



Trudy Mara  
Mara Grouse Hill Farm, LLC  
E12942 Hwy W  
Baraboo, WI, 53913

September 17, 2015

John Pohlman - LF/6  
WI Department of Natural Resources  
P O Box 7921  
Madison WI 53707-7921

Dear John:

I would like to comment on the Sauk Prairie Recreational Area Master Planning. We own a horse farm near Baraboo where we have a youth program. It is getting harder and harder to find land to ride on, especially in this part of the state. I believe in the original Sauk Prairie Recreation area the horse population spoke up for the need for horse trails. I am writing to reinforce that need.

Apparently in the open meeting there were those who spoke against horse trails, saying that horses spread invasive species. This is old, and erroneous information. (John Lange of this area has long used this argument to fight against horse trails- with untrue information to back him up) I am attaching more current, controlled and thoroughly tested research on this question.

One question-

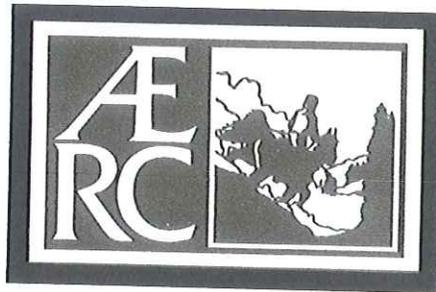
Would it be possible to consider expanding the equine trails to include the outside loop of snowmobile trails? At many of the DNR managed properties, these 2 user groups have quite a bit of overlap, and seems to work well. It would also allow SPRA to be more of a destination trail with the extra mileage. Thank you for your continued support of multi-use trails in the SPRA. We look forward to enjoying the scenic beauty of the area.

Sincerely,

Trudy Mara  
Mara Grouse Hill Farm, LLC

# Are horses responsible for introducing non-native plants along trails in the eastern United States?

A final report to the American Endurance Riders Conference (AERC)



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Prepared by

Dr. Stith T. Gower  
Department of Forest Ecology and Management  
1630 Linden Drive  
University of Wisconsin  
Madison, WI 53706  
608-262-0532 (office phone)  
608-345-4780 (cell)  
608-262-9922 (fax)  
[stgower@wisc.edu](mailto:stgower@wisc.edu) (email)  
<http://forestecology.forest.wisc.edu>

## Introduction

Conservation biologists, natural resource managers, and private landowners are increasingly concerned with the invasion of non-native species in natural ecosystems (Mooney and Drake 1986, Soule 1990, Williamson 1996, Vitousek et al. 1997). Non-native species, also known as alien, non-indigenous, or exotic, are species or strains that become established in natural ecosystems and replace native species. Non-native species pose both economic and ecological concerns. Non-native plants often decrease biodiversity by replacing native plant species and other organisms that depend on the plants. The loss of species diversity makes the ecosystem "unhealthy" or susceptible to degradation (Mooney and Drake 1986, Williamson 1996).

Non-native species also have a pronounced economic impact. Weeds cost the U.S. economy \$32 billion a year by decreasing crop production by 12% (Pimentel et al. 1999), and 73% of the weeds are non-native (Pimentel 1993). The costs estimates provided by Pimentel and his colleagues excluded costs of (i) producing the herbicides (\$4 billion), (ii) programs to control non-native plant species (\$3 billion), and (iii) environmental and public health damage caused by herbicides (\$9 billion). Pastures for livestock are especially susceptible to invasion by native and non-native weeds, with an estimated 45% of the invading species being non-native plants (Pimentel 1993). Forage production from pastures is a \$10 billion industry in the U.S. and yield losses caused by non-native species total \$1 billion annually (USDA 1998).

Given the large adverse effects non-native species can have on the ecological and economic integrity of ecosystems it is critical to prevent further degradation of natural and managed ecosystems. Sound management plans are needed to quantify modes of invasion of non-native species into ecosystems and identify opportunities to reduce or eliminate their sources of introduction.

Disturbances, particularly unnatural ones, appear to make ecosystems more susceptible to biological invasions (Braithwaite et al. 1989, Binggeli 1996, Adkinson and Jackson 1996). No ecosystem is free from disturbance, and since European settlement, the forest landscape has experienced increased logging, wildfire, road building, and the introduction or accidental release of non-native animals that transport invasive plants and/or their seeds. Trail horses have been accused of being an important cause for the spread of invasive or non-native plant species (Bates 1935, Land 1994). Given that non-native plant species commonly occur in pastures and horses consume pasture grasses and defecate pasture grass waste, it is plausible that horses may be a source for the introduction of non-native species. However, there are few data to support or refute this assertion (but see Campbell and Gibson 2001).

The availability and viability of non-native seeds is a biological bottleneck that may be an important factor restricting the importance of horses introducing non-native plants. Environmental and physical conditions of the trail are additional bottlenecks that may prevent non-native germinated seedlings from establishing and colonizing ecosystems adjacent to horse trails. The objectives of this research project are to: (i) assess the importance of different sources of material (i.e. hay, manure, and hoof debris) by which horses may introduce non-native plant seeds, (ii)

determine if seeds of non-native species introduced by horses can germinate and establish on horse trails, (iii) determine if non-native plant species established on trails colonize into natural ecosystems, and (iv) compare the presence and abundance of invasive plant species along horse trails to other recreation activities that may also be responsible for the spread of non-native species in natural ecosystems. The systematic study will provide valuable data to help land managers mitigate the introduction of non-native plant species by horses, if horses are found to be an important source for non-native species.

