 19).

Although Camp Ripley is not managed specifically for ruffed grouse, habitat is generally stable. Aspen stands of varying age classes provide the best ruffed grouse habitat along both routes. Aspen stands that had been clear-cut along both of these routes have been maturing. Ruffed grouse will benefit as timber harvest for forest management continues to maintain a wide range of age classes of aspen.

Figure 18. Ruffed grouse spring drumming survey routes at Camp Ripley.

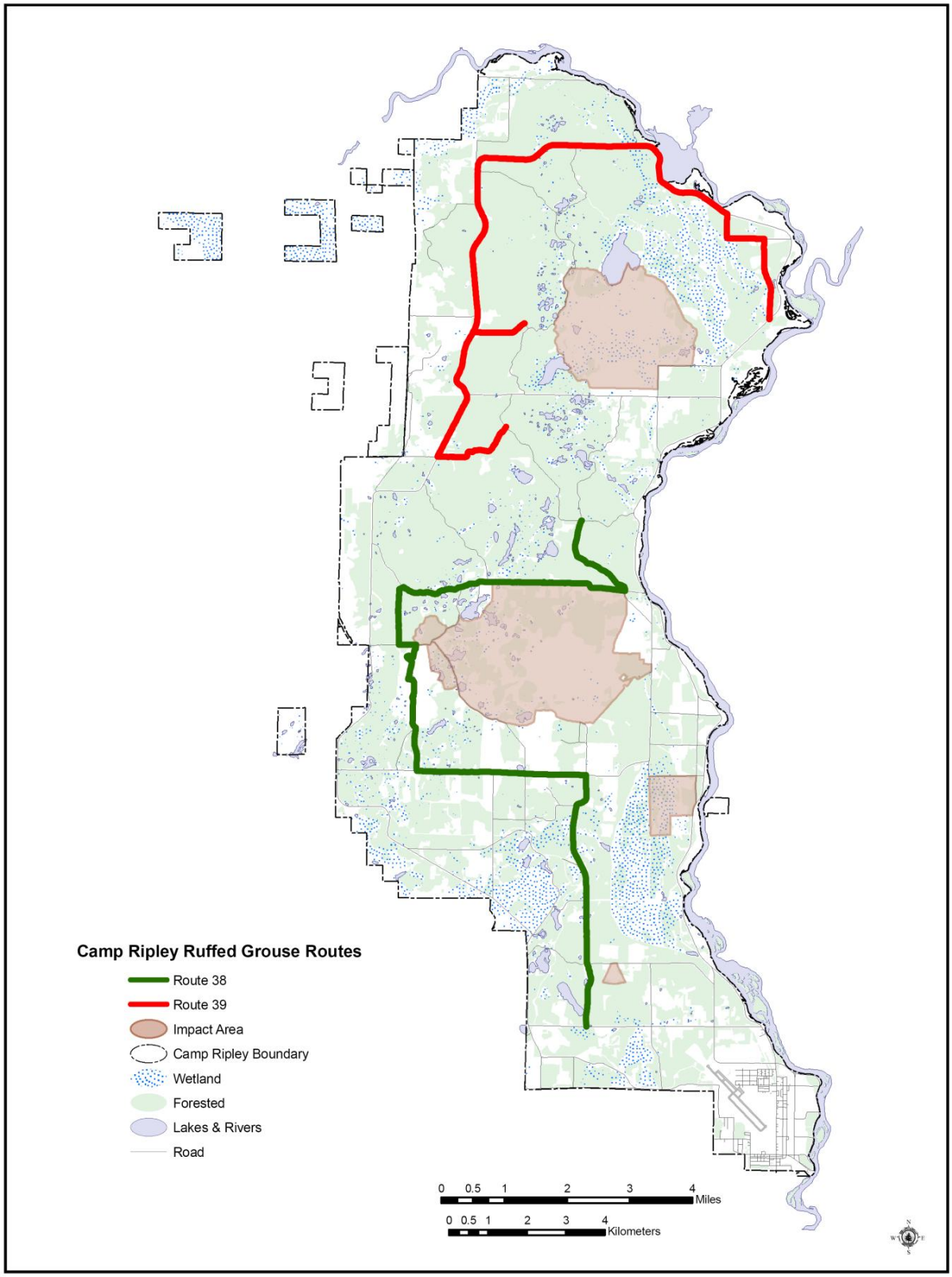
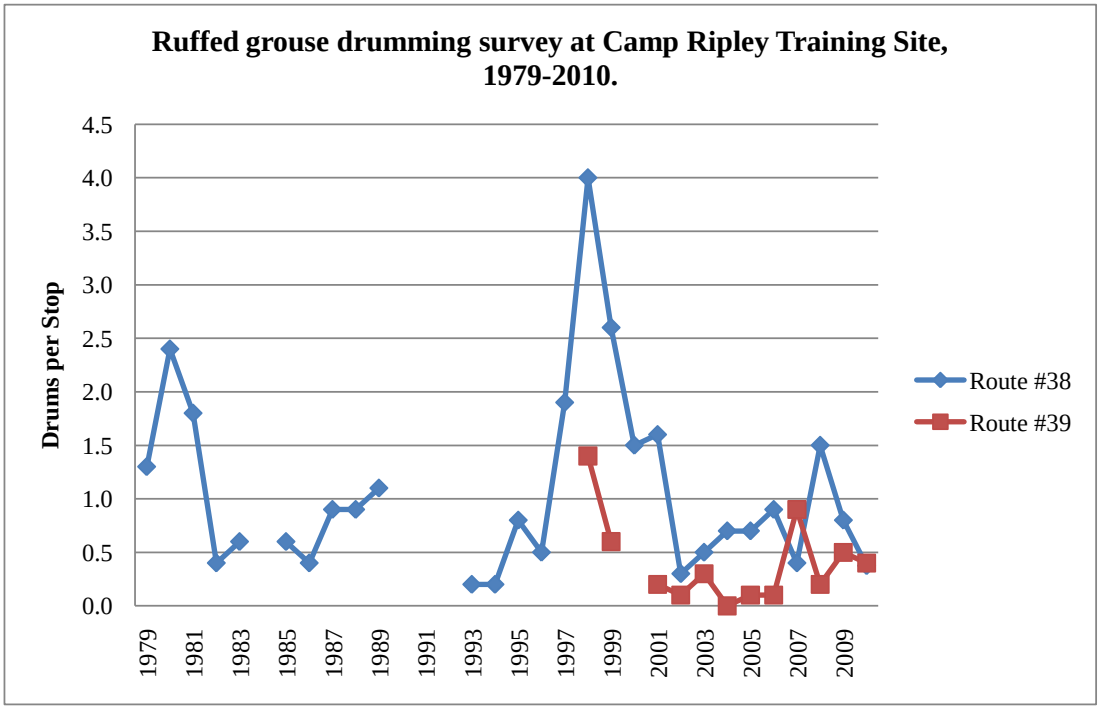


Figure 19. Ruffed grouse surveys at Camp Ripley, 1979-2010. Gaps in the graph indicate years when the survey was not conducted. Route #38 had only six stops in 2008.



*Gaps in the graph indicate years when the survey was not conducted.

Figure 20. Ruffed grouse drumming surveys in the Little Falls area, 1979-2010. Gaps in the graph indicate years when the survey was not conducted.

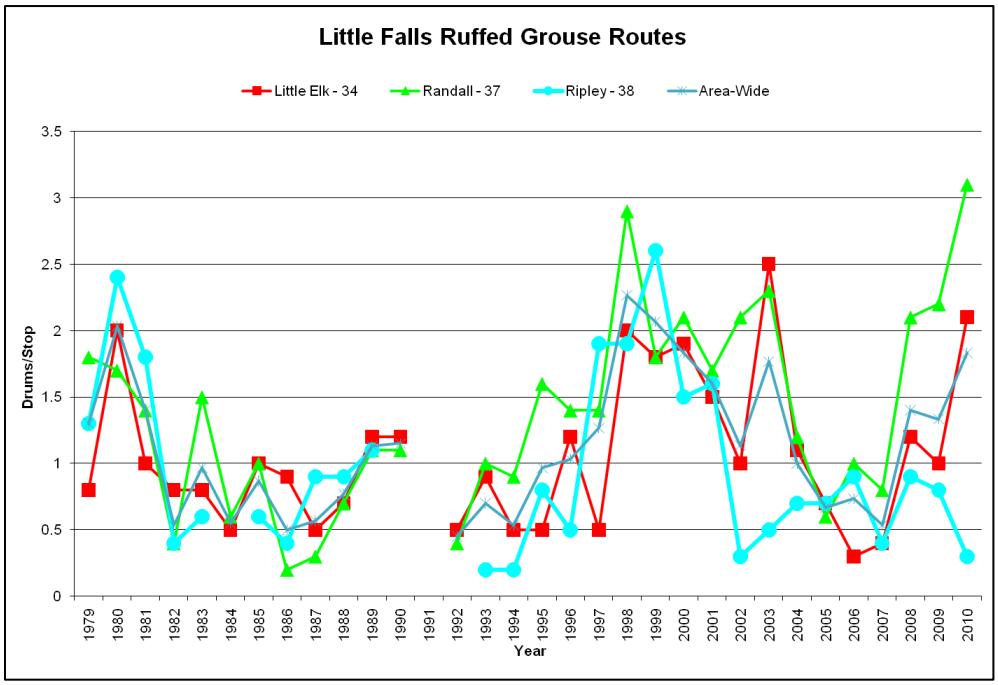
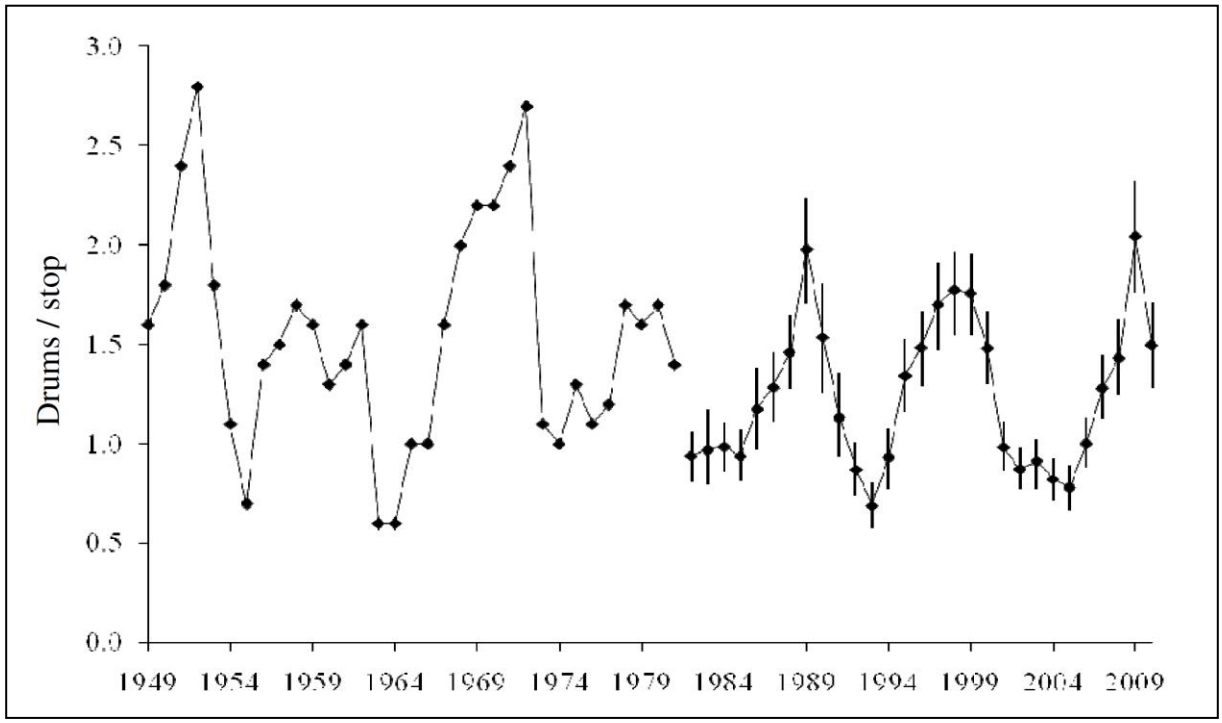


Chart courtesy of Beau Liddell, MNDNR, Division of Fish and Wildlife, Little Falls, MN.

Figure 21. Minnesota's ruffed grouse drum count index values, 1949-2010. Vertical error bars represent 95% confidence intervals based bootstrap samples (Larson 2010b).



Trumpeter Swan (*Cygnus buccinator*)

Trumpeter swans were a common breeding bird in western Minnesota until the mid-1800s; the last record of breeding in the wild was in 1885. Trumpeter swans were considered extirpated in the state. However, reintroduction and recovery efforts, including listing the species as threatened in Minnesota in 1996, have resulted in more than 5,300 free-flying birds in Minnesota. Trumpeter swans are monitored each year (Dirks et al. 2010) through aerial flights and ground observation by field staff.

The first record of trumpeter swans breeding on Camp Ripley occurred in 1990 when an active nest was located in a wetland north of Normandy Road (Dorff and Nordquist 1993). Trumpeter swans have continued to be documented at various lakes throughout Camp Ripley (1991, 1992, 2009, and 2010) but successful reproduction had not been documented in more than ten years. Beginning in 2009, a breeding pair, including a swan on a nest was documented on Mud Lake; however, no swans were observed on Mud Lake on subsequent checks and no cygnets were observed. In early August 2009, cygnets and adults were observed on an unnamed pond in the northeast corner of Marne Marsh, just southeast of Miller and Holden lakes. In late June 2010, four cygnets and adults were observed on Mallard Lake,

Table 15. Trumpeter swans raised at Camp Ripley since 1990.

Year	Cygnets Raised
1990	2
2009	Unknown
2010	**4**
Known Total	**6**

two adults were observed on Tamarack Lake without young, and no swans were observed on Mud Lake.

Wood Duck (*Aix sponsa*) Nest Boxes

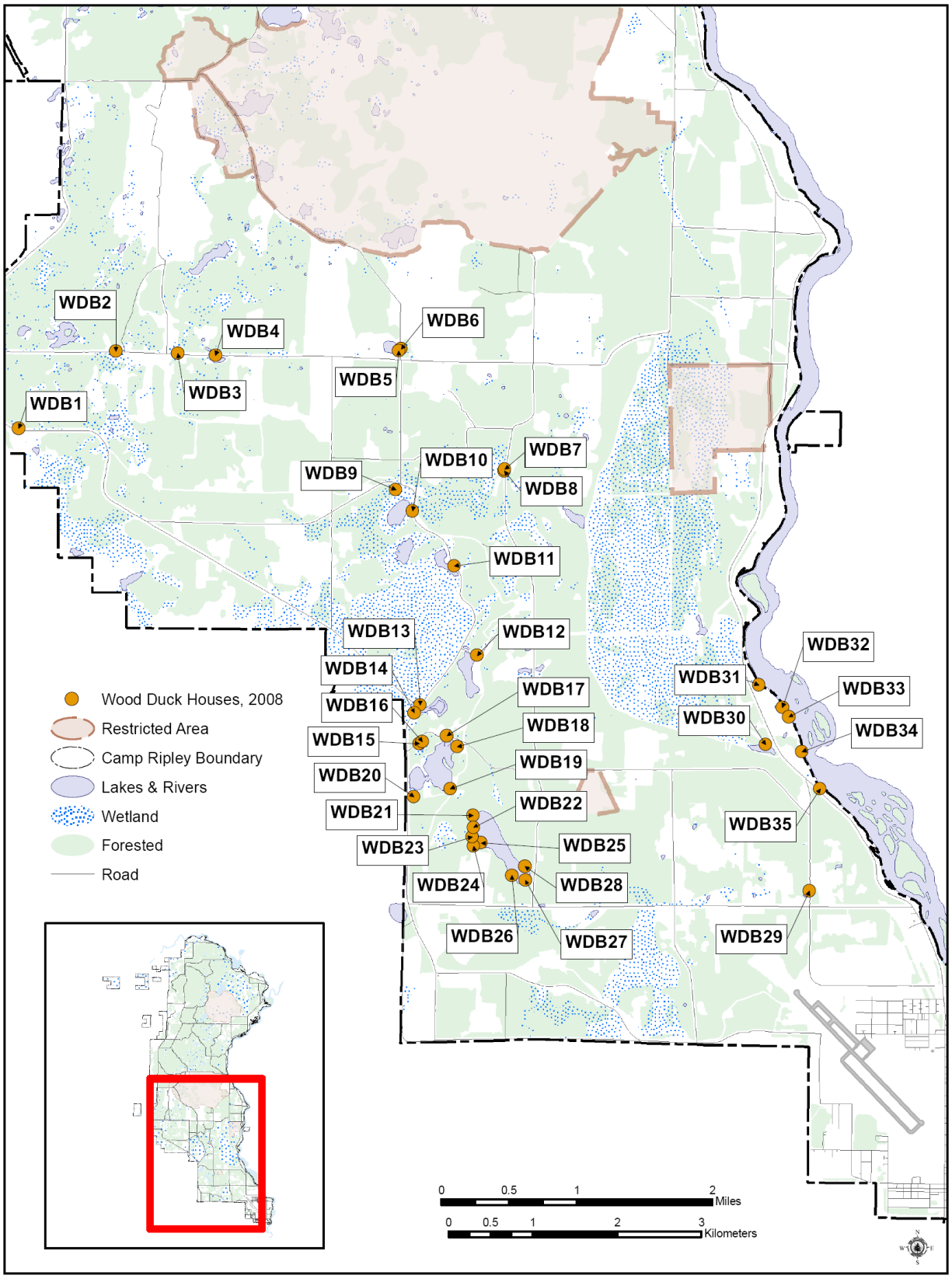
Wood ducks (*Aix sponsa*) were nearly extinct by the early 1900s due to habitat loss and the lack of old, dead trees where the ducks nest. However, management efforts, in part due to artificial nest boxes and an increase in beaver ponds, have helped increase the wood duck population (Ducks Unlimited, Inc. 2008 and MNDNR 2007). Camp Ripley established 35 artificial wood duck boxes in 2008 that were placed on eight foot steel sign posts with metal predator guards, based on recommendations from the Wood Duck Society (Wood Duck Society 2008).

During 2010, Camp Ripley interns monitored thirty-one wood duck houses adjacent to Ferrell Lake, Round Lake, Goose Lake, the Mississippi River, and other water bodies in the southern portion of Camp Ripley (Figure 22). Four boxes were missing in the spring of 2010 (#11, #31, #32, and #33). On April 11, 2010, volunteer Beth Walters began monitoring houses with the last visit occurring on June 29, 2010. Six nest boxes were active. Two boxes contained wood duck eggs but the nests were destroyed by predators (Boxes #7 and #10). The remaining four boxes were used by hooded mergansers (*Lophodytes cucullatus*). Two boxes, #2 and #27, hatched ten and eight ducklings, respectively. One box (Box #24) had eight hooded merganser eggs that hatched but a hen merganser carcass was found near the nest box and the remaining box (#13) nest was destroyed. The new design and placement of nest boxes on sign posts helped simplify monitoring of nest box use from the ground. However, two styles of predator guards were used and most of the destroyed nests were in boxes with less rigid predator guards. The less effective predator guards will be replaced in 2011. A volunteer will be recruited for the 2011 nesting season to maintain and monitor nest box use.

Black Tern (*Chlidonias niger*)

Black terns, a SGCN (MNDNR 2006), were observed on Mud Lake during mid-July 2010. Four nests were observed by interns during this visit. Black terns are a high priority in all Bird Conservation Region's waterbird plans. The North American Breeding Bird Survey (BBS) provides population trends for 1966-1989 (NatureServe 2009), and during this time the North American population of black terns decreased at an annual rate of 5.6% per year, for an overall population decline of 71.8%. The population decline (84.8%) has been greater in the United States than in Canada. Minnesota is one of twelve states with sufficient sample size to determine population trends from the BBS and also it shows significant population declines.

Figure 22. Wood duck nesting box locations at Camp Ripley, since 2008.



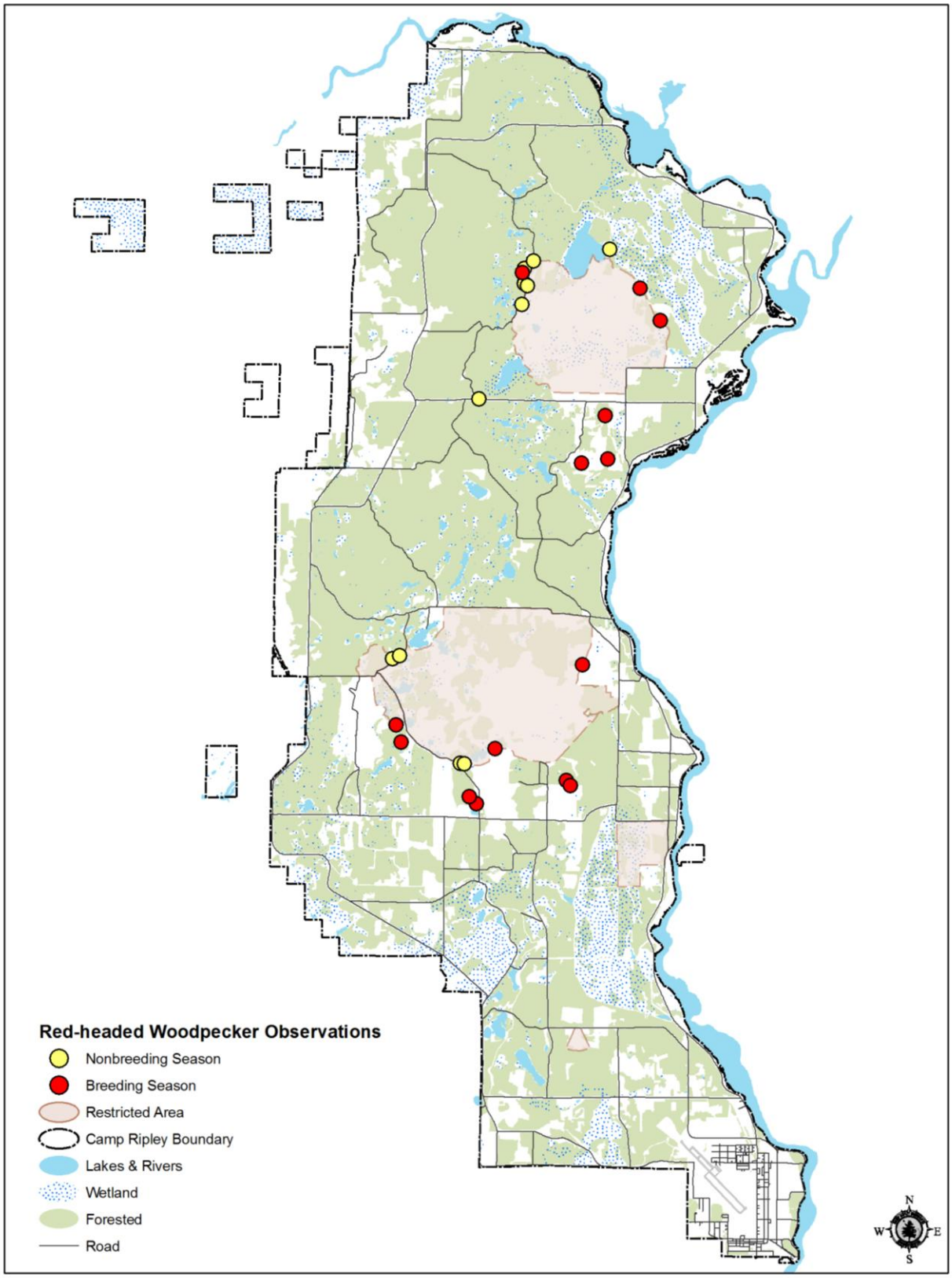
Red-headed Woodpecker (*Melanerpes erythrocephalus*)

The red-headed woodpecker is denoted on the Partners in Flight Continental Watch List (Rich et al. 2004), and is a Minnesota SGCN (MNDNR 2006). Populations have decline 87.5% since 1967. In 2006, to highlight the importance of this bird, the Audubon Chapter of Minneapolis developed a red-headed woodpecker recovery project that aims to serve as a focal point for population recovery. The project's goal is to reverse the decline and encourage the recovery of red-headed woodpecker populations through the creation, preservation, and restoration of habitat, research, and public education.

Breeding season red-headed woodpecker observations occurred on Camp Ripley from 1994 to 1998 when birds were observed on songbird plots. Over the past several years Camp Ripley staff recalled incidental observations of red-headed woodpeckers wintering within and adjacent to the Leach and Hendrickson impact ranges. During the winter of 2009-2010, environmental staff recorded observations of red-headed woodpeckers and recorded GPS points, and continued to obtain several observations into the spring months. Camp Ripley implemented a survey method modeled after Audubon Chapter of Minneapolis surveys occurring at the University of Minnesota's Cedar Creek Ecosystem Science Reserve.

Survey methods call for three surveys during separate time frames: 1) mid- to late-May, 2) early- to mid-June, and 3) late-June to early-July. The survey uses 10 minutes of observation followed by playing a red-headed woodpecker call, and another 10 minute observation period. The survey at Camp Ripley occurred only during the third time frame as areas where red-headed woodpecker habitat occurs were closed due to military training. Camp Ripley student interns conducted the survey on six days from July 1 to 13, 2010. During the survey, interns found nine individual red-headed woodpeckers adjacent to the Hendrickson Range and seven individuals along the perimeter of the Leach Range (Figure 23). These ranges provide oak savanna with nearby wetland habitats that are required by breeding and nesting red-headed woodpeckers.

Figure 23. Red-headed woodpecker observations at Camp Ripley, 2010.



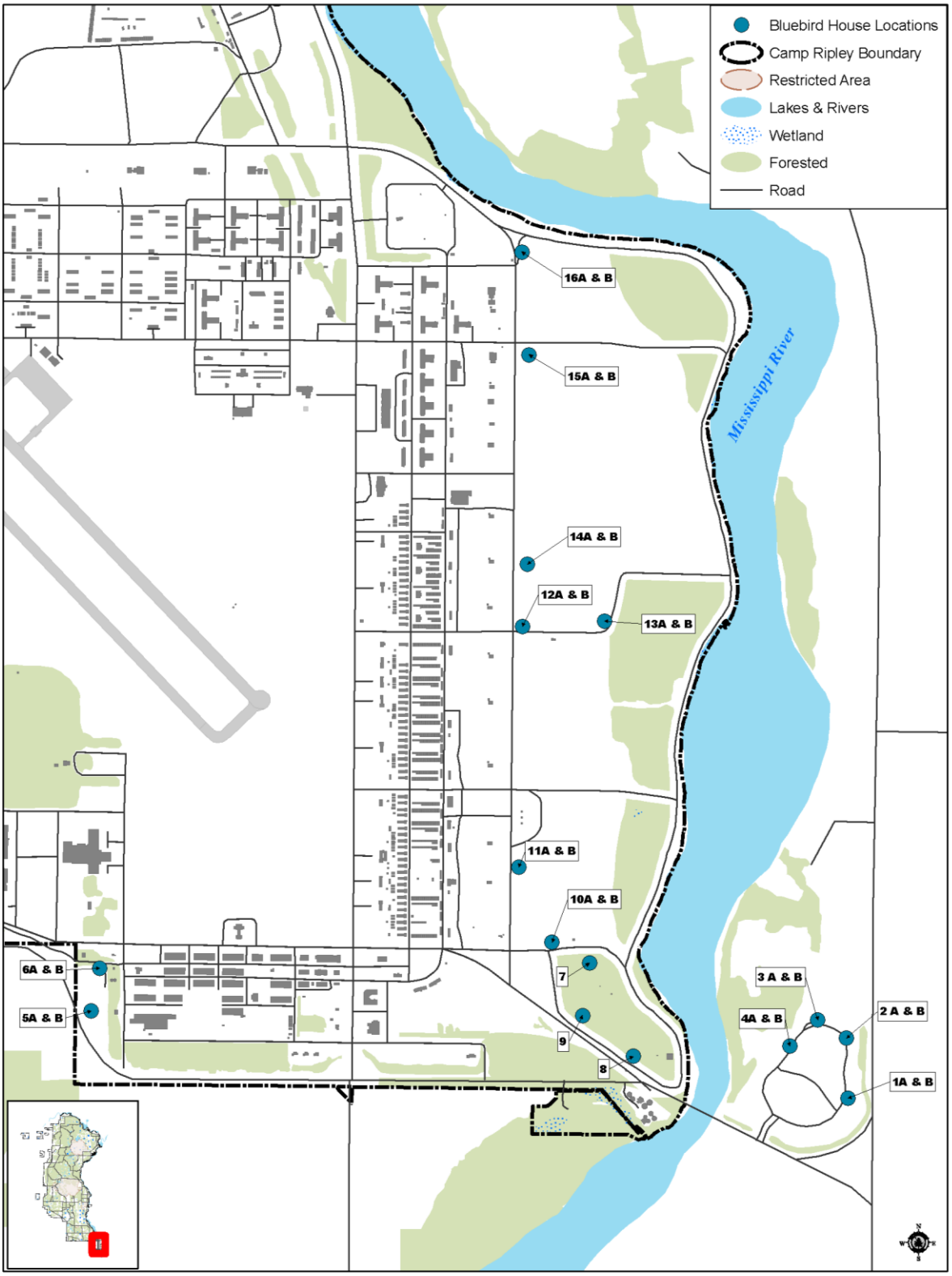
Eastern Bluebird (*Sialis sialis*) Nest Boxes

Eastern bluebird populations declined significantly from the 1930s to 1960s due to loss of habitat and competition from other cavity nesting birds particularly non-native European starlings (*Sturnus vulgaris)* and house sparrows (*Passer domesticus*) (MNDNR 2007). Because of this population decline, nationwide bluebird recovery efforts began with the North American Bluebird Society in 1977 (North American Bluebird Society 2008a), and in 1979 statewide recovery efforts were initiated by the Audubon Chapter of Minneapolis Bluebird Recovery Program of Minnesota (Bluebird Recovery Program of Minnesota 2008) in cooperation with the Nongame Program of the MNDNR. These recovery efforts were centered upon providing artificial nest boxes for eastern bluebirds. Camp Ripley has participated in the eastern bluebird recovery by establishing artificial nest boxes since 1994 at the Minnesota State Veterans Cemetery. In addition, the nest boxes at the Minnesota State Veterans Cemetery provide visitors viewing opportunities. Bluebird nest boxes were also established along the Camp Ripley cantonment fence in 2007.

In August 2008, the coordinator of the Bluebird Recovery Program of Minnesota evaluated the past nest boxes and locations for their benefit to bluebird use and production. Based on his recommendations, the nest boxes were replaced with Gilbertson PVC artificial nest boxes (North American Bluebird Society 2008b) and moved to different locations. As an event for National Public Lands Day, new bluebird boxes (Gilbertson PVC) were constructed and installed at the Minnesota State Veterans Cemetery (4 pairs (located across the Mississippi River from Camp Ripley)), De Parcq Woods (3 single boxes) and Camp Ripley cantonment (9 pairs) (Figure 24). Bluebird nest box pairs were located in open areas close to scattered trees, at least 300 feet from brush, and more than 500 feet apart. Placing boxes away from brush areas minimizes nest box use by house wrens. These new locations have been effective and eliminated use by house wrens in 2009 and 2010.

During 2010, all twenty-nine Gilbertson PVC artificial bluebird nest boxes (North American Bluebird Society 2008b) were monitored regularly during the breeding season (April 7 to August 19) by DeAnna Gehant and Mike Ratzloff, Camp Ripley volunteers. Twenty-one boxes were occupied by bluebirds, none by house wrens (*Troglodytes aedon*), seven by tree swallows (*Tachycineta bicolor*), and one by black-capped chickadees (*Poecile atricapillus)*. Any nesting attempts made by invasive house sparrows (*Passer domesticus*), were removed. Bluebird nestlings were first observed in nest boxes on May 13, 2010. Seventeen bluebirds fledged from the nest boxes at the Veterans Cemetery and 79 fledged from nest boxes within the cantonment area. The production of bluebird fledglings was up significantly from the nine birds produced at the Minnesota State Veterans Cemetery in 2007 with similar production in 2008. This increase can be attributed to regular maintenance and monitoring which greatly improves the success of bluebird houses. Additionally, 21 tree swallows successfully fledged.

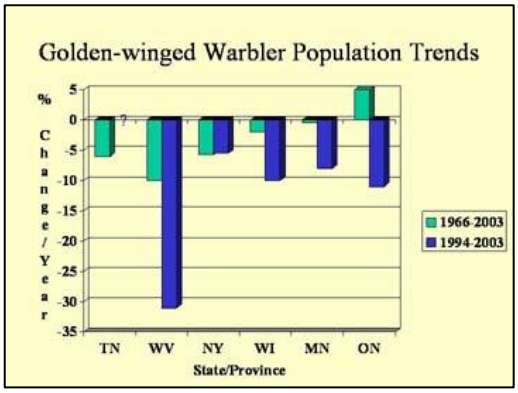
Figure 24. Location of eastern bluebird houses at Minnesota State Veterans Cemetery and Camp Ripley cantonment area, since 2008.



Golden-winged Warbler (*Vermivora chrysoptera*)

The golden-winged warbler, a SGCN, has been recorded on Camp Ripley since initial bird survey work in 1991. This species has been slightly increasing on point count surveys since 2000 and incidental, auditory observations have increased throughout Camp Ripley in the past five years. Eighty percent of the global breeding population resides in the forests surrounding the Great Lakes. The Breeding Bird Survey data from 1994 to 2003 shows an annual decline of nine percent in the north-central states of Minnesota, Wisconsin, and Michigan (Figure 25). The northeastern states have experienced a 20.4 percent population decline, the southeastern states populations are so low that estimating them is problematic, and Ontario has observed an 11.3 percent decline (Buehler et al. 2006). Due to this population decline, in February 2010, the U.S. Fish and Wildlife Service was petitioned to list the golden-winged warbler as threatened or endangered under the Endangered Species Act.

Figure 25. Golden-winged warbler population trends, Breeding Bird Surveys, United States.



Causes for the decline are loss of nesting habitat, and loss of quality stopover and wintering habitat. In the Northeast United States, the genetic hybridization of golden-winged warblers with blue-winged warblers (*Vermivora pinus*) may cause the decline of golden-winged warblers or blue-winged warblers may outcompete golden-winged warblers (Gill 1980).

In May 2010, Camp Ripley hosted three technicians from Michigan Tech University who where assisting a study that is examining genetic hybridization of golden-winged warblers. Preliminary data collected from warblers captured a Camp Ripley indicate that of 46 golden-winged warblers tested 6.5 percent (n=3) were cryptic hybrids (genetically introgressed (movement of a gene from one species into the gene pool of another by repeated backcrossing of a hybrid with one of its parents) with blue-winged warblers). Two tested blue-winged warblers were both pure blue-winged warbler. Three Brewster's warblers, a first generation hybrid of blue-winged and golden-winged warblers, were also tested. Two Brewster's had golden-winged warbler mothers and one had a blue-winged warbler mother.

Since Camp Ripley has a mixed population of golden-winged warblers, blue-winged warblers, and hybrids, it is not surprising that some golden-winged warblers were cryptic hybrids. The surprising result is that this introgression rate is lower than some other places in Minnesota, such as Rice Lake National Wildlife Refuge and the Superior National Forest, where the introgression rate is higher and where blue-winged warblers are very rarely or not found at all. Also in other places where the two species are sympatric (occupying the same geographic area), the introgression rate tends to be higher, closer to 10-15 percent of the population. If blue-winged warblers are relatively new arrivals at Camp Ripley, this may explain the relatively low introgression rate compared to other sympatric populations (Amber Roth, Michigan Technological University, PhD Candidate, personal communication).

Mammals

Gray Wolf (*Canis lupus*)

Federal Court Decision

Through federal action and by encouraging the establishment of state programs, the 1973 Endangered Species Act provided for the conservation of ecosystems upon which threatened and endangered species of fish, wildlife, and plants depend (USFWS 2008b). The gray wolf was first protected under the Endangered Species Act in 1974. 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 had grown to approximately 3,000 animals. Results from the 2007-2008 survey estimated that the current population remains at just under that number (2,921) (Erb 2008).

For decades, the number of wolves in Minnesota has exceeded the recovery criteria established by the federal wolf recovery plan. Currently, Minnesota's population of more than 2,900 wolves is second only to Alaska among U.S. states and exceeds the federal delisting goal of 1,251-1,400. Minnesota's wolves occupy nearly all of the suitable areas in the state. Minnesota has one of the highest wolf densities recorded anywhere, and the population has remained stable for nearly 10 years.

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. Management of wolves in Minnesota was turned over to the state based upon its 2001 Minnesota Wolf Management Plan. However, on September 29, 2008, the U.S. District Court for the District of Columbia overturned the Department of the Interior's decision to remove the gray wolf (Great Lakes Distinct Population Segment) from federal Endangered Species Act (ESA) protection. The status of gray wolves in Minnesota is once again threatened under the Endangered Species Act.

All provisions of state wolf management have been suspended until gray wolves are delisted again in Minnesota. Wolf management authority lies with the U.S. Fish and Wildlife Service (USFWS). Under federal law no one can take a wolf under any circumstances to protect livestock and pets. Wolves may be killed in defense of human life. Authorized government agents may take wolves where verified depredation occurs. Taking of wolves to protect livestock and pets, which was allowed under state management, is no longer allowed (MNDNR 2009).

Wolf Monitoring Background

Section 4(g) of the Endangered Species Act requires the federal government (through the US Fish and Wildlife Service) to monitor, for a minimum of five years, any species that is delisted due to its recovery. The federal Endangered Species Act and the Minnesota Wolf Management Plan encourage area-specific telemetry monitoring of wolves be continued. It will be important to continue to monitor Camp Ripley's wolf packs after delisting to determine changes in survival rates and causes of mortality. Comparing survival rates of wolves on and off the refuge area may provide additional insight into the effects of delisting. Although a great amount of information has been gathered concerning Camp Ripley's wolf packs, questions remain concerning survival rates, causes of mortality, and dispersal.

Besides serving as a National Guard training facility, Camp Ripley is also a Minnesota Statutory Game Refuge. Wolves were first documented on Camp Ripley in 1993. Camp Ripley provides good quality habitat for wolves on the southern edge of the Minnesota gray wolf range. In the past fifteen years, forty 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 16).

Since 2001, Camp Ripley has supported two wolf 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, evidence obtained from this study confirmed that wolves that move off Camp are moving into a more hostile environment where they die from illegal and accidental killing by humans.

Helicopter Capture and Wolf Movements

At the beginning of 2010 the only radio-collared wolf remaining on Camp Ripley was an older male (#31) in the south pack. Believed to be the alpha male, wolf #31 was first captured via helicopter in March 2008. In October 2009, he was recaptured in a padded leg hold trap.

The only other wolf caught in 2009 during fall trapping was a wolf pup (#35). Captured on October 6, 2009 he weighed 55 pounds. Because he was not fully grown he was collared with a padded VHF collar. However, his collar was recovered on January 28, 2010, having been chewed off. Because additional wolves were not captured, a helicopter capture was planned for 2010.

A helicopter capture crew (Quicksilver Air) was brought to Camp Ripley to capture wolves on February 2-3, 2010. The goal was to capture three or four uncollared wolves in each pack. An airplane was dispatched to track down wolf #31 and locate the rest of the south pack. He was located south of Camp on private land with two uncollared wolves. They were relocated several times during the two days of the capture event and in the afternoon of the second day were back on Camp. The two uncollared wolves were captured. Wolf #37, a large male, was collared with a conventional VHF collar (Advanced Telemetry Systems (ATS)). Wolf #38, a young female, was collared with a Globalstar satellite collar that was designed to collect GPS locations and transmit them from the field to the internet via the Globalstar satellite system. This collar worked perfectly for several months and then failed.

The helicopter crew was able to track and locate additional wolves on the south end of Camp. Four uncollared wolves were located in Hole-in-Day Marsh. One wolf (#36) was captured on the first day, and two additional wolves (#32 and #39) were captured on the second day. Wolf #32 was a female that had originally been collared in 2008, but had since lost its collar. The other two were adult males. All three were collared with conventional VHF collars (ATS).

An extensive ground and air search through the northern portion of Camp Ripley led to the sighting of two wolves from the north pack. One wolf (#40) was captured and collared with a

Table 16. 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 (lbs) at Last Capture	Ear Tag Color & Number (Left/ Right)	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	Found dead on Camp (7/01)
16	F	1	1-2 years	1/18/01	1/18/01	65		dead	Found dead in Michigan- shot (9/02) (Sue)
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 (Lucky)
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 Unk. (8/07) (Lady)
21	F	1	1-2 years	2/25/03	2/25/03	68		dead	Found dead in cornfield (Shot?)
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) (Smokey)
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 years	1/30/2006	1/30/2006	85		dead	Shot during firearms deer season (11/08) (Sly)
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	Orange 4/Orange 2	Dead	Shot - was north pack alpha male (Big Foot)
29	**F**	**1**	**2 years**	**1/30/2006**	**1/30/2006**	**67**	**Orange 1/Blue 11**	**Unknown**	**Collar chewed off -11/09 North pack**
30	F	1	3 years	1/31/2006	1/31/2006	85		dead	Found during helicopter capture (2/08) killed by wolves (Shep)
31	**M**	**1**	**4-5 years**	**3/22/08**	**3/22/08**	**75**	**Yellow 47/Blue 10**	**ALIVE**	**South pack – alpha male**

Table 16. 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 (lbs) at Last Capture	Ear Tag Color & Number (Left/ Right)	Fate	Comments
32	**F**	**2**	**2-3 years**	**3/22/08**	**2/3/2010**	**93**	**Yellow 38/Orange 21**	**ALIVE**	**South pack, GPS collar failed – 2008, dropped 2009; recollared 2010**
33	F	1	2 years	3/22/08	3/22/08	76		dead	Killed by depredation trapper in Manitoba, Canada (7/08)
34	M	1	4-5 years	3/22/08	3/22/08	92	Yellow 44/Yellow 36	dead	Shot near Staples, MN on 11/12/09 (Techno)
35	**M**	**1**	**Pup**	**10/6/09**	**10/6/09**	**55**	**Metal 2117/2466**	**Unknown**	**North pack; VHF collar (Trickster); Collar chewed off Jan. 2010**
36	**M**	**1**	**3 years**	**2/2/2010**	**2/2/2010**	**63**	**Yellow 34/Yellow 46**	**ALIVE**	**South pack**
37	**M**	**1**	**4-5 years**	**2/3/2010**	**2/3/2010**	**77**	**Orange 14/Orange 12**	**ALIVE**	**South pack**
38	**F**	**1**	**Pup**	**2/3/2010**	**2/3/2010**	**56**	**Blue 21/Orange 15**	**ALIVE**	**South pack – satellite collared, failed May 2010**
39	**M**	**1**	**7-8 years**	**2/3/2010**	**2/3/2010**	**97**	**Blue 3/Yellow 31**	**ALIVE**	**South pack**
40	**F**	**1**	**5 years**	**2/3/2010**	**2/3/2010**	**93**	**Orange 24/Yellow 29**	**ALIVE**	**North pack – may be alpha female**

conventional VHF collar (ATS). Although only two wolves were observed during the capture, the north pack appears to be stable with approximately six to eight members. Tracking throughout the year supports that estimate and indicates that pups were born in 2010. The collared wolf was usually located on Camp during the year, but was occasionally found west of Camp (Figure 26).

Having six wolves collared on the south end of Camp enabled us to monitor pack movements and the development of a new pack on Camp Ripley. Plotting all locations throughout the year including those from the GPS/satellite collar (Figure 26), shows that the six collared wolves are split into two groups and rarely cross into each others' territories. Wolves #31, #37, and #38 were located south of Camp during the helicopter capture and continued to occupy that area and the very southern part of Camp throughout the year. Wolves #32, #36, and #39 occupied the south central section of Camp (Figure 27). Track surveys in December indicate that more wolves are in each of these areas leading us to believe that the wolves on the south half of Camp have split into two packs. Track surveys, radio tracking and locating den sites in 2011 will be used to confirm that there is a new pack on Camp.

Wolf Mortalities

There were no wolf mortalities recorded in 2010.

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 bear range in Minnesota. The principal objectives of this study include: 1) continued monitoring of 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.

In 2008, the MNDNR Forest Wildlife Populations and Research Group initiated a 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 bear range and collared bears at Camp Ripley, along the southern edge of their range (Garshelis et al. 2007).