## Methods

### Study Sites and Experimental Design

The study was conducted in five locations along a south – north gradient from North Carolina to Michigan that encompasses two of the American Endurance Ride Conference (AERC) regions (Table 1). The selection of sites was based on logistics, proper experimental controls, financial support, and the author's familiarity with local flora. The large geographic region of riders (15 states and one Canadian province) represented in this study and varied environmental conditions of the study sites make the results highly relevant to policy makers and land managers. The sites were selected to encompass a large geographic region. Twenty horse were selected at each ride, except for the Biltmore Estates ride where 24 horses were sampled, and the AHDRA I ride where only 12 horses were sampled. Horses were selected randomly at each ride.

Table 1. Study site, respective location and AERC region, and the states and provinces from which horses were selected for study.

Site/ (Ride name)	Location	AERC Region	States & Provinces represented
Biltmore Estates (Biltmore Estates Challenge)	Asheville, NC	SE	GA, IN, KY, NC, ME, MN, ON, PA, TX, VA
Land Between the Lakes Nat'l Rec. Area (LBL Express)	Golden Pond, KY	SE	MO, KS, KY, TN, IN,
Kickapoo State Rec. Area (AHDRA I)	Oakwood, IL	MW	IL, MI, WI
South Kettle Moraine State Forest (Glacier Trails)	Eagle, WI	MW	IA, IL, MI, WI
Hiawatha National Forest (Grand Island)	Rapid River, MI	MW	IL, MI, WI,

At each ride, a representative sample of hay, or hay substitute, was collected from each owner and the sample was sub-sampled and placed in two labeled bags. A manure sample was collected from the horse paddock, divided into two sub-samples and placed into two labeled bags. Hoof scrapings were collected from all four feet of the horse (except when horses had pads), combined, thoroughly mixed, and divided into two sub-samples (Photo 1). One sub-sample of each material was

placed in a larger labeled bag and transported back to Madison, WI for the pot germination study and the second sub-sample of each tissue from each horse was placed on the trail within 24 hours of sample collection.



*Photo 1. Collection of hoof debris from an endurance horse at the 2006 Biltmore Estates Challenge.*

The hay, manure and hoof debris sub-samples for pot germination study were transported back to Madison, Wisconsin and added to 15 liter plastic potting buckets filled with commercial potting soil. The pots were placed outside and watered twice per week with a complete Hogland's nutrient solution to ensure the germinating plants had adequate water and nutrients. Plants were grown to the end of August 2005, and each germinated plant was identified by species and classified as native or non-native (United States Congress, Office of Technology Assessment 1993). Other sources used to identify non-native plant

species included Lorenzi and Jeffrey (1987), Royer and Dickinson (1999), Czarapata (2005), and USDA (1971).

The second sub-sample of hay, manure, and hoof debris was placed in a 50 cm diameter plot located every meter along each transect at five random locations on the trail designated for horses (Figure 2). The start and end point of each transect was marked with a large plastic stake driven flush to the ground so the transect could be re-located. At the end of the 2005 growing season each plot was surveyed and each germinated plant was identified by species and status (native or non-native).



*Photo 2a-c (left to right). (a) A transect containing the hay, manure, and hoof debris samples collected from 20 horses participating in the Land Between the Lakes (LBL) Express endurance ride in 2005, (b) close-up of a hay sub-samples placed on the trail, and (c) close up of a manure sub-sampled placed on the trail.*

The trails transects were re-surveyed in summer 2006 to verify 2005 results. In addition, ancillary data were collected to help explain why germination and establishment rates were so low. To test the hypothesis that resource(s) limitation were limiting the successful establishment of plant species, soil water holding capacity ( $\theta$ , percent by volume), soil bulk density (BD, mass per unit volume), and fraction of incoming photosynthetic active radiation, or visible light ( $F_{IPAR}$ ) were measured at each of the five transect locations at the five study sites. Photosynthetic active radiation was measured simultaneously outside the forest along a nearby road and in the middle of transects using sunfleck ceptometer (Decagon Devices, Pullman, WA) equipped with 40 integrated sensors that measure visible light (400 – 700 nm) used by plants in photosynthesis. Field measurements and data analysis followed Gower et al. (1999). Soil bulk density was measured for 0-20 cm depth at a random location along each of the five transects using standard method (Elliott et al. 1999). Soil water holding capacity was indirectly estimated from soil texture analysis. A 5 cm diameter core (0 – 20 cm depth) was collected at a random location along each of the five transects and soil texture was measured in the laboratory using the hygrometer technique (Bouyoucos 1962).

To answer the third objective, 0.25 x 0.25 m vegetation survey plots were established along a transect that was perpendicular to the same horse trail where sub-samples were placed. Plots were established at 0.25, 0.5, 1.0, 2.5, 5.0, 10.0, 15.0, 25.0, 37.5 and 50.0 meters from the trail. Five transects were established at each study site. At three study sites (Land Between the Lakes National Recreation Area, KY; Kickapoo State Recreation Area, IL; and Southern Kettle Moraine State Forest, WI) five additional transects were established on trails open to hikers but closed to horses. The KY, IL and WI sites were the only study sites where horse and non-horse trails were close to each other and the vegetation and soil surrounding the trail systems were similar.



*Photo 3 a-b (left to right). Photo of the mixed white pine – hardwood forest along the red trail at the Biltmore Estates Challenge ride where a 50 m transect was surveyed for native and non-native plant species, and (b) example of a survey plot with understory vegetation.*

## RESULTS

Non-native plant species only occurred in pots that contained hay samples. Non-native plants comprised 4, 13, 2, 2, and 5 % of the total plants in the hay pots from the Biltmore Estates, Land Between the Lakes, AHDRA I, Glacier Trails and Grand Island rides, respectively (Figure 1). Table 2 summarizes the non-native species that germinated from hay samples in the pots. A complete list of the species present in hay, manure, and hood debris samples is provided in Appendix 1.