Figure 26. Locations of wolf #40, north pack at Camp Ripley, 2010.

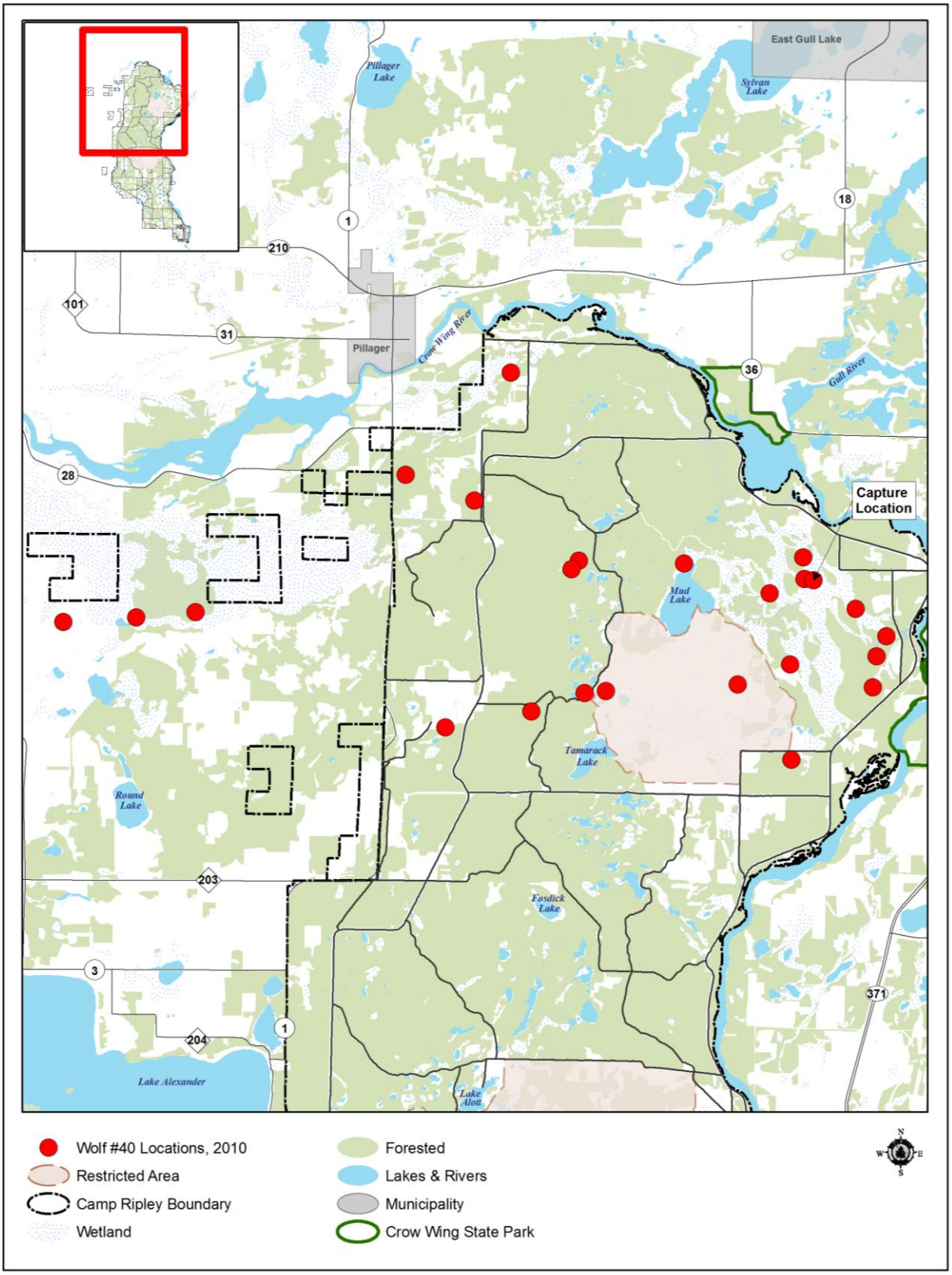
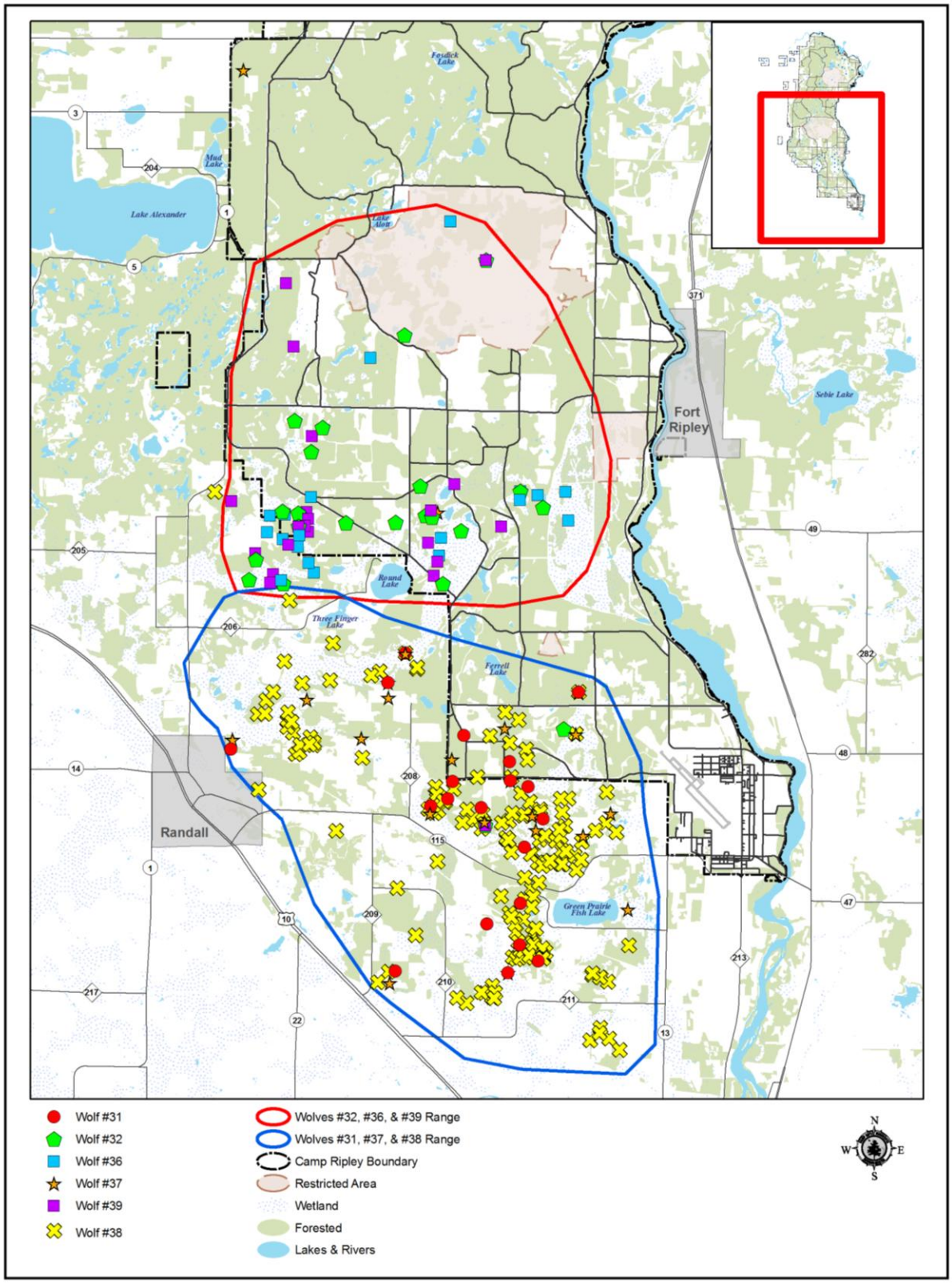


Figure 27. Locations of wolves #31, #32, #36, #37, #38, #39 at Camp Ripley, 2010.



Mortalities and Reproduction

Ground and aerial tracking were used to monitor reproductive success, movements and survival of eleven collared black bears through 2010 (Table 17). Bear #2063 had three cubs in 2009, two cubs survived to den in the fall. In late fall, a yearling bear was found dead in the southwestern part of #2063's territory; believed to be her third cub, evidence at the site indicated it was killed by wolves. Bear #2610 was an orphaned cub placed with bear #2063 in March 2007. Two years old in January 2009, she spent most of the year on Camp, but occasionally moved across the Crow Wing River. In mid-November she was on Camp, but crossed the Crow Wing River again and denned in a less populated area of southwest Baxter, Minnesota. In 2010, she had two cubs. Throughout the summer and fall she crossed the Crow Wing and Mississippi rivers several times and denned in a corn field east of Crow Wing State Park. Unfortunately, #2610 and her one surviving yearling were killed when the field was harvested (Figure 28).

Bear #2079 (eight years old in 2010) had two cubs in 2009, only one survived to fall denning. She appears to be shifting her home range further south of Camp as her offspring occupy her former territory. Although bear #2079 can still be found on Camp occasionally, she is usually located south of Camp (Figure 29). An orphan cub was also placed with bear #2079 in March 2007. The orphan, #2611 had last been located on Camp Ripley in August, 2008. In the spring of 2010 she was located in a den approximately 25 miles north of Grand Rapids, MN. She was recollared, but was killed the first

Table 17. Black bears monitored at Camp Ripley, 2010.

Bear ID	Sex	Age as of Jan. 2010	Date of First Capture	Age at First Capture	Weight at Last Capture (lbs)	Ear Tag Color & Number (Left/Right)	Status
2063	F	9	2001	Cub	185 (3/10)	Orange 40/Red 134	Alive
2079	F	8	2004	2 yrs	215 (3/10)	Lt. Blue 100/Red 132	Alive
2081	F	11	2004	5 yrs	200(3/10)	Lt. Blue 59/ Lt. Blue 60	Alive
2092	F	5	2005	Cub	195 (3/10)	Yellow 24/Purple 73	Alive (79's cub)
2107	F	3	2007	Cub	125 (7/10)	Green 175/Green 174	Alive (79's cub)
2108	F	3	2007	Cub	50 (3/08)	Yellow 121/Lt. Blue 73	Unknown (79's cub)
2610	F	3	2007	Cub	175 (3/10)	Blue 4/Orange 39	Dead – Fall 2010
2611	F	3	2007	Cub	59 (3/08)	Purple 93/Yellow 120	Dead – Fall 2010
2122	M	Unkn	2009	Unkn	200 (3/09)	None	Unknown
2123	F	1	2009	Cub	70 (3/10)	Blue 13/Blue 14	Alive (63's cub)
2124	F	1	2009	Cub	63 (3/10)	Blue 9/Yellow 37	Alive (63's cub)

Figure 28. Locations for black bears #2063, #2123, #2124 in 2010 and black bear #2610 in 2008 to 2010 at Camp Ripley.

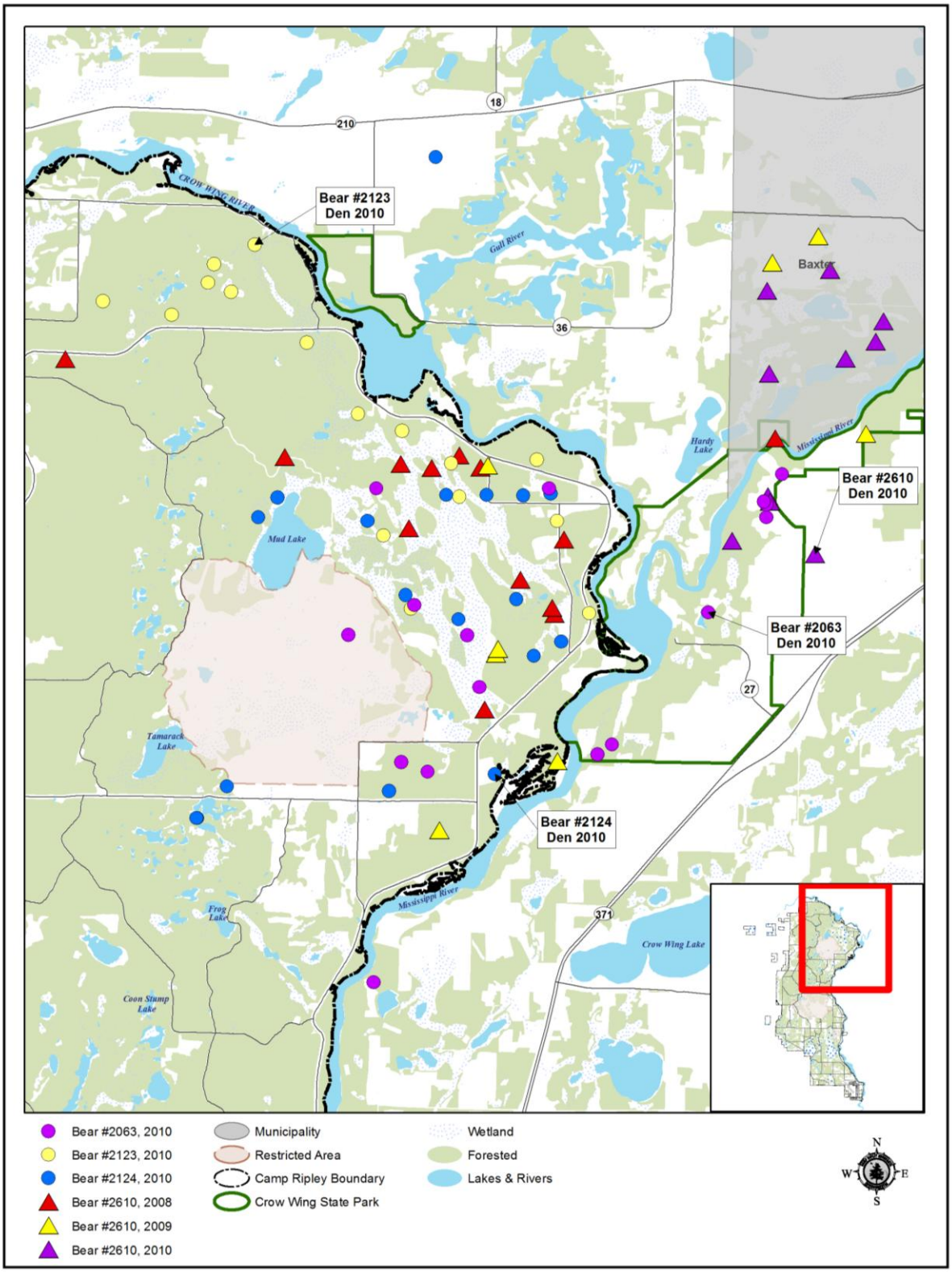
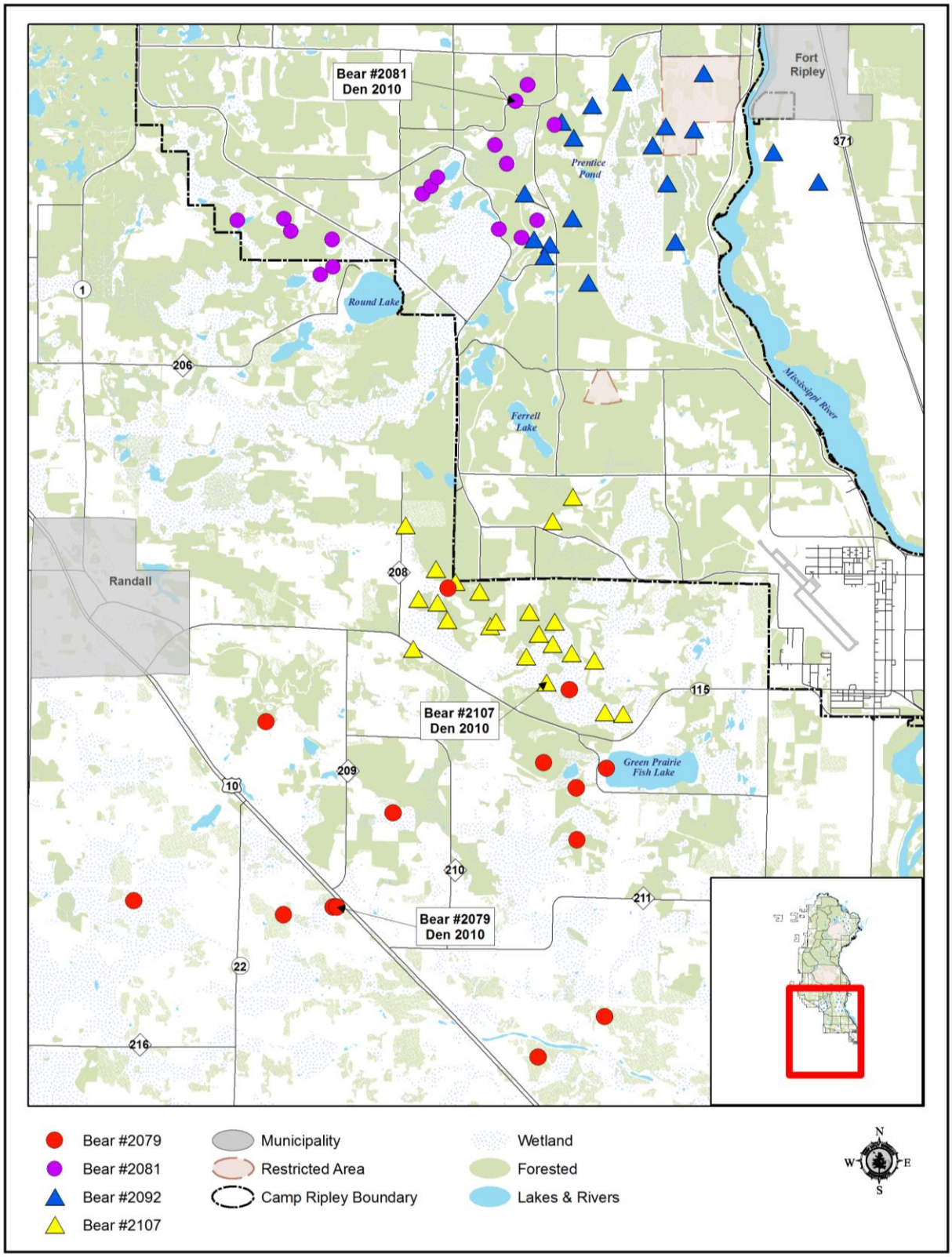


Figure 29. Locations of black bears #2079, #2081, #2092, and #2107 at Camp Ripley, 2010.



day of the bear season. Bear #2092 (five years old in Jan. 2010) had two cubs in 2009, she is one of bear #2079's cubs and her territory is in the northern portion of her mother's former range (Figure 29).

Bear #2081 (eleven years old in 2010) occupies an area in south central Camp Ripley. She had two cubs in 2010. Bear #2107 has spent the past two winters in a swamp south west of Camp. Because she was not handled in the winter, she was trapped on Camp in July so her collar could be replaced. Bears #2108 and #2122 were monitored throughout 2009 up to the time they should have denned. However, during den checks in Feb. 2010 it was discovered that both bears had dropped their collars in late fall.

Cougar (*Puma concolor*) and Canada Lynx (*Lynx canadensis*) Detection Survey

Historically, cougars (*Puma concolor*) also known as mountain lions were never common in Minnesota; however, they likely ranged throughout the state before European settlement (MNDNR 2007). Camp Ripley staff receives several reports annually of cougar sightings on Camp. Although observations of cougars in Minnesota are extremely rare, there have been recent documented sightings in Minnesota near Floodwood (Niskanen 2007) and unconfirmed sightings throughout the state. Two unconfirmed observations were reported on Camp Ripley in 2008 and adjacent to Camp in fall of 2009.

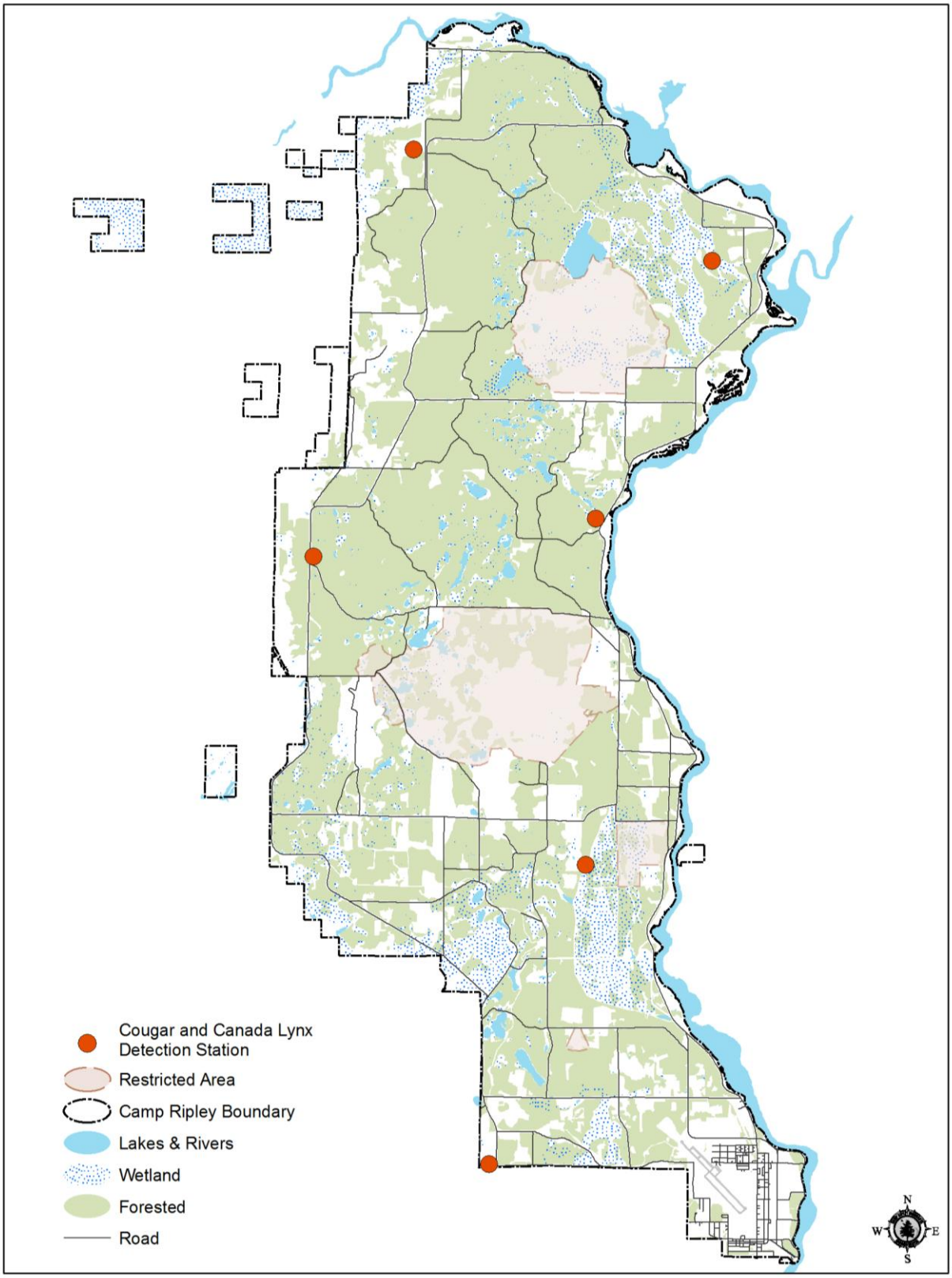
Since March 2000, the Canada lynx (*Lynx canadensis*) has been listed as a federally threatened species under the Endangered Species Act. This is the only lynx species in North America. Numbers of lynx in Minnesota likely fluctuate with Canadian populations and with the abundance of their primary prey, the snowshoe hare.

Minnesota historically supported the largest lynx population in the Great Lakes region. Studies are currently underway to understand their distribution, abundance, persistence, and habitat use in and near the Superior National Forest in northeastern Minnesota. This research indicates that Canada lynx may be more abundant in Minnesota than previously thought. In 1993 a lynx sighting was reported on Camp Ripley and more recent sightings in the state include Morrison County just west of Camp Ripley (Dirks and Dietz 2010).

The bobcat inhabits much of the same forested country as the lynx, but it is more common. Like the lynx, bobcat populations are affected by the abundance of food--mostly rabbits and mice. Evidence of bobcats and sightings are common on Camp Ripley and landowners along the Camp Ripley borders are known to hunt and trap bobcats.

To further assess the presence of large cats on Camp Ripley, scent stations were established that can be used to detect lynx, cougars, and bobcats. Six Envirotel cougar detection systems (Envirotel Inc. 2007) were installed throughout Camp (Dirks and Dietz 2010) in 2007. In August 2010, one site was removed from south of the Goose Pond and moved to the southwest corner of Camp (Figure 30). The detection system consists of a perforated plastic pipe installed over a 7 foot fence post. The plastic pipe has a 2-foot sheet of the hook side of Velcro fastener at the base. In

Figure 30. Cougar and Canada lynx detection survey locations at Camp Ripley, since 2010.



addition, a 12 x 12 foot square area around the central pole is fenced with two strands of barbed wire at heights of 18 inches above ground and 12-18 inches above the first strand. A solid scent lure is placed under the plastic pipe cap, and the hook fastener mat is sprayed with liquid cougar lure (either cougar urine or catnip scent). In addition, wild catnip is used as a lure when available. The barbed wire fence also collects hair samples from animals visiting the plastic scent pole.

The detection sites were monitored by staff every 4 to 8 weeks during the growing season, as permitted by training activities. During these visits, hair samples were removed from the barbed wire and center pole hook fasteners, and the center pole was sprayed with cougar lure. Hair sample collection continued in 2009 (n=6) and 2010 (n=65), and more than 90 hair samples have been collected since late November 2007. These samples will be analyzed during 2011 to determine the species of mammals visiting the stations.

Fisher (*Martes pennanti*)

Since 2007, Camp Ripley has participated in a statewide research project conducted by the MNDNR to examine fisher and marten ecology in Minnesota. The primary objectives of this study are to: 1) estimate survival rates and causes of mortality for fisher and marten, 2) describe and quantify features of natal den sites used by females, 3) directly estimate parturition rates and, if possible, litter sizes of radio-marked females, 4) evaluate how survival or reproduction varies as a function of forest attributes, prey abundance and weather conditions, and 5) to evaluate the design of winter track surveys (Erb et al. 2009). Camp Ripley is located on the southern edge of Minnesota's fisher range and is one of three study areas. Marten are not found in Camp Ripley.

In 2008, an interagency contract was developed between Camp Ripley, Central Lakes College, Minnesota State University-Mankato, and the MNDNR to establish a student project for fisher (Wandrie et al. 2010). Under this contract, fisher trapping on Camp Ripley commenced in September 2008 continuing through March 2009 and resumed again on September 13, 2009 and continued into mid-December 2009. In 2008 and 2009, the student captured five fishers during 3,068 trap nights (0.16 fisher/100 trap nights; Wandrie et al. 2010) (Table 18). Five fishers were monitored by the student resulting in 25 telemetry locations (Tables 19 and 20).

Table 18. Fisher capture data and total trap nights per month, 2008-2010.

Month	2008 Trap Nights[a]	2008 Fisher Captured[a]	2009 Trap Nights[a]	2009 Fisher Captured[a]	2010 Trap Nights	2010 Fisher Captured
January			209	0	0	
February			444	1	0	
March			474	1	0	
August	16		0	0	0	
September	442	1	147	0	12	0
October	176	0	29	0	220	0
November	483	0	169	1	462	3
December	342	0	137	1	411	2
Total	**1459**	**1**	**1609**	**4**	**1105**	**5**

[a] Wandrie et al. 2010

Table 19. Fisher monitored at Camp Ripley, since 2007.

Fisher ID	Sex	Age at Capture	Date of First Capture	Weight at Capture (kgs)	Ear Tag Number (Right/Left)	Status
F07-326	F	Sub-adult	11/14/2007	2.7	327/326	Unknown, collar pulled off June 2008
F08-466	F	Sub-adult	9-22-2008	3.0	488/466	Unknown, collar pulled off Feb. 2009
F09-458	M	Adult 2+ yrs	2-27-2009	6.0	454/458	Found dead, unknown cause May 2009
F09-480	M	Sub-adult	3-15-2009	4.6	487/480	Collared, recaptured, collar removed
F09-480	M	Adult	11-13-2009	5.3	481/480	Collar removed due to injury, not fitted with new collar
F09-461	F	Adult	12-13-2009	2.9	460/461	Collared, found dead unknown cause in September 2010
F10-463	M	Adult	11-10-2010	5.3	462/463	Collar not recovered- suspected pulled - November 2010
F10-482	M	Juvenile	11-22-2010	3.65	483/482	Collared
F10-484	M	Adult	11-24-2010	5.22	485/484	Collared
F10-464	M	Sub-adult	12-4-2010	4.6	486/464	Collared
F10-472	M	Sub-adult	12-15-2010	4.6	473/472	Collared

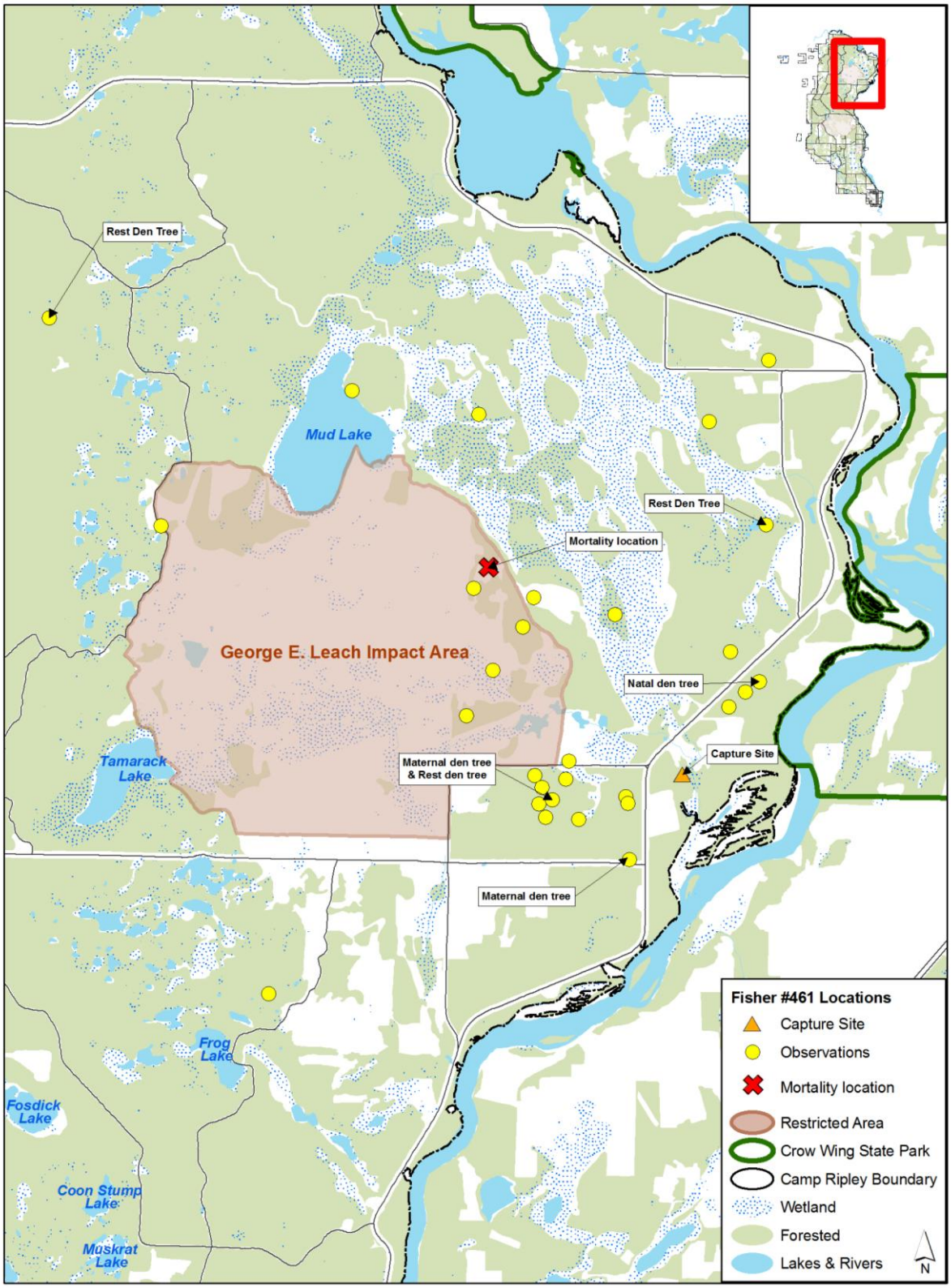
Wandrie et al. (2010) examined stomach contents of 19 trapper harvested fisher in Aitkin, Cass, Crow Wing, Morrison, and Sherburne counties. Findings from this study were similar to results of fisher diet studies in Maine and Minnesota. Food for fishers are small mammals, snowshoe hare, white-tailed deer carrion, fruits, and occasionally birds. Fisher home-range sizes, forest metrics data, and habitat preferences results were reported in the 2009 Conservation Program report (Dirks and Dietz 2010; Wandrie et al. 2010).

Table 20. Total number of locations points for each Camp Ripley fisher since 2007.

Fisher	Sex	Number of Location Points	Period Collared
F08-326	F	18	Nov. 2007-June 2009
F08-466	F	6	Jan. – Feb. 2009
F09-458	M	3	Feb.-May 2009
F09-480	M	12	March-Nov. 2009
F09-461	F	36	Dec. 2009-August 2010
F10-463	M	2	November 2010
F10-482	M	1	November - Present
F10-484	M	3	November - Present
F10-464	M	1	November - Present
F10-472	M	1	December - Present

Ground and aerial radio-tracking continued to be used to monitor movements and survival of radio-collared fisher #461 through 2010. In 2010, assistance with weekly radio-tracking was obtained through Central Lakes College student intern, Wade Lund, and volunteer, Beth Walters. Fisher #461 was captured in mid-December of 2009. A total of 36 ground and aerial telemetry locations were gathered for fisher #461 in 2010 (Figure 31). In addition, three resting den sites were identified for fisher #461 along with her natal den and two maternal dens sites. All den locations were located in live trees above ground. The den cavity height ranged from at

Figure 31. Locations of fisher #461, Camp Ripley, 2009-2010.



ground level to 25 feet above ground. Den tree species were aspen and red oak. The natal den site was videoed on April 22, 2010 and a maternal den site videoed on May 22, 2010, there were three kits present each visit. This fisher's (#461) collar was in mortality on September 9, 2010. Because it was in the north impact area (Leach Range) it was not located until later that month; therefore, the cause of mortality could not be determined.

Fishers #482 and #464 have been a challenge to locate since their release in November as the collar frequencies contain static making the signal difficult to hear both aerially and from the ground. Two aerial telemetry flights occurred in December 2010 in an attempt to locate them.

Camp Ripley established a cooperative project with Central Lakes College natural resources program to obtain assistance with trapping fisher, using student volunteers, from October 2010 to December 2010. These volunteers have collectively logged over 260 hours of time. The use of student volunteers has been productive as five fishers have been trapped and radio-collared during the fall of 2010.

Beaver (*Castor canadensis*)

Beaver are an important part of the natural ecosystems at Camp Ripley. 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 when beavers plug road culverts, causing water to flow over roads, and damaging them in the process. When this occurs, a cooperative effort between the Environmental Office, MNDNR, and Camp Ripley Department of Public Works (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. Camp Ripley beaver removal is conducted by MNDNR and nuisance beaver trappers at the direction of MNDNR staff. During 2010, 78 beaver were removed from problem areas. Beaver removal occurred in the following areas: Chorwan Road (culverts #333 & #334; n=4), Coon Stump Lake (n=7), Luzon Road in Training Area 20 (culvert #179; n=2), Lake Alott (n=6), Fosdick Lake (n=2), Frog Lake (n=4), Tamarack Lake (n=11), Rest Area #3 (n=3), Hogen Pond (culvert #108; n=4), base of Bennett Hill (n=7), Cody Road (culvert #136; n=8), Yalu Road (culverts #345 & #346; n=14), north Corregidor Road (n=2), and Corregidor Road, gate #27 (n=4). Nuisance beaver complaints occurred in late spring along the access road to the Tactical Training Base along Chorwan, this complaint was investigated and determined that the water problem was due to construction design. A culvert (#179) along Luzon Road was reported by trappers to have no activity in early spring but beavers moved into this area in late spring and were removed in June 2010; the culvert was cleared in July with no further activity until freeze up.

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 (Figure 32). However, two beaver deceivers were removed in 2009. These deceivers functioned well for several years but failed due to high water (Cody Road Pond) and floating cattail mats (north end of Fort Ripley Road). These deceivers will be redesigned to address failures, and reinstalled. In 2010, three work orders were submitted for replacement of broken levelers (located at culverts #375, #95, and #285) along the northeast corner of Marne Marsh and at Frog Lake outlet, and one new leveler at the outlet of Marne Marsh, but none were completed.

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

Porcupine (*Erethizon dorsatum*)

Porcupines are the second largest member of the rodent family. While most rodents have a high rate of reproduction along with a high rate of mortality, porcupines have neither. Female porcupines have one litter per year, with usually only one pup. Their winter diet consists of the inner bark of conifer trees and their summer diet consists of a variety of woody and herbaceous vegetation, primarily at ground level (Hazard 1982). Fishers are effective predators of porcupines.

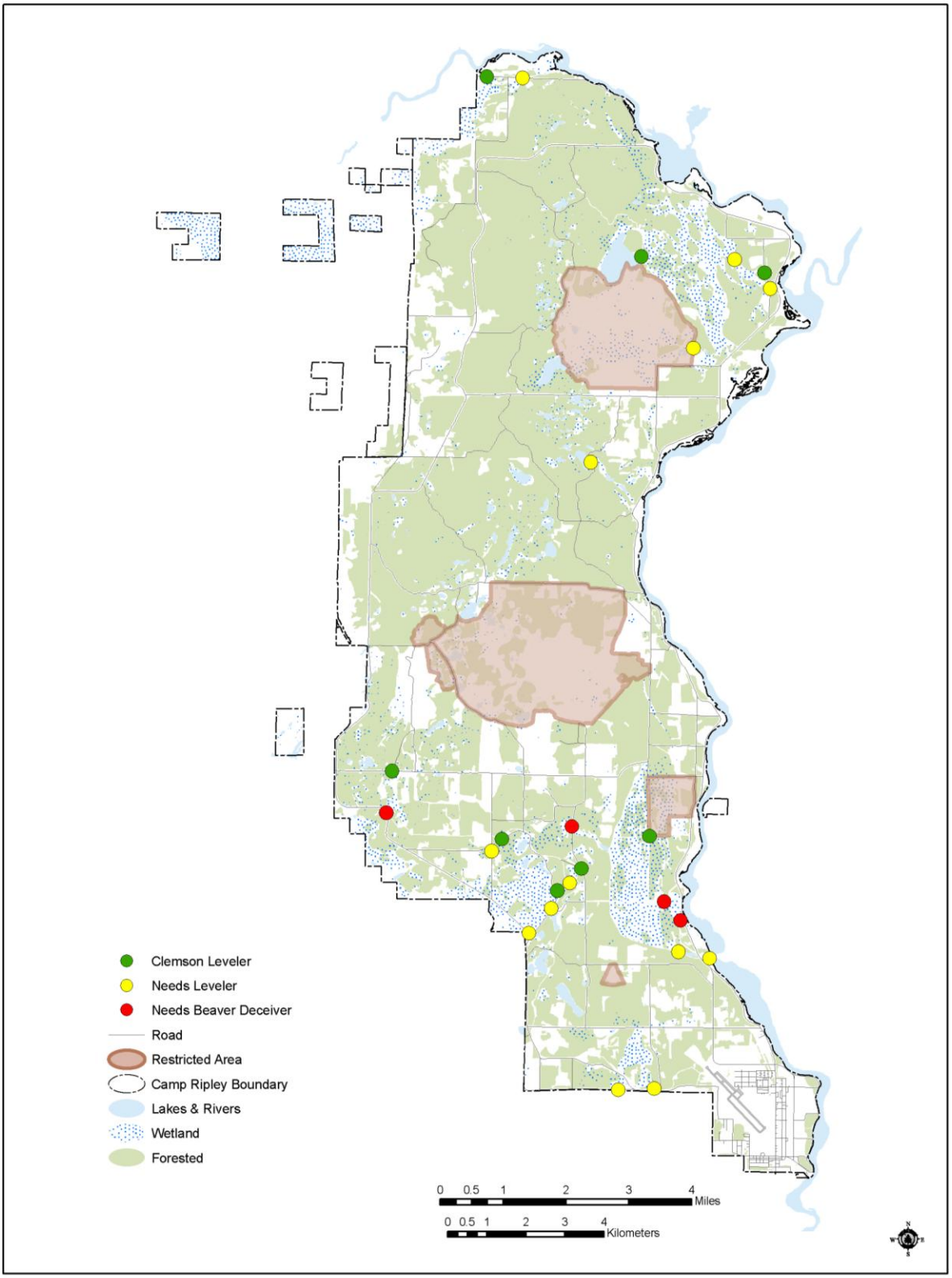
Porcupines can also be a nuisance when they gnaw on wooden objects, tires, and plastic tubing. Camp Ripley obtained a porcupine nuisance permit from the MNDNR in 2010. Porcupines are taken only on problem areas identified by Range Control. No nuisance porcupines were taken under the MNDNR permit in 2010.

Bat Survey

Camp Ripley participated in a regional and nationwide acoustic survey to monitor bat population trends coordinated by the U.S. Army Engineer Research and Development Center. This project's goal is to assess the impacts of White Nose Syndrome (WNS) on summer distribution of bats through examination of changes in bat distribution and activity over successive years

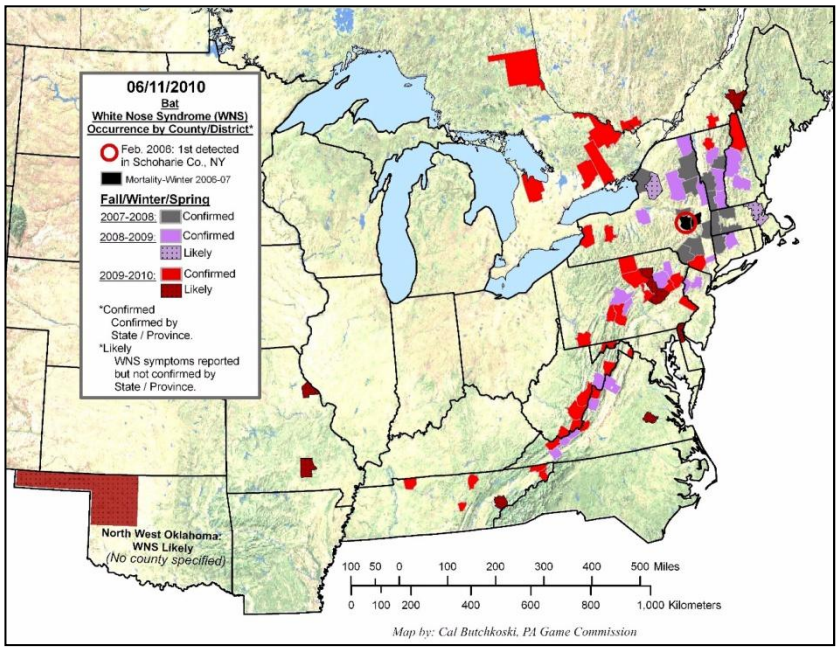
Camp Ripley is home to two bats that are designated state special concern species and SGCN, northern myotis (*Myotis septentrionalis*) and eastern pipistrelle (*Pipistrellus subflavus*). In addition, bat surveys have identified six of Minnesota's seven bat species to occur on Camp Ripley (Dirks and Dietz 2010).

Figure 32. Locations of beaver treatment areas and installation needs.



WNS has threatened bat populations in the eastern United States. Since 2006, WNS has spread from central New York southward into Virginia (Figure 33). WNS is a fungus that has killed more than a million hibernating bats (USFWS 2010). Due to WNS potential threats to Minnesota's bat populations including SGCN species, MNDNR staff chose to participate in this regional and nationwide population monitoring effort.

Figure 33. White nose syndrome occurrence by county, June 2010.