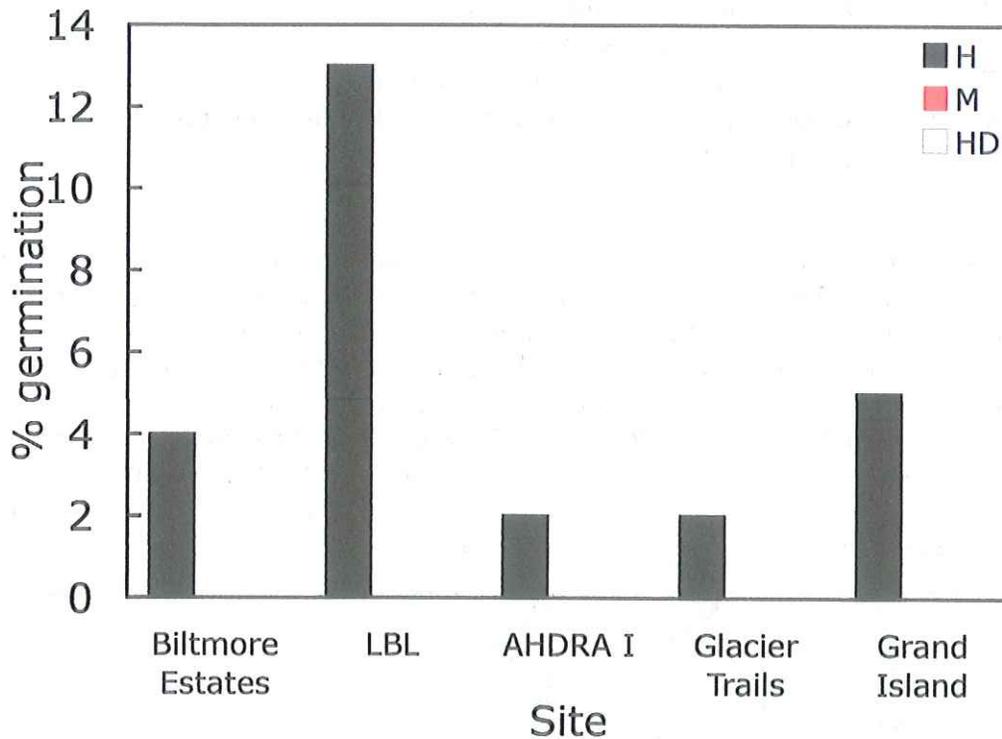


Figure 1. Percent of germinated plants in the pots that were non-native species. Values are based on the 26, 20, 20, 20, and 12 samples of hay, manure, and hoof debris collected at the Biltmore Estates, land Between the Lakes (LBL), Arabian Horse Distance Rider Association I (AHDRA), Glacier Trails, and Grand Island rides, respectively.

Table 2. Summary of non-native plant species that germinated from hay samples. Names include scientific name and (common name).

AERC ride	Non-native species
Biltmore Estates	<i>Digitaria</i> spp. (crabgrass), <i>Agropyron repens</i> (quackgrass), <i>Setaria</i> spp. (foxtail)
LBL Express	<i>Digitaria</i> spp. (crabgrass), <i>Rosa multiflora</i> (multiflora rosa), <i>Agropyron repens</i> (quackgrass), <i>Chenopodium album</i> (lambsquarter)
AHDRA I	<i>Agropyron repens</i> (quackgrass), <i>Polygonum pennsylvanicum</i> (smartweed)
Glacier Trails	<i>Cirsium arvense</i> (Canadian thistle)
Grand Island	<i>Cirsium arvense</i> (Canadian thistle), <i>Potentilla</i> spp. (cinquefoil)

The germination and establishment of native and non-native plants on the trail was extremely low. Based on survey of the five transects on the trail at each site in late summer 2005, only one hay plot at Biltmore Estates and two hay plots at Land Between the Lakes contained plants, and the plants at both sites were native grasses (Photo 4 and Figure 2). In other words, 3.8, 10, 0, 0, and 0% of the hay plots on the trails at Biltmore Estates, Land Between the Lakes, AHDRA I, Glacier Trails, and Grand Island sites, respectively, contained plants in 2005, and no plants grew in the manure and hoof debris plots. A resurvey of transects in 2006 revealed no plants were alive in any plots (data not shown).

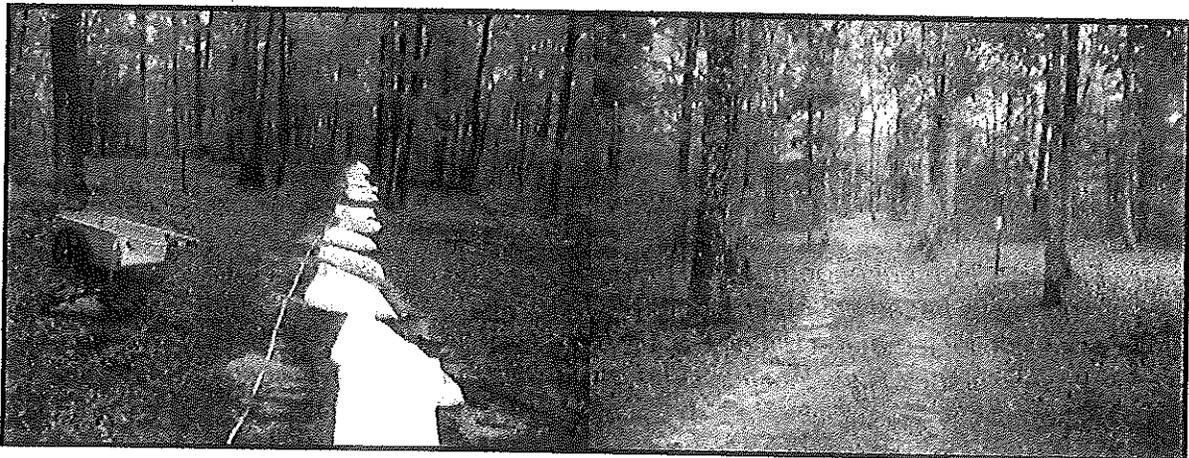


Photo 4 a-b (left to right). Photo of one of the five transects established at the Land Between the Lakes, and (b) the upper part of the same transect in summer 2005.