Credit: courtesy of Cal Butchkoski, Pennsylvania Game Commission

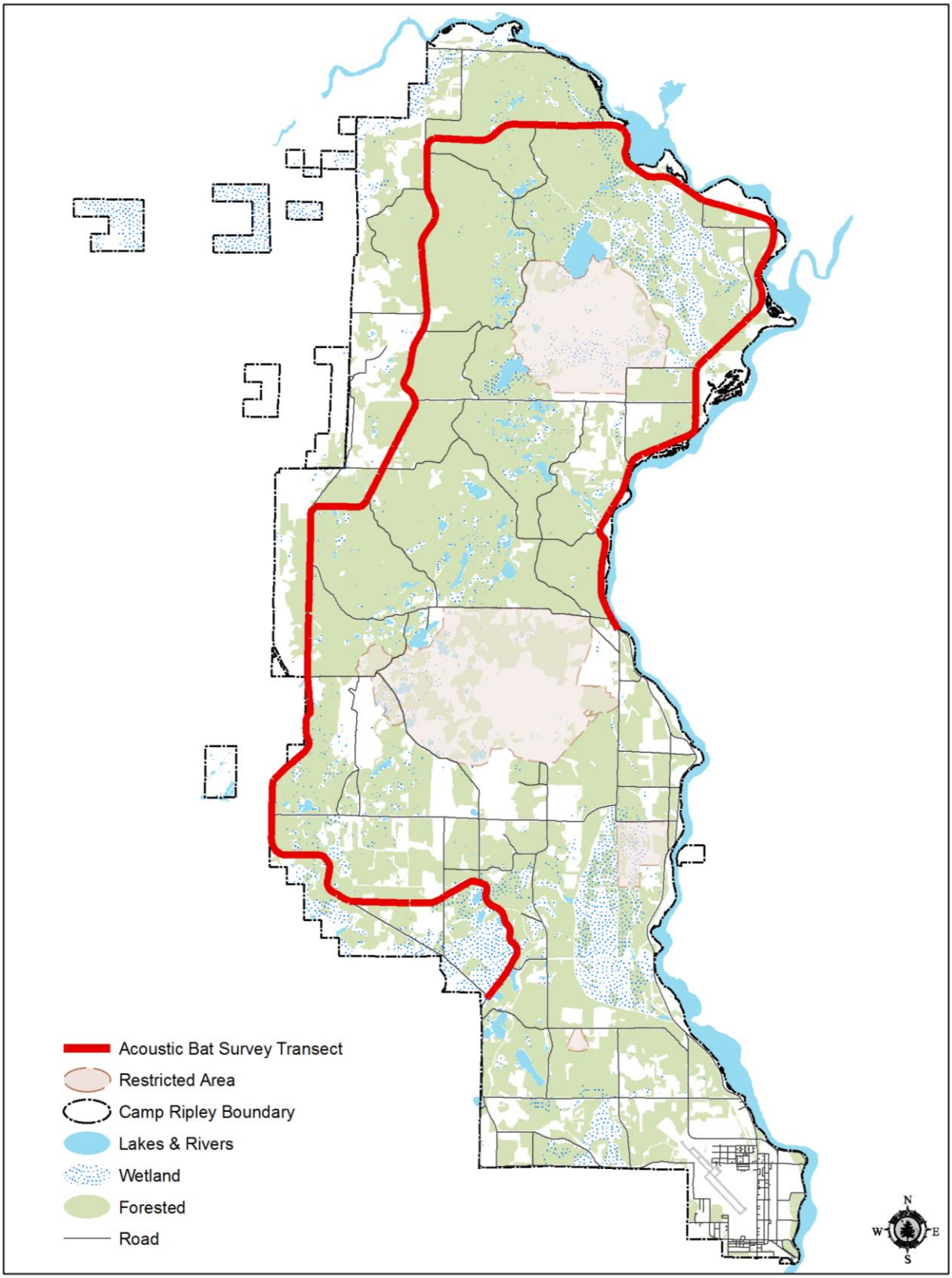
MNDNR staff established a 30 mile transect (Figure 34) that passes through common habitat types and could be easily sampled in successive years. Survey protocol (Britzke and Herzog 2010) requires that the acoustic survey be conducted while bats are on maternity range generally between June 1 and July 15. Monitoring should be conducted on nights with low wind, no rain or fog, and suitable temperatures for bat activity. Camp Ripley used an ANABAT II bat detector to record bat echolocations. The survey was conducted on July 8, 2010 and echolocation recordings were forwarded to the U.S. Army Engineer Research and Development Center's project leader for analysis. The 2010 results of this analysis have not been received to date. MNDNR staff plan to continue to sample the transect one to three times annually during the survey time period.

Reptiles and Amphibians

Blanding's Turtle (*Emys blandingii*)

The Blanding's turtle is listed as a state threatened species by the MNDNR. A species is considered threatened if it is likely to become endangered within the foreseeable future throughout all or a significant portion of its range within Minnesota. Camp Ripley has three MNDNR Blanding's turtle priority areas (Figures 35 and 36). Priority areas are the most important areas in the state for management, protection, and research of Minnesota's Blanding's turtle population. This species depends upon a variety of wetland types and sizes, and uses sandy upland areas for nesting.

Figure 34. Acoustic bat survey transect, Camp Ripley, 2010.



Surveys of Blanding's turtles have occurred at Camp Ripley since 1992. In 2010, two turtles were observed prior to the June survey period, a marked female (positive identification undetermined) on April 21, and an unmarked male on May 24. Historically, turtles have been observed between June 2 and July 2. During the 2010 survey season, the first Blanding's turtle was observed on June 8, 2010. Because nest predation is extremely high, road surveys are conducted annually throughout known Blanding's habitats to find and protect nests. Surveyors spent 203 hours on traditional and exploratory routes from June 2 through June 24, 2010 (Table 21). Due to the installation of the Tactical Training Base and Improvised Explosive Device Defeat lane along Chorwan and Wonsan roads in the spring of 2010, approximately two-thirds of the survey effort was in two vehicle patrols, as training increased significantly from previous years. Four predator destroyed Blanding's nests were found. Ten Blanding's turtles were observed this year (Figures 35 and 36). To aid in future identification, notches are filed into turtle scutes and each turtle is given a unique alpha code. Five turtles had been previously marked, two were newly marked this year (one on Chorwan Road and one on Anzio Road north of gate #61), and two were of unknown identity or unmarked. Turtles which were not marked or had unknown markings were intentionally left undisturbed so nesting would not be hindered. Unfortunately, these turtles were not observed again. Standard protocol is to watch a turtle until it completes nesting, then capture and identify it. One of the newly marked turtles found on Anzio Road was a 7 year old juvenile.

One Blanding's turtle was found dead on Luzon Road east of the Round Lake access due to vehicle collision on June 16, 2010. The turtle was too damaged to be able to positively identify its marking. It may have been turtle "KLN" that was observed the previous day not far from the location of where the dead turtle was found. "KLN" was first marked in 1996 at 20 or more years of age, and was observed four more times since in 1997, 2000, 2002, and 2010 (Figure 36).

Table 21. Summary of Blanding's turtle nest search surveys at Camp Ripley, 2000-2010.

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	60
2001	June 6-?	June 15	No nests found	June 27	79	9	66
2002	June 7-25	June 11	June 11	June 22	75	19	67
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	61
2005	June 6-23	June 10	June 12	June 17	225	18	68
2006	June 2-30	June 2	June 8	June 20	158	10	66
2007	June 1-21	June 3	June 7	June 20	189	19	68
2008	June 4-July 1	June 14	June 18	June 27	243	33	64
2009	June 11-June 28	June 11	June 13	June 27	205	17	68
2010	**June 2- June 24**	**June 8**	**June 16**	**June 19**	**203**	**10**	**64**

*Weather Underground online – Brainerd Airport- at <http://www.wunderground.com/history/airport/KBRD/>.

Two Blanding's turtle (ADY and BCP) nests were protected and monitored through October 2010. Turtle "BCP" dug its nest in a large soil spoil area adjacent to Chorwan Road. This spoil area

Figure 35. Observations, nest locations, MNDNR priority areas for Blanding's turtles in the north portion of Camp Ripley, 2010.

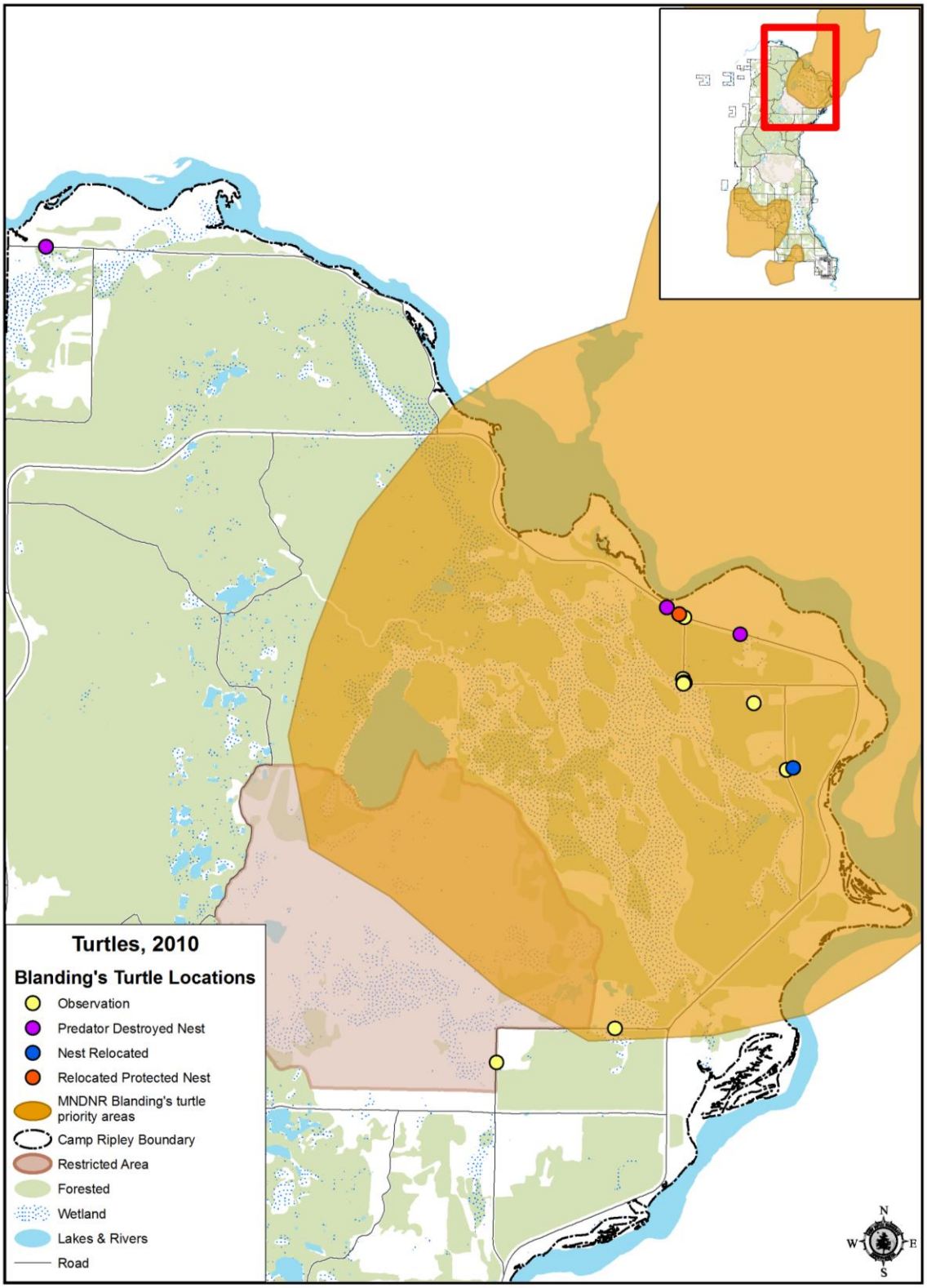
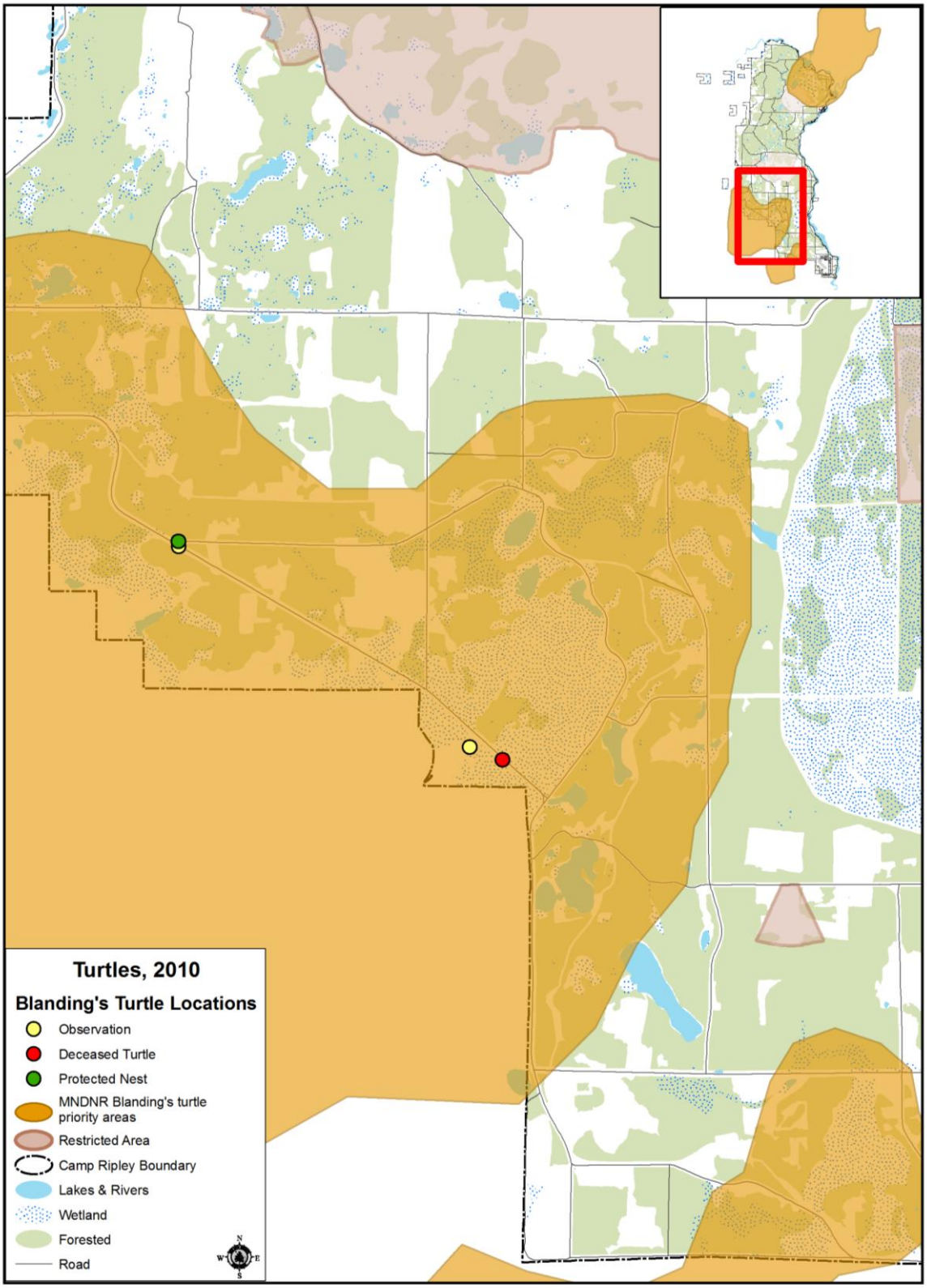


Figure 36. Observations, nest locations, MNDNR priority areas for Blanding's turtles in the south portion of Camp Ripley, 2010.



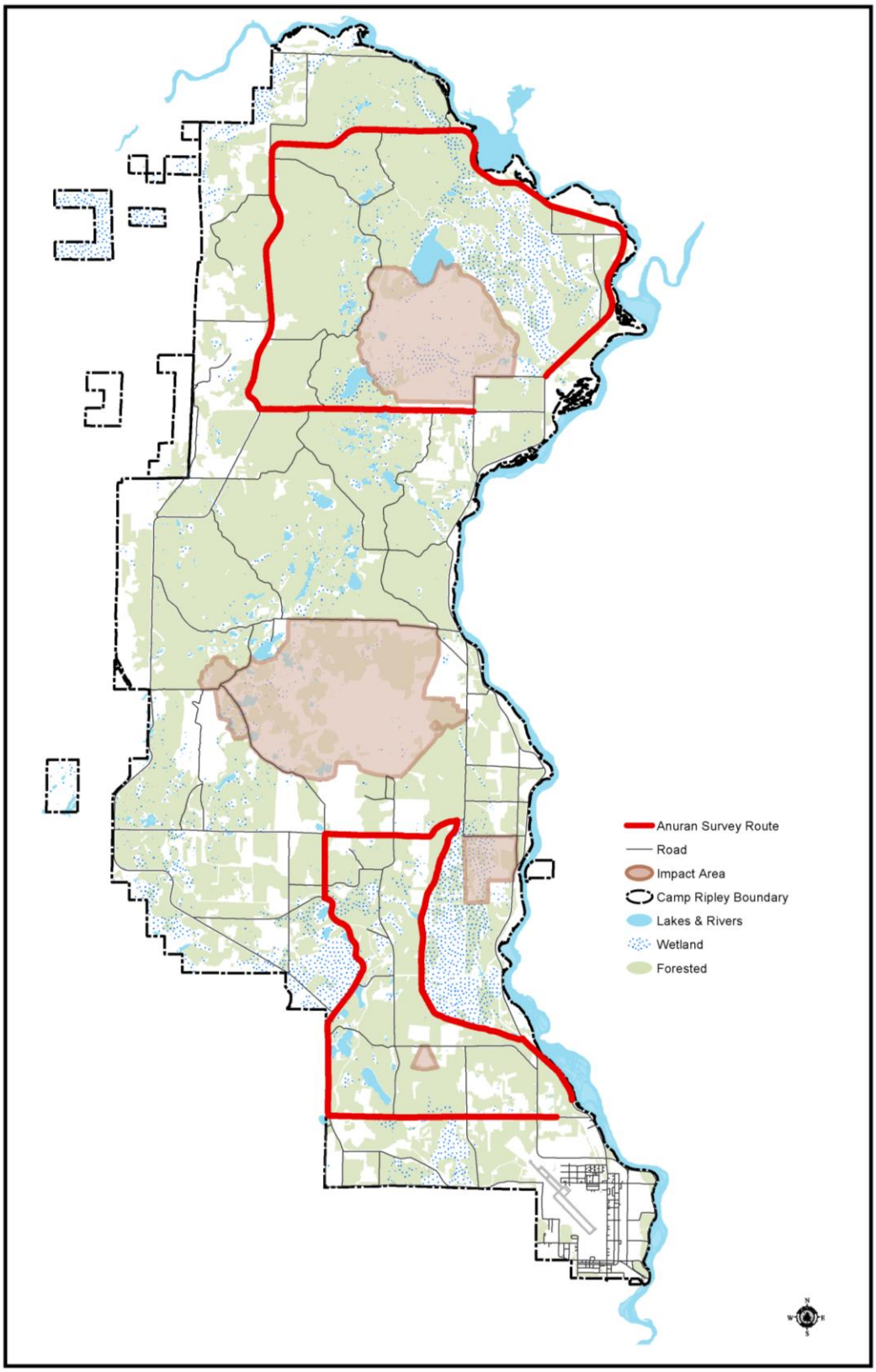
was temporary and would likely not remain throughout the egg development period. Therefore, this nest was relocated immediately after laying to a site along Pusan Road (Figure 35). Nests were monitored for hatching success and where no evidence of hatching was observed nests were excavated on October 20, 2010. Both nests were excavated since none had shown evidence of hatching. During nest excavation one nest (ADY) had 5 eggs and six hatched turtles, one of the hatched turtles appeared to be lodged about halfway up from the top of the nest chamber to the surface. Based on examination of the live turtle's remaining yolk sacs, the turtles had been hatched for several weeks, but may have been unable to dig out due to heavily compacted gravel soils. The five remaining eggs had three dead, partially developed embryos and two undeveloped, likely infertile eggs. Research has shown that few Blanding's turtle hatchlings actually arrive at a wetland. Therefore, a five inch berm was created along the exterior of protected nests, which facilitated capturing hatchlings and escorting them to a nearby shrub wetland. These six Blanding's turtle hatchlings were escorted to the range marsh along Luzon Road in Training Area 19. Nest incubation for nest "ADY" was 126 days from the date of laying to the date of excavation. The remaining nest (BCP) had 14 eggs total; one dead partially developed embryo, six spoiled and insect eaten eggs, and seven eggs that were likely infertile. Total production was six Blanding's turtles.

In 2009, four Blanding's turtle nests (ACD, ABK, BDP, and a partially destroyed nest) were excavated (Dirks and Dietz 2010) on October 20-21, 2009. All of these nests had recently hatched turtles contained in the nest cavity and/or egg shell incased nearly fully developed turtles. Deeper nest chamber excavation did not occur and the nests were recovered with excavated soil. Monitoring continued for hatching success until the ground froze (early November), and they remained unhatched. These nests were left to overwinter and were rechecked throughout the spring of 2010. The nests were excavated in late May. All nests contained partially developed eggs that were dead. Nest "ACD" had 18 total eggs of which 17 eggs were about 80% developed. Nest "ABK" had a total of 19 eggs of which 16 were about 80% developed. Nest "BDP" had 21 eggs total of which 19 were about 80% developed. The partially destroyed nest had 11 eggs remaining in the nest cavity, two eggs were open with fully developed turtles, and eight eggs were about 80% developed. All unaccounted eggs were likely infertile and had not begun to develop.

Anuran Surveys

Frog and toad calling surveys are conducted as part of a larger statewide survey, and have been conducted at Camp Ripley since 1993. The statewide survey began due to growing concern, for the past two decades, over declining amphibian populations worldwide. In addition, statewide data is contributed to the U.S. Geological Survey's North American Amphibian Monitoring Program. 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 surveyed three times from April through July (Figure 37).

Figure 37. Anuran survey routes at Camp Ripley, 1994-2010.



Surveys were conducted by MNDNR and intern staff on April 14 and 18, May 20, and July 3, 2010. Spring weather conditions were unseasonably warm and survey times for the first and second survey were moved ahead by a week or more. The south (route #50195) and north route (route #50295) were surveyed during all three time periods. Several south route stops were not surveyed during the first and second time periods due to military training. During the first survey period (April 15 – 30), spring peepers (*Pseudacris crucifer*) had the highest index since 2002. Boreal chorus frogs (*Pseudacris maculata*), wood frogs (*Rana sylvatica*), and northern leopard frogs (*Rana pipiens*) had lower average index values than in previous years, but each had a slight index increase from 2009 (Figure 38, Table 22). During the second survey period (May 15-June 5), gray treefrogs (*Hyla versicolor*) had the highest average index value since 1999 and spring peeper's index value was also the highest since 1995. Both Cope's gray treefrogs (*Hyla chrysoscelis*) and American toads (*Bufo americanus*) had lower average index values than in 2009 (Figure 39, Table 22). Statewide results, between 1998 and 2009, indicate a detectable decrease in the proportion of routes where gray treefrogs and spring peppers were heard (Larson 2010a).

Figure 38. Average anuran index value during the first survey period at Camp Ripley, 1994-2010. Surveys were not conducted during 2008.

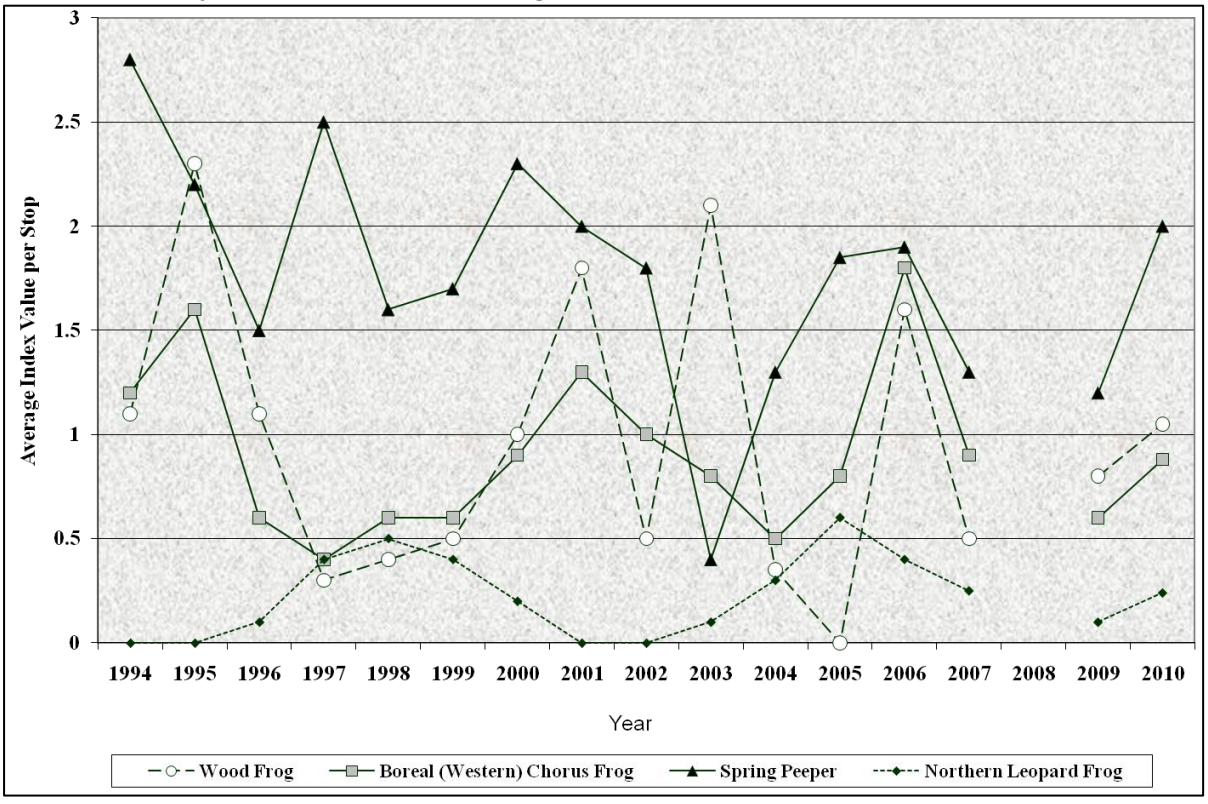
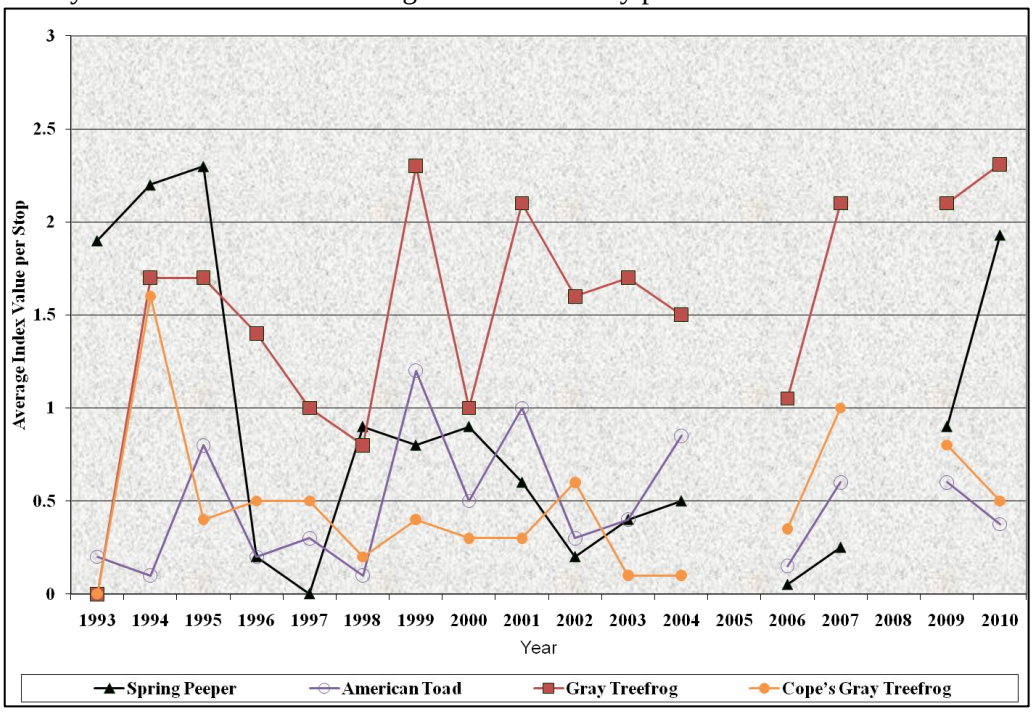


Table 22. Anuran survey index data at Camp Ripley, 1993-2010.

Survey Period 1	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**
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	*	0.8	**1.05**
Boreal (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	*	0.6	**0.88**
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	*	1.2	**2.0**
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	*	0.1	**0.24**
American toad	*	0	0	0	0	0	0	0	0	0	0	0	0.8	0	0	*	0	**0**
Gray treefrog	*	0	0	0	0	0	0	0	0	0	0	0	1.35	0	0	*	0	**0**
Cope's gray treefrog	*	0	0	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	*	0	**0**
Green frog	*	0	0	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**	**2008**	**2009**	**2010**
Wood frog	2.4	0.1	0	0	0	0	0	0	0	0	0	0	*	0	0	*	0	**0**
Boreal (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	*	0.3	**0.56**
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	*	0.9	**1.93**
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	*	0	**0.06**
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	*	0.6	**0.375**
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	*	2.1	**2.31**
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	*	0.8	**0.5**
Mink frog	0	0	0	0.2	0.1	0.1	0	0	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	*	0.1	**0**
Survey period 3	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**
Wood frog	*	*	0	0	*	*	*	*	0	0	*	*	0	*	0	*	0	**0**
Boreal (Western) chorus frog	*	*	0.1	0	*	*	*	*	0	0	*	*	0	*	0	*	0	**0**
Spring peeper	*	*	0	0	*	*	*	*	0	0	*	*	0	*	0	*	0	**0**
Northern leopard frog	*	*	0	0	*	*	*	*	0	0	*	*	0	*	0	*	0.3	**0**
American toad	*	*	0	0	*	*	*	*	0	0	*	*	0	*	0	*	0	**0**
Gray treefrog	*	*	0.2	0	*	*	*	*	0.2	0.3	*	*	0.25	*	0.4	*	0.5	**0.05**
Cope's gray treefrog	*	*	0	0	*	*	*	*	0	0.3	*	*	0.1	*	0.12	*	0.3	**0**
Mink frog	*	*	0.3	0.4	*	*	*	*	0	0.1	*	*	0.05	*	0.06	*	0	**0.1**
Green frog	*	*	0	0.3	*	*	*	*	0.3	0.1	*	*	0.25	*	0.06	*	0.7	**0.25**

Figure 39. Average anuran index value during the second survey period at Camp Ripley, 1993-2010. Surveys were not conducted during the second survey period in 2005 and 2008.



Fisheries

Spring Harvest

Several lakes and ponds were test netted by the Environmental Office to determine fish presence (Table 23). Two test nets were used in each basin.

Table 23. Spring fish presence on selected lakes at Camp Ripley, 2010.

Lake Name	Fish Present
Miller Pond	2 gallons of bullheads, mud minnows
Frog Lake	1 gallon of minnows (red dace, mud minnows)
Muskrat Lake	Nothing

Rapoon Lake showed evidence of walleye fingerlings, and was harvested (Table 24).

Table 24. Spring walleye harvest at Camp Ripley, 2010.

Lake Name	Harvest Amount	Rate	Stocking Location
Rapoon Lake	340 fingerlings	35 /lb (10 lbs)	Ferrell Lake

There was no spring walleye stocking on Camp Ripley. Spring muskellunge stocking took place on Frog Lake and Miller Pond. No muskellunge were removed during 2010.

Fall Harvest

Four lakes (Coon Stump, Muskrat, Cockburn and Rapoon) were harvested by MNDNR for walleye fingerlings (Table 25).

Table 25. Fall harvest of walleye, Camp Ripley, 2010

Lake Name	Harvest Amount	Rate (pounds)
Coon Stump Lake	walleyes	111 lbs
Cockburn Lake	walleyes	190.6 lbs

Pest Management

Tick Borne Diseases

Tick borne diseases 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 tick borne diseases in Minnesota is the black-legged tick (also known as the deer tick, *Ixodes scapularis*). Small mammals play an important role in the tick borne disease cycle; both as hosts for the vectors and by maintaining and transmitting infections to ticks, which do not transmit infections vertically (passing a disease from parent to offspring) 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.

Camp Ripley personnel collected rodents on August 24, 2010, using 3”x3”x10” Sherman traps. Each trap line consisted of approximately 5 to 20 traps. At each site, numerous trap locations were selected and one or more trap lines were set. Traps were placed near the base of bushes or trees and located approximately 15 meters apart depending on habitat. Traps were set on August 23, 2010 and collected before 10:00 AM the following morning to minimize rodent mortality. One hundred and forty traps were set with 92 captures. Trapped animals were transported to a secluded processing site where blood was collected.

All rodents trapped at Camp Ripley were handled following the University of Wisconsin-Madison Animal Care and Use Protocol and procedures established by the Mayo Clinic. Each rodent was anesthetized before taking blood or removing ectoparisites. Rodent blood was collected using retro-orbital bleeds, dried on filter paper and transported for testing to Dr. Bobbi Pritt, Director, Clinical Parasitology and Virology Division of Clinical Microbiology at the Mayo Clinic, Rochester, Minnesota. Captured rodents were identified to species. All but seven rodents were released at the original capture site. Three rodents died during processing and one rodent was dead in the trap. A short tailed shrew (*Blarina brevicauda*), also died in the trap. Two rodents escaped prior to processing and one rodent escaped after blood was taken. A short-tailed weasel (*Mustela ermine*), was also trapped and released. All ticks removed from rodents were placed in 70% alcohol for transportation to the U.S. Army Public Health Command Region-West, Entomological Sciences Division, Zoonotic Laboratory for identification, and additional processing. See Table 26.

Table 26. Immature *Ixodes scapularis* and *Dermacentor variabilis* removed from rodents, August 24, 2010, Camp Ripley, Minnesota.

Site	Number of Rodents w/wo Ticks	Rodent Species	*I. scapularis*	*D. variabilis*
Training Area-1	3	*Peromyscus leucopus*	4^{L}, 2^{EL}	0
	19	*Peromyscus leucopus*	0	0
	1	*Tamias striatus*	1^{EN}	0
Training Area-22	26	*Peromyscus leucopus*	15^{L}, 35^{EL}, 1^{N}, 4^{EN}	1^{L}
	6	*Peromyscus leucopus*	0	0
Training Area-29	11	*Peromyscus leucopus*	19^{L}, 14^{EL}	0
	13	*Peromyscus leucopus*	0	0
	2	*Peromyscus maniculatus*	0	0
	2	*Clethrionomys gapperi*	0	0
Totals	**83**		**38^{L}, 51^{EL}, 1^{N}, 5^{EN}**	**1^{L}**

^{L} - Larva, ^{N} - Nymph, ^{E} - Engorged

Rodent blood was tested for the pathogens that cause *Anaplasma phagocytophila* (HGA), *Ehrlichia* species (includes *E. chaffeensis, E. ewingii, E. muris, E canis* and *E. muris*-like), *Babesia microti* and *Borrelia burgdorferi* by real-time Polymerase Chain Reaction, with primer and probe sequences for *Anaplasma* and *Ehrlichia* developed at the Mayo Clinic; primer and sequences for *Babesia* and *B. burgdorferi* also developed at the Mayo Clinic (Bell and Patel 2005).

All rodent test results were provided by Dr. Pritt. Results indicated presence of five tick-borne disease pathogens on Camp Ripley (Table 27).

Table 27. Rodents collected including results for the pathogen and disease: *Anaplasma phagocytophilum*, Human granulocytotrophic anaplasmosis (HGA); *Borrelia burgdorferi*, Lyme disease (LD); *Babesia microti*, Babesiosis (BAB); and *Ehrlichia spp*., Human monocytotrophic ehrlichiosis (HME) or *Ehrlichia muris*-like (EML), August 24, 2010, Camp Ripley, Minnesota.

Species	Collected	Tested	HGA	LD	BAB	HME	EML
Peromyscus leucopus	81	78	5	1	27	1	1
Peromyscus maniculatus	2	2	0	0	0	0	0
Clethrionomys gapperi	2	2	0	0	0	0	0
Tamius straitus	1	1	1	0	1	0	0
TOTALS	**86**	**83**	**6**	**1**	**28**	**1**	**1**

LAND USE MANAGEMENT

Army Compatible Use Buffer (ACUB)

Introduction

Section 2811 of the Fiscal Year Department of Defense Authorization Act, passed December 2, 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 May19, 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 undeveloped 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 (MNARNG), 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 Minnesota Department of Natural Resources (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, 291 willing landowners have expressed interest in ACUB. These landowners represent about 41,785 acres of land. Over 93 percent of the interested landowners desire permanent conservation easements rather than acquisition. Federal funding in the amount of $14,946,500 has been awarded to the Camp Ripley ACUB since 2004.

- In addition to federal funding, MNDNR and BWSR secured $843,000 in state funding in support of ACUB through the Legislative Citizen Commission on Minnesota Resources and the Lessard-Sams Outdoor Heritage Council.

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

- Complete details regarding the ACUB accomplishments from fiscal year (FY) 2004 (start) to 2010 are provided in the FY2010 annual report that was presented to NGB. A summary of actions taken by MNDNR and BWSR are presented below.

Minnesota Department of Natural Resources Summary

Upon receiving Assistant Chief of Staff for Installation Management approval of the Camp Ripley ACUB on May 3, 2004, the MNARNG designated MNDNR to serve as its primary partner. NGB and the State of Minnesota, acting by and through MNDNR, entered into a Cooperative Agreement to implement the Camp Ripley ACUB. The cooperative agreement identified as AGREEMENT NO. W9133L-04-2-3052, establishes the terms and conditions applicable to the contribution of federal funds to assist MNDNR's acquisition of long-term interest in or title to parcels of land adjacent to Camp Ripley in accordance with the approved ACUB proposal.

The initial cooperative agreement, which became effective on August 16, 2004, included $500,000 from NGB to execute the first year of the Camp Ripley ACUB. The cooperative agreement has subsequently been modified seven times to accommodate $1,954,000 from Department of Defense (DOD) and $2,100,000 from NGB for a total of $4,054,000 (Table 28).

Table 28. Minnesota Department of Natural Resources federal funding allocation, since FY2004.

		DOD	Army	NGB	
FY2004	Original CA	N/A	N/A	$500,000	
FY2005	Mod No. 1	$500,000	N/A	$500,000	
FY2006	Mod No. 2	$500,000	N/A	N/A	
FY2007	Mod No. 3	N/A	N/A	N/A	
FY2007	Mod No. 4	$749,000	N/A	N/A	
FY2007	Mod No. 5	N/A	N/A	$600,000	
FY2008	N/A	N/A	N/A	N/A	
FY2009	N/A	N/A	N/A	N/A	
FY2010	Mod No 6	$205,000	N/A	NA	
FY2010	Mod No 7	N/A	N/A	$500,000	
TOTAL		**$1,954,000**	**+**	**$2,100,000**	**= $4,054,000**

Minnesota Department of Natural Resources Past Actions/Monitoring

From fiscal year 2004 to 2009, MNDNR has completed 11 land transactions totaling 1,457 acres. As such, the MNDNR is forever responsible for monitoring the parcels of land that are associated with these transactions. All parcels were inspected by MNDNR personnel during FY2010 to ensure that the land use complies with the intent of the easements or fee simple acquisition that justified the expenditure of ACUB funds. The MNDNR's annual monitoring plan calls for annual site visits. Reports of site visits are filed for each land parcel and are available through the MNDNR. All parcels were found to be in compliance based on the monitoring inspections.

Minnesota Department of Natural Resources Fiscal Year 2010 Accomplishments

MNDNR completed and recorded one fee title land transactions in FY2010 totaling 145 acres. Funding appropriation included $358,620 in DOD funding and $180,150 in partner costs, totaling $538,770. The MNDNR has also initiated action on five near term transactions that will be completed in FY2011 (Figure 40). In order to be considered complete for the purposes of this annual report, the land transactions must be recorded and documented in MNARNG's Real Property Database.

Minnesota Board of Water and Soil Resources Summary

Realizing the capability and mutual goals of BWSR, the MNARNG also designated BWSR to serve as partner to work in conjunction with the MNDNR. NGB and the State of Minnesota, acting by and through BWSR, entered into a cooperative agreement to implement the Camp Ripley ACUB. The cooperative agreement identified as Agreement No. W9133N-06-2-3056, establishes the terms and conditions applicable to the contribution of Federal funds to assist BWSR's acquisition of long-term interest in or title to parcels of land adjacent to Camp Ripley in accordance with the approved ACUB proposal.

The initial cooperative agreement with BWSR, which became effective on June 30, 2006, included $500,000 from the DOD. The cooperative agreement has subsequently been modified 12 times to accommodate $3,650,000 from DOD and $7,242,500 from NGB for a total of $10,892,500 Table 29).

Table 29. Minnesota Board of Water and Soil Resources funding allocation, since FY2006.

		DOD	Army	NGB	
FY2006	Original CA	$500,000	N/A	N/A	
FY2007	Mod No. 1	$1,000,000	N/A	N/A	
FY2007	Mod No. 2	N/A	N/A	$500,000	
FY2007	Mod No. 3	N/A	N/A	$1,000,000	
FY2007	Mod No. 4	N/A	N/A	$807,000	
FY2008	Mod No. 5	$840,000	N/A	N/A	
FY2008	Mod No. 6	N/A	N/A	$1,235,500	
FY2008	Mod No. 7	N/A	N/A	$1,500,000	
FY2009	Mod No. 8	$750,000	N/A	N/A	
FY2009	Mod No. 9	N/A	N/A	$1,500,000	
FY2010	Mod No 10	$460,000	N/A	NA	
FY2010	Mod No 11	$100,000	N/A	NA	
FY2010	Mod No 12	N/A	N/A	$700,000	
TOTAL		**$3,650,000**	**+**	**$7,242,500**	**= $10,892,500**

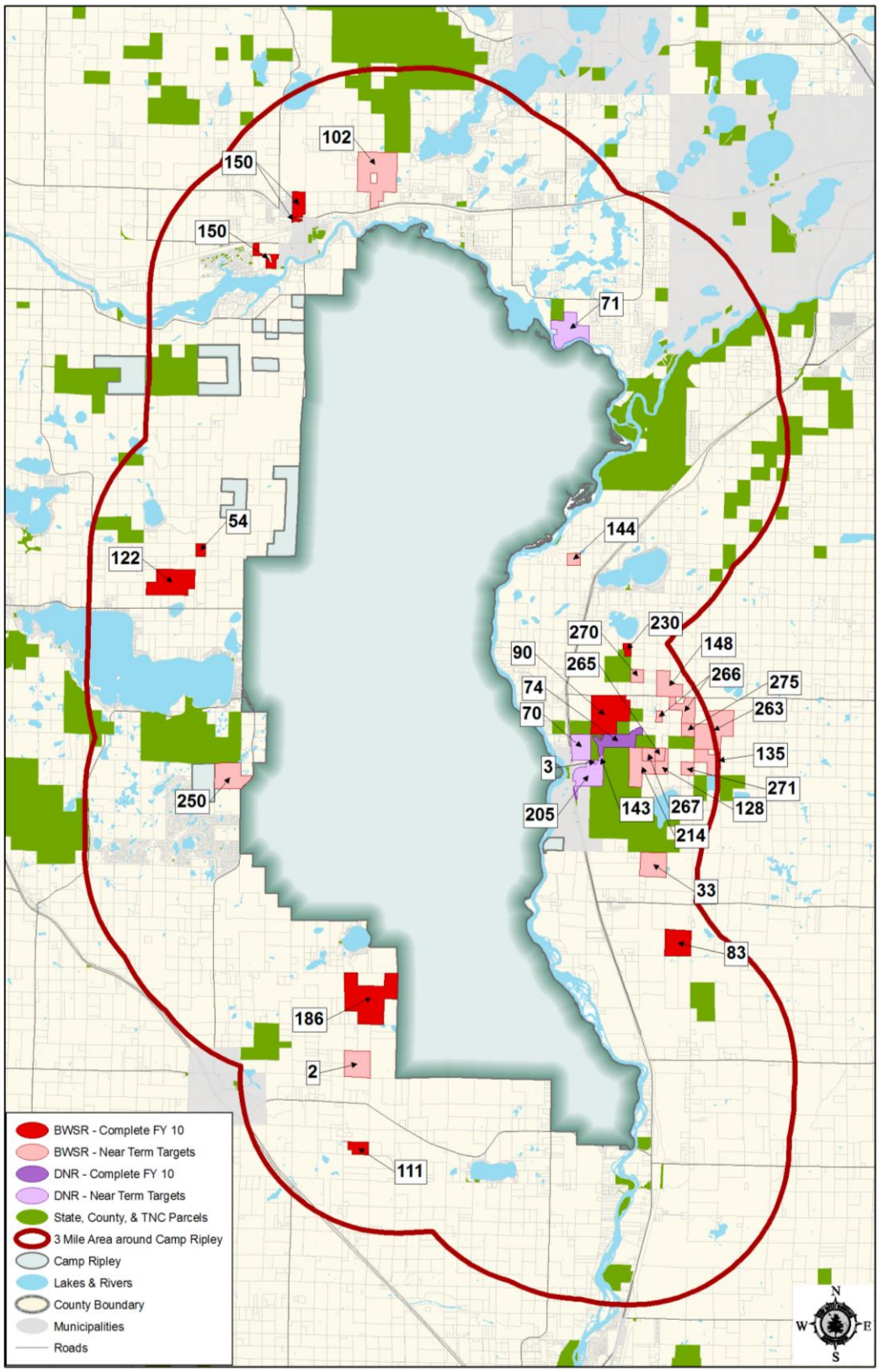
Minnesota Board of Water and Soil Resources Past Action/Monitoring

From FY2006 to FY2009, BWSR completed 36 land transactions totaling 6,772 acres. As such, BWSR is forever responsible for monitoring the parcels of land that are associated with these transactions. During FY2010, all parcels were inspected by County Soil and Water Conservation District personnel on behalf of BWSR. The inspections are intended to ensure that the land use complies with the intent of the easements that justified the expenditure of ACUB funds. BWSR's annual monitoring plan calls for site visits in the summer of each year. Reports of site visits are filed for each land parcel and are available through BWSR. All parcels were found to be in compliance based on the monitoring inspections in FY2010.

Minnesota Board of Water and Soil Resources Fiscal Year 2010 Accomplishments

BWSR completed and recorded 11 land transactions in FY2010 totaling 1,439 acres. Funding appropriations included $750,000 in DOD funding, $1,018,438 in NGB funding and $1,952,908 in partner costs, totaling $3,721,346. In order to be considered complete for the purposes of this annual report, the land transactions must be recorded and documented in MNARNG's Real Property Database. Figure 40 depicts the location of all BWSR transactions including those that have been completed in FY2010 and the 17 near term target land transactions that are pending for FY2011 funding.

Figure 40. Camp Ripley ACUB fiscal year 2010 accomplishments and 2011 near term targets.



Integrated Training Area Management (ITAM)

Program Overview

The increased technology of military weapons and equipment along with the increased operational tempo caused by the Global War on Terrorism has placed more pressure on training lands. Past and continued degradation of natural resources can have a negative effect on the realism of future training exercises. To meet all environmental laws and regulations the U.S. Army Construction Engineering Research Laboratory (USACERL) has developed the Integrated Training Area Management (ITAM) program. The ITAM program is a comprehensive tool that consists of five components necessary to maintain and improve the condition of natural resources. The ITAM program funding requirements to implement the five components are identified in the ITAM Work plan Analysis Module. These requirements are submitted to the National Guard Bureau annually for validation. The five components are as follows:

1. Range and Training Land Assessment (RTLA)
2. Land Rehabilitation and Maintenance (LRAM)
3. Training Requirements Integration (TRI)
4. Sustainable Range Awareness (SRA)
5. Geographic Information System (GIS)

Range and Training Land Assessment (RTLA) Program

RTLA is the component of the ITAM program that provides for the collecting, inventorying, monitoring, managing, and analyzing of tabular and spatial data concerning land conditions on an installation. RTLA provides data needed to evaluate the capability of training lands to meet multiple use demands on a sustainable basis. It incorporates a relational database and Geographic Information System (GIS) to support land use planning decision processes. This data is intended to provide information to effectively manage land use and natural and cultural resources.

The mission requirements of the customer units training on Camp Ripley determine the focus of the RTLA program. RTLA analyzes the training requirements then conducts assessments that evaluate the training lands ability to support the requirements. The results of the RTLA assessments provide treatment prescriptions that are forwarded on to the LRAM component for execution. The training requirements of Camp Ripley customers are determined using a multi-step process.

1. Review of Range Facility Management Scheduling System (RFMSS) and the Army Range Requirements Model (ARRM) to determine types of units utilizing Camp Ripley.
2. Review of current Tactics, Techniques and Procedures (TTPs) being used in theater for which units will need to train.
3. Coordinate with customer units, range control and operations to refine and prioritize assessments.

The process developed six major types of training conducted on Camp Ripley. While each type of training has its own unique requirements, they do share common characteristics that help form the mission-scape for each training type. The six training types are:

1. Field Artillery
2. Mechanized maneuver
3. Engineer
4. Patrolling/Convoy Operations
5. Assembly Area/Bivouac
6. Light/Dismounted Infantry

Since the start of the Global War on Terrorism, added emphasis has been placed on patrol and convoy training by all units that utilize Camp Ripley while bivouac and assembly area operations have decreased due to the increased reliance on forward operating bases in the theaters of operation and tactical training bases on the installation. As operations overseas are reduced, a return to the 'traditional' training seen before Global War on Terrorism will increase the importance of assembly area and bivouac operations.

To support the mission-scape requirements, the following is a list of the RTLA assessments currently being conducted (Table 30):

1. Annual assessment of Camp Ripley's maneuver trails to ensure safe travel by all vehicles (also known as LRAM assessment).
2. Assess the quality and sustainability of artillery firing points.
3. Assess woody vegetation and safety hazards in open maneuver and drop zones.
4. An assessment of forest structure and condition to inform the location and development of heavy maneuver corridors in maneuver area K1 on Camp Ripley.
5. Monitoring the traversibility of Camp Ripley's land navigation courses.
6. Assessment of maneuver training areas for potential hazards.
7. Assessment of visibility through the forest understory.

Table 30. Range and training land assessments schedule at Camp Ripley, 2010-2014.

Project Name	2010	2011	2012	2013	2014
Assessment 1 (Maneuver Trail Condition)	South Half	North Half	South Half	North Half	South Half
Assessment 2 (Artillery Points)	20 sites			23 sites	23 sites
Assessment 3 (Open Maneuver & Drop Zones)	All sites				All sites
Assessment 4 (Maneuver Trails)	Trail 2	Trail 3	Trail 4		
Assessment 6 (Land Navigation Courses)	B-3	A-11		B-5	B-7
Assessment 7 (Hazardous Artifacts)	MA B	MA K1	MA I	MA D	MA C
Assessment 9 (Forest Understory)	Test and Develop	Training Area 70, 71, 78	Training Area 29, 30, 32	Training Area 5, 8, 10	Training Area 54, 75, 76

RTLA Assessment Results

Maneuver Trails. In 2010 this assessment was completed for the southern half of Camp Ripley. The area contains approximately 250 miles of trails which were assessed for erosion or hazardous road conditions. A total of 46 sites were annotated of which 13 were in need of immediate attention.

Artillery Points. The remaining 14 artillery firing points were assessed in 2010. A total of 123 acres of available space was lost due to forest encroachment between 1985 and 2006. The majority of lost grassland was reported in one site that lost 76 acres to a pine plantation. A second firing point lost 17 acres due to woody encroachment blocking access to part of the site. The remaining 12 firing points lost an average of 2.5 acres over the 21 year period or 14.7% of the original open space. To avoid future loss of available lands for artillery training it is recommended that a more aggressive prescribed fire regimen be implemented that burns into the surrounding forest on a short rotation to discourage woody encroachment. Also, pine plantations should not be planted in existing grasslands.

Maneuver Corridor. In 2010, no new corridor was assessed for timber harvest. The two corridors previously cut were assessed for current condition. The initial corridor cut in 2008 showed significant aspen regeneration, much more than expected with the summer cut. The corridor also showed a significant seed bed of native grasses. It was suggested that a general broadleaf herbicide be used on both cut maneuver corridors in the summer of 2011 to kill the aspen saplings followed by a fall prescribed burn to reduce the stems.

Land Navigation. The Gettysburg Land Navigation Course was assessed for traversibility and hazards in 2010. Twenty 200m transects were run at randomly generated points throughout the range. A total of 43 snagged trees were noted with a maximum of 12 on one transect and an average of 2.15 per transect. Fifteen of the 20 transects showed two or fewer snags present. The overall traversibility was rated as moderate with a few difficult areas noted in areas of aspen regeneration. Suggested treatment was to continue including this area in the prescribed burn rotation to improve traversibility and thin the areas of aspen regeneration.

Hazardous Artifacts. Maneuver area B was assessed for farm and training artifacts in 2010. Thirty-three sites were noted of which none posed an immediate hazard. The area assessed includes the oldest portion of Camp Ripley, so many of the artifacts noted were associated with old firing ranges. Further evaluation of these artifacts is needed to determine proper mitigation of military related sites. All excavations will be filled in during 2011.

Forest Understory. This was the first year of the forest understory assessment. Training Area 78 was assessed with 24 random points assessed. A Visual Signal-17 panel was emplaced at the assessment points and a photograph taken 50 meters away. Each photograph was rated on a 0-5 scale with 0 indicating the panel was not visible at all and 5 denoting that the panel was fully visible. The average visibility score for the area was 3.42 with the poorest visibility being on the edges of the timber stands. Training Area 78 will be re-assessed in 2011 with more points. The initial results do indicate that prescribed fire will help improve the visibility and training value of the area.

Land Rehabilitation and Maintenance (LRAM) Program

Land Rehabilitation and Maintenance is an ongoing program whereby erosion control measures and good vegetation management practices are employed to maintain and stabilize the soil. LRAM is the component of the ITAM program that provides a preventive and corrective land rehabilitation and maintenance procedure to reduce the long-term impacts of training on Camp Ripley.

LRAM uses technologies such as re-vegetation and erosion control techniques to maintain soils and vegetation required to support Camp Ripley's mission. These specifically designed efforts help to maintain Camp Ripley as a quality military training site and subsequently minimize long-term costs associated with land rehabilitation. LRAM includes programming, planning, designing, and executing land rehabilitation, maintenance, and reconfiguration projects based on requirements and priorities identified in the Training Requirements Integration and RTLA components of ITAM. A key component of the LRAM program is an annual assessment that is conducted to document LRAM needs attributable to past years activities.

2010 LRAM Work

The LRAM Program completed work in the following areas:

1. Repaired all 46 sites documented in the maneuver trail assessment.
2. Improved six artillery firing points assessed in 2009.
3. Gyro-traced 60 acres of maneuver corridor to reduce stumps and slash.
4. Capped 12 farmstead sites to remove hazards to troops.
5. Removed all snags within the B-3 Land navigation Course.
6. Repaired approximately 100 acres of maneuver damage during the summer annual training period.

Major equipment purchased this year for the LRAM program included:

1. 250 gallon boomless sprayer
2. Skid steer light material bucket
3. Skid steer rock and brush rake
4. Cat 938H Front end loader
5. Heavy duty low-boy trailer

Training Requirements Integration (TRI)

Training Requirements Integration is a program developed to integrate the training mission with the natural resource requirements. TRI is the component of the ITAM Program that provides a decision support procedure that integrates training requirements with land management, training management, and natural and cultural resources management. The integration of all requirements occurs through continuous consultation between operations, range control, natural and cultural resources managers, and other environmental staff members, as appropriate. The INRMP and ITAM work plan are documents that require TRI input. In 2011, the ITAM work plan will be a web-based program.

Sustainable Range Awareness (SRA)

Sustainable Range Awareness is the component of the ITAM Program that provides a means to develop and distribute educational materials to land users. Materials relate procedures for sound environmental stewardship of natural and cultural resources and reduce the potential for inflicting avoidable impacts. The SRA intent is to inform land users of restrictions and activities, to avoid and prevent damage to natural and cultural resources. The SRA component applies to soldiers, installation staff, and other land users.

The SRA component purchased 8,000 laminated maps of Camp Ripley in 2010. The maps have proven to be very popular with the installations' customers and include information on the back side that supports sustainable land use.

Geographic Information System (GIS)

The Sustainable Range Program (SRP) GIS Mission is to create, analyze, manage, and distribute authoritative standardized spatial information, products, and services for the execution of training strategies and missions on U.S. Army ranges and training lands. Through information excellence, one of the three tenets upon which the SRP was founded, the SRP GIS Program strives to provide the SRP community, trainers, and soldiers with the ability to leverage the most accurate and complete datasets through easily accessible and user-friendly products and applications.

GIS is playing an ever increasing role in SRP and other installation activities. GIS supports all components of the ITAM program as well as the Range and Training Land Program (RTLP). Without the excellent support of the GIS team, the SRP program at Camp Ripley would be severely hampered.

A summary of the SRP GIS accomplishments is as follows:

1. Supported the Range Complex Master Planning (RCMP) by producing 50 maps of existing, programmed and non-programmed ranges.
2. Compiled a geodatabase of over 20 layers in support of the Encroachment Condition Module.
3. Completed the Range Reconciliation by coordinating with range control, real property and RFMSS to update the ranges with facility ID numbers, Facility Category Codes (FCC) and standardized range naming. Produced 120 maps in support of the Range Reconciliation.
4. Supported SRA by producing a custom installation map that included information on sustainable range use. Coordinated for the contracted printing and laminating of 8,000 maps that were distributed to customers during FY2010.
5. Supported military training by providing custom maps to training units for planning purposes. Created 100 new ArcMap projects.
6. Supported Miller Army Airfield by creating an aviation specific map of Camp Ripley in support of aviation operations. Created GIS data layers that were loaded into the SDE geodatabase. Created and distributed over 250 maps.
7. Supported the Camp Ripley hunt program by producing data layers and approximately 200 maps.

8. Supported two brigade level XCTC exercises with planning and design support. Created in excess of 300 maps.
9. Maintained all data to SDSFIE and QAP standards.
10. Developed a tool to automate the export of daily Safety Danger Zones (SDZ) to a Falconview compatible format in support of aviation operations on Camp Ripley.

Operational Noise Management

In 2010, data was submitted to U.S. Army Public Health Command (USAPHC) to update the Camp Ripley Noise Management Plan. Significant to this data submission was the overall reduction in the number of artillery firing points while expanding the number of areas of potential artillery activity, inclusion of new ranges, and an increase in the amount of demolition allowed on the unimproved demolition sites. It is expected that the level of noise generated by training activities on the installation will increase dramatically in the next few years compared to the levels generated since the start of the Global War on Terrorism as units re-focus their training on the traditional tasks of tank and artillery firing. The noise study is expected to be complete in 2011 and will be used to update the Noise Management Plan.

GEOGRAPHIC INFORMATION SYSTEMS (GIS)

As a component of the Environmental and Integrated Training Area Management (ITAM) programs, GIS is used to support management of those programs and is subsequently used to implement related resource management plans such as the Integrated Natural Resources Management Plan, Integrated Cultural Resource Management Plan, Forestry Management Plan, Fire Management Plan, Protected Species Management Plan, Lake Management Plan, Range Complex Master Plan, and the Arden Hills Army Training Site Development Plan.

Whether used for data development, maintenance, analysis, display, or cartographic production this decision support tool is maintained to adapt with end user needs. Continuous coordination with program support personnel, other directorates, departments and external entities are required to ensure the most accurate and complete geospatial data is available.

The use of consistent datasets and products across common geographic areas (i.e., Camp Ripley and AHATS) as well as the required integration between range management and environmental sustainability initiatives has inherently lead to shared efforts regarding GIS support for the Environmental and ITAM programs. As a result, associating specific efforts to an individual program area is not clear cut. However, for the purposes of this report GIS accomplishments have been separated by program area. This section focuses on the Environmental Program. ITAM GIS accomplishments can be found on page 99 of this report.

Data Management

Several MNARNG GIS goals and objectives are defined by Federal, Army, and NGB regulations that govern management of GIS. These regulations pertain to data standardization and conceptual design of the system. The goal is to coordinate data and GIS structure within the states as well as nationally. This coordination and standardization is necessary to keep state and national efforts organized. In accordance with these regulations, Environmental related data layers within the MNARNG GIS repository are compliant with the Spatial Data Structure for Facilities, Installations, and Environment (SDSFIE) version 2.6 as well as Federal Geographic Data Committee (FGDC) metadata standards.

To support visibility and analysis efforts, Army and NGB annually request states for standardized geospatial data. Specific to NGB-ILE are the Common Installation Picture (CIP) layers. These requests initiate a review of current data layers and coordination with subject matter experts to ensure spatial and attribute data is current, accurate, properly documented and compliant with CIP Quality Assurance Plans (QAP). In addition to Army and NGB requirements there is continued development and maintenance of geospatial data layers based upon business need. A complete list of production GIS data layers updated in 2010 are identified in Appendix J.

Representing NGB, the MNARNG has continued to participate in the Army SDSFIE 3.0 pilot project. SDSFIE 2.6 has undergone major revision resulting in version 3.0. Prior to its official release Army and NGB need to evaluate the impact this revision will have on existing data holdings. This includes assessment of the new SDSFIE adaptation process which would allow DOD branches, States and Installations the flexibility to make local alterations to the standard while maintaining overall benefits of a common data standard. Through this effort pilot project participants reviewed SDSFIE 3.0, generated a pilot Army adaptation and applied it locally through web based and local client tools. Currently, project results (e.g. participant comments, site visit reports, Army Mapper integration efforts, etc.) are being considered as the Army and NGB determine a method for implementation of the standard as well as a method to maintain adaptations and at which user tiers (Army, NGB, State, Installation) they will be supported.

LiDAR derived forest metrics (canopy height, diameter at breast height, basal area, stem density, and volume) for Camp Ripley and the ACUB project area have been updated based upon an updated set of statistical models. In 2008, the original set of LiDAR derived forest metrics for Camp Ripley were based upon the statistical models generated by Wes Newton, USGS Statistician, for a mixed forest landscape in central Maine. In the spring/summer 2009, an assessment was conducted to evaluate the accuracy of these forest metric estimates. Using the results of this evaluation, Wes Newton was able to adjust the statistical models to more accurately estimate forest metrics across the Camp Ripley landscape. Updated models were applied to the 2007 Camp Ripley LiDAR dataset and a new set of forest metrics was generated for Camp Ripley and the ACUB project area.

End User Support

Custom maps (digital and hard copy) continue to be the primary GIS product for non-GIS staff. This past year there were nearly 1000 maps produced to support environmental related activities, reports and presentations. The Map Library (http://sharepoint/JFHQ/JSTAFF/J6/TeamSite/GIS/MapLibrary/default.aspx) has also been maintained (78 new and updated maps) to provide wider dissemination of commonly requested maps.

Generated graphics and figures for the 2010 Conservation Program accomplishments document. This includes data maintenance and required analysis of all associated data layers covering all program areas (forestry, fire management, timber harvest, invasive plants, and animal survey).

Supported the Camp Ripley Army Compatible Use Buffer (ACUB) initiative through maintenance of the ACUB database, spatial and attribute data updates, reporting, site selection analysis, and coordination with the real property manager to ensure enrolled parcels are properly tracked in PRIDE, NGB's Real Property Database.

Support for the Camp Ripley and AHATS hunt programs included data maintenance and map production. These reference maps supported planning, logistics, coordination, and safety for all Camp Ripley and AHATS hunts.

GIS support provided for Camp Ripley land fund project included creation of GIS shapefiles according to land fund project plan. Maps and graphics were also provided to support presentations.

In support of the Camp Ripley landscape project, created maps showing future and current cantonment projects and landscaping areas to be provided to contractor for planning and design.

Information Technology Coordination

The J6 (Information Technology) directorate is responsible for hardware and software support for the MNARNG. Both are essential components of a GIS. With increasing network security the ability to manage these components has been limited. In order to obtain the necessary permissions and priority to maintain the GIS a member of the Environmental GIS staff has been functioning as a liaison with the J6 Directorate.

Through this relationship the approval of GIS related software for use on the MN domain has been expedited (14 new or upgraded GIS related applications were approved in 2010). This has also allowed for more timely installs of newly approved software as well as a J6 point of contact for resolving GIS related software issues.

To date, two of the three production GIS databases have been migrated to J6 production servers. This consolidation is not only for databases, web server consolidation and file storage space for the expanding GIS user base is also being considered but has not occurred at this time. The integration of GIS data and applications onto J6 systems allows us to take advantage of in-place

continuity of operations (COOP) and fail over procedures. In addition it reduces the overhead of hardware costs and maintenance for the Environmental and ITAM programs.

GIS staff with the proper admin permissions is also critical for supporting web based applications. There has been extensive effort implementing web based applications, specifically the Visual Planning and Evaluation Tools (VPlanET) application. Although this web application was designed to support the Real Property Development Plan (RPDP) process it incorporates many data layers maintained by Environmental and ITAM GIS personnel. The ability to disseminate a web based interface to interact with data from multiple program areas and sources is the power of this technology and it will continue to expand within the MNARNG. Understanding data sources and limitations is essential for reliable analysis and information sharing through these applications. This will require continued integration and support between J6 and GIS personnel.

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 is a great asset to the local community and the state of Minnesota. It is important that Camp Ripley, in particular the environmental team, be interactive with the general public. Ensuring the local community and greater Minnesota are educated about the mission of Camp Ripley is a key component to maintain support for the military training site and the military mission. Over the past year, the environmental team has helped implement activities such as the Morrison County Water Festival, Earth Day, National Public Lands Day, and Habitat Day.

The Environmental Office has been a long-term partner with the various educational institutions within the state. Camp Ripley's environmental team has also been involved in local high school job shadow programs. 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. Partnering with local colleges has not only been beneficial to the students but the environmental program as well. In 2010, St. Cloud State University graduate students produced a preliminary report on how to control invasive plants within Camp Ripley. Central Lakes College has also been a valuable partner with the fisher research project.

Camp Ripley is also available for environmental presentations and tours. Using the Martin J. Skoglund environmental classroom has been a great way to introduce students to conservation and hands-on science. In 2010, the environmental team gave 110 presentations or tours to 4,139 people entailing 430 staff hours. A majority of these presentations occur in the Martin J. Skoglund, environmental classroom at Camp Ripley.

Salvage Permit

Camp Ripley maintains two permits for the purpose of salvaging animals for the Martin J. Skoglund Environmental Classroom; State of Minnesota salvage permit No. 14815 and Federal Fish and Wildlife Permit MB776466-0. No animals were salvaged for educational purposes in 2010.

Hunting Programs

Disabled American Veterans Firearms Wild Turkey Hunt

Camp Ripley hosted the sixth annual Disabled American Veterans (DAV) turkey hunt on April 21-22, 2010. 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 MNDNR. Thirty-seven hunters participated in this year's turkey hunt. Fifteen hunters were successful, for a 40 percent success rate (Table 31).

Table 31. Disabled American Veterans spring wild turkey hunts at Camp Ripley, 2005-2010.

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%	27	25	April 25-26	22.5
2007	15	52%	31	29	April 25-26	23.5
2008	27	75%	39	36	April 23-24	23.8
2009	23	66%	40	35	April 22-23	23.6
2010	**15**	**40%**	**40**	**37**	**April 21-22**	**24.6**
Total	**103**		**199**	**181**		
Avg.	**17**	**56%**				

Deployed Soldiers Firearms Wild Turkey Hunt

After a great first year, Camp Ripley hosted its second annual Deployed Soldiers turkey hunt on April 26-28, 2010. The hunt was organized and conducted by the MNARNG- Environmental Office. Due to last year's success and interest the hunt numbers were increased. Forty-seven hunters participated in this year's turkey hunt. Twenty-five hunters were successful, for a 53 percent success rate (Table 32).

Table 32. Deployed soldiers spring wild turkey hunt at Camp Ripley, 2009-2010.

Year	Turkeys Harvested	Hunter Success	Permits Issued	Number of Hunters	Dates	Largest Turkey (lbs)
2009	18	64%	45	28	April 27-29	23.8
2010	**25**	**53%**	**60**	**47**	**April 26-28**	**25.5**

Disabled American Veterans Firearms Deer Hunt

The nineteenth annual Disabled American Veterans firearms deer hunt on Camp Ripley was held October 6-7, 2010. This year 58 hunters participated in the hunt. An unseasonable warm front

was the weather pattern for the duration of the hunt and may have resulted in low deer activity. Seven deer were killed (Table 33).

Table 33. Disabled American Veterans firearms white-tailed deer hunt at Camp Ripley, 1992-2010.

Year	Deer Harvested	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
2008	9	16%	2	6	1	58	53	Oct 8-9	180
2009	13	25%	5	4	4	55	52	Oct 7-8	174
2010	**7**	**12%**	**2**	**5**	**0**	**60**	**58**	**Oct 6-7**	**123**
Total	**198**		**64**	**91**	**43**		**810**		
Avg.	**10.5**	**26%**	**3.5**	**5**	**2**		**45**		**151**

Deployed Soldiers Archery Deer Hunt

The fifth 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, 135 hunters applied and 90 hunters participated in this year's hunt (Table 34).

Table 34. Deployed soldier's archery deer hunt at Camp Ripley, 2006-2010.

Year	Deer Harvested	Hunter Success	Buck	Does	Fawns	Permits Issued	Number of Hunters	Dates	Largest Deer (lbs)
2006	6	15%	3	3	0	100	39	Oct 4-5	92
2007	10	17%	1	6	3	123	59	Oct 3-4	175
2008	14	25%	6	6	2	123	56	Oct 8-9	141
2009	11	22%	3	7	1	126	51	Oct 7-8	198
2010	**12**	**13%**	**5**	**7**	**0**	**135**	**90**	**Oct 6-7**	**214**
Total	**53**		**18**	**29**	**6**		**295**		
Avg.	**11**	**18%**	**3.6**	**5.8**	**1.2**		**59**		

Youth Archery Deer Hunt

The ninth annual youth archery deer hunt was held October 9-10, 2010. The weather was partly cloudy with some showers. Participants were allowed to hunt in any non-restricted areas north of Cassino Road. The hunt was coordinated by the Minnesota Deer Hunters Association, the Minnesota State Archery Association, Camp Ripley, and the MNDNR. In 2010, a total of 150 permits were issued with 136 hunters participating, harvesting seven deer (Table 35). Each hunter was required to have completed a safety course, and have an adult mentor present while hunting.

Table 35. Youth archery white-tailed deer hunt at Camp Ripley, 2002-2010.

Year	Deer Harvested	Hunter Success	Bucks	Does	Fawns	Permits Issued	Number of Applicants	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
2008	10	8.1%	3	5	2	150	220	124	Oct 11-12	114
2009	12	7.5%	2	7	3	150	240	130	Oct 10-11	120
2010	**7**	**5%**				**150**	**225**	**136**	**Oct 9-10**	**Unknown**
Total	**113**		**36**	**55**	**22**	**1302**	**2097**	**1138**		
Avg.	**12.5**	**10%**	**4**	**6**	**2**		**233**	**126**		

General Public Archery Deer Hunt

The annual general public archery deer hunt at Camp Ripley continues to be known as one of the largest and most anticipated archery hunts in the nation since its establishment in 1954. This hunt is administered by the Minnesota Department of Natural Resources. Hunters are allowed to apply for one of two, 2-day seasons. This year, the hunts were held on October 21-22 and October 30-31. For the seventh year, hunters were permitted to use a bonus tag, allowing them to take a second antlerless deer. In 2010, the number of permitted hunters was 5,002.

A total of 4,293 hunters participated in the 2010 archery hunts (Table 36). There were 507 deer harvested during the two hunts. This year's hunt was the third most successful hunt. During the first two-day hunt, 20 bucks where registered weighing over 200 lbs. Hunter success was approximately 11.8 percent which is greater than the long-term average of 9 percent; however, this increased hunter success is likely due to use of bonus tags. Approximately 60 percent of the harvested animals were does and fawns. Good weather, bonus permits, and good hunter turnout was the perfect scenario for a good success rate.

Table 36. General public archery white-tailed deer hunts at Camp Ripley, 1981-2010.

Year	Deer Harvested	Adult Males	%	Adult Females	%	Fawns	%	Permits Issued	# of Hunters	Hunter 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
***2008**	516	183	35	220	43	113	22	5005	4167	11.9%	OCT. 19-20	OCT. 26-27	234
***2009**	477	190	40	202	42	85	18	5005	4126	11.4%	OCT 15-16	OCT 31-NOV 1	265
***2010**	**507**	**187**	**37**	**228**	**45**	**92**	**18**	**5002**	**4293**	**11.8%**	**OCT 20-21**	**OCT 30-31**	**253**

*Years when bonus tag use allowed.

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 the Twin Cities Army Ammunition Plant is now known as the Arden Hills Army Training Site (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 and monitoring studies along with management of the flora and fauna will be an ongoing part of the installation's Integrated Natural Resources Management Plan (INRMP), which was completed in November of 2001 and updated in 2007 (Dirks et al. 2008), 2008 (Dirks and Dietz 2009), 2009 (Dirks and Dietz 2010), and 2010 (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.

CULTURAL RESOURCES

In 2010, the field work for the phase II evaluation of three former farmstead sites and one pre-historic site was completed. The final report is pending. The Heritage Site evaluation was assisted with the help of Amanda Gronhovd who had completed the phase I evaluation of these sites.

On AHATS, the entire 1,500 acres have been evaluated for historic features and all of the 128 acres of undisturbed soils have been evaluated for prehistoric features. In addition, all of the buildings have been evaluated and determined not eligible for the National Register of Historic Places.

LAND USE CONTROL AND REMEDIAL DESIGN

The Operable Unit 2 (OU2) Land Use Control Remedial Design (LUCRD) New Brighton/Arden Hills Superfund Site passed the Consistency Test and was signed on September 27, 2010. Land Use Controls (LUC) are required as part of the remedies for soil, sediment, and groundwater at specific areas within OU2. LUCs are needed because the current concentrations of various contaminants within these areas are above levels that allow for unlimited use or unrestricted exposure. There are no LUC for military training; however some soil caps and digging restrictions are present on AHATS.

The MNARNG, as part of its community responsibility, wants to make AHATS available for nonmilitary users, including those under age 18. The exposure levels for those under 18 are more restrictive. In order to reach the exposure levels the LUCRD must be amended. To amend the LUCRD the Minnesota Pollution Control Agency/Environmental Protection Agency needs more data. The MNARNG has drafted a technical memorandum to implement institutional, engineered, and administrative controls to address these concerns.

As a result, the conditions of the LUCRD must be honored by the MNARNG relative to their long-range planning, land use, and land management practices on AHATS. To ensure compliance with the conditions of the LUCRD, MNARNG is hereby referencing the LUCRD and inserting a copy as an appendix to the AHATS Master Plan/Site Development Plan (Minnesota Army National Guard 2009) and the AHATS INRMP (Minnesota Army National Guard 2007 and Appendix B). It is understood that any future revisions to the LUCRD will automatically supersede any earlier editions.

NATURAL RESOURCE DAMAGE ASSESSMENT

Natural resource damage may occur at sites as a result of releases of hazardous substances or oil. Natural Resource Damage Assessments (NRDA) are used to assess injury to natural resources held in the public trust. This is an initial step toward restoring injured resources and services and toward compensating the public for their loss.

The Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) provides a comprehensive group of authorities focused on one main goal: to address any release, or threatened release, of hazardous substances, pollutants, or contaminants that could endanger human health and/or the environment. CERCLA's response provisions focus on the protection of human health and the environment. The statute also provides authority for assessment and restoration of natural resources that have been injured by a hazardous substance release or response.

A natural resource damage assessment is the process of collecting, compiling, and analyzing information to make these determinations. The overall intent of the assessment regulations is to determine appropriate restoration and compensation for injuries to natural resources. Restoration actions are principally designed to return injured resources to baseline conditions (EPA 2009).

At the AHATS facility, sustainability of natural vegetation cover has been a top priority in all planning efforts to ensure a realistic training environment and quality wildlife habitat. All natural resources conservation activities are designed to maintain and enhance the training areas for soldiers, thus serving the military mission.

In order to meet its sustainability objectives the MNARNG has requested funding through the NRDA process to implement projects from the AHATS INRMP. The AHATS INRMP, which was developed in concert with partners from the Minnesota Department of Natural Resources and United States Fish and Wildlife Service, provides a foundation for managing AHATS' natural resources. These NRDA land management projects are intended to eliminate hazards relating to infrastructure,

restore wildlife habitat, and help eliminate invasive species on the AHATS facility (Appendix M in Dirks and Dietz 2010).

NATURAL RESOURCES

Natural resource planning is an integral part of the Conservation Program for the MNARNG. The MNARNG uses the INRMP as the guidance documents for implementing the Conservation Program. The planning process used in developing the INRMP 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 MNARNG's 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 INRMP not only satisfies the military mission but also provides 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 AHATS, and present their annual accomplishments and work plans for the next year. Please refer to Appendices F for the 2010 AHATS annual meeting minutes.

Vegetation Management

Prescribed Fire

No prescribed fire management occurred during 2010.

Biomass Project

Biomass energy is a renewable energy source. AHATS has an abundant supply of common buckthorn (*Rhamnus cathartica*), cottonwood (*Populus deltoides*), Russian olive (*Elaeagnus angustifolia*), Siberian elm (*Ulmus pumila*), black locust (*Robinia pseudoacacia*), and ornamental white poplar (*Populus alba*). The accumulated woody biomass was a combination of these types of invasive terrestrial plants and deciduous trees.

Staging of the biomass occurred over a three year period by Jim Tatro and Todd Hendricks, members of Camp Ripley/AHATS Department of Public Works crew and also Craig Andresen of Natural Resources Restoration, Inc. They diligently removed woody biomass in all nine AHATS training areas with the goal of restoring native plant communities, returning the training area to oak savannah, and reducing safety hazards and impediments in the field.

Ramsey County is also one of three counties impacted by the Minnesota Department of Agriculture quarantine for emerald ash borer (*Agrilus planipennis*). The quarantine restricts the movement of ash trees, or any firewood of any non-coniferous (hardwood) species.

On Monday, June 21, 2010 twenty semi-truck loads of chipped wood were removed from the AHATS by Ever-Green Energy. Tim Notch, of The Nature Conservancy, assisted AHATS in connecting with the renewable energy coordinator and Ever-Green Energy, the service provider to

District Energy St. Paul. One of the most important advantages of biomass energy is that it is cost effective. The energy is generated, chipped, collected, and supplied all in the same local area.

Sustainable practices in training area management improve the environment by conserving resources, reducing chemical applications, and reducing labor input. AHATS is exploring all avenues of environmental innovation to enhance training and project a positive image for the service members and to the community.

Wildlife

Species in Greatest Conservation Need

Species in greatest conservation need (SGCN) 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. One of the federal requirements of the Comprehensive Wildlife Conservation Strategy to manage species in greatest conservation need 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 provides direction and focus for sustaining SGCN into the future (MNDNR 2006).

In Minnesota, 292 species meet the definition of species in greatest conservation need. All listed species (federal and state) are included on SGCN list. This set of SGCN includes mammals, birds, reptiles, amphibians, fish, insects, and mollusks, and represents about one-quarter of the nearly 1,200 animal species in Minnesota that were assessed for this project (MNDNR 2006). AHATS provides habitat for 38 SGCN, including 36 bird species of which 22 are songbirds (Appendix H). Additional research will be directed toward identifying other SGCN species on AHATS, and management or conservation actions that could be implemented to benefit these species.

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. 2008). Counts occur within predetermined 15-mile diameter circles located across North America, Mexico, and South America. All of AHATS is found within the St. Paul, north (CBC census code: MNSP) census circle. Each count is conducted during a single calendar day within two weeks of Christmas (December 14 to January 5). The St. Paul, north census was started in 1967, and the census has occurred 42 times (Minnesota Ornithologists' Union 2010). CBC data is primarily used to track winter distribution patterns and population trends of various bird species.

The 2009-2010 CBC at AHATS occurred on Saturday, December 18, 2009, and was conducted by Craig Andresen, St. Paul Audubon Society volunteer. The other portion of the census area was surveyed on December 19, 2009. The skies were overcast, temperatures were in low 20 degrees Fahrenheit, with winds of 10 miles per hour (Minnesota Ornithologists' Union 2010). Table 37 depicts the total number of birds counted at AHATS during the annual CBC.

Table 37. Christmas bird count data from Arden Hill Army Training Site, winter of 2009-2010.

Species	Scientific Name	Dec. 18, 2009
Canada goose	*Branta canadensis*	28
Trumpeter swan	*Cygnus buccinator*	7
Mallard	*Anas platyrhynchos*	~1500
Wild turkey	*Meleagris gallopavo*	13
Bald eagle	*Haliaeetus leucocephalus*	1
Red-tailed hawk	*Buteo jamaicensis*	6
Rough-legged hawk	*Buteo lagopus*	1
Great horned owl	*Bubo virginianus*	1
Red-bellied woodpecker	*Melanerpes carolinus*	1
Downy woodpecker	*Picoides pubescens*	1
Hairy woodpecker	*Picoides villosus*	1
American crow	*Corvus brachyrhynchos*	25
Black-capped chickadee	*Parus atricaillus*	9
American tree sparrow	*Spizella arborea*	3
# Observers		Unk.
TOTAL # INDIVIDUALS		1,597
TOTAL # SPECIES		14

Minnesota Breeding Bird Atlas

The Minnesota Breeding Bird Atlas (MNBBA) is a bird conservation project that identifies every bird species and where it breeds in the state. The project will be active from 2009 to 2013. The MNBBA uses breeding bird observations from both professionals and citizen scientists. Minnesota is one of seven states that have not developed an atlas. The project is coordinated by Audubon Minnesota and sponsored by the MNDNR, U.S. Fish and Wildlife Service, statewide non-profit birding organizations, and Legislative-Citizens Commission on Minnesota Resources (LCCCMR) funds (State of Minnesota).

Breeding bird observations are recorded based upon blocks of 9 miles^2 that cover the entire state. AHATS is located within block T30R23a. Bob Holtz, volunteer with the St. Paul Audubon, is coordinating observations within the block. Based on preliminary data, 87 bird species have been observed since 2009 (Minnesota Breeding Bird Atlas Project 2011).

Songbirds

As a natural oasis in a mostly metropolitan area, AHATS provides important breeding and migratory habitat for bird species in greatest conservation need (SGCN). Thirty-six SGCN birds have been identified on AHATS; including both breeding and migratory species (Appendix H). Nineteen SGCN birds including waterbirds, raptors, and songbirds are known to breed on AHATS; seven were recorded during songbird point count surveys this year.

Songbird surveys were conducted on 13 permanent plots (Figure 41) on May 27, 2010. Surveys have been conducted on these plots since 2001. A total of 112 birds consisting of 33 different

species were recorded. Overall, the average number of birds per plot was 8.61 and the average number of species per plot was 9.15 (Table 38 and Figure 42). Trends of three SGCN grassland songbirds are presented in Figure 43.

Grassland plots (*n*=7) contained 16 bird species and 45 total birds. The average number of birds found on grassland plots was 6.43 and the average number of species per plot was 5.0 (Table 38 and Figure 42). Seven of the past ten years, clay colored sparrows (*Spizella pallida*) were the most abundant species recorded on grassland plots. In 2010, these sparrows were more than twice as abundant as any other species of grassland birds (Table 39). Grassland management at AHATS in recent years has involved prescribed burning and tree and invasive shrub 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)*.

Woodland plots (*n*=6) contained 26 species and 67 total birds. The average number of birds found on woodland plots was 11.12 and the average number of species per plot was 10.3 (Table 38 and Figure 42). The most abundant birds on woodland plots in 2010 were blue jay (*Cyanocitta cristata*), house wren (*Troglodytes aedon*), red-eyed vireo (*Vireo olivaceus*), white-breasted nuthatch (*Sitta carolinensis*), brown-headed cowbird (*Molothrus ater*), Baltimore oriole (*Icterus galbula*), and American goldfinch (*Geothypis trichas*) (Table 39).

Figure 41. Permanent songbird survey plots at Arden Hills Army Training Site, 2001-2010.

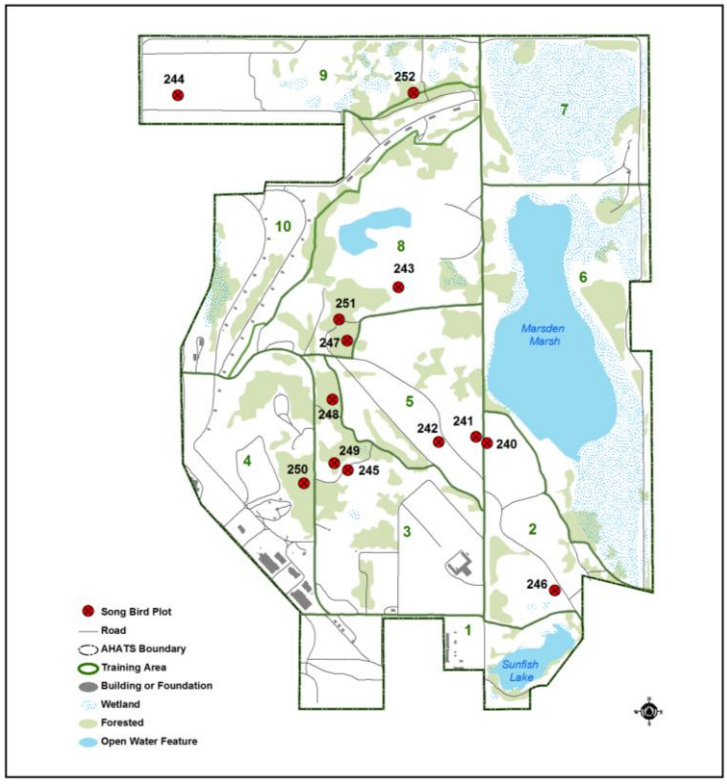


Figure 42. Arden Hills Army Training Site average number of songbird species per plot, 2001 to 2010.

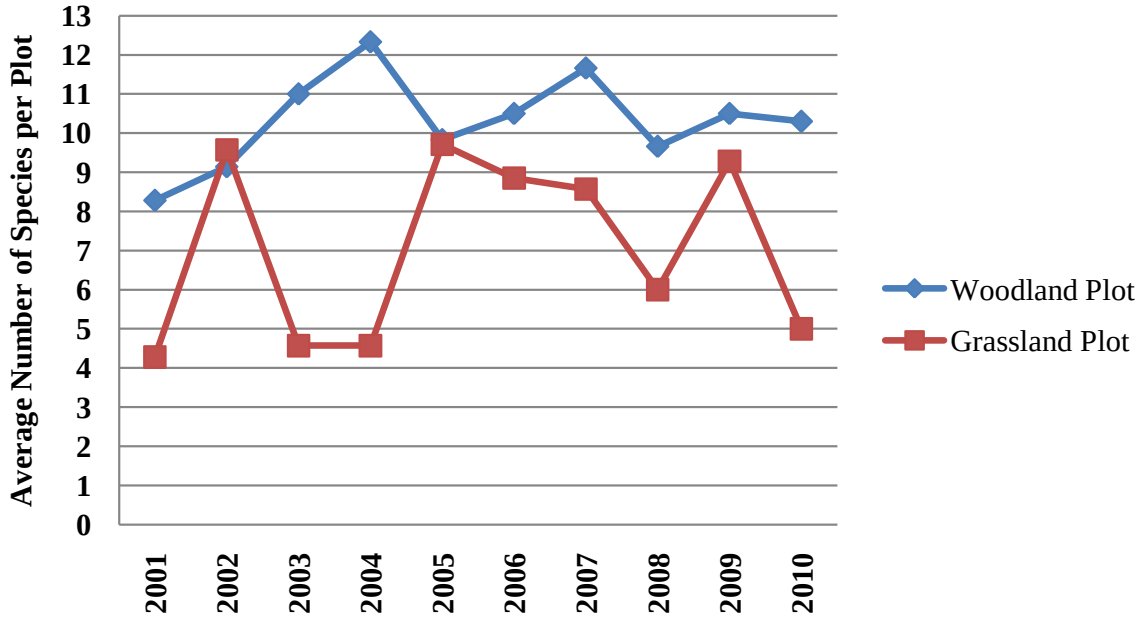


Figure 43. Arden Hills Army Training Site selected grassland songbirds in greatest conservation need, 2001 to 2010.