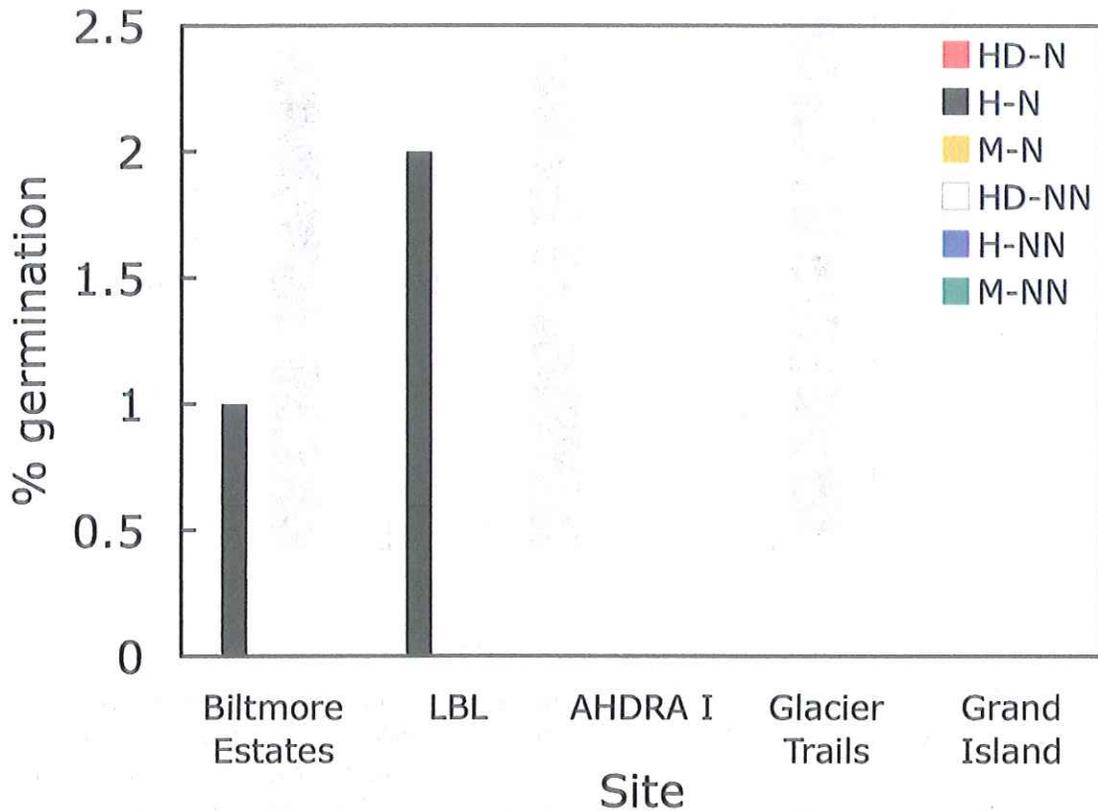


Figure 2. Percent of all (hay, manure and hoof debris) plots at each study site that contained germinated native and non-native plants. Legend is as follows: hay = H, manure = M, hoof debris = HD, native = N and non-native = NN.

Vegetation composition of transects perpendicular to the trail was dominated by native species along the horse trails (94 – 98%) and hiking trails where horses are prohibited (93 – 99%) (Figure 3). Non-native species composition did not differ significantly ( $P > 0.05$ ) between horse and hiking (i.e. non-horse) trails, and ranged from 1 – 7 % for hiking trails and 2 – 6 % for horses trails. These data indicate that non-native plant species were established at approximately a similar rate for trails that allowed and prohibited horses. Non-native plants were always found within 1 meter of the trail, suggesting the plants were not getting established in adjacent ecosystems we sampled in this study.