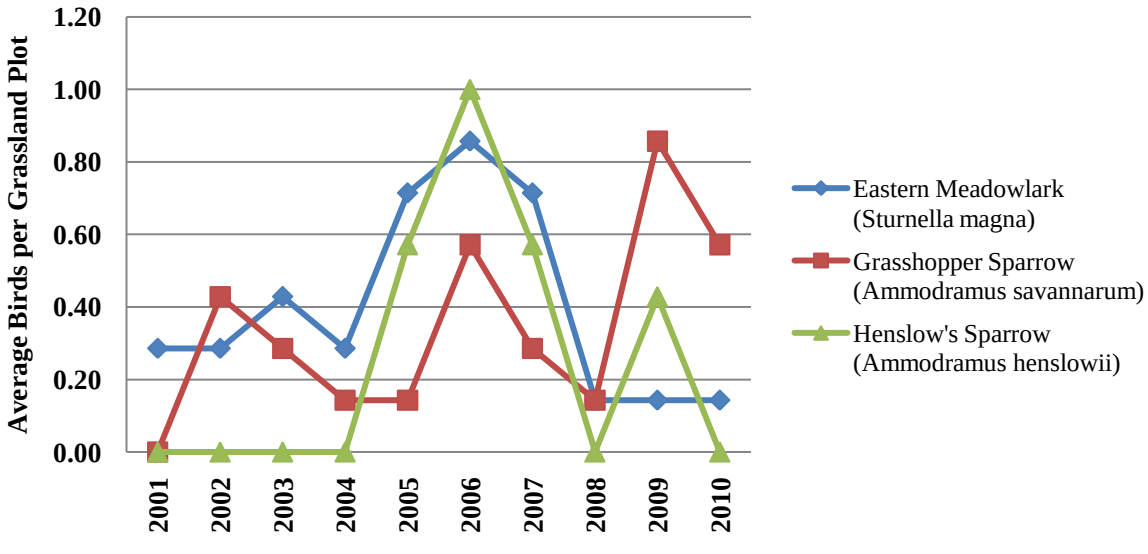


Table 38. Summary of songbird surveys at Arden Hills Army Training Site, 2001-2010.

Woodland Plots						
Year	**Field Surveyors**	**# of Plots Surveyed**	**Total # of Birds Documented**	**Total # of Species Documented**	**Average # of Birds per Plot**	**Average # of Species per Plot**
2001	Dirks	7	81	25	11.57	8.28
2002	Dirks	7	78	28	11.14	9.14
2003	Dirks	6	84	31	14.00	11.0
2004	Dirks	6	88	36	14.66	12.33
2005	Dirks	6	73	28	12.12	9.83
2006	Dirks	6	74	32	12.13	10.5
2007	Dirks	6	90	34	15.00	11.66
2008	Dirks	6	64	25	10.66	9.66
2009	Dirks	6	73	25	12.16	10.5
2010	**Dirks**	**6**	**67**	**26**	**11.2**	**10.3**

Grassland Plots						
Year	**Field Surveyors**	**# of Plots Surveyed**	**Total # of Birds Documented**	**Total # of Species Documented**	**Average # of Birds per Plot**	**Average # of Species per Plot**
2001	DeJong	7	37	18	5.28	4.28
2002	DeJong	7	62	22	8.86	9.57
2003	DeJong	7	39	17	5.57	4.57
2004	Burggraff	7	41	19	5.86	4.57
2005	DeJong	7	67	23	9.57	9.71
2006	DeJong	7	75	20	10.71	8.85
2007	DeJong	7	66	21	9.43	8.57
2008	Dirks	7	45	26	6.42	6.0
2009	Dirks	7	46	20	6.71	9.28
2010	**Dirks**	**7**	**45**	**16**	**6.43**	**5.0**

Table 39. Most abundant songbirds observed on plots at Arden Hills Army Training Site, 2001-2010. The number of birds documented is indicated in columns.

Grassland Plots (*n*=7)											
Common Name	**Scientific Name**	**July 12, 2001**	**July 1, 2002**	**June 17, 2003**	**June 29, 2004**	**June 1, 2005**	**June 2, 2006**	**June 5, 2007**	**July 9, 2008**	**May 29, 2009**	**May 27, 2010**
Mourning dove	*Zenaida macroura*								2		
Eastern kingbird	*Tyrannus tyrannus*				6			5	2	4	
American crow	*Corvus brachyrhynchos*					10					
Tree swallow	*Tachycineta bicolor*						5			4	**5**
Black-capped chickadee	*Poecile atricapillus*				3						
House wren	*Troglodytes aedon*	3							4		
Sedge wren	*Cistothorus platensis*	5				6					
Eastern bluebird	*Sialia sialis*							5	4	4	
Gray catbird	*Dumetella carolinensis*								2		
Clay-colored sparrow	*Spizella pallida*	6	5	7		5	8	11	6	6	**11**
Field sparrow	*Spizella pusilla*	3			5				4		**4**
Vesper sparrow	*Pooecetes gramineus*							4			
Song sparrow	*Melospiza melodia*		7	6							
Henslow's sparrow	*Ammodramus henslowii*						7	4		3	
Grasshopper sparrow	*Ammodramus savannarum*									6	**4**
Red-winged blackbird	*Agelaius phoeniceus*		10	4		5					
Eastern meadowlark	*Sturnella magna*			3		5	6	5			
Brewer's blackbird	*Euphagus cyanocephalus*		8								
American goldfinch	*Carduelis tristis*				7	7			2		**5**

Woodland Plots (*n*=6)											
Common Name	**Scientific Name**	**July 12, 2001**	**July 1, 2002**	**June 17, 2003**	**June 29, 2004**	**June 1, 2005**	**June 2, 2006**	**June 5, 2007**	**July 9, 2008**	**May 29, 2009**	**May 27, 2010**
Mourning dove	*Zenaida macroura*						4				
Tree swallow	*Tachycineta bicolor*									4	
Eastern wood-pewee	*Contopus virens*		6		7	6	6	4	3	5	
Great crested flycatcher	*Myiarchus crinitus*							4	3		
Red-eyed vireo	*Vireo olivaceus*					6				5	**5**
Blue jay	*Cyanocitta cristata*								6	6	**6**
Black-capped chickadee	*Poecile atricapillus*		7	6				7		3	
White-breasted nuthatch	*Sitta carolinensis*								5		**5**
House wren	*Troglodytes aedon*	11	7	7	5	8	5	11		3	**6**
American robin	*Turdus migratorius*	6	6	7	6	5	7		5	6	
Gray catbird	*Dumetella carolinensis*								3		
Eastern towhee	*Pipilo erythrophthalmus*	6							3		
Common yellowthroat	*Geothlypis trichas*									5	
Yellow warbler	*Dendroica petechia*									3	
Song sparrow	*Melospiza melodia*								5		
Northern cardinal	*Cardinalis cardinalis*						4	4	3	3	
Indigo bunting	*Passerina cyanea*								3		
Red-winged blackbird	*Agelaius phoeniceus*						4	5	4	3	
Brown-headed cowbird	*Molothrus ater*								3		**5**
Baltimore oriole	*Icterus galbula*									4	**5**
American goldfinch	*Carduelis tristis*	10		6	9			4		4	**4**

Henslow's Sparrow (*Ammodramus henslowii*)

Henslow's sparrows, a SGCN, were recorded in 2009 and were observed four of the past six years at AHATS during INRMP surveys. None were observed during 2008 and 2010. However, this could be due to the timing of 2008 survey which was later than the previous five years, or could indicate that 2006 was the peak of a local irruption of the species. Since 2005, Henslow's sparrows have been observed on four INRMP plots (Figure 41), they are plot: #240 (2005, 2006, 2007), #241 (2006, 2007), #242 (2005, 2006, 2007, 2009), and #244 (2005, 2006) (Dirks et al. 2008 and Dirks and Dietz 2009, 2010). In 2010, habitat conditions changed on plots where these sparrows were previously observed. A majority of plot's #240, #241, and #242 area was mowed in the fall of 2009 to prepare for a 2010 summer youth event that was eventually cancelled. During the spring of 2009, plot #240 was burned (Burn Unit #8), at the recommended 4 to 5 year burn rotation for Henslow's sparrow habitat management. The unit had been previously burned in 2004. In addition, about half of plot #244 has been used to park vehicles since fall of 2008. The mowing, fire, and other disturbance on these plots likely made the habitat unsuitable for breeding Henslow's sparrows in 2010.

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 (Dirks et al. 2010).

Henslow's sparrows are listed as endangered by the MNDNR and six other states, but are not listed by the 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). 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 grassland areas 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 (Dirks et al. 2010). Habitat requirements and management for Henslow's sparrows will be included in the development of future habitat restoration plans.

Osprey (*Pandion haleaetus*)

During the 2010 nesting season, an osprey (*Pandion haleaetus*) pair was observed on the nesting platform at Marsden Lake. In July 16, 2010, a male and a female osprey chick were

banded (Table 40). The osprey chick banding was conducted in cooperation with Audubon Minnesota and Excel Energy, who provided the bucket truck for access to the platform.

Table 40. Osprey chicks raised at Arden Hills Army Training Site, since 2001.

Year	Osprey Raised
2001	3
2002	4
2009	2
2010	**2**
Total	**11**

Bird Nest Boxes

Nest boxes have been installed at AHATS in previous years by the Audubon Society and other local groups. These nest boxes are monitored by Craig Andresen and Chase Davies, volunteers with the St. Paul Audubon Society. During late summer of 2010, Camp Ripley interns began to assess the condition of AHATS artificial nest boxes, gather GPS locations for boxes, and develop a location map. Each box was uniquely identified by using the existing metal tag numbering system attached to each box and a description of box type (e.g., Peterson or Gilbertson bluebird box). This effort will continue, as staff priorities allow, as not all nest boxes were located.

Sandhill Crane (*Grus canadensis*)

Sandhill cranes are monitored through a project of the International Crane Foundation. The annual Midwest Crane Count has been conducted since 1976. The purpose of the count is to monitor the abundance and distribution of cranes in the upper Midwest (International Crane Foundation 2010). Volunteer, Sharon Shinomiya, counted cranes at AHATS on April 17, 2010. She reported four sandhill cranes for the survey.

Eastern Wild Turkey (*Meleagris gallopavo*)

The University of Minnesota's Department of Fisheries, Wildlife and Conservation Biology began a study of Eastern wild turkeys (*Meleagris gallopavo silvestris*) in the Minneapolis-St. Paul metropolitan area. The following are excerpts from graduate student Karl Tinsley's study proposal and annual accomplishments.

Eastern wild turkeys in Minnesota represent an important economic resource, one which contributed approximately $17 million dollars through hunting and hunting related activities in 2005, and is expected to surpass $60 million dollars by 2025 (MNDNR 2007). However, current wild turkey distribution is well north of the accepted historical range for Minnesota (MNDNR 2007, Schorger 1966, Mosby 1959). This northward progression has resulted in the expansion of wild turkey into urban landscapes, including the Minneapolis-St. Paul metropolitan area. This has lead to an increase in wild turkey related nuisance complaints (MNDNR Wildlife Complaint Inquiry Log 2001-2009) across the metropolitan area. Understanding seasonal home range and nesting habitat use will provide management tools to assist in potential conflict resolution.

Ultimately, meeting seasonal requirements (e.g. nesting habitat, winter and brood dietary requirements) will influence the long-term size, condition, and stability of turkey populations in the urban landscape. Presently, it is unclear to what extent wild turkey range may expand into urban areas, how urban landscapes may alter seasonal home range patterns or nesting habitat use, or the extent of conflicts that may arise due to nuisance behavior.

As ground feeders, wild turkey foraging can be severely impacted by climatic (e.g. snow depth and duration) conditions (Porter 1980, Wunz and Hayden 1975). Studies detailing turkey reliance on anthropogenic food sources (e.g. food plots, agricultural fields, and corn silage) in rural northern environments is well documented (Kane et al 2007, Porter et al. 1980, Vander Haegen et al. 1988). However, many urban flocks lack adequate access to rural anthropogenic resources; therefore, these individuals must seek novel food resources to supplement their diets during winter months (e.g. birdfeeders). Hence, turkeys may be forced to reduce energy expenditures or include urban anthropogenic food resources (e.g. birdfeeders) into winter home range patterns. This behavior will likely lead to increased damage to bird feeders, roosting on structures and vehicles, and fecal deposits, thereby creating potential sources of conflict as turkeys invade urban landscapes in search of food.

Seasonal nesting habitat use and brood movements may be impacted due to the high rate of human disturbance (e.g. normal park recreation, mowing, and unleashed dogs) associated with urban parkland. Nest site location will be indentified by radio telemetry, and a summary habitat cover survey will be completed. Seasonal brood movements will be monitored to determine the bird's habitat use during this critical lifecycle event.

As wild turkeys further invade urban landscapes, the potential for negative impacts on native communities and local ecological processes is unknown. Furthermore, the risk of adverse interactions (e.g. aggressive behavior, property damage, and fecal deposits) between urban wild turkey and humans is expected to increase. My research proposes to investigate and identify the ecological attributes of wild turkey which allow for successful ongoing expansion into non-native urban landscapes in east central Minnesota. The specific aims of the study seek to evaluate seasonal home range of wild turkey in urban landscapes, and determine nesting habitat requirements of wild turkeys in urban landscapes.

Five turkeys were captured at various parks in Ramsey and Washington counties during the pilot study in 2010. One hen captured at Snail Lake Regional Park, Ramsey County, initiated nesting at AHATS, she hatched six poults out of nine eggs. Over several weeks, all poults were lost, either at AHATS or in adjacent residential neighborhoods. No additional nesting attempts by this hen were observed. This Snail Lake female had a much larger home range than other study turkeys; ranging from Snail Lake Regional Park to AHATS to residential areas west of Hamline Avenue. The study will continue until 2012.

Trumpeter Swan (*Cygnus buccinator*)

A pair of trumpeter swans with two cygnets was observed on Marsden Lake during June 2010; one survived to fall. Trumpeter swans are listed as a threatened species in Minnesota and have been monitored each year at Marsden Lake for presence and reproduction (Dirks et al. 2010 and Dirks and Dietz 2010) (Table 41). 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 swans.

Table 41. Trumpeter swans raised at Arden Hills Army Training Site, 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
2008	6
2009	1
2010	**1**
Total	**45**

Mammals

White-tailed Deer (*Odocoileus virginianus*) Aerial Survey

Historically, winter white-tailed deer populations at the AHATS and Twin Cities Army Ammunition Plant (TCAAP) properties have fluctuated from an estimated high of 400 in the late 1960s (Jordan et al. 1997) to 30 in 2001 and 2003. Overpopulation of deer may negatively impact vegetation and efforts to restore oak savannah, impact the vegetative structure required for military training, and cause hazards due to vehicle collisions along perimeter roadways. Aerial deer surveys are conducted annually to track population changes. The number of deer counted during winter deer surveys has increased in the past few years to a high of 124 in 2007. Although the properties are fenced, deer are not completely restricted from moving in and out of AHATS and TCAAP. Since control of the deer population at AHATS and the surrounding area occurs primarily on the training site, management of this population will rely primarily on hunting pressure. As the number of deer surveyed increased since 2003, the number of hunts and total number of deer harvested have also increased to try to keep the deer herd from becoming too large (See Hunting Programs section in this document for hunt data summaries). This year's survey was conducted at the AHATS and TCAAP properties on January 5, 2010 by John Moriarty, Ramsey County Parks and Recreation District. Seventy-two deer were counted during the survey (Table 42). The reduction in

Table 42. Aerial surveys of White-tailed deer at the Twin Cities Army Ammunition Plant and Arden Hills Army Training Site, 1999-2010.

Year	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Deer Counted	41	47	30	--	30	47	--	84	124	87	104	**72**

deer numbers is partially due to the harvest of deer in the fall of 2009 when 66 deer were harvested. This is the largest total number of deer harvested since the hunts began in 2003. This indicates that hunting pressure has aided reduction in deer numbers and is necessary to reduce and/or maintain the deer population.

Plains Pocket Mouse (*Perognathus flavescens*)

The plains pocket mouse is listed as a state special concern species. AHATS is the site of the only known plains pocket mouse population in Ramsey County. First documented at AHATS in 1995, this species has been located in 13 other counties in Minnesota and is the largest known population of pocket mice in the state (MNDNR Rare Species Guide 2009). The closest pocket mouse capture was in Anoka County, 10.5 miles from AHATS.

Figure 44. Plains pocket mouse habitat enhancement, Arden Hills Army Training Site, 2010.

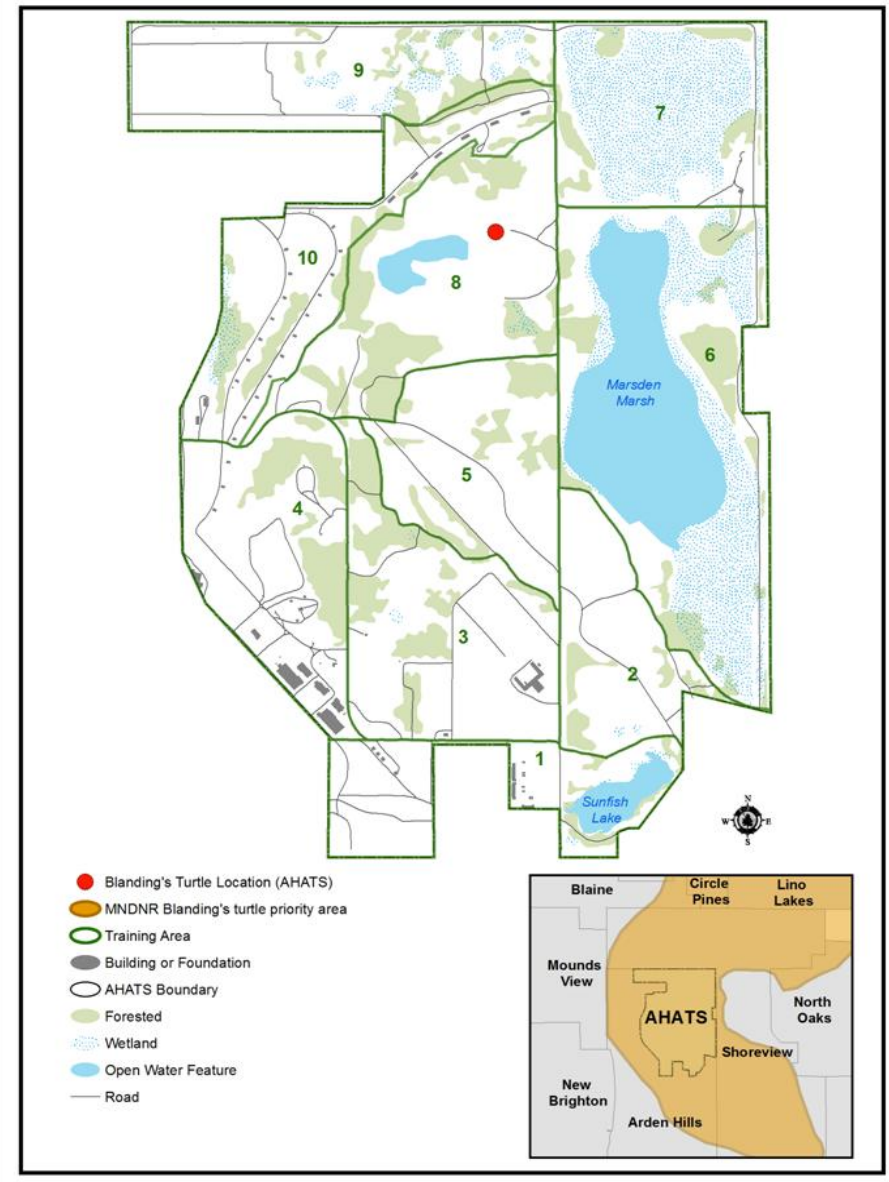
At AHATS, plains pocket mice are found in a gravel pit near Marsden Lake. The preferred habitat for the plains pocket mouse contains well-drained sandy soils, with sparse, grassy or brushy vegetation (Higgins et al. 2000 and MNDNR Rare Species Guide 2009). The vegetation around the gravel pit area is gradually becoming thicker due to lack of disturbance. At AHATS, thicker vegetation is more commonly inhabited by meadow voles and *Peromyscus* species. In order to maintain the amount of suitable habitat available for the plains pocket mouse at AHATS, vegetation manipulations need to be conducted. In October 2003, an ATV was used to drag a chain link harrow to partially remove vegetation in a 2,700 m^2 (0.67 acre) parcel of land north of the pocket mouse capture sites (Dirks and DeJong 2004). Plains pocket mice were live trapped in the 2003 disturbance area in both 2004 (Dirks and DeJong 2005) and 2009 (Dirks and Dietz 2010). Again, in October 2010, a similar location was disturbed using a grader whereby less than six inches of soil was scraped off the top to disturb the area and provide the necessary sparsely vegetated habitat (Figure 44). This work was conducted by Ramsey County public works during a training exercise. Plains pocket mice hibernate in underground burrows in winter, excavated summer burrows in Minnesota were all parallel to the surface at a depth of six to eight inches and burrows for winter hibernation are deeper (Hibbard and Beer 1960).

Reptiles and Amphibians

Blanding's Turtle (*Emys blandingii*)

The Blanding's turtle is listed as a state threatened species by the MNDNR. AHATS is part of a MNDNR designated Blanding's turtle priority area (Figure 45). Priority areas are the most important areas in the state for management, protection, and research of Minnesota's Blanding's turtle population. This species depends upon a variety of wetland types and sizes, and uses sandy upland areas for nesting. Surveys of Blanding's turtles have occasionally occurred at AHATS. Because nest predation is extremely high, road surveys are conducted in known Blanding's habitats to find and protect nests.

Figure 45. Blanding's turtle observation and MNDNR priority area, Arden Hills Army Training Site, 2010.

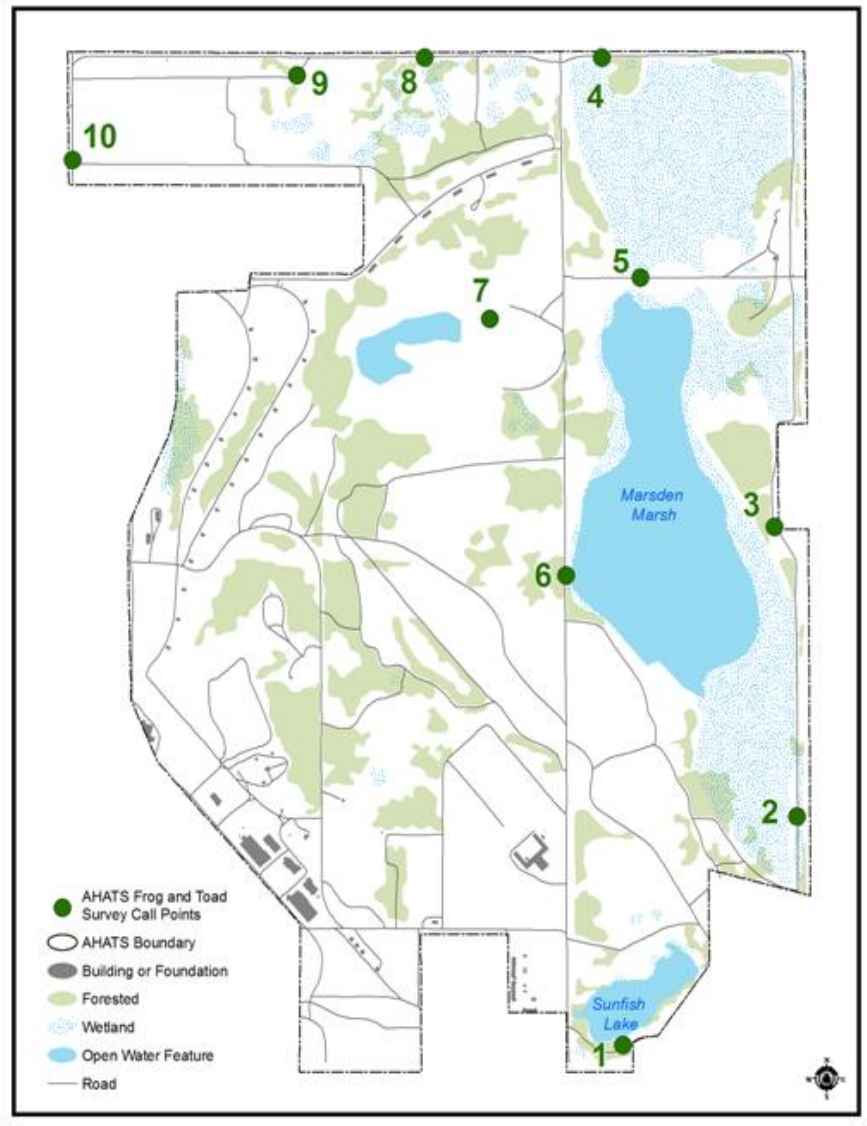


A Blanding's turtle road survey was conducted by a single observer on June 2 and 3, 2010 (22 hours). During the 2010 survey, one Blanding's turtle was observed in the gravel pit area on the east side of the lake (Figure 45). This previously marked female turtle (ID=CO or 3200) was greater than 19 years of age. The turtle did not initiate any nesting behavior but returned to a nearby pond. In addition, one snapping turtle nest was protected, and later hatched.

Anuran Surveys

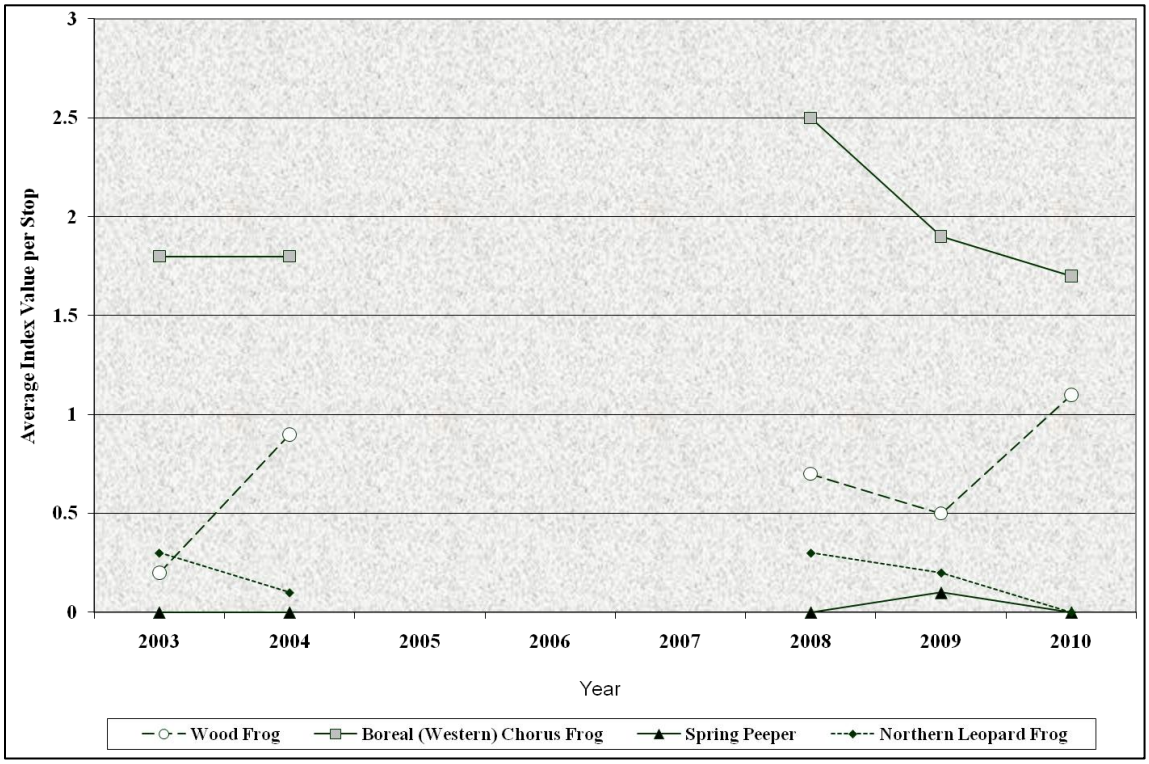
Frog and toad calling surveys are conducted as part of a larger statewide survey, and have been conducted at AHATS since 1993. The statewide survey began due to growing concern, for the past two decades, over declining amphibian populations worldwide. In addition, statewide data is contributed to the U.S. Geological Survey's North American Amphibian Monitoring Program. 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. The routes are surveyed three times from April through July (Figure 46).

Figure 46. Anuran survey stops at Arden Hills Army Training Site, 2010.



Surveys were conducted by John Moriarty, Ramsey County Parks and Recreation District on April 4, 2010. Spring weather conditions were unseasonably warm and survey times for the first and second survey time periods were moved ahead by a week or more. In 2010, AHATS was surveyed only during the first time period. Few spring peepers were detected (Figure 47). AHATS results are similar to the decrease in the proportion of routes statewide where spring peepers have been heard between 1998 and 2009 (Larson 2010a). Interpretation of AHATS results is difficult due to years when the anuran survey was not conducted. Based on the available data, wood frog and boreal chorus frog populations have remained stable during the 2000's.

Figure 47. Average anuran index value during the first survey period at Arden Hills Army Training Site, 2003, 2004, 2008-2010. Surveys were not conducted from 2005 to 2007.



Insects

Butterfly Survey

The St. Paul Audubon Society (20 observers, two groups) conducted their annual survey for butterflies at AHATS on Saturday, June 26, 2010. The survey began at 10:00 AM and was completed by 3:00 PM. Survey weather conditions were partly cloudy (26-50% overcast) with temperatures rising to 83° F. and winds 3 to 7 mph. One new species was observed, the gray comma (*Polygonia progne*) (Table 43). In 2010, the second observation of a painted lady *(Vanessa cardui)* occurred since it was first observation in 2001. More great spangled fritillaries (*Speyeria cybele*) were observed this year than in the previous three years, but significantly fewer common wood nymphs (*Cercyonis pegala*) were observed than in previous years. Twenty-three species were recorded for a total of 173 individuals. The variety of different species observed is similar to 2005 and 2009; however, there were more individuals in 2009 and 2010.

Table 43. Number of butterflies at Arden Hills Army Training Site, St. Paul Audubon Society, 2001-2010.

Common Name	Scientific Name	July 6, 2001	July 14, 2002	July 6, 2003	July 10, 2004	July 9, 2005	July 8, 2006	June 30, 2007	June 29, 2008	June 27, 2009	June 26, 2010
Black swallowtail	*Papilio polyxenes*	1				1	1	1			
Eastern tiger swallowtail	*Papilio glaucus*	4				2			2	1	
Swallowtail species	*species undetermined*	1		1							
Checkered white	*Pontia protodica*	3									
Cabbage white	*Pieris rapae*		5			1		5	5	2	**2**
"Whites"	*Pieris species*					1					
Clouded sulphur	*Colias philodice*	?	2	8		2	6	42			**10**
Orange sulphur	*Colias eurytheme*	100s	35	1	1	1		30			**6**
Dainty sulphur	*Nathalis iole*	1									
Sulphur species	*species undetermined*										**15**
American copper	*Lycaena phlaeas*		3				2	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						1	
Striped hairstreak	*Satyrium liparops*	1						1			
Hairstreak species	*species undetermined*			2						1	
Eastern tailed-blue	*Everes comyntas*	5	100's	4		6	32	34			**2**
Spring azure	*Celastrina ladon*									8	**6**
'Summer' spring azure	*Celastrina ladon neglecta*	4	1	3						8	**1**
Variegated fritillary	*Euptoieta claudia*	1		1							
Great spangled fritillary	*Speyeria cybele*	12	11	40	9	16	5	13	2	4	**17**
Aphrodite fritillary	*Speyeria aphrodite*	4	4	dozens	19	10	14	2	2	4	
Regal fritillary	*Speyeria idalia*										
Silver-bordered fritillary	*Boloria selene*										
Fritillary species	*species undetermined*	32	10	14	14+		14	28		14	**10**
Silvery checkerspot	*Chlosyne nycteis*				1						
Pearl crescent	*Phyciodes tharos*	11			1						
Northern crescent	*Phyciodes selenis*			7	2		1			1	
Northern pearl crescent	*Phyciodes selenis/tharos*					1	1	7	2		
Crescent species	*species undetermined*		2	4						6	**1**
Baltimore checkerspot	*Euphydryas phaeton*	15		6	13	5	4	10	1	3	**1**
Question mark	*Polygonia interrogationis*		1				2				
Silvery checkerspot	*Chlosyne nycteis*				1						
Eastern comma	*Polygonia comma*			1			3		2		**5**
Gray comma	***Polygonia progne***										**2**
Mourning cloak	*Nymphalis antiopa*	2	2	5	2	5		3	2	1	**2**
American lady	*Vanessa virginiensis*	6	2	1		1		4			
Painted lady	*Vanessa cardui*	5									**1**
Vanessa species	*species undetermined*		1								
Red admiral	*Vanessa atalanta*	12+		3			2	11			**3**
Common buckeye	*Junonia coenia*	7	1			1		6			
White admiral	*Limenitis arthemis arthemis*								3		
Red-spotted purple	*(Limenitis a . astyanax)*								1	1	
Viceroy	*Limenitis archippus*	1	2	5		1			2		
Hackberry emperor	*Asterocampa celtis*							2			
Northern pearly-eye	*Enodia anthedon*	2	4	7	1	5	9	5			**2**
Eyed brown	*Satyrodes eurydice*	46	15-20	22	3	5	32	26	1		**4**
Little wood satyr	*Megisto cymela*								2	7	**2**
Common ringlet	*Coenonympha tullia*	4							6	11	
Common wood nymph	*Cercyonis pegala*	dozens	dozens	100-	100+	36	104	173		44	**57**
Monarch	*Danaus plexippus*	11	10	11	1	17	64	38	4	10	**3**

Table 43. Number of butterflies at Arden Hills Army Training Site, St. Paul Audubon Society, 2001-2010.

Common Name	Scientific Name	July 6, 2001	July 14, 2002	July 6, 2003	July 10, 2004	July 9, 2005	July 8, 2006	June 30, 2007	June 29, 2008	June 27, 2009	June 26, 2010
Silver-spotted skipper	*Epargyeus clarus*	2	2	1	1	1	2	2		2	
Northern Cloudywing Skipper	*Thorybes pylades*									1	
Least skipperling	*Ancyloxypha numitor*									1	
European skipper	*Thymelicus lineola*	6		dozens	2	1		5	23	32	**17**
Peck's skipper	*Polites peckiums (=coras)*								2		
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			**2**
Skipper species	*species undetermined*				1		4	2	2	1	**3**
	Total Species*	35	26	32	17	23	20	32	18	22	**23**
	Total Individuals**				176	124	329	480	66	156	**173**

*a species of butterfly and all its subspecies are counted as a single species
**total individuals not available due to estimates

Other Wildlife Observations

During the St. Paul Audubon Society's butterfly count described above the surveyors also recorded incidental observations of bird species (Table 44).

Table 44. Bird species observed at Arden Hills Army Training Site, during St. Paul Audubon Society's annual butterfly survey, June 26, 2010.

Family	Scientific Name	Common Name
Ardeidae	*Ardea herodias*	Great blue heron
	Casmerodius albus	Great egret
Anatidae	*Branta canadensis*	Canada goose
	Cygnus buccinator	Trumpeter swan
Cathartidae	*Cathartes aura*	Turkey vulture
Accipitridae	*Pandion haliaetus*	Osprey
	Buteo platypterus	Broad-winged hawk
	Buteo jamaicensis	Red-tailed hawk
Strigidae	*Bubo virginianus*	Great horned owl
Columbidae	*Zenaida macroura*	Mourning dove
Picinae	*Melanerpes carolinus*	Red-bellied woodpecker
	Colaptes auratus	Northern flicker
Fluvicolinae	*Empidonax minimus*	Least flycatcher
Tyranninae	*Tyrannus tyrannus*	Eastern kingbird
Vireonidae	*Vireo olivaceus*	Red-eyed vireo
Hirundinidae	*Tachycineta bicolor*	Tree swallow
	Stelgidopteryx serripennis	Northern rough-winged swallow
Corvidae	*Cyanocitta cristata*	Blue jay
	Corvus brachyrhynchos	American crow
Paridae	*Parus atricaillus*	Black-capped chickadee

Table 44. Bird species observed at Arden Hills Army Training Site, during St. Paul Audubon Society's annual butterfly survey, June 26, 2010.

Family	Scientific Name	Common Name
Sittidae	*Sitta carolinesis*	White-breasted nuthatch
Polioptilidae	*Polioptila caerulea*	Blue-gray gnatcatcher
Troglodytidae	*Troglodytes aedon*	House wren
Turdidae	*Sialia sialis*	Eastern bluebird
	Turdus migratorius	American robin
Mimidae	*Dumetella carolinensis*	Gray catbird
	Toxostoma rufum	Brown thrasher
Sturnidae	*Sturnus vulgaris*	European starling
Parulidae	*Geothlypis trichas*	Common yellowthroat
Emberizidae	*Spizella pallida*	Clay-colored sparrow
	Spizella pusilla	Field sparrow
	Ammodramus savannarum	Grasshopper sparrow
	Melospiza melodia	Song sparrow
Cardinalidae	*Passerina cyanea*	Indigo bunting
Icteridae	*Agelaius phoeniceus*	Red-winged blackbird
	Molothrus ater	Brown-headed cowbird
Fringillidae	*Carduelis tristis*	American goldfinch
Passeridae	*Passer domesticus*	House sparrow

OUTREACH AND RECREATION

One of Arden Hills Army Training Site's missions is to add value to the community. The staff does this by being active in many special events, such as the National Public Lands Day where two common loon nesting platforms and a lean-to shelter were constructed through Eagle Scout projects. The nesting platforms were later installed at AHATS. In addition, St. Paul Audubon Society hosted a spring event for 27 participants to view American woodcock (*Scolopax minor*) courting displays at AHATS.

In 2008, AHATS along with the adjacent Rice Creek, was designated an Important Bird Area (IBA) by Audubon Minnesota, the state office of the National Audubon Society, and the MNDNR Nongame Program. The AHATS-Rice Creek Important Bird Area is one of 23 such areas in Minnesota, and part of 7,500 sites in nearly 170 countries. AHATS participated in the fourth annual Urban Bird Fest of Ramsey County from May 13-16, 2010 by hosting an afternoon bird hike on Friday, May 16. The tour hosted 83 participants and offered opportunities to a variety of birding skill levels. AHATS plans to participate in the Urban Bird Fest from May 12-15, 2011.

Hunting Programs

Deployed Soldiers Archery Wild Turkey Hunt

AHATS hosted its second Deployed Soldier archery turkey hunt on April 14-16 and April 21-23, 2010. The hunt was organized and conducted by the MNARNG-Environmental Office. Eleven hunters participated in two weekend turkey hunts. Seven hunters were successful, for a 64 percent success rate (Table 45).

Table 45. Deployed Soldiers wild turkey hunt at Arden Hills Army Training Site, 2009-2010.

Year	Turkeys Harvested	Hunter Success	Permits Issued	Number of Hunters	Dates	Largest Turkey (lbs)
2009	2	25%	8	8	April 15-17	20.9
2010	**5** **2**	**100%** **33%**	**10** **10**	**5** **6**	**April 14-16** **April 21-23**	**Unknown**

Deployed Soldiers Archery Deer Hunt

In 2010, the fifth annual deployed soldiers archery deer hunt was held on October 6 to 8, October 9 to 10, October 11 to 13, October 29 to October 31, and December 3 to 5. 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. One, two-day and four, three-day hunts were allowed. All 220 applicants for the AHATS deployed soldier hunts were allowed to hunt at least one of the five hunts (Table 46).

Table 46. Deployed soldier's archery white-tailed deer hunt at Arden Hills Army Training Site, 2006-2010.

Year	Deer Harvested	Buck	Does	Fawns	Number of Hunters
2006	7	2	5	0	33
2007	13	4	5	4	55
2008	21	7	10	4	102
2009	30	8	6	16	104
2010	**35**	**13**	**20**	**2**	**110**

Volunteer Archery Deer Hunt

The deployed soldiers archery deer hunts run smoothly due to Minnesota Deer Hunters Association and Minnesota State Archery Association volunteers. Seventy-nine volunteers that assisted with the youth and deployed soldier hunts were allowed access to hunt deer at AHATS November 26 to 28, 2010. Seventeen deer were harvested during the volunteer hunt (Table 47).

Table 47. Volunteer archery white-tailed deer hunt at Arden Hills Training Site, 2003-2010.