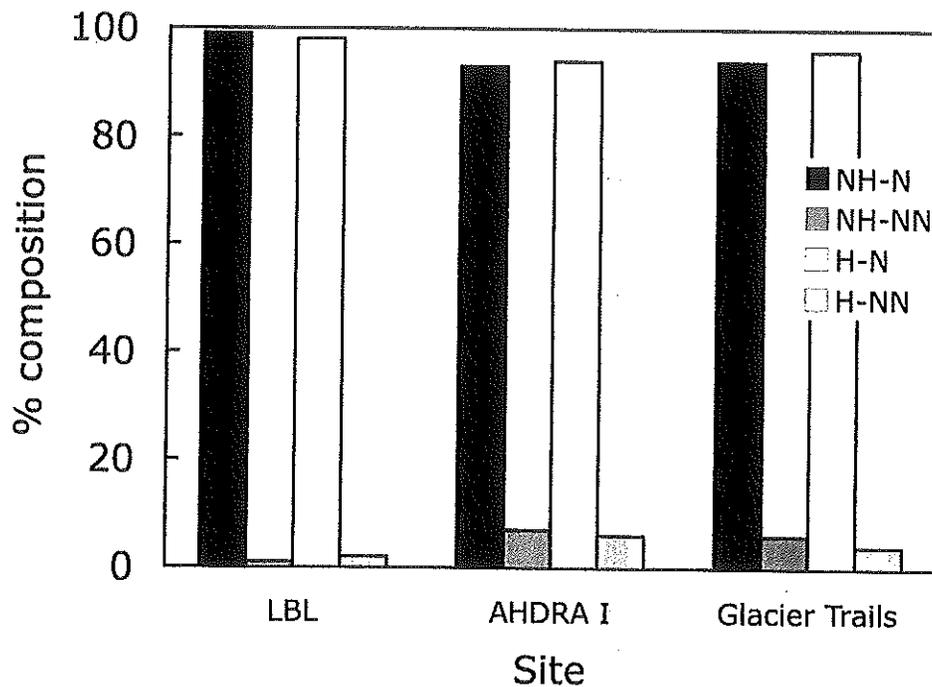


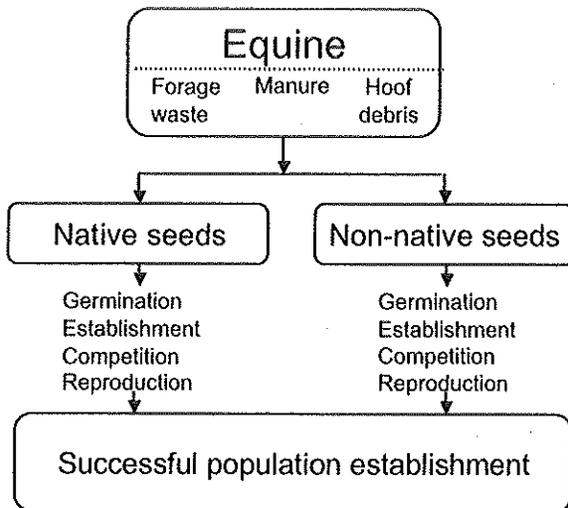
Figure 3. Comparison of the percent composition of native (N) and non-native (NN) plant species observed for the five transects perpendicular to trails where horses are prohibited (NH = no horse) and allowed (H = horses allowed). All values are based on the average of all plots along the 50 m transect that was perpendicular to the trail.

## DISCUSSION

### *Are horses important sources of non-native plants?*

Non-native plants are a serious economic and ecological threat to natural ecosystems and therefore it is important to determine the major sources for the introduction of non-native species, and identify management opportunities to reduce or eliminate their introduction. This study examined the role of horses as a source for non-native plants in five study areas that spanned a broad geographic and environmental gradient in the eastern United States.

Figure 4 depicts the various bottlenecks or constraints that prevent horses from spreading non-native plant species. Major horse-related sources of seed introduction include forage, manure and hoof debris. It is also conceivable that seeds could be transported on the horse's coat, but this source has not received attention and could be easily remedied. The results from the pot germination experiment demonstrated hay was the primary source of non-native seeds in this study. Non-native plants comprised 2-13% of the total number of plants germinated and averaged 5.2% of total plants germinated for the five study sites. The absence of non-native viable non-native seeds in horse manure is consistent with the preliminary findings reported by Dominican University of California scientists.



*Figure 4. Conceptual model illustrating the pathways that horses may be responsible for the introduction of seeds of non-native plants and the bottlenecks that restrict the successful establishment of non-native plant population.*

Conversely, Campbell and Gibson (2001) reported that non-native species comprised 15% of all plant species that germinated from horse dung in a study in southern Illinois. It is worth noting that the Campbell and Gibson study collected horse manure from the trail without any knowledge of its source(s) (i.e. was it from the same horse, the same group of horses, unrelated horses), while in this study the samples were all independent and encompassed a large geographic region. Earlier studies reported that non-native seeds are passed through the horse's digestive system (Harmon and Kiem 1934, Benninger-Truax et al. 1992), but there was no attempt to determine if the seeds were viable. The mastication and digestion of viable weed seed in the equine digestive system reduces seed viability by 98% (Cash et al. 2006).

Although non-native plant species were present in hay samples, and germinated in the pots, the results from the trail were strikingly different. Of the 288 hay, manure and hoof debris samples placed on the trails, only three plots contained living vegetation at the end of the first growing season, and the three plants were not non-native species. Furthermore no live plants were observed at the end of the second growing season. Campbell and Gibson (2001) reported horse dung-treated plots contained 3 non-native species out of 25 species observed on horse trails in southern Illinois. The three non-native species they observed included two common forage species – lespedeza and white clover – and crabgrass.

The 1% germination and establishment rate observed for the transect plots on the horse trails illustrates the difficult physical and environmental conditions seedlings experience during the critical germination and establishment phase. Why do plants have such a low success rate of becoming established on horse trails? It is difficult to determine whether germination or establishment was the bottleneck for plant survival in this study because transects were surveyed only once per year in 2005 and 2006. Causes of seed mortality during the germination phase include (i) predation by vertebrates, invertebrates, fungi and bacteria, (ii) inadequate reserves in the seed caused by physiological aging, and (iii) alteration of the seed by

organisms that passed the seed. Seeds at the surface of soil are very susceptible to loss of storage reserves because of warm soil temperatures and desiccation (Roberts 1988, Mohler 2001). Seed predation seems less likely as a viable explanation because we did observe modest germination of seeds when samples were sown in pots. The period of plant establishment, defined here as the stage between germination and the production of the first true leaf, is thought to be the major bottleneck for some species (Boutin and Harper 1991). Causes for seedling mortality include exhaustion of seed reserves, improper environmental conditions such as drought, seedling disturbance, seedling herbivory, or defects of seedlings. Several of these factors may explain the extremely low germination and/or survival rate of the samples placed on the trail. Unlike agroecosystems, horse trails represent a highly disturbed system. The physical disturbance of the soil of heavily used horse trails undoubtedly makes it difficult for plants to become established.