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
2008	22	3	17	2	33	Nov 28-30
2009	28	11	8	9	31	Nov 27-29
2010	**17**	**3**	**6**	**8**	**20**	**Nov 26-28**

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APPENDIX A. CAMP RIPLEY INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN UPDATED GOALS AND OBJECTIVES

CAMP RIPLEYADMINISTRATION						
Section / Year Created	**INRMP Goal**	**2010 Objective**	**Objective Created**	**2010 Objective Status**	**2011 Update**	**Update Created**
INRMP **1/1/2003**	**Ensure adequate funding and resources to implement Camp Ripley's Conservation program**	**Maintain 4 DMA Staff to support the implementation of the Conservation and ITAM Programs at Camp Ripley**	**1/1/2003**	**Completed**	**Maintain four MNARNG Staff to support the implementation of the Conservation and Integrated Training Area Management (ITAM)Programs at Camp Ripley.**	**11/17/2010**
		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	**1/1/2003**	**Completed**	**Update and execute a 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.**	**11/17/2010**
		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**	**In Progress**	**Conduct an annual meeting of the Natural Resources Planning Committee to review the annual work plans and for presenting an annual update of INRMP accomplishments from the preceding year**	**11/17/2010**
		Annually integrate long-range natural resources planning with site development planning for the military mission	**1/1/2003**	**In Progress**	**Annually integrate long-range natural resources planning with site development planning for the military mission**	**11/17/2010**

CAMP RIPLEYADMINISTRATION

Section / Year Created	INRMP Goal	2010 Objective	Objective Created	2010 Objective Status	2011 Update	Update Created
		In 2010 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)	1/1/2003	Current Contracts: MNDNR-Ecological & Water Resources 1.6 employees SCSU-GIS-1 employee SCSU-TNC 1 land steward, 2 crew members.	In 2011, 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)	11/17/2010
		Maintain administration of the INRMP development, implementation, and updating through the Environmental Office.	1/1/2003	In Progress	Maintain administration of the INRMP development, implementation, and updates through the Camp Ripley Environmental Office.	11/17/2010
		Complete an annual Conservation-INRMP update report. Update , review and obtain signatures at annual meeting with MNDNR and USFWS	12/10/2008	In Progress	Complete an annual Conservation-INRMP update report. Update, review and obtain signatures at annual meeting with MNDNR and USFWS.	11/17/2010
		In 2010 continue to implement Land Fund Projects	12/10/2008	In Progress	In 2011 continue to implement land fund projects.	11/17/2010
		Develop and maintain a work plan of ITAM projects in the WAM that support the INRMP implementation	2010	In Progress	Develop and maintain a work plan of ITAM projects in the WAM that support the INRMP implementation.	11/17/2010
		Develop and maintain a work plan of environmental projects in the STEP that support the INRMP implementation	2010	Completed	Develop and maintain a work plan of environmental projects in the STEP that support the INRMP implementation.	11/17/2010

CAMP RIPLEYADMINISTRATION						
Section / Year Created	**INRMP Goal**	**2010 Objective**	**Objective Created**	**2010 Objective Status**	**2011 Update**	**Update Created**
		Develop and maintain a work plan of wild land fire projects in the Fire and Emergency Services Program that support the INRMP implementation	**2010**	**Completed**	**Develop and maintain a work plan of wildland fire projects in the Fire and Emergency Services Program that support the INRMP implementation**	**11/17/2010**

CAMP RIPLEY FORESTRY						
Section / Year Created	**INRMP Goal**	**2010 Objectives**	**Objective Created**	**2010 Objective Status**	**2011 Update**	**Update Created**
Forestry **12/8/2009**	**Update the Camp Ripley forest management plan to include progress/action since initial plan dated 2002.**	**In 2010, update the Camp Ripley forest management plan to include progress/action since initial plan dated 2002.**		**Complete in annual Conservation Program Report**	**In 2011, update the Camp Ripley forest management plan to include progress/action since initial plan dated 2002.**	**11/17/2010**
		In 2010, develop a 5-year work plan for land fund expenditures as it relates to forest management plan.		**DNR completed 10-year land fund plan, Camp Ripley staff reviewed plan out to 2012 for land fund expenditures**	**Review years 2013-14 of 10-year land fund plan, coordinate with military staff to ensure common consensus.**	**11/17/2010**
		In 2010 develop a landscape management element for the cantonment area.		**CRC-SE role complete**	**Facilities Management Office and Grounds responsibility.**	**11/17/2010**
Forestry **1/1/2003**	**Maintain Forest Vegetation Inventory for land management planning, and for monitoring changes**	**In 2011 update aerial imagery.**	**12/10/2008**	**To be completed**	**In 2011, complete aerial imagery in spring or fall.**	**11/17/2010**

CAMP RIPLEY FORESTRY

Section / Year Created	INRMP Goal	2010 Objectives	Objective Created	2010 Objective Status	2011 Update	Update Created
		In 2010 Little Falls DNR Forestry will verify, measure, and evaluate changes to the forest landscape attributed to annual alterations.	12/10/2008	Completed	In 2011, Little Falls DNR Forestry will verify, measure, and evaluate changes to the forest landscape attributed to annual alterations.	11/17/2010
		In 2010 Re-inventory through field verification additional forest stands so that along with alterations a minimum 4000 acres of the forested area is updated annually.	12/10/2008	Completed, in 2010 re-inventoried 2,324 acres for a total re-inventory of 26,113 acres	Complete 26,000 acres of re-inventory through field verification in 2011.	11/17/2010
		In 2010 conduct LIDAR assessment of timber resources and utilize data to verify forest inventory, update LIDAR in 5 year rotation, next update in 2013.	12/22/2008	In progress	Update LiDAR in 5 year rotation, next update in 2013.	11/17/2010
Forestry 1/1/2003	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	Encourage clear cutting on aspen stands identified through DFC determination to be part of Installation aspen base.	12/10/2008	Completed and Ongoing	Encourage clear cutting on aspen stands identified through DFC determination to be part of Installation's aspen base.	11/17/2010
		In 2010 develop and implement management recommendations for each site and continue to develop mission-scape to characterize the landscape as it supports the military mission of Camp Ripley.	12/10/2008	In Progress	In 2011, develop and implement management recommendations for each site and continue to develop mission-scape to characterize the landscape as it supports the military mission of Camp Ripley.	11/17/2010

CAMP RIPLEY FORESTRY

Section / Year Created	INRMP Goal	2010 Objectives	Objective Created	2010 Objective Status	2011 Update	Update Created
		In 2010 implement a timber cut for an additional maneuver corridor in Maneuver K1	12/10/2008	2 Completed 1 Planned	In 2011, plan one timber cut for maneuver K1 and plan land conditioning for prior cuts.	11/17/2010
		In 2010 assess conifer plantings within the Mississippi and Crow Wing River corridors as visual and noise buffers to the increasing numbers of homeowners developing along the river shores.	12/22/2008		Rejected, need to revisit with the possibility of needing to create riparian buffer plan.	11/17/2010
Forestry 1/1/2003	Balance forest diversity on the Training Site by maintaining the integrity of the historic representation of forest composition	In 2010, assess the white pine type by component in those stands where the species is represented as a subsidiary species or part of the understory.	12/10/2008	Not completed, need to complete forest inventory	In 2011, use recently gathered forest inventory to assess the white pine type by component in those stands where the species is represented as a subsidiary species or part of the understory.	11/17/2010
		In 2010, implement a reforestation project using the land fund account for the reforestation of jack pine.	12/10/2008	Completed and ongoing	In 2011, implement a reforestation project using the land fund account for the reforestation of jack pine.	11/17/2010
				New objective	In 2011, coordinate with all possibly involved departments a common long-term goal for the desired future condition of the jack pine stands located in the northwest corner of Camp Ripley.	10/27/2010
				New objective	In 2011, identify adaptive forest management strategies to protect and regenerate the oak stands within desired areas.	10/27/2010

CAMP RIPLEY FORESTRY

Section / Year Created	INRMP Goal	2010 Objectives	Objective Created	2010 Objective Status	2011 Update	Update Created
		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.	12/10/2008	Need complete assessment of butternut status on training site	In 2011, develop a monitoring system to assess the presence and condition of butternut trees. A potential cooperative research study promoted by the U.S. Forest Service- North Central Station, MNDNR, TNC, and Camp Ripley, examining the potential of phenotypic disease resistance in the population to butternut canker.	11/17/2010
		In 2010, continue to collect native seed from Camp Ripley to promote regeneration of proper white pine and jack pine genotype.	12/22/2008	Not completed, dependent on next jack pine harvest	In 2011, arrange an a agreement between Camp Ripley and DNR forestry/nursery to collect native tree seed in exchange for tree seedlings in return.	11/17/2010
Forestry 1/1/2003	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-Eco Resources Division	Maintain committed partnership with The Nature Conservancy, sharing as an adjoining landholder, through common planning efforts and cross-linked goal emphasis.	12/10/2008	Partnership remains committed	Maintain committed partnership with The Nature Conservancy, sharing as an adjoining landholder, through common planning efforts and cross-linked goal emphasis.	11/17/2010
		Continue environmental reviews of all harvest activities (as part of the stand exam process) and implement BMP where needed.	12/10/2008	Completed	Delete this objective, covered in other objectives	11/17/2010

CAMP RIPLEY FORESTRY

Section / Year Created	INRMP Goal	2010 Objectives	Objective Created	2010 Objective Status	2011 Update	Update Created
		Control invasive exotic species within the forest ecosystem for the purpose of improving and sustaining training area lands and eradication of exotic species.	12/10/2008	Not completed, current exotic program deals directly with grasslands, very little overlap for forested areas.	In 2011, work with DNR forestry and TNC to develop a monitoring protocol and schedule for exotic species threatening forested area within Camp Ripley.	11/17/2010
Forestry 1/1/2003	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 TAC, and set forth through Statutory authority or DOD regulation	In Jan 2011, submit a 2 year harvest plan to Camp Ripley for review.	12/8/2009	In progress	In January 2011, review a 2-year harvest plan for Camp Ripley.	11/17/2010
		Maintain a single point of contact as the MNDNR forester for all timber sales, firewood permits, or stand treatment contracts. Internal communications should be through the Training Area Coordinator.	12/10/2008	Completed and ongoing	Maintain a single point of contact as the MNDNR forester for all timber sales, firewood permits, or stand treatment contracts. Internal communications should be through the Training Area Coordinator.	11/17/2010

CAMP RIPLEY FORESTRY

Section / Year Created	INRMP Goal	2010 Objectives	Objective Created	2010 Objective Status	2011 Update	Update Created
		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.	12/10/2008	Completed and ongoing	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.	11/17/2010
		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.	12/10/2008	Complete and ongoing	Respond to Site Development Plan proposals as first priority for planning and execution with commercial timber sales given first option for work projects for MNDOC-Sentence-to-Serve and MNDNR-MCC.	11/17/2010
				New objective	Participate in planning initiative for landscape planning as part of forest stewardship grant sponsored by Minnesota Forest Resources Council.	11/17/2010
Forestry 1/1/2003	Monitor fire danger levels and control wildfires	In 2010 implement the wild land fire management plan.	12/10/2008	Complete and ongoing	In 2011, implement the wildland fire management plan.	11/17/2010

CAMP RIPLEY GRASSLANDS

Section/ Goal Created	INRMP Goal	2010 Objectives	Objective Created	2010 Objective Status	2011 Update	Update Created
Grasslands 1/1/2003	Restore and manage the grassland communities for the purposes of military training, protection of species, native prairie restoration, and soil stabilization	In 2010, evaluate and prioritize the grassland compartments for management needs based on previous year's assessments.	12/11/2008	In progress, nearing completion. 10-28-10	In 2011, evaluate and prioritize the grassland compartments for management needs based on previous years assessments.	10/13/2010
				New Objective	In 2011, develop a BMP for controlling invasive plants (Malone et al. 2010) within Camp Ripley	10/28/2010
		In 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 - exotic species within the grassland ecosystem for the purpose of improving and sustaining training area lands.	12/11/2008	In progress, 2 units to burn, but weather dependent. 10-28-10	In 2012-2013 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 - exotic species (Malone et al. 2010) within the grassland ecosystem for the purpose of improving and sustaining training area lands.	10/13/2010
				New Objective	In 2011, based on the RTLA assessments, burn the following units – B-2-17, B-3-18, B-3-19, D-18-47, D-35-12, K-1-68-82, I-58-51, I-64-77, I-64-78, I-64-79, F-44-57, and D-20-18.	10/28/2010

CAMP RIPLEY IMPROVED GROUNDS

Section / Goal Created	INRMP Goal	2010 Objectives	Objective Created	2010 Objective Status	2011 Update	Update Created
Improved Grounds 1/1/2003	Protect and develop improved grounds for functional and aesthetic qualities in the Cantonment area of Camp Ripley.	In 2010 develop a landscape management plan to include maps, assessments and guidelines for maintenance, improvements and tree location.	3/26/2008	Completed and in FMO's responsibility	In 2012, review the 2010 plan for revisions.	11/17/2010
		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	In progress, inspected but trees need to be taken down.	Annually inspect cantonment trees for dead, dying or high-risk trees and have them removed.	10/13/2010
		Reference cantonment landscape plan regarding location and need of nursery to supply landscaping needs.	3/26/2008	In progress	Reference cantonment landscape plan regarding location and need of nursery to supply landscaping needs.	10/12/2010
		In 2010 implement control measures identified in findings for the protection of the improved grounds in the cantonment area.	3/26/2008	In progress	In 2011, implement management recommendations identified for the protection of the improved grounds in the cantonment area.	10/12/2010

CAMP RIPLEY LAND USE

Section / Goal Created	INRMP Goal	2010 Objectives	Objective Created	2010 Objective Status	2011 Update	Update Created
Land Use 1/1/2003	Identify and develop land use opportunities for the public	In 2010 conduct two, two-day general public bow hunts for white-tailed deer in cooperation with MNDNR Division of Wildlife.	12/9/2008	Completed, October 21-22, 30-31	In 2011 conduct two, two-day general public bow hunts for white-tailed deer in cooperation with MNDNR, Section of Wildlife.	10/28/2010
		In 2010 conduct the two- day youth archery deer hunt in cooperation with MNDNR Wildlife.	12/9/2008	Completed October 9-10	In 2011, conduct a two- day youth archery white-tailed deer hunt in cooperation with MNDNR, Section of Wildlife.	10/28/2010
		In 2010, conduct a two-day Disabled American Veterans deer hunt.	12/9/2008	Completed October 6-7	In 2011, conduct a two-day Disabled American Veterans white-tailed deer hunts.	10/28/2010
		In 2010, conduct a two-day deployed soldier deer hunt.	12/9/2008	Completed October 6-7	In 2011, conduct a two-day deployed soldier archery white-tailed deer hunt.	10/28/2010
				New Objective	In 2011, implement a three-day deployed soldier muzzleloader white-tailed deer hunt.	10/28/2010
		In 2010, conduct a two-day, Disabled American Veterans turkey hunt.	12/9/2008	Completed	In 2011, conduct a two-day, Disabled American Veterans wild turkey hunt.	10/28/2010
		In 2010, conduct a 3-day deployed soldier turkey hunt.	12/9/2008	Completed	In 2011, conduct two, 2-day deployed soldier wild turkey hunt.	10/28/2010
		In 2010 continue to conduct other non-motorized public recreation events such as skiing, nature hikes, touring, or dog-trialing as opportunities arise.	12/9/2008	In progress	In 2011, continue to conduct other non-motorized public recreation events such as skiing, nature hikes, or touring as opportunities arise.	10/28/2010

CAMP RIPLEY LAND USE

Section / Goal Created	INRMP Goal	2010 Objectives	Objective Created	2010 Objective Status	2011 Update	Update Created
		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.	12/9/2008	Completed	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.	10/28/2010
		In 2010 maintain approximately 21.5 miles of cross-country ski trails.	12/9/2008	Completed	In 2011, maintain approximately 21.5 miles of cross-country ski trails.	10/28/2010
		Conduct a biathlon race biennially.	12/9/2008	In progress	Conduct a biathlon race biennially.	10/28/2010
		In 2010, continue to negotiate with Minnesota Power regarding the use and management of the Minnesota Power land located on the northern edge of Camp Ripley just south of the Crow Wing River.	12/9/2008	In progress	In 2011, continue to negotiate with Minnesota Power regarding the use and management of the Minnesota Power land located on the northern edge of Camp Ripley adjacent to the Crow Wing River.	10/28/2010
		In 2010, develop a new boat access in Fosdick Lake to improve fishing access.	12/9/2008	In progress	In 2011, develop a new boat access in Fosdick Lake to improve fishing access.	10/28/2010
Land Use 3/26/2008	Minimize land use conflicts on and off the installation	Annually enroll 5-10 landowners in the ACUB Program.	12/9/2008	In progress, enrolled 12 landowners	Annually enroll 5-10 landowners in the ACUB Program.	10/28/2010
		Continue to partner with MNDNR and MNBWSR to implement ACUB.	12/9/2008	In progress	Continue to partner with MNDNR and MNBWSR to implement ACUB.	10/28/2010

CAMP RIPLEY LAND USE

Section / Goal Created	INRMP Goal	2010 Objectives	Objective Created	2010 Objective Status	2011 Update	Update Created
		In 2010 continue to secure funding to implement ACUB and annually enroll about 1000 acres of land in the program.	12/22/2008	In progress	In 2011, continue to secure funding to implement ACUB and annually enroll about 1,000 acres of land in the program.	10/28/2010
		In 2010, work with The Nature Conservancy on a land transfer regarding the Crow Wing River property owned by Minnesota Power.	12/9/2008	In progress, need to meet with TNC	In 2011, work with The Nature Conservancy on a land transfer regarding the Crow Wing River property owned by Minnesota Power.	10/28/2010
		Continue to develop partnerships to protect natural resources around Camp Ripley.	12/9/2008	In progress	Continue to develop partnerships to protect natural resources around Camp Ripley.	10/28/2010
		In 2010 pursue other state funding in support of ACUB including the Lessard-Sams Outdoor Heritage Fund	2009	In progress, received $843,000 from Lessard-Sams Outdoor Heritage Fund	In 2011, continue to pursue other state funding in support of ACUB including the Lessard-Sams Outdoor Heritage Fund	10/28/2010

CAMP RIPLEY WILDLIFE-MAMMALS

Section / Goal Created	INRMP Goal	2010 Objectives	Objective Created	2010 Objective Status	2011 Update	Update Created
Wildlife 1/1/2003	Maintain white-tailed deer population levels consistent with biological diversity, carrying capacity, and military training needs	In 2011, to harvest at least 400 white-tailed deer.	12/8/2009	Hunts harvested 574 white-tailed deer, see Outreach and Recreation Section	In 2011, harvest at least 400 white-tailed deer.	12/15/2010

CAMP RIPLEY WILDLIFE-MAMMALS

Section / Goal Created	INRMP Goal	2010 Objectives	Objective Created	2010 Objective Status	2011 Update	Update Created
Wildlife 3/26/2008	Continue to monitor the reproductive success, movements, and mortality of black bears on Camp Ripley	In 2010, monitor the seven bears that are currently collared.	12/9/2008	Ongoing project, see 2010 black bear section. Bear #2610 died in November 2010. Bears #2113 & #2115 lost.	In 2011, monitor the seven bears that are currently collared.	12/15/2010
		In 2010, continue to monitor nuisance bear activity in accordance with the range regulations.	12/9/2008	No nuisance bear activity reported in 2010.	In 2011, continue to monitor nuisance bear activity in accordance with the range regulations.	12/15/2010
Wildlife 1/1/2003	Monitor populations of furbearers for comparison with state and regional data	In 2010, conduct MNDNR scent-post surveys on Camp Ripley.	12/9/2008	Not completed, insufficient professional staff	In 2011, conduct MNDNR scent-post surveys on Camp Ripley.	12/15/2010
		In 2010, continue our portion of the state-wide fisher study.	12/9/2008	Student volunteer fisher trappers, captured 5 fishers, 4 radio-collared in 2010. See 2010 report.	In 2011, continue our portion of the statewide fisher study.	12/15/2010
		In 2009-2010, use LiDAR to estimate vegetation structure within delineated home ranges and around den sites to determine habitat use.		Completed via fisher graduate student, see 2010 report.	In 2011-2012, use LiDAR to estimate vegetation structure within delineated home ranges and around den sites to determine habitat use.	12/15/2010
RTLA-Fauna 1/1/2003	Monitor fauna (Birds, Mammals, and Reptiles and Amphibians) resources on Camp Ripley	In 2010, research monitoring protocol for small mammals on core plots.	12/11/2008	Not completed, insufficient professional staff.	Delete Objective	12/15/2010
Wildlife 1/1/2003	Manage beaver populations at Camp Ripley	In 2010, install six Clemson levelers and two deceivers in problem areas to prevent the washout of dikes and roads and submit DPW work orders.	12/9/2008	Work orders submitted, work not completed.	In 2011, install six Clemson levelers and two deceivers in problem areas to prevent the washout of dikes and roads, replace broken levelers/deceivers, and submit DPW work orders.	12/15/2010

CAMP RIPLEY WILDLIFE-MAMMALS

Section / Goal Created	INRMP Goal	2010 Objectives	Objective Created	2010 Objective Status	2011 Update	Update Created
		In 2010, obtain a permit to remove nuisance beaver, as needed.	12/9/2008	78 nuisance beaver removed in 2010; see 2010 report.	In 2011, obtain a permit to remove nuisance beaver, as needed.	12/15/2010
		In 2010, implement nuisance beaver management guidelines, as outlined in permit.	12/9/2008	Outlined in current permit.	In 2011, implement nuisance beaver management guidelines, as outlined in permit.	12/15/2010
Wildlife 3-26-2008	Manage porcupine populations at Camp Ripley	In 2010, obtain a permit to target problems areas for porcupines and harvest nuisance porcupines.	12/9/2008	No nuisance porcupines were removed in 2010.	In 2011, obtain a permit to target problem areas for porcupines and harvest nuisance porcupines.	12/15/2010

CAMP RIPLEY WILDLIFE-BIRDS

Section / Goal Created	INRMP Goal	2010 Objectives	Objective Created	2010 Objective Status	2011 Update	Update Created
Wildlife 1/1/2003	Monitor bird populations on Camp Ripley	In 2010, complete a selected subset of 80 point-count survey based upon LiDAR and/or bird population needs.	12/9/2008	Not completed, insufficient professional staff.	In 2011, complete a selected subset of 80 point-count survey plots based upon LiDAR and/or bird population needs.	12/15/2010
		In 2010, establish new bird point count plots and develop sampling technique to capture full range of vegetative structure of 12 focal bird species to improve predictive ability of songbird models.		Not completed, insufficient professional staff.	In 2011, establish new bird point count plots and develop sampling technique to capture full range of vegetative structure of 12 focal bird species to improve predictive ability of songbird models.	12/15/2010

CAMP RIPLEY WILDLIFE-BIRDS

Section / Goal Created	INRMP Goal	2010 Objectives	Objective Created	2010 Objective Status	2011 Update	Update Created
		In 2010, continue to analyze INRMP bird survey data, including population and species diversity trends, habitat comparisons and correlations with types and intensities of use, and management guidelines using LIDAR comparisons.	12/9/2008	Ongoing	In 2011, continue to analyze INRMP bird survey data, including population and species diversity trends, habitat comparisons and correlations with types and intensities of use, and management guidelines using LIDAR comparisons.	12/15/2010
		In 2010, continue to annually update species lists of birds found on Camp Ripley.	12/9/2008	Ongoing	In 2011, continue to annually update species lists of birds found on Camp Ripley.	12/15/2010
		In 2010, monitor grouse populations on Camp Ripley via spring drumming counts.	12/9/2008	Completed, see 2010 report.	In 2011, monitor grouse populations on Camp Ripley via spring drumming counts.	12/15/2010
				New Objective, see 2010 report.	In 2011-2014, participate in the Minnesota Breeding Bird Atlas project.	12/15/2010
				New Objective, see 2010 report	In 2011, investigate potential causes of red-eyed vireo population decline on Camp Ripley and future research needs.	12/15/2010
Wildlife 1/1/2003	Continue to make bluebird-nesting boxes available for cavity nesting songbird species at the Camp Ripley Cemetery	In 2010, monitor and maintain 27 bluebird nest structures.	12/9/2008	DeAnna Gehant, volunteer, monitored 27 nest boxes at Veterans Cemetery and Cantonment Area in 2010. See 2010 report.	In 2011, monitor and maintain 27 bluebird nest structures.	12/15/2010
Wildlife 1/1/2003	Monitor raptor populations on Camp Ripley	In 2010, participate in the statewide survey for owls.	12/9/2008	Not completed, insufficient professional staff.	In 2011, participate in the statewide survey for owls.	12/15/2010

CAMP RIPLEY WILDLIFE-BIRDS

Section / Goal Created	INRMP Goal	2010 Objectives	Objective Created	2010 Objective Status	2011 Update	Update Created
		In 2010, monitor nesting success of ospreys on Camp Ripley.	12/9/2008	Completed; see 2010 report.	In 2011, monitor nesting success of ospreys on Camp Ripley.	12/15/2010
Wildlife 1/1/2003	Maintain species diversity, distribution of waterfowl populations within Camp Ripley	In 2010, recruit volunteer/s to monitor productivity and maintain 35 wood duck nest structures.	12/9/2008	Beth Walters, volunteer, monitored wood duck houses, see 2010 report.	In 2011, recruit volunteer/s to monitor productivity and maintain 35 wood duck nest structures.	12/15/2010
Wildlife 1/1/2003	To protect waterfowl from potential injury due to ingestion of white phosphorus munitions compounds in the impact areas.	Maintain the ban on the firing of white phosphorus munitions into wetland located in the Leach and Hendrickson impact areas indefinitely.	12/9/2008	Ongoing	Maintain the ban on the firing of white phosphorus munitions into wetland located in the Leach and Hendrickson impact areas indefinitely.	12/15/2010
		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.	12/9/2008	Ongoing	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.	12/15/2010
Wildlife 1/1/2003	Control nuisance bird problems	In 2010, establish a BASH plan and provide training on wildlife deterrent devices-techniques used near airfields.		BASH plan completed, delete objective		12/15/2010

CAMP RIPLEY REPTILES AND AMPHIBIANS-INVERTEBRATES-FISHERIES

Section / Goal Created	INRMP Goal	2010 Objectives	Objective Created	2010 Objective Status	2011 Update	Update Created
Reptiles & Amphibians 1/1/2003	Continue to monitor the presence and abundance of reptiles and amphibians	In 2010, at appropriate professional staffing, review effectiveness of drift-fence surveys. Investigate alternative methods for 2011.	12/9/2008	Not Completed due to insufficient professional staffing	In 2011, with appropriate professional staffing, review effectiveness of drift-fence surveys. Investigate alternative methods for 2012.	12/15/2010
		In 2010, participate in statewide annual anuran call surveys.	12/9/2008	Completed, see 2010 report.	In 2011, participate in statewide annual anuran call surveys.	12/15/2010
Invertebrates 1/1/2003	Continue to monitor the presence and abundance of terrestrial and aquatic invertebrates	In 2010, with appropriate professional staffing, determine need for additional invertebrate surveys and establish schedule.	12/9/2008	Not Completed due to insufficient professional staffing	In 2011, with appropriate professional staffing, determine need for additional invertebrate surveys and establish schedule.	12/15/2010
Fisheries 1/1/2003	Protect, establish, manage and enhance the fisheries resources at Camp Ripley	In 2010, implement management recommendations for each lake management plan.	12/9/2008	Completed	In 2011, implement management recommendations for each lake management plan.	12/15/2010
		Annually, continue population enhancement through fish stocking as deemed by lake management plans.	12/9/2008	Completed, 340 walleye fingerlings where placed into Ferrell Lake	Annually, continue population enhancement through fish stocking as deemed by lake management plans.	12/15/2010
		Continue creel census program through range control for all fishable areas on and adjacent to Camp Ripley.	12/9/2008	In Progress	Continue creel census program through range control for all fishable areas on and adjacent to Camp Ripley.	12/15/2010
		Continue to allow fishing opportunities as training permits.	12/9/2008	Completed	Continue to allow fishing opportunities as training permits.	12/15/2010

CAMP RIPLEY REPTILES AND AMPHIBIANS-INVERTEBRATES-FISHERIES						
Section / Goal Created	**INRMP Goal**	**2010 Objectives**	**Objective Created**	**2010 Objective Status**	**2011 Update**	**Update Created**
		In 2012, complete a lake survey, by spring trapping of Lake Alott, Ferrell and Fosdick lakes.	12/9/2008	To be determined	In 2012, complete a lake survey, by spring trapping of Lake Alott, Ferrell and Fosdick lakes.	12/15/2010
Fisheries 1/1/2003	Continue to allow a rearing program by MNDNR fisheries in Camp Ripley	In 2010, coordinate fish rearing activities on lake and pond use at Camp Ripley.	12/9/2008	Completed, no fish removed from Camp Ripley ponds in Fall of 2010	In 2011, coordinate fish rearing activities on lakes and ponds used at Camp Ripley.	12/15/2010

CAMP RIPLEY PROTECTED SPECIES (includes Federal Threatened and Endangered, State Threatened and Endangered, Species in Greatest Conservation Need (SGCN))						
Section / Goal Created	**INRMP Goal**	**2010 Objectives**	**Objective Created**	**2010 Objective Status**	**2011 Update**	**Update Created**
T & E Species 1/1/2003	Manage and protect species that are listed as threatened or endangered by the federal government or species listed by the State of Minnesota	In 2010, continue to monitor resident and transient threatened and endangered species that may be present at Camp Ripley and implement management recommendations as noted in the Protected Species Management Plan (Dirks et al. 2010), as funding allows.	12/9/2008	Ongoing	In 2011, continue to monitor resident and transient threatened and endangered species that may be present at Camp Ripley and implement management recommendations as noted in the Protected Species Management Plan (Dirks et al. 2010), as funding allows.	12/15/2010

CAMP RIPLEY PROTECTED SPECIES
(includes Federal Threatened and Endangered, State Threatened and Endangered, Species in Greatest Conservation Need (SGCN))

Section / Goal Created	INRMP Goal	2010 Objectives	Objective Created	2010 Objective Status	2011 Update	Update Created
		In 2010, capture and monitor gray wolf populations and movements via radio telemetry (Dirks et al. 2010).	12/9/2008	Ongoing, captured & radio-collared six wolves and monitored. See 2010 report.	In 2011, capture and monitor gray wolf populations and movements via radio telemetry (Dirks et al. 2010).	12/15/2010
		In 2010, monitor wolf mortality incidences and conduct necropsies on dead wolves (Dirks et al. 2010).	12/21/2009	No wolf mortality documented in 2010.	In 2011, monitor wolf mortality incidences and conduct necropsies on dead wolves (Dirks et al. 2010).	12/15/2010
		In 2010, monitor location/s and protect wolf rendezvous sites (Dirks et al. 2010).	12/21/2009	No wolf rendezvous site/s located in 2010.	In 2011, monitor location/s and protect wolf rendezvous sites (Dirks et al. 2010).	12/15/2010
		In 2010, protect any known wolf den site/s (Dirks et al. 2010).	12/21/2009	No wolf den site/s located in 2010.	In 2011, protect any known wolf den site/s (Dirks et al. 2010).	12/15/2010
		In 2010, continue to monitor bald eagle nests and provide protection to nests in accordance with the ARNG eagle policy guidance and biological opinion for North Range (Dirks et al. 2010).	12/9/2008	Completed six territories monitored on Camp Ripley, see 2010 report.	In 2011, continue to monitor bald eagle nests and provide protection to nests in accordance with the ARNG eagle policy guidance (Dirks et al. 2010).	12/15/2010
		In 2010, conduct monthly bald eagle breeding season aerial surveys (April – July) (Dirks et al. 2010).	12/21/2019	Completed see 2010 report.	In 2010, conduct monthly bald eagle breeding season aerial surveys (April – July) (Dirks et al. 2010).	12/15/2010
				New Objective	In 2011-2013, monitor the East Boundary bald eagle nest territory once weekly between January 1 and March 1, and every three weeks after March 1, per bald eagle take permit.	12/15/2010

CAMP RIPLEY PROTECTED SPECIES
(includes Federal Threatened and Endangered, State Threatened and Endangered, Species in Greatest Conservation Need (SGCN))

Section / Goal Created	INRMP Goal	2010 Objectives	Objective Created	2010 Objective Status	2011 Update	Update Created
		In 2010, monitor bald eagle mortalities and determine cause (Dirks et al. 2010).	12/21/2009	One injured and no bald eagle mortalities during 2010, see 2010 report.	In 2011, monitor bald eagle mortalities and determine cause (Dirks et al. 2010).	12/15/2010
		In 2010, investigate and secure a 5-year programmatic agreement (take permit) for bald eagles on Camp Ripley (Dirks et al. 2010).	12/9/2009	Investigated, awaiting response from USFWS.	In 2011, track application progress of a 5-year programmatic agreement (take permit) for bald eagles on Camp Ripley (Dirks et al. 2010).	12/15/2010
		Educate users about the presence and importance of protected species	12/9/2008	Revised range regulations and bulletin	Educate users about the presence and importance of protected species	12/15/2010
		In 2010, continue to determine the presence/absence of the Canada lynx (Dirks et al. 2010) by using Envirotel's cougar detection system (hair sampling).	12/9/2008	Completed - Ongoing	In 2011, continue to determine the presence/absence of Canada lynx (Dirks et al. 2010).	12/15/2010
		In 2010, continue a monitoring program for Blanding's turtles (Dirks et al. 2010).	12/9/2008	Completed - Ongoing	In 2010, continue a monitoring program for state threatened Blanding's turtles (Dirks et al. 2010).	12/15/2010
		In 2010, research and design Blanding's turtle drift fence with turtle gates along IED defeat lane and develop nesting area enhancement (Dirks et al. 2010).	12/21/2009	Not completed, insufficient professional staff.	In 2011, research, design, and install Blanding's turtle drift fence with turtle gates along IED defeat lane and develop nesting area enhancement (Dirks et al. 2010).	12/15/2010

CAMP RIPLEY PROTECTED SPECIES
(includes Federal Threatened and Endangered, State Threatened and Endangered, Species in Greatest Conservation Need (SGCN))

Section / Goal Created	INRMP Goal	2010 Objectives	Objective Created	2010 Objective Status	2011 Update	Update Created
		In 2010, continue to monitor red-shouldered hawks to provide additional data on population, nest locations, and provide management recommendations (Dirks et al. 2010).	12/9/2008	Completed play call-back survey in 2010. See 2010 report. Re-survey in 4 to 5 years (Dirks et al. 2010).	Delete objective	12/15/2010
		In 2010-2011, develop red-shouldered hawk trap methods and deploy two satellite transmitters.	12/21/2009	Not completed, insufficient professional staff.	In 2012, develop red-shouldered hawk trap methods and deploy two satellite transmitters.	12/15/2010
T & E Species 1/1/2003	Protect populations and habitats of special concern and other rare nongame wildlife species and prevent their decline to threatened or endangered status	In 2010, identify SGCN species and complete the final Protected Species Management Plan for Camp Ripley and recommend management actions.	12/9/2008	Not completed, insufficient professional staff.	In 2011, identify SGCN species and complete the final Protected Species Management Plan for Camp Ripley and recommend management actions.	12/15/2010
		In 2010, select SGCN species and develop survey methods to monitor occurrence on Camp Ripley.	12/21/2009	Ongoing, black terns surveyed on Mud Lake. Red-headed woodpecker survey. See 2010 report.	In 2011, select SGCN species and develop survey methods to monitor occurrence on Camp Ripley.	12/15/2010
		In 2010, monitor occurrence and production of trumpeter swans (Dirks et al. 2010).	12/21/2009	Completed, see 2010 report.	In 2011, monitor occurrence and production of trumpeter swans (Dirks et al. 2010).	12/15/2010

CAMP RIPLEY PROTECTED SPECIES (includes Federal Threatened and Endangered, State Threatened and Endangered, Species in Greatest Conservation Need (SGCN))						
Section / Goal Created	**INRMP Goal**	**2010 Objectives**	**Objective Created**	**2010 Objective Status**	**2011 Update**	**Update Created**
		In 2010, include annual accomplishments of the Protected Species Management Plan in the annual Conservation Program Report as part of the Camp Ripley and AHATS INRMP updates.	**12/21/2009**	**Completed, see 2010 report**	**In 2011, continue to include annual accomplishments of the Protected Species Management Plan in the annual Conservation Program Report as part of the Camp Ripley and AHATS INRMP updates.**	**12/15/2010**

INTEGRATED TRAINING AREA MANAGEMENT (formerly RTLA, TRI-LRAM, SRA)						
Section / Goal Created	**Goal**	**Supporting Objective**	**Objective Created**	**2010 Completion**	**2011 Update**	**Update Created**
ITAM **Oct. 2010**	**Provide multiple, inter-connected platoon-sized firing points for field artillery units**	**Conduct RTLA assessments of existing firing points to monitor grassland condition, ground disturbance, surrounding forest and access routes. Each firing point will be assessed every five years**		**Final 14 firing points surveyed.**	**No assessments scheduled until 2012.**	**Jan. 2011**
		Maintain multiple maneuver trails into each firing point	**Oct. 2010**	**LRAM Assessment completed on North half of CRTC**	**Complete LRAM Assessment on southern half of CRTC**	**Jan. 2011**
		Ensure firing points within close proximity of each other are connected with useable and safe maneuver trails	**Oct. 2010**	**LRAM Assessment completed on North half of CRTC**	**Complete LRAM Assessment on southern half of CRTC**	**Jan. 2011**

INTEGRATED TRAINING AREA MANAGEMENT (formerly RTLA, TRI-LRAM, SRA)						
Section / Goal Created	**Goal**	**Supporting Objective**	**Objective Created**	**2010 Completion**	**2011 Update**	**Update Created**
		Maintain or expand grassland area at each firing point to a minimum of 15 acres.	**Oct. 2010**		**Improve seven firing points by treating 54 acres.**	**Jan. 2011**
		Ensure surrounding forest is opened to accommodate supporting activities such as fire direction center (FDC), tactical operations center (TOC) and other assembly area activities.	**Oct. 2010**		**Forest Understory Assessment in Training Areas 70, 71 and 78.**	**Jan. 2011**
Oct. 2010	**Provide maneuver corridors that allow multiple training scenarios for platoon-sized mechanized maneuver**	**Conduct RTLA assessment that selects the best option for developing maneuver corridors**		**None surveyed**	**Survey one maneuver corridor for inclusion in DNR timber sale**	**Jan. 2011**
		Conduct RTLA assessment that monitors the condition of existing maneuver corridors and provides suggested prescriptions to repair damage and minimize erosion	**Oct. 2010**	**Corridors not established**	**Corridors not established**	**Jan. 2011**
		Coordinate with the MN Dept of Natural Resources for timber harvests necessary for development of maneuver corridors	**Oct. 2010**		**Survey one maneuver corridor for inclusion in DNR timber sale**	**Jan. 2011**
		Improve areas of timber harvest to enhance maneuverability and develop native grasslands	**Oct. 2010**	**Gyro-trac used to reduce slash and stumps on 46 acres**	**Application of herbicide to kill aspen regeneration. Continue slash and stump treatment**	**Jan. 2011**

INTEGRATED TRAINING AREA MANAGEMENT (formerly RTLA, TRI-LRAM, SRA)						
Section / Goal Created	**Goal**	**Supporting Objective**	**Objective Created**	**2010 Completion**	**2011 Update**	**Update Created**
		Create observation points along maneuver corridors to provide opposing forces places to conduct ambushes	**Oct. 2010**	**One area identified for existing corridors**	**Clear vegetation from observation point**	**Jan. 2011**
		Maintain open forest on both sides of the maneuver corridor	**Oct. 2010**		**Write burn plans for area of maneuver corridor**	**Jan. 2011**
Oct 2010	**Provide areas to support engineer training**	**Conduct RTLA assessments of engineer dig sites to monitor recovery rate of vegetation and surrounding forest for assembly area operations**	**Oct. 2010**		**Ongoing**	**Jan. 2011**
		Coordinate with Environmental office to ensure cultural clearances of potential dig sites are complete	**Oct. 2010**	**MA K-1 surveyed**		**Jan. 2011**
		Ensure access trails can accommodate heavy equipment	**Oct. 2010**	**LRAM Assessment completed on North half of CRTC**	**Complete LRAM assessment on southern half of CRTC**	**Jan. 2011**
Oct 2010	**Provide maneuver trails that support patrolling/convoy operations**	**Conduct semi-annual RTLA assessments on all maneuver trails to document erosion and safety issues**	**Oct. 2010**	**North half of CRTC surveyed**	**Survey southern half of CRTC**	**Jan. 2011**
		Maintain all maneuver trails to allow safe travel and minimize erosion	**Oct. 2010**	**LRAM Assessment completed on North half of CRTC**	**Complete LRAM assessment on southern half of CRTC**	**Jan. 2011**
		Maintain open areas adjacent to maneuver trails in order to accommodate UH-60 MEDEVAC missions	**Oct. 2010**		**Include helipads in LRAM survey**	**Jan. 2011**

INTEGRATED TRAINING AREA MANAGEMENT (formerly RTLA, TRI-LRAM, SRA)

Section / Goal Created	Goal	Supporting Objective	Objective Created	2010 Completion	2011 Update	Update Created
	Provide forested areas to accommodate company level assembly areas	Conduct RTLA assessment to monitor conditions of existing and potential assembly areas	Oct. 2010		Forest Understory Assessment in Training Areas 70, 71 and 78	Jan. 2011
		Maintain assembly areas with an open understory and full canopy	Oct. 2010		See prescribed fire plan	Jan. 2011
		Maintain or develop multiple trails in each assembly area to accommodate occupation by mechanized and wheeled vehicles	Oct. 2010		LRAM Assessment on southern half of CRTC	Jan. 2011
		Maintain or develop access points that can accommodate a high traffic volume	Oct. 2010		Develop work plan based on assessment	Jan. 2011
Oct. 2010	Provide training lands to support dismounted maneuver training	Conduct RTLA assessment to determine visibility through the forest understory	Oct. 2010	Methods tested in Training Area 78. Additional control points needed.	Conduct assessment in Training Areas 71, 78 and 79 in support of maneuver corridors.	Jan. 2011
		Maintain or develop and open forest understory that allows 60% visibility at 50m to support the effective use of MILES gear	Oct. 2010		Write burn plan for Training Areas 78 to control understory.	Jan. 2011
	Facilitate a nationally recognized ITAM program	Develop and maintain a 5 year plan for ITAM projects	Oct. 2010	Initial plan completed in Apr 10	Automated system to be fielded in 2011	Jan. 2011
		Maintain an updated GIS that supports the training community	Oct. 2010	Ongoing	Ongoing	Jan. 2011

INTEGRATED TRAINING AREA MANAGEMENT (formerly RTLA, TRI-LRAM, SRA)						
Section / Goal Created	**Goal**	**Supporting Objective**	**Objective Created**	**2010 Completion**	**2011 Update**	**Update Created**
		Develop RTLA assessments that enhance the training lands for customer units	**Oct. 2010**	**Ongoing**	**Ongoing**	**Jan. 2011**
		Develop an annual budget that supports training	**Oct. 2010**		**Submitted 2012 budget for $825K**	**Jan. 2011**
		Maintain all training lands to provide a safe training environment	**Oct. 2010**		**Ongoing**	**Jan. 2011**
		Educate all users of Camp Ripley on the sustainable use of the training lands	**Oct. 2010**	**4th edition of the SRP map**	**SRA materials ordered from**	**Jan. 2011**
		Coordinate with Range Control, Environmental and Post Operations to synchronize efforts on the training lands	**Oct. 2010**	**Ongoing**	**Ongoing**	**Jan. 2011**
		Maintain equipment to ensure maximum life-span	**Oct. 2010**	**Ongoing**	**Ongoing**	**Jan. 2011**
		Create an annual accomplishments document that shows the results of all RTLA assessments and completion of LRAM projects	**Oct. 2010**	**Complete**	**Complete in 1st quarter of 2012**	**Jan. 2011**
		Execute all ITAM funds	**Oct. 2010**	**Complete**	**Encumber all funds NLT 30 Sep 11.**	**Jan. 2011**

CAMP RIPLEY GIS

Section/ Goal Created	INRMP Goal	2010 Objectives	Objective Created	2010 Objective Status	2011 Update	Update Created
GIS 1/1/2003	Achieve and maintain compliance with all mandated GIS requirements	Complete metadata for all new and updated layers prior to loading into GDB.	12/18/2009	Completed for 2010. Ongoing.	Complete metadata for all new and updated layers prior to loading into GDB.	12/16/2010
		Maintain compliance with SDSFIE.	12/18/2009	Completed for 2010. Ongoing.	Maintain compliance with SDSFIE.	12/16/2010
		Provide appropriate data and documentation in the required format for all Army and NGB data requests.	12/18/2009	Complete. Provided data for CIP, RCMP, SRP, ECM, SDSFIE, 3.0 pilot. Ongoing.	Provide appropriate data and documentation in the required format for all Army and NGB data requests.	12/16/2010
GIS 1/1/2003	Maintain the MNARNG geographic database with sufficient completeness, consistency and accuracy for reliable query, analysis and application development	In 2010, identify data requirements and procedures in support of environmental/INRMP initiatives. Capture status and update frequency for each required layer. Record in GIS Plan.	12/18/2009	Data requirements have been identified. Data maintenance plans have been developed for select layers to ensure proper maintenance and update frequency.	Identify data requirements and procedures in support of environmental/INRMP initiatives. Capture status and update frequency for each required layer.	12/16/2010
		House a current copy of the Camp Ripley forest inventory in the GDB. The source of this layer should be the DNR FIM.	12/18/2009	Completed for 2010. Ongoing.	House a current copy of the Camp Ripley forest inventory in the GDB. The source of this layer should be the DNR FIM.	12/16/2010
		Maintain ACUB data layers.	12/18/2009	Completed for 2010. Ongoing.	Maintain ACUB data layers.	12/16/2010
		House current copies of the Camp Ripley and AHATS aerial photos in the GDB.	12/18/2009	Complete.	House current copies of the Camp Ripley and AHATS aerial photos in the GDB.	12/16/2010
		Ensure copies of digital statewide aerial photos are available to environmental staff.	12/18/2009	Complete. Using MnGeo WMS.	Ensure copies of digital statewide aerial photos are available to environmental staff.	12/16/2010

CAMP RIPLEY GIS

Section/ Goal Created	INRMP Goal	2010 Objectives	Objective Created	2010 Objective Status	2011 Update	Update Created
GIS 1/1/2003	Maintain hardware and software systems appropriate for the info management needs of Camp Ripley	In 2010, develop GIS management plan to include data, software, hardware, application and staffing requirements.	12/18/2009	Did not complete.	In 2011, develop GIS management plan to include data, software, hardware, application and staffing requirements.	12/16/2010
		Identify hardware needs for sustainment of data requirements. Record in CRC-SE GIS Plan	12/18/2009	Hardware requirements are known.	Identify hardware needs for sustainment of data requirements.	12/16/2010
GIS 1/1/2003	Develop, implement, and maintain applications to meet the info needs of the MNARNG user community	Develop a user-friendly web application through ArcGIS Server to support data access needs to help achieve select INRMP goals and objectives.	12/18/2009	In progress. Coordinating with J6 Automation section to support this objective.	Develop a user-friendly web application through ArcGIS Server to support data access needs to help achieve select INRMP goals and objectives.	12/16/2010
		Maintain content of the digital map library.	12/18/2009	Complete for 2010. Ongoing.	Maintain content of the digital map library.	12/18/2009
GIS 3/26/2008	Ensure geospatial data and applications support MNARNG enterprise GIS initiatives.	Conduct monthly MNARNG GIS Working Group meetings and participate in the NGB GIS subcommittee	12/18/2009	Completed for 2010. Ongoing.	Conduct monthly MNARNG GIS Working Group meetings and participate in the NGB GIS subcommittee.	12/18/2009
		Coordinate development and acquisition of geospatial data and applications with other users through the MNARNG GIS Working Group.	12/18/2009	Completed for 2010.	Coordinate development and acquisition of geospatial data and applications with other users through the MNARNG GIS Working Group.	12/18/2009
		Make appropriate geospatial data available in a centralized location to reduce redundancy.	12/18/2009	Completed for 2010.	Make appropriate geospatial data available in a centralized location to reduce redundancy.	12/18/2009