Environmental conditions of horse trails also adversely affect plant germination and establishment. Light is the most important environmental cue that promotes the germination of dormant seeds in the soil (Mohler 2001). Plant germination responds to visible light in the red wavelength – the same wavelength that plants use to drive photosynthesis. Light passing through a heavy overstory canopy is depleted in the red wavelength, and as a result the germination of shade intolerant species is inhibited (Gorski 1975). Moreover, adequate light is required by seedlings to drive photosynthesis and produce the carbohydrates needed to promote plant growth. Many of the non-native weedy plants are extremely shade intolerant – that is to say they require modest to full sunlight (Fenner 1978). The average fraction of incoming visible light reaching the soil surface was less than 0.1 at four of the five sites (Figure 5a). Except for the Grand Island site, the light levels measured were considerably below the requirements for shade intolerant weed species.

A second factor that may have contributed to the poor germination and establishment of plants on the trails is water availability. Young emerging seedlings are especially susceptible to desiccation and drought (Mohler 2001). The bulk density, or mass per unit volume of soil, was greater than  $1.6 \text{ g/cm}^3$  – a value that as a general rule of thumb will impede the growth of fine roots of most plants (Figure 5b). Soil compaction also decreases water infiltration in the soil, thereby decreasing water available for plant uptake (Landsberg and Gower 1997). Soil water holding capacity was lowest at the Grand Island site because of the large fraction of the soil particles were sand (Figure 5c).

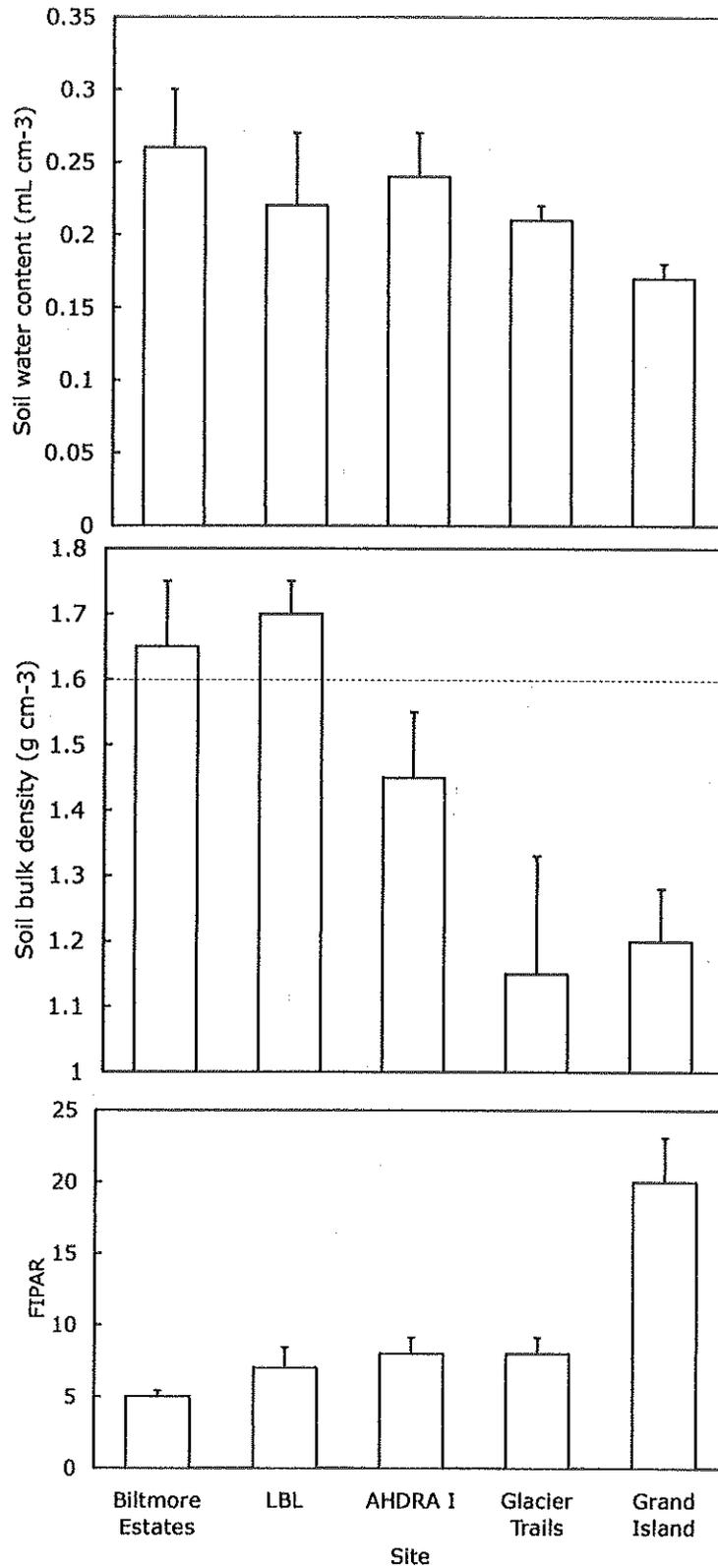


Figure 5 a-c (bottom to top). Average (a) fraction of incident photosynthetic active radiation or visible light at the soil surface, (b) soil bulk density and (c) soil water holding capacity (% by volume) for the five transects at each study site.

Caution should be exercised when interpreting the presence of non-native species along horse trails. Non-native plant species are common to horse trails (Campbell and Gibson 2001, this study), but that does not necessarily infer horses were responsible. For example, non-native species composition and the ratio of non-native:total species composition did not differ between trails open and closed to horse at the three sites examined in this study. Other scientists have reported that the number of exotic plant species is greater along trails than adjacent ecosystems (Hall and Kruss 1989, Parendes and Jones 2000, Tyser and Worley 1992, Benninger-Truax et al. 1992, Adkinson and Jackson 1996). Possible explanations for this pattern include greater resource availability, especially light, in response to gaps in the canopy. Understory plant diversity has been linked to a number of resources including soil water and nutrients (Robertson et al. 1998, Robertson et al. 1993) and light availability (Chazdon et al. 1996, Nicotra et al. 1999). Also, openings in forest canopies increase the number of vegetation strata, which in turn, increases the number and species of birds – key transporters of plant seeds.

### **Non-Native Plant Classification**

When comparing the results of studies quantifying whether horse introduce non-native plant species it is important to consider the source(s) of the classification of plants as non-native plants, and the practicality of the classification. For example, Campbell and Gibson (2001) classified *Poa pratensis*, *Trifolium repens*, and *Kummerowia striata* as an exotic species. *Poa pratensis* L., Kentucky bluegrass, is a perennial, cool-season, sod-forming grass native to Europe, but it is used throughout the U.S. for lawns, golf courses, pastures, and erosion control. *Trifolium repens*, white clover, a herbaceous perennial legume, is native to Europe, North Africa and west Asia, but is a valued forage crop for livestock. *Kummerowia striata*, lespedeza, a perennial legume native to East Asia, and Korea, is commonly used as a forage crop land stabilization cover crop. Campbell and Gibson (2001) used Mohlenbrock (1986) as their source for classifying species as non-native. Two of the sources used in this study (Czarapata 2005, USDA 1971) do not consider the above species non-native. Many grass and clover species are not native to the United States, but their importance and widespread use as forage crops and lawn and recreation field crops raises questions about what constitutes a non-native species.

### **Management Opportunities to Further Reduce the Risk of Horses Spreading Non-Native Plants**

It is important to acknowledge that the results from this study may not be representative for other geographic regions in the United States, or for other types of horse activities. Additional research is needed to determine if the results from this study are representative for other regions and equine activities. One study is ongoing in California (<http://www.dominican.edu/dominicannews/weeds/index.html>).

Despite the extremely low germination and establishment rates of plants on the horse trails, the presence of non-native seed in the hay samples suggests horses pose a threat, albeit small, for the introduction of non-native plant species. Proper disposal of unused or spoiled hay would lessen the likelihood that seeds from

non-native plants get established. Waste in the compost piles could be incinerated or allowed to decompose in a designated area to avoid the spread of seeds.

Estimates for the time it takes for seeds to pass through a horse's digestive tract range from 48 – 72 hours (Alexander 1946, Vander Noot et al. 1967, Cash et al. 2006). Cash et al. (2006) conducted a horse feeding trial where feed was dosed with known quantities of leafy spurge, spotted knapweed, Persian dandelion, wild oat, curly dock and quackgrass – all non-native weeds – and alfalfa. Total passage of viable weed seeds through 72 hours ranged from 0 to 2% for weeds species to over 10% for alfalfa. These data suggest that horses should be placed on certified weed-free hay or hay substitute for three to four days prior to travel to avoid transporting non-native seeds in forage and manure. Given the extremely low viability of the seeds passing through horses, and the low germination and establishment rate of seeds in manure and hay (Campbell and Gibson 2001, this study), judicious disposal of waste seems more prudent.

## **CONCLUSIONS**

Non-native seeds in the hay and manure samples obtained from endurance horses germinated under ideal growing conditions and comprised 2-13% of the total plants identified in the pots. However, less than 1% of the plots established on the horse trail contained live plant at the end of the first growing season, and no live plants were observed in the plots at the end of the second growing season. Understory species composition and fraction of non-native:total species did not differ between trails open and closed to horses at three of the study sites. Collectively, these data suggest horses are not important source for the introduction of non-native plants.

## **ACKNOWLEDGEMENTS**

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**CURT MEINE, PH.D.**

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P.O. BOX 38 ✦ PRAIRIE DU SAC, WI 53578 ✦ CURT.MEINE@GMAIL.COM

September 23, 2015

Mr. John Pohlman - LF/6  
WI Department of Natural Resources  
P O Box 7921  
Madison WI 53707-7921

RE : Comments on WDNR Draft Master Plan for the Sauk Prairie Recreation Area

Dear Mr. Polman,

Please find my comments on the WDNR Draft Master Plan for the Sauk Prairie Recreation Area attached.

Thank you to you and to all the WDNR staff who have worked on the draft plan. As I state in my comments, we are at an important moment in the long and rich history of this special landscape, and in our collaborative efforts to forge a positive future for it. I hope you and your staff will continue to strive to make this plan one that honors the land's special history and character, that respects the relationships that have helped us to shape the reuse vision, and that gives thought to the future generations that will inherit this land from us.

Sincerely,



Curt Meine

## Comments to Wisconsin DNR on Draft Master Plan for the Sauk Prairie Recreation Area

Submitted by Curt Meine, Sauk City, Wisconsin  
September 23, 2015

### 1) Background

For more than eighteen years I have been involved in efforts in our community to help forge a positive future for the lands of the former Badger Army Ammunition Plant. I was privileged to serve on the Badger Reuse Committee, whose final consensus report in 2001 provided the basis for the transfer of a portion of the Badger lands to the people of Wisconsin (and for the related land transfers to the USDA-Dairy Forage Research Center, the Ho-Chunk Nation, and others).

I would first like to thank all the hardworking employees of the Wisconsin DNR who have devoted their time and talent to preparing this draft plan. You have had a complex task during challenging times. I appreciate your efforts to bring this plan forward and to help achieve the vision laid out by the Badger Reuse Committee in its 2001 consensus report—the “Badger Reuse Plan” (or BRP). (As a reminder: the 21-member committee included three representatives of the State of Wisconsin, including then WDNR Secretary Darrell Bazzell.)