CAMP RIPLEY GIS

Section/ Goal Created	INRMP Goal	2010 Objectives	Objective Created	2010 Objective Status	2011 Update	Update Created
		Store data in an organized structure allowing end users to more easily locate appropriate data layers.	**12/18/2009**	**Completed for 2010.**	**Store data in an organized structure allowing end users to more easily locate appropriate data layers.**	**12/18/2009**

APPENDIX B: ARDEN HILLS ARMY TRAINING SITE INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN UPDATED GOALS AND OBJECTIVES

AHATS ADMINISTRATION

Section/ Goal Created	INRMP Goal	2010 Objectives	Objective Created	2010 Objective Status	2011 Update	Update Created
INRMP 8/1/2007	Ensure adequate funding and resources to implement AHATS's INRMP	Implement the Conservation and ITAM Programs at AHATS	12/12/2008	Ongoing	Continue to implement the Conservation and ITAM Programs at AHATS.	12/7/2010
		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	12/12/2008		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.	12/7/2010
		Maintain administration of the INRMP development, implementation, and updating through the Camp Ripley Environmental Office; and to include the LUCRD.	12/7/2010	Reference OU2 LUCRD Sept 2010	Maintain administration of the INRMP development, implementation, and updates through the Camp Ripley Environmental Office, and to include the LUCRD.	12/7/2010
		Create an annual Conservation-INRMP update report. Update review and obtain signatures at annual meeting with MNDNR and USFWS	12/12/2008		Create an annual Conservation-INRMP update report. Update review and obtain signatures at annual meeting with MNDNR and USFWS.	12/7/2010
		Participate in the Sustainable Range Program committee to annually integrate long-range natural resources planning with site development planning for the military mission	12/12/2008		Participate in the Sustainable Range Program committee to annually integrate long-range natural resources planning with site development planning for the military mission.	12/7/2010

AHATS ADMINISTRATION

Section/ Goal Created	INRMP Goal	2010 Objectives	Objective Created	2010 Objective Status	2011 Update	Update Created
		Facilitate potential funding through the Natural Resources Damage Assessment to supplement implementation of AHATS INRMP	12/12/2008	Ongoing	Facilitate potential funding through the Natural Resources Damage Assessment to supplement implementation of AHATS INRMP.	12/7/2010
		Develop and maintain a work plan of ITAM projects in the WAM that support the INRMP implementation	12/12/2008	Ongoing	Develop and maintain a work plan of ITAM projects in the WAM that support the INRMP implementation.	12/7/2010
		Develop and maintain a work plan of environmental projects in the STEP that support the INRMP implementation	12/12/2008	Ongoing	Develop and maintain a work plan of environmental projects in the STEP that support the INRMP implementation.	12/7/2010
		Develop and maintain a work plan of wild land fire projects in the Fire and Emergency Services Program that support the INRMP implementation	12/12/2008	Ongoing	Develop and maintain a work plan of wildland fire projects in the Fire and Emergency Services Program that support the INRMP implementation.	12/7/2010

AHATS RTLA-GIS

Section/ Goal Created	INRMP Goal	2010 Objectives	Objectives Created	Objective Status	2011 Update	Update Created
RTLA 8/1/2007	Provide information to land managers about the status of natural and cultural resources on AHATS	Reassess RTLA monitoring protocol.	12/12/2008	Ongoing	Continue RTLA monitoring protocol.	12/7/2010

AHATS RTLA-GIS						
Section/ Goal Created	**INRMP Goal**	**2010 Objectives**	**Objectives Created**	**Objective Status**	**2011 Update**	**Update Created**
		Create an ITAM annual report which documents the accomplishments for the preceding year.	**12/12/2008**	**Not completed**	**Create an ITAM annual report which documents the accomplishments for that preceding year.**	**12/7/2010**
		Provide information to the AHATS SDP, INRMP, IPMP, ICRMP, and Range Regulations.	**12/12/2008**	**Ongoing**	**Provide information to the AHATS SDP, INRMP, IPMP, ICRMP, and Range Regulations.**	**12/7/2010**
GIS **8/1/2007**	**Provide comprehensive GIS support for AHATS**	**Conduct a GIS needs assessment to determine application, data, and equipment requirements to support environmental management at AHATS.**	**12/12/2008**	**Ongoing**	**Conduct a GIS needs assessment to determine application, data, and equipment requirements to support environmental management at AHATS.**	**12/7/2010**
		Develop and provide access to applications, data and equipment identified in needs assessment.	**12/12/2008**	**Not complete**	**Develop and provide access to applications, data and equipment identified in needs assessment.**	**12/7/2010**
		Include GIS requirements for AHATS into a GIS Plan.	**12/12/2008**	**Not complete**	**Include GIS requirements for AHATS into a GIS Plan.**	**12/7/2010**
		Provide AHATS staff GIS support as needed.	**12/18/2009**	**Add items for OU2 LUCRD Sept 2010 and Storm water**	**Provide AHATS staff GIS support as needed.**	**12/7/2010**

AHATS TRI-LRAM

Section/ Goal Created	INRMP Goal	2010 Objectives	Objectives Created	Objective Status	2011 Update	Objective Updated
TRI 8/1/2007	Provide military trainers and land managers with the necessary technical and analytical information for them to meet their requirements	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.	12/12/2008	Ongoing	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.	12/7/2010
		Accommodate 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 and the LUCRD.	12/12/2008	Reference OU2 LUCRD Sept 2010	Accommodate 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 and the LUCRD.	12/7/2010
TRI 8/1/2007	Optimize training land management decisions by coordinating mission requirements and land maintenance activities	Advise on the allocation of land to support current and projected training mission requirements.	12/12/2008		Advise on the allocation of land to support current and projected training mission requirements.	12/7/2010
		The TAC will coordinate usage with external organizations, supporting agencies, tenant activities, and higher headquarters.	12/12/2008		The TAC will coordinate usage with external organizations, supporting agencies, tenant activities, and higher headquarters.	12/7/2010
		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.	12/12/2008		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.	12/7/2010
TRI 8/1/2007	Ensure adequate staffing and resources to manage and protect AHATS's natural resources	Maintain Training Area Coordinator to provide full time support for TRI needs at AHATS.	12/12/2008		Maintain Training Area Coordinator to provide full time support for TRI needs at AHATS.	12/7/2010

AHATS TRI-LRAM

Section/ Goal Created	INRMP Goal	2010 Objectives	Objectives Created	Objective Status	2011 Update	Objective Updated
LRAM 8/1/2007	Sustain natural resources to ensure long-term military use	Employ a Site Assessment type methodology to identify areas for redesign, rehabilitation, and/or repair by implementing RTLA assessments.	12/12/2008		Continue to implement and support RTLA assessments.	12/7/2010
		Implement management recommendations for sites identified in RTLA Assessment.	12/12/2008		Implement management recommendations for sites identified in RTLA Assessments.	12/7/2010

AHATS SRA

Section/ Goal Created	INRMP Goal	2010 Objectives	Objectives Created	Objective Status	2011 Update	Update Created
SRA 8/1/2007	Minimize natural resources damage by educating users in regards to activities negatively impacting the environment.	Continue to educate land users of their environmental stewardship responsibilities.	12/12/2008		Continue to educate land users of their environmental stewardship responsibilities.	12/7/2010
		Conduct Environmental Briefings (Pre-camp conferences, trainer workshops, Training Area Coordination Briefings, schools, and civilian organizations).	12/12/2008		Conduct Environmental Briefings (Pre-camp conferences, trainer workshops, Training Area Coordination Briefings, schools, and civilian organizations).	12/7/2010
		Promote compliance with AHATS environmental regulations and land use controls (LUCRD).	12/12/2008	Reference OU2 LUCRD Sept 2010	Promote compliance with AHATS environmental regulations and land use controls (LUCRD).	12/7/2010

AHATS SRA

Section/ Goal Created	INRMP Goal	2010 Objectives	Objectives Created	Objective Status	2011 Update	Update Created
SRA 8/1/2007	Instill a sense of pride and stewardship for those that use AHATS's natural and cultural resources	Improve public relations through SRA by communicating our success at sustaining mission activities.	12/12/2008		Improve public relations through SRA by communicating our success at sustaining mission activities.	12/7/2010
		Convey installation mission and training objectives to environmental professionals and the public.	12/12/2008		Convey installation mission and training objectives to environmental professionals and the public.	12/7/2010
		Continue to implement a public education program.	12/12/2008		Continue to implement a public education program.	12/7/2010

AHATS VEGETATION MANAGEMENT

Section/ Goal Created	INRMP Goal	2010 Objectives	Objectives Created	Objective Status	2011 Update	Update Created
Wetlands 8/1/2007	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	Obtain all necessary permits required by the "Federal" Clean Water Act (CWA) and "State" Wetland Conservation Act (WCA) before project implementation.	12/12/2008	Ongoing	Obtain all necessary permits required by the "Federal" Clean Water Act (CWA) and "State" Wetland Conservation Act (WCA) before project implementation.	12/7/2010

AHATS VEGETATION MANAGEMENT

Section/ Goal Created	INRMP Goal	2010 Objectives	Objectives Created	Objective Status	2011 Update	Update Created
		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.	12/12/2008	Ongoing	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.	12/7/2010
		Document wetland banking in annual accomplishment report	12/22/2008		Document wetland banking in annual accomplishment report.	12/11/2009
		Create Comprehensive storm water pollution prevention plan and best management practices	12/7/2010	New objective, began during Fall 2010.	Continue storm water pollution prevention plan and best management practices.	12/7/2010
Grasslands - Woodlands 8/1/2007	Restore and manage grassland and woodland communities for the purposes of military training, protection of native species, oak savannah restoration, and soil stabilization	Facilitate the process to implement restoration projects if funding becomes available.	12/12/2008		Facilitate the process to implement restoration projects if funding becomes available.	12/7/2010
		Evaluate and prioritize the grassland compartments for management needs	12/12/2008	Pending	Evaluate and prioritize the grassland compartments for management needs	12/7/2010
		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.	12/12/2008	Insufficient funding	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.	12/7/2010

AHATS VEGETATION MANAGEMENT

Section/ Goal Created	INRMP Goal	2010 Objectives	Objectives Created	Objective Status	2011 Update	Update Created
		Ensure adequate fire breaks, best management practices, and other safety procedures are in place	12/12/2008	Ongoing	Ensure adequate fire breaks, best management practices, and other safety procedures are in place.	12/7/2010
		Maintain a Vegetation Management Committee, which will develop detailed management regimes for each training area at AHATS, and create a Vegetation Management Plan for AHATS.	12/12/2008	Not completed, insufficient professional staff	Maintain a Vegetation Management Committee, which will develop detailed management regimes for each training area at AHATS, and create a Vegetation Management Plan for AHATS.	12/7/2010
Floral 8/1/2007	Monitor floral resources on AHATS	Monitor, catalog, and create reference document for AHATS flora	8/1/2007		Monitor, catalog, and create reference document for AHATS flora	12/7/2010

AHATS PLANTED OR CULTIVATED VEGETATION NEAR BUILDINGS and BORDERS

Section	INRMP Goal	2010 Objectives	Objectives Created	2010 Objective Status	2011 Update	Objective Updated
Cantonment 8/1/2007	Protect and develop landscaped grounds for functional and aesthetic qualities in the AHATS Cantonment area	Maintain a tree nursery to supply future landscaping needs.	12/12/2008	Ongoing	Maintain a tree nursery to supply future landscaping needs.	12/7/2010
		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.	12/12/2008	Insufficient funding	Continue 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.	12/7/2010

AHATS FISH AND WILDLIFE MANAGEMENT (Mammals)

Section/ Goal Created	INRMP Goal	2010 Objectives	Objectives Created	2010 Objective Status	2011 Update	Update Created
White-tail Deer 8/1/2007	Monitor deer population	In 2010, compile information from past research, deer harvest data, and aerial surveys, to provide a basis for determining management objectives.	12/12/2008	Not completed, insufficient professional staff.	In 2011, compile information from past research, deer harvest data, and aerial surveys, to provide a basis for determining management objectives.	12/7/2010
		In 2010, conduct youth archery deer hunt.	12/12/2008	Not completed, reference OU2 LUCRD Sept 2010	In 2011, re-assess implementing youth archery deer hunts	12/7/2010
		In 2010, conduct five (2-3 day) deployed soldier archery deer hunts.	12/12/2008	Completed, see AHATS Outreach & Recreation Section	In 2011, conduct deployed service member archery deer hunts.	12/7/2010
		In 2010, conduct one, 3-day volunteer archery deer hunt.	12/12/2008	Completed, see AHATS Outreach & Recreation Section	In 2011, conduct one, 3-day volunteer archery deer hunt.	12/7/2010
		In 2010, conduct one three-day archery deer hunt for youth of MN Air and Army National Guard members.	12/22/2009	Not completed, reference OU2 LUCRD Sept 2010	In 2011, re-assess implementing one three-day archery deer hunt for youth of MN Air and Army National Guard members.	12/7/2010
		In 2010, conduct two, 3-day deployed service member archery turkey hunts.	12/12/2008	Completed, see AHATS Outreach & Recreation Section	In 2011, conduct deployed service member archery turkey hunts.	12/7/2010
Nuisance Animal Control 8/1/2007	Monitor and removal of nuisance and feral animals	In 2010, conduct scent post surveys to track population levels as needed.	12/12/2008	Not completed, insufficient professional staffing.	In 2011, conduct scent post surveys to track population levels as needed.	12/7/2010

AHATS FISH AND WILDLIFE MANAGEMENT (Mammals)						
Section/ Goal Created	**INRMP Goal**	**2010 Objectives**	**Objectives Created**	**2010 Objective Status**	**2011 Update**	**Update Created**
		Annually record observations of nuisance and feral animal species.	**12/12/2008**	**Ongoing**	**Annually record observations of nuisance and feral animal species.**	**12/7/2010**
		Eliminate entry points for feral animals	**12/12/2008**	**Ongoing**	**Eliminate entry points for feral animals.**	**12/7/2010**
		Remove nuisance and feral animals as needed	**12/12/2008**	**Ongoing**	**Remove nuisance and feral animals as needed.**	**12/7/2010**
8/1/2007 **(under RTLA)**	**Monitor faunal (Birds, Mammals, and Reptiles and Amphibians) resources on AHATS**	**In 2010, re-assess monitoring protocol for small mammals.**	**12/22/2009**	**Not completed, insufficient professional staff.**	**In 2011, re-assess monitoring protocol for small mammals.**	**12/7/2010**

AHATS FISH AND WILDLIFE MANAGEMENT (Birds-Herps-Invertebrates-Protected Species)						
Section/ Goal Created	**INRMP Goal**	**2010 Objectives**	**Objectives Created**	**2010 Objective Status**	**2011 Update**	**Update Created**
Birds (Nesting Structures) **8/1/2007**	**Continue to make nesting structures available**	**In 2010, map and determine number of existing nesting structures.**	**12/12/2008**	**Partially completed, Ongoing**	**In 2011, continue to map, determine number and condition of existing artificial nesting structures.**	**12/7/2010**
		In 2010, repair, replace, or add nesting structures as necessary.	**12/12/2008**	**Craig Andreson, volunteer, intern - Ongoing**	**In 2011, repair, replace, or add nesting structures as necessary.**	**12/7/2010**

AHATS FISH AND WILDLIFE MANAGEMENT (Birds-Herps-Invertebrates-Protected Species)						
Section/ Goal Created	**INRMP Goal**	**2010 Objectives**	**Objectives Created**	**2010 Objective Status**	**2011 Update**	**Update Created**
		In 2010, enlist the help of volunteers for annual maintenance and monitoring of nesting structures.	**12/12/2008**	**Craig Andreson, volunteer, intern - Ongoing**	**In 2011, continue to enlist the help of volunteers for annual maintenance and monitoring of nesting structures.**	**12/7/2010**
Songbirds **8/1/2007**	**Monitor songbird populations on AHATS**	**In 2010, conduct annual surveys for songbirds on IMRMP plots.**	**12/12/2008**	**Completed, see AHATS Bird Section**	**In 2011, conduct annual surveys for songbirds on INRMP plots.**	**12/7/2010**
Reptiles and Amphibians **8/1/2007**	**Monitor the presence and abundance of reptiles and amphibians**	**In 2010, continue to support the annual anuran survey.**	**12/12/2008**	**John Moriarty, volunteer - Ongoing**	**In 2011, continue to support the annual statewide anuran survey.**	**12/7/2010**
		In 2010, investigate new methods for monitoring reptiles and amphibians.	**12/12/2008**	**Not completed, due to insufficient professional staffing**	**In 2011, investigate new methods for monitoring reptiles and amphibians.**	**12/7/2010**
Invertebrates **8/1/2007**	**Monitor the presence and abundance of terrestrial and aquatic invertebrates**	**Continue to support the Audubon Society's July butterfly survey.**	**12/12/2008**	**Ongoing, see AHATS Insect Section**	**Continue to support the Audubon Society's butterfly survey.**	**12/7/2010**
		In 2010, investigate whether any invertebrate studies and inventories are needed.	**12/12/2008**	**Not completed, insufficient professional staff**	**In 2011, review invertebrate studies and inventories.**	**12/7/2010**
T & E Species **8/1/2007**	**Manage and protect species that are listed as threatened or endangered by the federal government or the State of Minnesota**	**In 2010, continue to monitor resident and transient threatened and endangered species that may be present at AHATS and implement management recommendations as noted in the Protected Species Management Plan (Dirks et al. 2010), as funding allows.**	**12/22/2009**	**Ongoing**	**In 2011, continue to monitor resident and transient threatened and endangered species and implement management recommendations as noted in the Protected Species Management Plan (Dirks et al. 2010), as funding allows.**	**12/7/2010**

AHATS FISH AND WILDLIFE MANAGEMENT (Birds-Herps-Invertebrates-Protected Species)						
Section/ Goal Created	**INRMP Goal**	**2010 Objectives**	**Objectives Created**	**2010 Objective Status**	**2011 Update**	**Update Created**
		In 2010, include annual accomplishments of the Protected Species Management Plan in the annual Conservation Program Report as part of the AHATS INRMP updates	**12/21/2009**	**Completed, see 2010 report**	**In 2011, continue to include annual accomplishments of the Protected Species Management Plan in the annual Conservation Program Report as part of the AHATS INRMP updates.**	**12/15/2010**
		Conduct plains pocket mouse habitat enhancement within existing habitat, and survey population in 2011 (Dirks et al. 2010).	**12/12/2008**	**Completed habitat enhancement see AHATS Mammals section**	**In 2011, examine additional locations for plains pocket mouse habitat enhancement adjacent to existing habitat, and survey population in 2012 (Dirks et al. 2010).**	**12/7/2010**
		In 2010, monitor the presence and reproductive success of trumpeter swans.	**12/12/2008**	**Completed, see AHATS Birds section**	**In 2011, monitor the presence and reproductive success of trumpeter swans (Dirks et al. 2010).**	**12/7/2010**
		Continue a monitoring program for specifically for Blanding's turtles.	**12/12/2008**	**Ongoing, see AHATS Reptile and Amphibian section**	**In 2011, continue a monitoring program for state threatened Blanding's turtles.**	**12/7/2010**
		Annually monitor for the presence of bald eagles (Dirks et al. 2010).	**12/12/2008**	**None present, Ongoing**	**Annually monitor for the presence of bald eagles (Dirks et al. 2010).**	**12/7/2010**
		In 2010, monitor for the presence of the Henslow's sparrow (Dirks et al. 2010).	**12/12/2008**	**Completed, see AHATS Birds section**	**In 2011, monitor for the presence of the state endangered Henslow's sparrow (Dirks et al. 2010).**	**12/7/2010**
		Maintain suitable habitat for Henslow's sparrows (Dirks et al. 2010)		**Ongoing, no Henslow's sparrow observations in 2010**	**Maintain suitable habitat for Henslow's sparrows (Dirks et al. 2010).**	**12/7/2010**

AHATS FISH AND WILDLIFE MANAGEMENT (Birds-Herps-Invertebrates-Protected Species)						
Section/ Goal Created	**INRMP Goal**	**2010 Objectives**	**Objectives Created**	**2010 Objective Status**	**2011 Update**	**Update Created**
8/1/2007	**Monitor faunal (Birds, Mammals, and Reptiles and Amphibians) resources on AHATS**	**In 2010, continue an annual monitoring program for birds on plots.**	**12/22/2009**	**Completed, see AHATS Bird section**	**In 2011, continue an annual monitoring program for birds on plots.**	**12/7/2010**
		In 2010, re-assess monitoring protocol for reptiles and amphibians.	**12/22/2009**	**Not completed, insufficient professional staff**	**In 2011, re-assess monitoring protocol for reptiles and amphibians.**	**12/7/2010**

AHATS LAND USE						
Section/ Goal Created	**INRMP Goal**	**2010 Objectives**	**Objectives Created**	**Objective Status**	**2011 Update**	**Update Created**
Land Use **8/1/2007**	**Identify and develop appropriate land use opportunities**	**Continue to allow public access to AHATS for recreation and educational activities**	**12/12/2008**	**Reference OU2 LUCRD Sept 2010**	**Continue to allow public access to AHATS for recreation and educational activities.**	**12/7/2010**
				Reference OU2 LUCRD Sept 2010	**Continue to participate in Urban Bird Fest of Ramsey County.**	**1/18/2011**
8/1/2007		**Continue to foster relationships with local interest groups that want to help maintain and develop AHATS natural resources.**	**12/12/2008**	**Reference OU2 LUCRD Sept 2010**	**Continue to foster relationships with local interest groups that want to help maintain and develop AHATS natural resources.**	**12/7/2010**

APPENDIX C: CAMP RIPLEY INTERAGENCY AGREEMENT BETWEEN MINNESOTA DEPARTMENT OF MILITARY AFFAIRS AND MINNESOTA DEPARTMENT OF NATURAL RESOURCES

Cooperative Agreement
For Integrated Natural Resource Management
At Camp Ripley Military Reservation

This Cooperative Agreement for Natural Resources Management at Camp Ripley Military Reservation (hereinafter Camp Ripley) is made and entered into by and between the Department of Military Affairs of the State of Minnesota (hereinafter DMA) by the Adjutant General of the State of Minnesota and the Minnesota Department of Natural Resources (hereinafter DNR) by its Commissioner of Natural Resources.

WHEREAS, Camp Ripley is a military installation consisting of approximately 53,000 acres of land located in Morrison County, Minnesota; and

WHEREAS, Camp Ripley is operated for military training purposes by the Adjutant General pursuant to Minn. Stat. Chapter 190; and

WHEREAS, the Adjutant General is charged by law with the responsibility for the operation, protection, use and safety of Camp Ripley, and is authorized by law to sell timber and crops growing on Camp Ripley; and

WHEREAS, the Adjutant General desires to provide for the conservation, management, utilization and restoration of natural resources on Camp Ripley; and

WHEREAS, the DNR is charged by state law with the responsibility to conserve, manage, utilize and restore the natural resources of the State of Minnesota; and

WHEREAS, Camp Ripley is a statutory game refuge established pursuant to Minn. Stat. Sec. 97A.085; and

WHEREAS, DNR and DMA mutually acknowledge that they find it to be in accordance with their respective statutory authorities and in the best interests of the people of the State of Minnesota to enter into this Cooperative Agreement;

NOW, THEREFORE, DNR and DMA agree to the following terms and conditions:

1. The parties will enter into a Cooperative Agreement for managing the natural resources of Camp Ripley. This program will include a long-range integrated natural resource management plan, annual work plans and specific projects for program implementation. These plans and projects will, upon approval of DMA and DNR, be deemed incorporated into this Cooperative Agreement.

2. Under this program, DNR shall be allowed to undertake any natural resource management and enforcement activities required by and/or authorized by law, except that DMA may prohibit or limit any activities

which are not required by law and which in DMA's opinion will adversely affect Camp Ripley's security, military mission, or other resources.

3. The integrated natural resource management plan will include but is not limited to inventories, classifications, and management goals for the natural resources under management.

4. The integrated natural resource management plan will include consideration of the following program areas: Fisheries, Wildlife, Forestry, Vegetation Management, Recreation, Land Use, Waters, Law Enforcement and others. Annual work plans shall be developed by the DNR and DMA for each program area with proposed projects. Work plan proposals will be provided to each other no later than 31 January of each year and at least 60 days before plan implementation.

5. DNR and DMA shall submit to each other annual reports of all resource management activities that were undertaken by each agency at Camp Ripley relevant to this Cooperative Agreement during the preceding calendar year. This report will be furnished no later than 31 January and will provide information on the accomplishment of work plan activities in a format specified in the natural resource management plan. Representatives of DMA and DNR shall meet at least once annually to review annual work plans and reports and to review and, if necessary, revise the integrated natural resources management plan and activities undertaken pursuant to this Cooperative Agreement. The Camp Ripley Commander shall call and convene the annual meeting no later than 28 February of each year.

6. In performing resource management activities pursuant to this Cooperative Agreement, DNR employees are authorized to enter Camp Ripley in accordance with procedures established by the DMA. Other individuals or contractors performing resource management work as part of this Agreement shall consult with Camp Ripley Security about entry procedures and regulations and then cooperate with the Range Control office in all matters pertaining to authorized entry to Camp Ripley.

7. In furtherance of this Cooperative Agreement and any projects undertaken hereunder, DMA agrees to provide such personnel and equipment as it, in its sole discretion, deems feasible.

8. The parties expressly acknowledge that Camp Ripley is primarily a military training facility and that the military mission of Camp Ripley as determined by DMA shall take precedence over any resource management activity, subject only to limits imposed by law. DMA agrees that it will notify DNR of any conflicts between the military use of Camp Ripley and the operation of this Cooperative Agreement, the integrated natural resource

management plan, or annual work plans undertaken hereunder. The parties will promptly review and mutually assess such conflicts and determine whether the management plan or work plans must be modified or cancelled. In the event of disagreement, final determinations shall be made by DMA.

9. Each party hereto shall be responsible and liable for its own actions and the consequences of these actions to the extent provided by law, and shall not be responsible for the actions of the other party or for the consequences of these actions. The parties to this Agreement waive all claims against each other for any loss, damage, personal injury or death suffered by them, their agents, officers or employees in consequence of the performance of this Agreement to the extent permitted by law.

10. For purposes of worker's compensation, all military personnel involved in any of the activities contemplated by this agreement shall at all times be considered employees of the Department of Military Affairs: likewise, for purposes of worker's compensation, all DNR personnel, so serving, involved in such activities shall at all times be considered employees of the Department of Natural Resources.

11. This Agreement shall become effective on the last date listed below, and may be terminated by either party upon 90 days prior notice to the other party.

12. All work undertaken pursuant to this Agreement shall be subject to State Department of Administration rules and procedures and the laws of the State of Minnesota, and shall be subject to audit by the State.

13. Nothing in this Agreement shall be construed as obligating the State to expend money in excess of appropriations authorized by law and administratively allocated to this Agreement.

Dated: 1-6-2010

Department of Military Affairs

BY: _____

LARRY W. SHELLITO
The Adjutant General

Dated: 12-21-09

Department of Natural Resources

BY: _____

MARK HOLSTEN
Commissioner of Natural Resources

APPENDIX D: ARDEN HILLS ARMY TRAINING SITE INTERAGENCY AGREEMENT BETWEEN MINNESOTA DEPARTMENT OF MILITARY AFFAIRS AND MINNESOTA DEPARTMENT OF NATURAL RESOURCES

Cooperative Agreement
For Integrated Natural Resource Management
At Arden Hills Army Training Site (AHATS)

This Cooperative Agreement for Natural Resources Management at Arden Hills Army Training Site (hereinafter AHATS) is made and entered into by and between the Department of Military Affairs of the State of Minnesota (hereinafter DMA) by the Adjutant General of the State of Minnesota and the Minnesota Department of Natural Resources (hereinafter DNR) by its Commissioner of Natural Resources.

WHEREAS, AHATS is a military installation consisting of approximately 1,500 acres of land located in Ramsey County, Minnesota; and

WHEREAS, AHATS is operated for military training purposes by the Adjutant General pursuant to Minn. Stat. Chapter 190; and

WHEREAS, the Adjutant General is charged by law with the responsibility for the operation, protection, use and safety of AHATS; and

WHEREAS, the Adjutant General desires to provide for the conservation, management, utilization and restoration of natural resources on AHATS; and

WHEREAS, the DNR is charged by state law with the responsibility to conserve, manage, utilize and restore the natural resources of the State of Minnesota; and

WHEREAS, DNR and DMA mutually acknowledge that they find it to be in accordance with their respective statutory authorities and in the best interests of the people of the State of Minnesota to enter into this Cooperative Agreement;

NOW, THEREFORE, DNR and DMA agree to the following terms and conditions:

1. The parties will enter into a Cooperative Agreement for managing the natural resources of AHATS. This program will include a long-range integrated natural resource management plan, annual work plans and specific projects for program implementation. These plans and projects will, upon approval of DMA and DNR, be deemed incorporated into this Cooperative Agreement.

2. Under this program, DNR shall be allowed to undertake any natural resource management and enforcement activities required by and/or authorized by law, except that DMA may prohibit or limit any activities which are not required by law and which in DMA's opinion will adversely affect AHATS's security, military mission, or other resources.

3. The integrated natural resource management plan will include but is not limited to inventories, classifications, and management goals for the natural resources under management.

4. The integrated natural resource management plan will include consideration of the following program areas: Fisheries, Wildlife, Forestry, Vegetation Management, Recreation, Land Use, Waters, Law Enforcement and others. Annual work plans shall be developed by the DNR and DMA for each program area with proposed projects. Work plan proposals will be provided to each other no later than 31 January of each year and at least 60 days before plan implementation.

5. DNR and DMA shall submit to each other annual reports of all resource management activities that were undertaken by each agency at AHATS relevant to this Cooperative Agreement during the preceding calendar year. This report will be furnished no later than 31 January and will provide information on the accomplishment of work plan activities in a format specified in the natural resource management plan. Representatives of DMA and DNR shall meet at least once annually to review annual work plans and reports and to review and, if necessary, revise the integrated natural resources management plan and activities undertaken pursuant to this Cooperative Agreement. The Camp Ripley/AHATS Commander shall call and convene the annual meeting no later than 28 February of each year.

6. In performing resource management activities pursuant to this Cooperative Agreement, DNR employees are authorized to enter AHATS in accordance with procedures established by the DMA. Other individuals or contractors performing resource management work as part of this Agreement shall consult with AHATS's Security about entry procedures and regulations and then cooperate with the Training Area Coordinator in all matters pertaining to authorized entry to AHATS.

7. In furtherance of this Cooperative Agreement and any projects undertaken hereunder, DMA agrees to provide such personnel and equipment as it, in its sole discretion, deems feasible.

8. The parties expressly acknowledge that AHATS is primarily a military training facility and that the military mission of AHATS as determined by DMA shall take precedence over any resource management activity, subject only to limits imposed by law. DMA agrees that it will notify DNR of any conflicts between the military use of AHATS and the operation of this Cooperative Agreement, the integrated natural resource management plan, or annual work plans undertaken hereunder. The parties will promptly review and mutually assess such conflicts and

determine whether the management plan or work plans must be modified or cancelled. In the event of disagreement, final determinations shall be made by DMA.

9. Each party hereto shall be responsible and liable for its own actions and the consequences of these actions to the extent provided by law, and shall not be responsible for the actions of the other party or for the consequences of these actions. The parties to this Agreement waive all claims against each other for any loss, damage, personal injury or death suffered by them, their agents, officers or employees in consequence of the performance of this Agreement to the extent permitted by law.

10. For purposes of worker's compensation, all military personnel involved in any of the activities contemplated by this agreement shall at all times be considered employees of the Department of Military Affairs: likewise, for purposes of worker's compensation, all DNR personnel, so serving, involved in such activities shall at all times be considered employees of the Department of Natural Resources.

11. This Agreement shall become effective on the last date listed below, and may be terminated by either party upon 90 days prior notice to the other party.

12. All work undertaken pursuant to this Agreement shall be subject to State Department of Administration rules and procedures and the laws of the State of Minnesota, and shall be subject to audit by the State.

13. Nothing in this Agreement shall be construed as obligating the State to expend money in excess of appropriations authorized by law and administratively allocated to this Agreement.

Dated: 1-6-2010

Department of Military Affairs

BY: _____
LARRY W. SHELLITO
The Adjutant General

Dated: 12-21-09

Department of Natural Resources

BY: _____
MARK HOLSTEN
Commissioner of Natural Resources

APPENDIX E: CAMP RIPLEY ANNUAL MEETING MINUTES, 2010

MEMORANDUM FOR RECORD 22 February 2010

SUBJECT: Minutes of the DMA, DNR and USFWS Annual Meeting, 17 February 2010

1. Introduction.

LTC Todd Kubista at 0935 17 February 2010, called the DMA, DNR and, USFWS, annual meeting to order. Other guest included professionals from The Nature Conservancy, Morrison County Soil and Water Conservation District and Saint Cloud State University. The meeting was held at the Martin J. Skoglund Environmental Classroom on Camp Ripley MN. Members present:

Department of Military Affairs:
LTC Todd Kubista, Deputy Post Commander
LTC Jay Morsching, Operations Officer
MAJ Keith Ferdon, Training Area Coordinator
Mr. Marty Skoglund, Environmental Program Manager
Mr. Bill Brown, Natural/Cultural Specialist
Mr. Jay Brezinka, Natural Resource Manager
Mr. Craig Erickson, GIS Manager
Department of Natural Resources:
Mr. Joe Kurcinka, DNR Regional Director (St. Paul)
Mr. Gregory Russell, Asst. Regional Forest Manager (St. Paul)
Mr. John Korzeniowski, Area Forest Supervisor (Little Falls)
Ms. Linda Gormanson, Program Forester (Little Falls)
Mr. Beau Liddell, Wildlife Manager (Little Falls)
Mr. Brady Becker, Fisheries Specialist (Little Falls)
Mr. Brian Dirks, Animal Survey Coordinator (Camp Ripley)
Ms. Nancy Dietz, Animal Survey Asst. (Camp Ripley)
Ms. Pam Perry, NR Supervisor, Ecological Services (Brainerd)
Mr. Mark Hauck, Community Assistance Specialist (St. Cloud)
United States Fish & Wildlife Service:
Mr. Nick Rowse, Biologist (Bloomington)
Ms. Mags Rheude, Biologist (Bloomington)
The Nature Conservancy:
Mr. Todd Holman, Program Manager Central MN (Cushing)
Mr. Tim Notch, Land Steward (Cushing)
Morrison County Soil and Water Conservation District:
Ms. Helen McLennan, District Manager (Little Falls)
Mr. Lance Chisholm, District Technician (Little Falls)
St. Cloud State University:
Ms. Lee Anderson GIS Specialist
Ms. Jamie Hanson, Graduate Student
Mr. Alan Einek, Graduate Student

2. Opening Remarks.

LTC Kubista welcomed everyone to Camp Ripley and provided a brief history of his involvement and his willingness to learn about the conservation programs on Camp Ripley. LTC Kubista thanked all of those present for their commitment and hard work in helping implement the conservation programs and ACUB initiative for the MNARNG. LTC Kubista also expressed his

gratitude towards the successful partnerships, which allowed the MNARNG to receive the 2008 Conservation Award for large installations. The objectives of the meeting were to discuss 2009 accomplishments and 2010 work plans.

3. Discussion.

A presentation by LTC Morsching regarding the future direction on range use and development kicked off the meeting. A presentation was then given by Mr. Brezinka, which summarized the 2009 accomplishments for both the ITAM and Conservation programs and briefly explained the 2010 work plans. An update was then given by Ms. Rheude regarding the eagle take permitting process. Mr. Einek and Ms. Hanson presented on their invasive species projects and Mr. Skoglund briefed on the ACUB program; an open comment and discussion period then followed. Listed below are some of the key issues, highlights, and projects for natural resource management on Camp Ripley.

Natural Resources:

1. From a planning stand point, this is our third year of implementing the conservation report concept. The conservation report encompasses all of the previous year's accomplishments for the conservation program of the MNARNG. Within the conservation report are also the updated goals and objectives for all the conservation and ITAM programs for Camp Ripley and AHATS.
2. A wild land fire plan and ITAM plan-accomplishment report to be completed in 2010.
3 From an administration or budgeting perspective for 2011, the budgets are projected to decrease for both program areas (Conservation 30%, ITAM 40%).
4 An effort is underway to establish a motorized and non motorized trail around Camp Ripley with the intent to connect to the Paul Bunyan trail at Crow Wing State Park and the Soo Line trail near Bowlus MN.
5 The MN National Guard had a documentary produced in the fall of 2009 which showcased the efforts in Gray Wolf Management on Camp Ripley. Partners included USGS, DNR, and DMA.

Wildlife: (Fauna)

1. All hunts were very successful. The 2009 harvest on Camp Ripley was 513 White-tailed Deer.
2. The first turkey hunt for deployed soldiers was implemented on Camp Ripley and AHATS in 2009.
3. The fisher study is in its final year.
4. Continue to implement fauna surveys (songbird, anuran, osprey, owls, bear, Blanding's turtle etc).
5. Working with the USFWS in obtaining a 22.26 "take" permit regarding an eagle's nest near the North FOB area on Camp Ripley.
6. Continue to monitor federal threatened and endangered species and species of greatest conservation need. Six gray wolves were collared on Feb 2-3, 2010.

Vegetation: (Flora)

1 Re-inventory approx. 4400 acres of forest in 2009. To date (23,824 acres have been re-inventoried).
2 Seven timber cuts in 2009, 2010-2011 cut list under review.
3 Continue to implement prescribed fire program at Camp Ripley.
4 Land fund was used for 20K in projects in 2009. Staffs are working on a 2010-2015 project list.
5 Continue 2nd phase of the maneuver trail project in Maneuver Area K1.
6 Continue to implement the Invasive Species Project with SCSU.
7 Several RTLA assessments will continue in 2010.

Fisheries:

1. Harvested 20,816 walleyes and 658 Muskie's in 2009 from Camp Ripley.
2. Operated, Coon Stump, Cockburn, Rapoon, and Muskrat for walleye rearing and Frog, and Miller for muskies.
3. Lake assessments on Lake Alott, Ferrell and Fosdick Lakes were completed in 2009.
4. New access into Fosdick Lake is underway, finish spring of 2010.

ACUB:

1. $12,981,500 to date in federal funding (FY2004-2009) $3,349,000 DNR, $9,632,500 BWSR
2. 262 interested landowners represent 37,545 acres.
3. Interest in easements (91%) and acquisition (9%).
4. 62 land transactions representing 10,639 acres completed or underway.
5. $843,000 was received in 2010 from the Lessard-Sams Heritage Fund for a cash match for the ACUB program near the vicinity of the Nokasippi Wildlife Management Area.

Cultural Resources:

1. Complete the Phase II evaluation of 7 protected cultural sites located on the MPRC, ISBC and Maneuver lanes range development areas.
2. Continue to meet and discuss the proposed language for a programmatic agreement with the 11 participating federally-recognized Indian Tribes in the Nation to Nation federal Consultation. Will attempt to meet formally again before year's end.
3. Completed the five year update and revision of the Integrated Cultural Resource Management Plan (ICRMP).
4. Fifteen of the most hazardous farmstead sites were cleared-filled and capped for soldier safety. More to be filled in 2010.
5. Continue to complete the Phase I evaluation on sites as deemed by Range complex master plan.

Meeting was adjourned at 14:02 pm.

Minutes Submitted By:
Jay Brezinka, Natural Resource Manager

APPENDIX F: ARDEN HILLS ARMY TRAINING SITE ANNUAL MEETING MINUTES, 2010

MEMORANDUM FOR RECORD 24 March 2010

SUBJECT: Minutes of the DMA, DNR and USFWS Annual Meeting, 17 March 2010

1. Introduction. Mr. Dave Hamernick at 1000, 17 March 2010, called the annual meeting of the Natural Resource committee to order. The meeting was held at the Arden Hills City Hall. Members present:

Department of Military Affairs:
MAJ Keith Ferdon, Training Area Coordinator
Mr. Jay Brezinka, Natural Resources Manager
Mr. Dave Hamernick, AHATS Environmental Protection Manager
Ms Mary Lee, AHATS Environmental Protection Specialist
SSG Jamie LeClair, AHATS Training Area Coordinator
Mr. Tom Rothleutner, Road and Grounds Supervisor
Mr. Bill Brown,
Department of Natural Resources:
Mr. Brian Dirks, Animal Survey Coordinator
Mr. Jim LaBarre, Wildlife
Ms. Hannah Texler, Regional Ecological Resources
U.S. Army Reserve:
Mr. Marshal Braman, Natural Resources Manager
Ramsey County:
Mr. John Moriarty, Natural Resources Manager

2. Opening Remarks.
Department of Military Affairs (DMA) Minnesota National Guard (AHATS)
Mr. Brezinka welcomed everyone to Arden Hills Army Training Site (AHATS) and provided a brief history of the natural resources program. Mr. Brezinka thanked all of those present for their commitment and hard work in helping implement the natural resources program at AHATS. The objectives of the meeting were to discuss 2009 accomplishments and 2010 work plans for the AHATS Integrated Natural Resources Management Plan (INRMP).

3. Discussion.
Department of Military Affairs (DMA) Minnesota National Guard (AHATS)
Mr. Hamernick reviewed the INRMP to include administration, vegetation management, wildlife and issues concerning wild turkeys. Mr. Hamernick presented updated information on AHATS current activities, future concerns to include Pond G concerns, the Natural Resources Damage Assessment (NRDA) and the Land Use Control Remedial Design (LUCRD).

Mr. Brezinka recapped the 2009 hunt statistics. Ms. Lee discussed installation of a Purple Martin House, biological controls of non native plants, continuation of bio-fuels and tree removal, and concern of current oak wilt. SSG LeClair recapped changes to the Range Regulation and replacement of locks on Hamline Gates 1 & 2.

Department of Natural Resources (DNR / DMA):
Mr. Dirks reviewed the songbird surveys and highlighted the 19 Species of Greatest Conservation Need (SGCN http://files.dnr.state.mn.us/assistance/nrplanning/bigpicture/cwcs/chapters_appendix/appendix_b.pdf) known on AHATS. Mr. Dirks also recapped positive nest box results, and positive deer survey numbers. Discussion on habitat preservation for the Plains Pocket Mouse also reaffirmed past

practices on site by Mr. Dirks. Discussion on the SGCN bat found on AHATS led to consensus that typical bat houses would not impact their success on site.

Cultural / Forestry Resources (DMA):

Mr. Brown recapped the completion the Phase II evaluation of the protected cultural sites located on AHATS. Discussion followed with applicability of filling closed sites with sand to protect sites from hazards. Further consideration is needed, sites to be minimally marked with Sibert stakes.

Road and Grounds Maintenance (DMA):

Mr. Rothleutner discussed options for Oak Wilt, AHATS will coordinate with the Nature Conservancy to mark the trees. 2010 also has numerous additional ITAM projects to include concrete slab removal and recycling efforts.

Roundtable Discussion and Comments:

Mr. Moriarty (Ramsey County Parks) discussed upcoming Urban Bird Fest activities and St. Paul Audubon events. Ms. Texler (MNDNR) discussed options for inventories and ecological items to include the vegetative plan. Mr. LaBarre recommended procedures for the city of Arden Hills to address wild turkey concerns.

4. Closing.

Mr. Brezinka thanked all for participation and welcomed any input for future goals and planning. Copies of the Conservation Program Report were provided to those in attendance. Meeting adjourned at 12:15.

Minutes Submitted By:
Mary L. Lee, AHATS Environmental

APPENDIX G. WEST RANGE WETLAND PERMIT NOTICE OF DECISION, 2010

Minnesota Wetland Conservation Act
Notice of Decision

Local Government Unit (LGU)	Address
Morrison Soil & Water Cons. District	**16776 Heron Rd** **Little Falls, MN 56345**

1. PROJECT INFORMATION

Applicant Name	Project Name	Date of Application	Application Number
MN Department of Military Affairs	**Military Range Construction**	**7/1/2010**	**49-7-1-10**

☐ Attach site locator map.

Type of Decision:

☐ Wetland Boundary or Type ☐ No-Loss ☐ Exemption ☐ Sequencing

☒ Replacement Plan ☐ Banking Plan

Technical Evaluation Panel Findings and Recommendation (if any):

☐ Approve ☒ Approve with conditions ☐ Deny

Summary (or attach): Camp minimized the project from the original scope of over 30,000 square feet of impact down to 11,683 square feet.

2. LOCAL GOVERNMENT UNIT DECISION

Date of Decision:

☐ Approved ☒ Approved with conditions (include below) ☐ Denied

LGU Findings and Conclusions (attach additional sheets as necessary):

In a site review conducted July 29th on site, the project had been minimized by over half of the previous requested impact. Two sites for replacement were reviewed. Either would work, but it was felt that if some organic matter and plants could be transplanted into the newly created wetland area located in Section 18 of T131 R30W, we would agree that it held functions and values similar to the impact sites, which were isolated basins.

Sequencing requirements were met.

For Replacement Plans using credits from the State Wetland Bank:

Bank Account #	Bank Service Area	County **Morrison**	Credits Approved for Withdrawal (sq. ft. or nearest .01 acre)

Replacement Plan Approval Conditions. In addition to any conditions specified by the LGU, the approval of a Wetland Replacement Plan is conditional upon the following:

☐ **Financial Assurance:** For project-specific replacement that is not in-advance, a financial assurance specified by the LGU must be submitted to the LGU in accordance with MN Rule 8420.0522, Subp. 9 (List amount and type in LGU Findings).

☐ **Deed Recording:** For project-specific replacement, evidence must be provided to the LGU that the BWSR "Declaration of Restrictions and Covenants" and "Consent to Replacement Wetland" forms have been filed with the county recorder's office in which the replacement wetland is located.

☐ **Credit Withdrawal:** For replacement consisting of wetland bank credits, confirmation that BWSR has withdrawn the credits from the state wetland bank as specified in the approved replacement plan.

Wetlands may not be impacted until all applicable conditions have been met!

LGU Authorized Signature:

Signing and mailing of this completed form to the appropriate recipients in accordance with 8420.0255, Subp. 5 provides notice that a decision was made by the LGU under the Wetland Conservation Act as specified above. If additional details on the decision exist, they have been provided to the landowner and are available from the LGU upon request.		
Name **Helen McLennan**	Title **District Manager**	
Signature Helen McLennan	Date **8/17/2010**	Phone Number and E-mail **320-616-2479** **Helen.McLennan@mn.nacdnet.net**

THIS DECISION ONLY APPLIES TO THE MINNESOTA WETLAND CONSERVATION ACT. Additional approvals or permits from local, state, and federal agencies may be required. Check with all appropriate authorities before commencing work in or near wetlands.

Applicants proceed at their own risk if work authorized by this decision is started before the time period for appeal (30 days) has expired. If this decision is reversed or revised under appeal, the applicant may be responsible for restoring or replacing all wetland impacts.

This decision is valid for three years from the date of decision unless a longer period is advised by the TEP and specified in this notice of decision.

3. APPEAL OF THIS DECISION

Pursuant to MN Rule 8420.0905, any appeal of this decision can only be commenced by mailing a petition for appeal, including applicable fee, within thirty (30) calendar days of the date of the mailing of this Notice to the following as indicated:

Check one:

☐ Appeal of an LGU staff decision. Send petition and $_____ fee (if applicable) to:	☐ Appeal of LGU governing body decision. Send petition and $500 filing fee to: Executive Director Minnesota Board of Water and Soil Resources 520 Lafayette Road North St. Paul, MN 55155

4. LIST OF ADDRESSEES

- ☐ SWCD TEP member: **Alan Ringwelski, District Technician**
- ☐ BWSR TEP member: **John Overland, Wetland Specialist**
- ☐ LGU TEP member (if different than LGU Contact):
- ☐ DNR TEP member: **Michael North**
- ☐ DNR Regional Office : **Tim Crocker**
- ☐ WD or WMO (if applicable):
- ☐ Applicant and Landowner (if different)
- ☐ Members of the public who requested notice:
- ☐ Corps of Engineers Project Manager **Leo Grabowski**
- ☐ BWSR Wetland Bank Coordinator (wetland bank plan decisions only)

5. MAILING INFORMATION

➢For a list of BWSR TEP representatives, see: www.bwsr.state.mn.us/aboutbwsr/workareas/WCA_areas.pdf

➢For a list of DNR TEP representatives, see: www.bwsr.state.mn.us/wetlands/wca/DNR_TEP_contacts.pdf

➢Department of Natural Resources Regional Offices:

NW Region:	NE Region:	Central Region:	Southern Region:
Reg. Env. Assess. Ecol.	Reg. Env. Assess. Ecol.	Reg. Env. Assess. Ecol.	Reg. Env. Assess. Ecol.
Div. Ecol. Resources	Div. Ecol. Resources	Div. Ecol. Resources	Div. Ecol. Resources
2115 Birchmont Beach Rd. NE	1201 E. Hwy. 2	1200 Warner Road	261 Hwy. 15 South
Bemidji, MN 56601	Grand Rapids, MN 55744	St. Paul, MN 55106	New Ulm, MN 56073

For a map of DNR Administrative Regions, see: http://files.dnr.state.mn.us/aboutdnr/dnr_regions.pdf

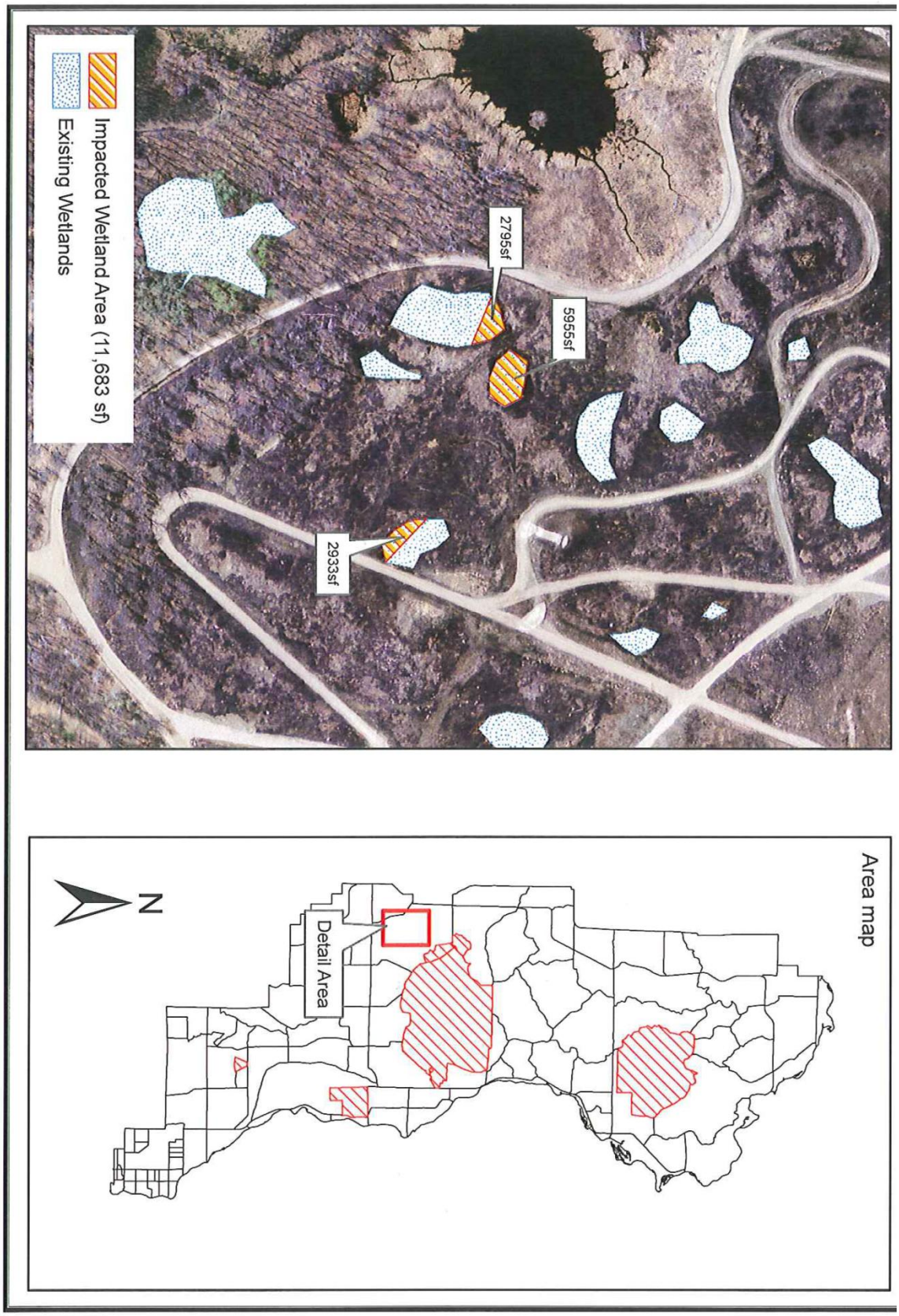
➢For a list of Corps of Project Managers, see: www.mvp.usace.army.mil/regulatory/default.asp?pageid=687
or send to: Dept. of the Army, Corps of Engineers, St. Paul District
ATTN: CO-R, 190 Fifth Street East
St. Paul, MN 55101-1638

➢For Wetland Bank Plan applications, also send a copy of the application to:
Minnesota Board of Water and Soil Resources
Wetland Bank Coordinator
520 Lafayette Road North
St. Paul, MN 55155

6. ATTACHMENTS

In addition to the site locator map, list any other attachments:

- ☒ **Revised map of proposed wetland impact.**
- ☐
- ☐
- ☐
- ☐


Impacted Wetland Area (11,683 sf)
Existing Wetlands
2795sf
5955sf
2933sf
N
Detail Area
Area map

APPENDIX H. OCCURENCES OF SPECIES IN GREATEST CONSERVATION NEED BY ECOLOGICAL CLASSIFICATION SYSTEM SUBSECTIONS ON CAMP RIPLEY AND ARDEN HILLS ARMY TRAINING SITES, MINNESOTA (UPDATED 2010)

# of ECS subsections	Tax	Scientific Name	Common Name	Ecological Classification System Subsection			Camp Ripley Record	AHATS Record	State Status	Federal Status
				Anoka Sand Plain	Pine Moraines & Outwash Plains	St. Paul-Baldwin Plains				
Numbers in columns indicate number of occurrences since 1990 based on the MNDNR Natural Heritage Database, MNDNR Fisheries Database, Minnesota County Biological Survey data, or the Statewide Mussel Surveys. An "X" indicates that the species either was found in that subsection prior to 1990 or is expected to occur based on other information. Record Code: P=Presence. Status Code: END=Endangered, THR=Threatened, SPC=Special Concern, CAND=Candidate species for listing, PR=Protected by Eagle Act, and NL=Not listed.										
5	Ma	*Myotis septentrionalis*	Northern Myotis	X		X	P		SPC	NL
7	Ma	*Pipistrellus subflavus*	Eastern Pipistrelle			X	P	P	SPC	NL
23	Ma	*Spermophilus franklinii*	Franklin's Ground Squirrel	X	X	X	P		NL	NL
5	Ma	*Perognathus flavescens*	Plains Pocket Mouse	7				P	SPC	NL
10	Ma	*Reithrodontomys megalotis*	Western Harvest Mouse	X		X			SPC	NL
12	Ma	*Microtus ochrogaster*	Prairie Vole	2	11	X	P		SPC	NL
12	Ma	*Mustela nivalis*	Least Weasel	X		X			SPC	NL
14	Ma	*Canis lupus*	Gray Wolf		X		P		SPC	THR
24	Ma	*Taxidea taxus*	American Badger	1	X	X	P		NL	NL
19	Ma	*Spilogale putorius*	Eastern Spotted Skunk	X	X	X			THR	NL
	Ma	*Puma concolor*	Cougar **(Not SGCN)**						SPC	NL
10	Ma	*Lynx canadensis*	Canada Lynx				P		SPC	END
			Mammal Subtotal				7	**2**		
14	Bi	*Cygnus buccinator*	Trumpeter Swan	X	16	X	P	P	THR	NL
9	Bi	*Anas acuta*	Northern Pintail	X		X	P		NL	NL
4	Bi	*Tympanuchus cupido*	Greater Prairie-chicken		55				SPC	NL
9	Bi	*Tympanuchus phasianellus*	Sharp-tailed Grouse		X				NL	NL
18	Bi	*Gavia immer*	Common Loon	13	38	X	P	P	NL	NL
17	Bi	*Podiceps grisegena*	Red-necked Grebe	X	X	X	P		NL	NL
16	Bi	*Ixobrychus exilis*	Least Bittern	3	X	1	P		NL	NL
21	Bi	*Botaurus lentiginosus*	American Bittern	18	12	X	P	P	NL	NL
8	Bi	*Nycticorax nycticorax*	Black-crowned Night-heron	3		4		P	NL	NL
4	Bi	*Pelecanus erythrorhynchos*	American White Pelican		4		P		SPC	NL
21	Bi	*Haliaeetus leucocephalus*	Bald Eagle	55	171	35	P		SPC	PR
13	Bi	*Accipiter gentilis*	Northern Goshawk		7				NL	NL
25	Bi	*Circus cyaneus*	Northern Harrier	4	2	X	P	P	NL	NL
12	Bi	*Buteo lineatus*	Red-shouldered Hawk	31	117	15	P	P	SPC	NL
25	Bi	*Stelgidopteryx serripennis*	N. Rough-winged Swallow	4	2	6	P	P	NL	NL
6	Bi	*Falco peregrinus*	Peregrine Falcon	10		10			THR	NL
10	Bi	*Coturnicops noveboracensis*	Yellow Rail		16		P		SPC	NL
23	Bi	*Rallus limicola*	Virginia Rail	2	X	X	P	P	NL	NL
7	Bi	*Gallinula chloropus*	Common Moorhen	2		1			SPC	NL
24	Bi	*Pluvialis dominica*	American Golden-plover	X	X	X			NL	NL
16	Bi	*Recurvirostra americana*	American Avocet	X	X	X			NL	NL
25	Bi	*Tringa melanoleuca*	Greater Yellowlegs	X	X	X	P	P	NL	NL
19	Bi	*Bartramia longicauda*	Upland Sandpiper	7	2	1	P		NL	NL
13	Bi	*Numenius phaeopus*	Whimbrel	X	X				NL	NL
18	Bi	*Limosa haemastica*	Hudsonian Godwit	X	X	X			NL	NL
20	Bi	*Arenaria interpres*	Ruddy Turnstone	X	X	X			NL	NL
25	Bi	*Calidris pusilla*	Semipalmated Sandpiper	X	X	X	P		NL	NL
20	Bi	*Calidris fuscicollis*	White-rumped Sandpiper	X	X	X			NL	NL
24	Bi	*Calidris alpina*	Dunlin	X	X	X		P	NL	NL
23	Bi	*Tryngites subruficollis*	Buff-breasted Sandpiper	X	X	X	P		NL	NL
22	Bi	*Limnodromus griseus*	Short-billed Dowitcher	X	X	X	P		NL	NL
22	Bi	*Scolopax minor*	American Woodcock	28	95	X	P		NL	NL
9	Bi	*Phalaropus tricolor*	Wilson's Phalarope	4	2		P	P	THR	NL
18	Bi	*Chlidonias niger*	Black Tern	21	X	2	P	P	NL	NL
4	Bi	*Sterna hirundo*	Common Tern		5			P	THR	NL
11	Bi	*Sterna forsteri*	Forester's Tern			3	P	P	SPC	NL
25	Bi	*Coccyzus erythropthalmus*	Black-billed Cuckoo	15	10	5	P		NL	NL

# of ECS subsections	Tax	Scientific Name	Common Name	Ecological Classification System Subsection			Camp Ripley Record	AHATS Record	State Status	Federal Status
				Anoka Sand Plain	Pine Moraines & Outwash Plains	St. Paul-Baldwin Plains				
Numbers in columns indicate number of occurrences since 1990 based on the MNDNR Natural Heritage Database, MNDNR Fisheries Database, Minnesota County Biological Survey data, or the Statewide Mussel Surveys. An "X" indicates that the species either was found in that subsection prior to 1990 or is expected to occur based on other information. Record Code: P=Presence. Status Code: END=Endangered, THR=Threatened, SPC=Special Concern, CAND=Candidate species for listing, PR=Protected by Eagle Act, and NL=Not listed.										
11	Bi	*Asio flammeus*	Short-eared Owl		X				SPC	NL
25	Bi	*Chordeiles minor*	Common Nighthawk	2	6	X	P		NL	NL
21	Bi	*Caprimulgus vociferus*	Whip-poor-will	X	1	X	P		NL	NL
22	Bi	*Melanerpes erythrocephalus*	Red-headed Woodpecker	1	2	1	P	P	NL	NL
23	Bi	*Sphyrapicus varius*	Yellow-bellied Sapsucker	1	27	1	P	P	NL	NL
6	Bi	*Empidonax virescens*	Acadian Flycatcher			9			SPC	NL
13	Bi	*Empidonax traillii*	Willow Flycatcher	11		14	P	P	NL	NL
25	Bi	*Empidonax minimus*	Least Flycatcher	15	67	6	P	P	NL	NL
25	Bi	*Contopus virens*	Eastern Wood-pewee	54	2	44	P	P	NL	NL
10	Bi	*Lanius ludovicianus*	Loggerhead Shrike	11		1			THR	NL
6	Bi	*Vireo bellii*	Bell's Vireo			2			NL	NL
18	Bi	*Troglodytes troglodytes*	Winter Wren		8	3	P	P	NL	NL
25	Bi	*Cistothorus platensis*	Sedge Wren	39	30	9	P	P	NL	NL
20	Bi	*Cistothorus palustris*	Marsh Wren	18	8	9	P	P	NL	NL
22	Bi	*Catharus fuscescens*	Veery	44	86	6	P	P	NL	NL
20	Bi	*Hylocichla mustelina*	Wood Thrush	5	7	11	P		NL	NL
25	Bi	*Toxostoma rufum*	Brown Thrasher	6	4	6	P	P	NL	NL
6	Bi	*Vermivora pinus*	Blue-winged Warbler	X		2			NL	NL
14	Bi	*Vermivora chrysoptera*	Golden-winged Warbler		28		P	P	NL	NL
10	Bi	*Dendroica tigrina*	Cape May Warbler				P	P	NL	NL
10	Bi	*Dendroica cerulea*	Cerulean Warbler	2	4	11	P		SPC	NL
6	Bi	*Protonotaria citrea*	Prothonotary Warbler			5			NL	NL
22	Bi	*Seiurus aurocapillus*	Ovenbird	28	95	24	P	P	NL	NL
5	Bi	*Seiurus motacilla*	Louisiana Waterthrush	4		8			SPC	NL
14	Bi	*Oporornis agilis*	Connecticut Warbler		4		P	P	NL	NL
2	Bi	*Wilsonia citrina*	Hooded Warbler		1	9	P		SPC	NL
13	Bi	*Wilsonia canadensis*	Canada Warbler		2		P		NL	NL
13	Bi	*Spizella pusilla*	Field Sparrow	48	17	10	P	P	NL	NL
14	Bi	*Ammodramus savannarum*	Grasshopper Sparrow	28	2	3	P	P	NL	NL
7	Bi	*Ammodramus henslowii*	Henslow's Sparrow			1		P	END	NL
17	Bi	*Ammodramus leconteii*	Le Conte's Sparrow	X	9		P		NL	NL
9	Bi	*Ammodramus nelsoni*	Nelson's Sharp-tailed Sparrow		3				SPC	NL
25	Bi	*Melospiza georgiana*	Swamp Sparrow	57	28	16	P	P	NL	NL
15	Bi	*Zonotrichia albicollis*	White-throated Sparrow		9		P	P	NL	NL
25	Bi	*Pheucticus ludovicianus*	Rose-breasted Grosbeak	26	36	29	P	P	NL	NL
11	Bi	*Spiza americana*	Dickcissel	X		X	P		NL	NL
25	Bi	*Dolichonyx oryzivorus*	Bobolink	13	4	3	P	P	NL	NL
20	Bi	*Sturnella magna*	Eastern Meadowlark	16	1	2	P	P	NL	NL
						Birds Subtotal	**52**	**36**		
4	Am	*Hemidactylium scutatum*	Four-toed Salamander			X			SPC	NL
13	Am	*Plethodon cinereus*	Eastern Red-backed		X				NL	NL
14	Am	*Necturus maculosus*	Common Mudpuppy	X		X			NL	NL
6	Am	*Acris crepitans*	Northern Cricket Frog			1			END	NL
						Amphibians Subtotal	**0**	**0**		
25	Re	*Chelydra serpentina*	Common Snapping Turtle	15	3	14	P		SPC	NL
11	Re	*Clemmys insculpta*	Wood Turtle	2		4			THR	NL
13	Re	*Emydoidea blandingii*	Blanding's Turtle	207	155	83	P	P	THR	NL
3	Re	*Apalone mutica*	Smooth Softshell			2			SPC	NL
3	Re	*Cnemidophorus sexlineatus*	Six-lined Racerunner			X			NL	NL
3	Re	*Eumeces fasciatus*	Five-lined Skink			X			SPC	NL

# of ECS subsections	Tax	Scientific Name	Common Name	Ecological Classification System Subsection			Camp Ripley Record	AHATS Record	State Status	Federal Status
				Anoka Sand Plain	Pine Moraines & Outwash Plains	St. Paul-Baldwin Plains				
Numbers in columns indicate number of occurrences since 1990 based on the MNDNR Natural Heritage Database, MNDNR Fisheries Database, Minnesota County Biological Survey data, or the Statewide Mussel Surveys. An "X" indicates that the species either was found in that subsection prior to 1990 or is expected to occur based on other information. Record Code: P=Presence. Status Code: END=Endangered, THR=Threatened, SPC=Special Concern, CAND=Candidate species for listing, PR=Protected by Eagle Act, and NL=Not listed.										
9	Re	*Heterodon nasicus*	Western Hognose Snake	9		X	P		SPC	NL
6	Re	*Heterodon platirhinos*	Eastern Hognose Snake	2	1	2	P		NL	NL
15	Re	*Liochlorophis vernalis*	Smooth Green Snake	X	X	X	P		NL	NL
5	Re	*Coluber constrictor*	Eastern Racer			1			SPC	NL
9	Re	*Elaphe vulpina*	Eastern Fox Snake	1		7			SPC	NL
7	Re	*Pituophis catenifer*	Gopher Snake	3		1			NL	NL
6	Re	*Lampropeltis triangulum*	Milk Snake			X			NL	NL
3	Re	*Crotalus horridus*	Timber Rattlesnake			X			THR	NL
						Reptile Subtotal	**5**	**1**		
2	Fi	*Ichthyomyzon gagei*	Southern Brook Lamprey			4			SPC	NL
7	Fi	*Lampetra appendix*	American Brook Lamprey			13			NL	NL
14	Fi	*Acipenser fulvescens*	Lake Sturgeon	1		15			SPC	NL
4	Fi	*Scaphirhynchus platorynchus*	Shovelnose Sturgeon			6			NL	NL
3	Fi	*Polyodon spathula*	Paddlefish			11			THR	NL
3	Fi	*Anguilla rostrata*	American Eel			9			NL	NL
4	Fi	*Alosa chrysochloris*	Skipjack Herring			X			SPC	NL
2	Fi	*Hybognathus nuchalis*	Mississippi Silvery Minnow			X			NL	NL
2	Fi	*Notropis amnis*	Pallid Shiner			X			SPC	NL
5	Fi	*Macrhybopsis aestivalis*	Speckled Chub			X			NL	NL
9	Fi	*Notropis anogenus*	Pugnose Shiner	X	26	X			SPC	NL
2	Fi	*Opsopoeodus emiliae*	Pugnose Minnow			5			NL	NL
3	Fi	*Cycleptus elongatus*	Blue Sucker			28			SPC	NL
3	Fi	*Ictiobus niger*	Black Buffalo			2			SPC	NL
3	Fi	*Moxostoma carinatum*	River Redhourse			26			NL	NL
11	Fi	*Moxostoma valenciennesi*	Greater Redhorse	28	32	1	P		NL	NL
2	Fi	*Aphredoderus sayanus*	Pirate Perch			X			SPC	NL
2	Fi	*Lepomis gulosus*	Warmouth			X			NL	NL
6	Fi	*Lepomis megalotis*	Longear Sunfish		26	X			NL	NL
3	Fi	*Ammorcrypta clara*	Western Sand Darter			18			NL	NL
3	Fi	*Ammorcrypa asprella*	Crystal Darter			X			SPC	NL
3	Fi	*Etheostoma asprigene*	Mud Darter			2			NL	NL
2	Fi	*Etheostoma chlorosoma*	Bluntnose Darter			X			NL	NL
9	Fi	*Etheostoma microperca*	Least Darter		116				SPC	NL
2	Fi	*Percina evides*	Gilt Darter			11			SPC	NL
5	Fi	*Campostoma oligolepis*	Largescale Stoneroller			X			NL	NL
						Fish Subtotal	**1**	**0**		
6	Sp	*Marpissa grata*	A Jumping Spider			1			SPC	NL
4	Sp	*Metaphidippus arizonensis*	A Jumping Spider	1		1			SPC	NL
5	Sp	*Paradamoetas fontana*	A Jumping Spider	X		X	P		SPC	NL
1	Sp	*Tutelina formicaria*	A Jumping Spider	X					SPC	NL
						Spider Subtotal	**1**	**0**		
10	In	*Afexia rubranura*	Red Tailed Prairie Leafhopper			1			SPC	NL
1	In	*Asynarchus rossi*	A Caddisfly			2			SPC	NL
2	In	*Agapetus tomus*	A Caddisfly	1					SPC	NL
9	In	*Atrytone arogos*	Arogos Skipper			X			SPC	NL
3	In	*Ceraclea vertreesi*	Vertrees's Ceraclean Caddisfly		X				SPC	NL
1	In	*Chilostigma itascae*	Headwater Chilostigman Caddisfly		X				END	NL
2	In	*Cicindela lepida*	Little White Tiger Beetle				P		THR	NL

# of ECS subsections	Tax	Scientific Name	Common Name	Ecological Classification System Subsection			Camp Ripley Record	AHATS Record	State Status	Federal Status
				Anoka Sand Plain	Pine Moraines & Outwash Plains	St. Paul-Baldwin Plains				
Numbers in columns indicate number of occurrences since 1990 based on the MNDNR Natural Heritage Database, MNDNR Fisheries Database, Minnesota County Biological Survey data, or the Statewide Mussel Surveys. An "X" indicates that the species either was found in that subsection prior to 1990 or is expected to occur based on other information. Record Code: P=Presence. Status Code: END=Endangered, THR=Threatened, SPC=Special Concern, CAND=Candidate species for listing, PR=Protected by Eagle Act, and NL=Not listed.										
5	In	*Cicindela patruela patruela*	A Tiger Beetle	2	4	X	P		SPC	NL
13	In	*Epidemia epixanthe michiganensis*	Bog Copper	X	X	X			NL	NL
5	In	*Erynnis persius*	Persius Duskywing	X	X	X			END	NL
7	In	*Euphyes bimacula illinois*	Two-spotted Skipper	X	X	X			NL	NL
2	In	*Gomphus viridifrons*	Green-faced Clubtail			X			NL	NL
7	In	*Hesperia leonardus leonardus*	Leonard's Skipper	1	3	X			SPC	NL
2	In	*Hesperia uncas*	Uncas Skipper	X					END	NL
3	In	*Lycaeides melissa samuelis*	Karner Blue	X					END	END
11	In	*Oeneis macounii*	Macoun's Arctic		X				NL	NL
2	In	*Ophiogomphus susbehcha*	St. Croix Snaketail			1			SPC	NL
3	In	*Oxyethira ecornuta*	A Caddisfly		1				SPC	NL
6	In	*Oxyethira itascae*	A Caddisfly		X				SPC	NL
9	In	*Papaipema beeriana*	Blazing Star Stem Borer			X			NL	NL
12	In	*Phyciodes batesii*	Tawny Crescent		X				NL	NL
2	In	*Polycentropus milaca*	A Caddisfly		1				SPC	NL
11	In	*Speyeria idalia*	Regal Fritillary	X		X			SPC	NL
						Insect Subtotal	**2**	**0**		
3	Mo	*Cumberlandia monodonta*	Spectaclecase			8			THR	CAND
5	Mo	*Cyclonaias tuberculata*	Purple Wartyback	1		16			THR	NL
3	Mo	*Elliptio crassidens*	Elephant-ear			13			END	NL
10	Mo	*Elliptio dilatata*	Spike	5		45			SPC	NL
4	Mo	*Fusconaia ebena*	Ebonyshell			26			END	NL
3	Mo	*Megalonaias nervosa*	Washboard			3			THR	NL
4	Mo	*Plethobasus cyphyus*	Sheepnose			9			END	CAND
6	Mo	*Pleurobema coccineum*	Round Pigtoe			50			THR	NL
4	Mo	*Quadrula fragosa*	Winged Mapleleaf			4			END	END
10	Mo	*Quadrula metanevra*	Monkeyface	X		42			THR	NL
5	Mo	*Quadrula nodulata*	Wartyback	20		102			END	NL
5	Mo	*Tritogonia verrucosa*	Pistolgrip			27			THR	NL
7	Mo	*Alasmidonta marginata*	Elktoe	3		X			THR	NL
3	Mo	*Arcidens confragosus*	Rock Pocketbook			24			END	NL
24	Mo	*Lasmigona compressa*	Creek Heel splitter	39	52		P		SPC	NL
12	Mo	*Lasmigona costata*	Fluted-shell			11			SPC	NL
4	Mo	*Simpsonaias ambigua*	Salamander Mussel			3			THR	NL
11	Mo	*Actinonaias ligamentina*	Mucket mussel	4		X			THR	NL
4	Mo	*Ellipsaria lineolata*	Butterfly			20			THR	NL
3	Mo	*Epioblasma triquetra*	Snuffbox			45			THR	NL
4	Mo	*Lampsilis higginsi*	Higgins Eye			22			END	END
3	Mo	*Lampsilis teres*	Yellow Sandshell			2			END	NL
25	Mo	*Ligumia recta*	Black Sandshell	112	35	44	P		SPC	NL
5	Mo	*Obovaria olivaria*	Hickorynut			9			SPC	NL
5	Mo	*Truncilla donaciformis*	Fawnsfoot	13		8			NL	NL
8	Mo	*Venustaconcha ellipsiformis*	Ellispe			1			THR	NL
						Mussel Subtotal	**2**	**0**		
						Species in Greatest Conservation Need TOTAL	**69**	**38**		

APPENDIX I: CAMP RIPLEY BALD EAGLE TAKE PERMIT, 2010

DEPARTMENT OF THE INTERIOR
U.S. FISH AND WILDLIFE SERVICE

3-201
(1/97)

FEDERAL FISH AND WILDLIFE PERMIT

1. PERMITTEE

MN DEPT OF MILITARY AFFAIRS - NATL GUARD
15000 HWY 115
BLDG 11-1 CAMP RIPLEY
LITTLE FALLS, MN 56345

2. AUTHORITY-STATUTES
16 USC 668a

REGULATIONS
50 CFR 13
50 CFR 22.26

3. NUMBER
MB00059A-0

4. RENEWABLE
☒ YES
☐ NO

5. MAY COPY
☒ YES
☐ NO

6. EFFECTIVE
02/24/2010

7. EXPIRES
03/31/2013

8. NAME AND TITLE OF PRINCIPAL OFFICER *(If #1 is a business)*
TODD A KUBISTA
DEPUTY POST COMMANDER

9. TYPE OF PERMIT
EAGLE TAKE ASSOCIATED WITH BUT NOT THE PURPOSE OF AN ACTIVITY

10. LOCATION WHERE AUTHORIZED ACTIVITY MAY BE CONDUCTED
Camp Ripley
Little Falls, MN

11. CONDITIONS AND AUTHORIZATIONS:

A. GENERAL CONDITIONS SET OUT IN SUBPART D OF 50 CFR 13, AND SPECIFIC CONDITIONS CONTAINED IN FEDERAL REGULATIONS CITED IN BLOCK #2 ABOVE, ARE HEREBY MADE A PART OF THIS PERMIT. ALL ACTIVITIES AUTHORIZED HEREIN MUST BE CARRIED OUT IN ACCORD WITH AND FOR THE PURPOSES DESCRIBED IN THE APPLICATION SUBMITTED. CONTINUED VALIDITY, OR RENEWAL, OF THIS PERMIT IS SUBJECT TO COMPLETE AND TIMELY COMPLIANCE WITH ALL APPLICABLE CONDITIONS, INCLUDING THE FILING OF ALL REQUIRED INFORMATION AND REPORTS.

B. THE VALIDITY OF THIS PERMIT IS ALSO CONDITIONED UPON STRICT OBSERVANCE OF ALL APPLICABLE FOREIGN, STATE, LOCAL OR OTHER FEDERAL LAW.

C. VALID FOR USE BY PERMITTEE NAMED ABOVE.

D. Subject to Conditions below, you are authorized to disturb (1) bald eagle nest during the course of the following activity: Construction of a Forward Operating Base. This may cause a loss of productivity due to abandonment of the nest for one year or continued abandonment caused by construction and 500+ people using the site for military readiness at the "Chorawan" nest UTM x coordinate 395421, UTM y coordinate 5126450.

E. The authorizations granted by permits issued under this section apply only to take that results from activities conducted in accordance with the description contained in the permit application and the terms of the permit. If the permitted activity changes, you must immediately contact the Service to determine whether a permit amendment is required in order to retain take authorization.

F. This permit does not authorize intentional take of live eagles, eggs or young.

G. You must comply with the following avoidance, minimization, or other mitigation measures: Conduct timber harvest before start of breeding season, no cutting or removing overstory trees within 330 feet of nest, avoid pedestrian traffic, implement refuse control measures to prevent attracting eagles to garbage; remove all road-killed animals from road to prevent eagle-vehicle strikes; educate military personnel using the Foward Operating Base of the presence of the eagles and protection afforded eagles.

H. You remain responsible for all outstanding monitoring requirements and mitigation measures required under the terms of the permit for take that occurs prior to cancellation, expiration, suspension, or revocation of the permit.

I. You are required to monitor eagle use of important eagle-use areas where eagles are likely to be affected by your activities for 3 years

☒ ADDITIONAL CONDITIONS AND AUTHORIZATIONS ALSO APPLY

12. REPORTING REQUIREMENTS
ANNUAL REPORT DUE: 06/30

ISSUED BY	TITLE	DATE
[signature]	CHIEF, MIGRATORY BIRD PERMIT OFFICE - REGION 3	02/24/2010

after completion of the activity during the season(s) when eagles would normally be present, to the area where the take is likely to occur, and noting whether eagles continue to nest, roost, or forage there. You are required to monitor other eagle nests in the area to determine if the breeding pair has moved elsewhere. Monitoring will include, but should not be limited to, (1) one visit per week between January 1st and March 1st to all aforementioned locations to check for the presence or absence of bald eagles. If no active nest is detected during this period, monitoring will continue every three weeks until March 31st. This monitoring should be conducted for the next (3) three years 2011,2012 and 2013. Reports should be received by the Migratory Bird Permit office by June 30. Any indications of eagle presence, or lack of eagle presence, during each visit will be documented. If possible, fledging success should be monitored and reported if the eagles are successful. Additionally, if it is determined that eagles are nesting, or attempting to nest, at or near a monitored location, nest location will be documented. An eagle nest is defined as any structure built, maintained, or used by eagles for the purpose of reproduction.

If the eagles are using this nest during the construction phase, behavior should be monitored to determine if they are disturbed or actually abandon the nest. Buffer distances from the nest may be decreased if there is a documented absence of eagles in that nest. This may be determined each year.

J. You must submit an annual report summarizing the information you obtained through monitoring to the Service for 3 years after completion of the activity or termination of the permit to the issuing migratory bird permit office at 1 Federal Drive, Fort Snelling, MN 55111. Form 3-202-15 (Eagle Non-purposeful Take Report) can be found online at www.fws.gov/forms/3-202-15.pdf <http://www.fws.gov/forms/3-202-15.pdf>

K. You must immediately notify the migratory bird permit issuing office at 612-713-5441 regarding any apparent injury or death occurring to any eagle, including viable eggs, during project activities. You must immediately transport any injured eagle to The Raptor Center at the University of MN, St. Paul, MN.

L. You must contact the Service immediately upon discovery of any unanticipated take.

M. While the permit is valid and for up to 3 years after it expires, you must allow Service personnel, or other qualified persons designated by the Service, access to the areas where eagles are likely to be affected, at any reasonable hour, and with reasonable notice from the Service, for purposes of monitoring eagles at the site(s).

N. You may delegate the authority granted in this permit to subpermittee(s). Any subpermittee who has been delegated this authority may not re-delegate to another individual/business.

O. Subpermittees must be at least 18 years of age. You are responsible for ensuring that your subpermittees are qualified to perform the work and adhere to the terms of your permit. You are also responsible for maintaining current records of designated subpermittees. As the permittee, you are ultimately legally responsible for compliance with the terms and conditions of this permit and that responsibility may not be delegated.

P. You and any subpermittees must carry a legible copy of this permit and display it upon request whenever exercising its authority.

Q. All of the provisions and conditions of the governing regulations at 50 CFR 13 and 50 CFR 22.26 are conditions of your permit. Failure to comply with the conditions of your permit could be cause for suspension of the permit and/or citation. For copies of the regulations, visit: www.fws.gov/permits.

R. This permit does not authorize you to conduct activities on Federal, State, or other public or private property other than your own without additional prior written permits or permission from the agency/landowner.

S. You must maintain records as required in 50 CFR 13.46. All records relating to the permitted activities must be kept at the location indicated in writing by you to the migratory bird permit issuing office.

T. Acceptance of this permit authorizes the U.S. Fish and Wildlife Service to inspect and audit or copy any permits, books or records required to be kept by the permit and governing regulations (50 CFR 13.46).

U. No take is authorized if it would violate the laws of the applicable State, county, municipal or tribal government or any other applicable law.

V. The U.S. Fish and Wildlife Service is not liable for any damage or injury to person, wildlife, or property that occurs as the result of carrying out the activities associated with this permit.

U.S. FISH & WILDLIFE SERVICE - MIGRATORY BIRD PERMIT OFFICE
EAGLE TAKE (§ 22.26) - ANNUAL REPORT

PERMITTEE: MN Dept of Military Affairs - Natl Guard
ADDRESS: 15000 Hwy 115
Little Falls | MN | 56345
City | State | Zip Code

☐ Check here if reporting a change of name, address, or contact information

PERMIT NUMBER: MB00059A-0
REPORT FOR CALENDAR YEAR*: 2010
REPORT DUE DATE: June 30
PHONE: 320-616-2718
Email: jay.brezinka1@us.army.mil

INSTRUCTIONS: Type or print the information requested below for each Important Eagle-Use Area (IEUA) identified on your permit during the year covered by this report and return the completed report to the above address by the due date. Filing an accurate annual report is a condition of your permit. Failure to file a timely and accurate report can result in permit suspension. Please note that the absence of eagles from an IEUA you are monitoring will in no way affect the continued validity of your permit. Accurate reporting will play an essential role in future eagle management. **Use a separate supplemental sheet for each IEUA identified on your permit.**
MAKE SURE YOU SIGN & DATE THE CERTIFICATION STATEMENT BELOW BEFORE YOU SUBMIT YOUR REPORT. (50 CFR parts 13, 21, & 22)

IMPORTANT USE AREA : Chorwan nest - primary nest near FOB

Identify nest, communal roost, or foraging area. If more than one of one type of IEUA is identified on your permit, designate which nest (or roost or foraging area) data applies to.

DATE EAGLES OBSERVED	TIME OF DAY	NUMBER OF EAGLES OBSERVED (If in large numbers, please estimate)	OBSERVED BEHAVIOR (P – perched; F – feeding; N – sitting on or attending nest; IF– in flight)	DESCRIPTION OF HUMAN ACTIVITY AT TIME EAGLES WERE OBSERVED (e.g., surveying; excavation; pile driving; interior work, etc.) If activity is completed, enter "Completed"
3/1/2010	11:00	0	NA	No human activity
3/8/2010	14:00	0	NA	No human activity
3/25/2010	9:30	0	NA	No human activity
4/5/2010	12 noon	0	NA	Bulldozers working on FOB to north of nest
4/21/2010	11:30	0	NA	No machinery working
5/4/2010	8:45	0	NA	Bulldozers on FOB to north of nest
5/20/2010	10:20	0	NA	Construction on FOB to north of nest
6/2/2010	13:00	0	NA	Light FOB construction
6/14/2010	20:00	0	NA	Road Construction to FOB; Troops in FOB

CERTIFICATION: I certify that the information in this report is true and correct to the best of my knowledge. I understand that any false statement herein may subject me to the criminal penalties of 18 U.S.C. 1001.

Signature: Brian J. Dilks Date: 6-30-2010

OMB No. 1018-0136 Expires 08/31/2009

Form 3-202-15
REV 09/09

U.S. FISH & WILDLIFE SERVICE - MIGRATORY BIRD PERMIT OFFICE
EAGLE TAKE (§ 22.26) - ANNUAL REPORT

PERMITTEE: MN Dept of Military Affairs - Natl Guard
ADDRESS: 15000 Hwy 115
Little Falls (City) MN (State) 56345 (Zip Code)
☐ Check here if reporting a change of name, address, or contact information

PERMIT NUMBER: MB00059A-0
REPORT FOR CALENDAR YEAR*: 2010
REPORT DUE DATE: June 30
PHONE: 320-616-2718
Email:

INSTRUCTIONS: Type or print the information requested below for each Important Eagle-Use Area (IEUA) identified on your permit during the year covered by this report and return the completed report to the above address by the due date. Filing an accurate annual report is a condition of your permit. Failure to file a timely and accurate report can result in permit suspension. Please note that the absence of eagles from an IEUA you are monitoring will in no way affect the continued validity of your permit. Accurate reporting will play an essential role in future eagle management. **Use a separate supplemental sheet for each IEUA identified on your permit.**
MAKE SURE YOU SIGN & DATE THE CERTIFICATION STATEMENT BELOW BEFORE YOU SUBMIT YOUR REPORT. (50 CFR parts 13, 21, & 22)

IMPORTANT USE AREA : East Boundary nest - alternate nest site.

Identify nest, communal roost, or foraging area. If more than one of one type of IEUA is identified on your permit, designate which nest (or roost or foraging area) data applies to.

DATE EAGLES OBSERVED	TIME OF DAY	NUMBER OF EAGLES OBSERVED (If in large numbers, please estimate)	OBSERVED BEHAVIOR (P – perched; F – feeding; N – sitting on or attending nest; IF– in flight)	DESCRIPTION OF HUMAN ACTIVITY AT TIME EAGLES WERE OBSERVED (e.g., surveying; excavation; pile driving; interior work, etc.) If activity is completed, enter "Completed"
3/8/2010	14:00	0	Not applicable	Light roadway traffic on East Boundary
3/9/2010	9:00	2	N	Light roadway traffic on East Boundary
3/25/2010	9:35	1	P - no eggs	No human activity
4/5/2010	12:15	0	Not applicable (NA)	Light roadway traffic on East Boundary
4/7/2010	11:15	0	NA	Light roadway traffic on East Boundary
4/20/2010	09:15	2	P/IF	Trucks hauling on Chorwan
5/4/2010	8:30	1	P - next to nest	Roadway traffic on East Boundary and Chorwan
5/20/2010	10:23	0	NA	Roadway traffic on East Boundary and Chorwan
6/2/2010	14:00	0	NA	Roadway traffic on East Boundary and Chorwan

CERTIFICATION: I certify that the information in this report is true and correct to the best of my knowledge. I understand that any false statement herein may subject me to the criminal penalties of 18 U.S.C. 1001.

Signature: Brian J. Dutko Date: 6-30-2010

OMB No. 1018-0136 Expires 08/31/2009

Form 3-202-15
REV 09/09

APPENDIX J. GIS DATA LAYER UPDATES, 2010.

The following GIS data layers have been updated in 2010.

cadastre
- easement_right_of_way_area

communications
- comm._antenna_point

cultural
- cultural_cleared_area
- cultural_restricted_area
- cultural_survey_area

fauna
- fauna_special_species_area
- nesting_point

flora
- flora_pres_burn_area
- forest_stand_area
- lcta_line
- lcta_point
- timber_harvest_area

future_projects
- future_projects_area
- future_projects_line
- future_projects_point

improvement_general
- fence_line

improvement_recreation
- recreation_trail_centerline

land_status
- land_repair_point
- land_restriction_area

landform
- elevation_contour_line

military_operations
- ammunition_storage_area
- dudded_impact_area
- firing_point
- firing_line
- forward_arming_refueling_point
- military_access_point
- military_drop_zone_area
- military_flight_corridor_area
- military_observation_point
- mil_special_use_airspace_area
- military_range_area
- military_safety_marker_point
- mil_surface_danger_zone_area
- military_target_line
- military_target_point
- training_area
- training_point

transportation_air
- air_accident_zone_area
- airfield_surface_point