In its essence, the BRP called for all Badger’s future landowners and community stakeholders to work together to craft a future at Badger that would include and integrate four main uses: (1) land restoration; (2) sustainable agriculture; (3) education and research; and (4) recreation. Relevant especially to this draft plan is the language of the BRP to manage the Badger lands “as a single unit... collaboratively and holistically.” The language of the report regarding recreation is also of utmost important for this draft plan. Criterion 5.3 reads:

*Recreational activities should focus on Badger's natural and cultural features and values. Activities should be **low-impact in nature** and should be **compatible with other uses and overall management goals**. Efforts shall be made to accommodate appropriate recreational activities, but these activities shall have **no significant detrimental impacts on the cultural and natural features of the property**.*

In keeping with the BRP and its consensus values, criteria, and plan elements, the State of Wisconsin requested that it receive a portion of the Badger lands—what is now the Sauk Prairie Recreation Area (SPRA)—through an agreement with the U.S. National Park Service. The WDNR application for transfer called for planning at Badger to “build upon work done ... by the Badger Reuse Committee” and stated:

*Many groups with varying interests in Badger share a common goal with the WDNR to convert it to a recreational property with **low impact recreation** (hiking, picnicking, primitive camping), prairie, savanna, and grassland restoration, and cultural/historical interpretation with potential for an education center.*

The WDNR’s 2012 Regional and Property Analysis for the Sauk Prairie Recreation Area recognized these foundations for planning when it stated that:

...[T]he best overall functional role for the Sauk Prairie Recreation Area is to **fulfill the highlighted ecological opportunities** available while maximizing **compatible recreation opportunities**. This approach also takes into consideration the nine key values identified in the Badger Reuse Plan, approved by the Sauk County Board in 2001.

The clear language of these guiding documents—especially the consensus recommendations and requirements for **low-impact** and **compatible** recreational activities—provides the lenses through which I have followed the planning process for the SPRA and have read and reviewed the draft plan. My comments below reflect not only how the draft plan respects the guidelines that we all, including the State of Wisconsin, agreed and committed to, but how it **advances** efforts to realize the full reuse vision.

## 2) General Comments

I would like to say at the outset that I am frustrated that senior WDNR officials have failed to provide leadership in realizing the primary recommendation of the BRC and the stipulations of the transfer document: that master planning be done with the full and engaged cooperation of *all* the Badger property landowners and partners; that it involve the *entire* Badger property; and that public statements and communications reflect the *foundations of reuse planning in the consensus BRC report*. As SPRA planning goes forward, I ask that every opportunity be taken to rectify these flaws: that SPRA planning be dovetailed and coordinated with the planning efforts of the Ho-Chunk Nation and the DFRC; that support be given to reinvigorating and reinforcing the coordination role of the Badger Oversight and Management Commission; and that senior WDNR officials fully recognize and communicate to the public the responsibility they have to follow the foundational agreements through which the State of Wisconsin acquired the SPRA property.

Recognizing again that the reuse vision for the Badger lands called for an integrated and mutually enhancing combination of land restoration, agriculture, education and research, and recreation, the draft master plan moves us forward in some important ways. I am very pleased that the plan gives high priority to the restoration of prairies, savannas, woodlands, and wetlands on the DNR's portion of the Badger lands. We have so much work to do together on this, and the plan points us in that good direction. However, this is a matter of priorities. The plan, with its primary focus on recreation, does not convey the urgent and immediate need for habitat management and the opportunities for grassland restoration that we stand to lose as invasive shrubs are rapidly changing the landscape at the SPRA and beyond. The plan would do well to put much stronger emphasis on developing partnerships *immediately* to help in this immense task.

I am also very pleased to see that the draft plan recognizes the great potential for conservation agriculture on the Badger lands, and, again, for unique partnerships to grow that can help to realize that potential. This aspect of the reuse vision was absent in earlier phases of planning. We have vast opportunities in this area, with the active engagement of the Ho-Chunk Nation, the DFRC, the UW-Madison, neighboring farmers, and other private landowners. We may envision the SPRA lands becoming part of a matrix where sustainable and restorative practices (e.g., restoration and livestock grazing, intercropping with prairie strips, carbon-sequestering soil conservation, buffer strips, pollinator-friendly restoration practices, rehabilitation of the historic apple trees, etc.) are demonstrated. I strongly encourage the WDNR to highlight such opportunities much more in its final plan.

I am also pleased to see that the cultural values of the Badger lands will be recognized in educational opportunities. However, I see room for improvement in the draft plan, especially in working together

across jurisdictional boundaries to tell the story of this unique place. In particular, it seems like common sense that a single visitor/education center, shared by all the Badger landowners and stakeholders, will more effectively serve everyone—and, more importantly, future visitors.

I am also gratified to see in the draft plan a much greater emphasis on research at Badger than in prior planning documents. This is an often neglected part of the Badger reuse vision. Criterion 6.3 of the BRP provides direction: “Research activities in the natural sciences should focus on the conservation of soils, water quality, air quality, geologic features, native wildlife, plants, and the restoration of ecological communities and processes as well as agricultural, historical, and cultural assets.” This ought to be built even more prominently into SPRA planning, with a strong emphasis on opportunities for partnerships, engaging the University of Wisconsin System, and the need and potential for citizen science.

The SPCA is, obviously, designated a state recreation area, and recreation is the main focus of this plan. However, this designation was proposed and followed due to the flexibility of land management approaches that it entailed. It was felt that, of the land classifications available under state statute, this was the most promising for realizing the unique integrated vision of the BRP. It is appropriate that recreation be an important activity at the SPRA. However, I have concerns over several the proposed activities, and how they will—or will not—work together on the landscape. In the reuse committee we struggled with this question, but came to understand that *low-impact and mutually compatible activities* would best serve all the landowners, and the overall vision, going forward. As noted above, this was incorporated into the reuse and land transfer documents. I will share more specific comments on these concerns below.

Finally, I would like to highlight what I see as the most important statement of the Badger Reuse Committee: Value 4 of the final report called for future uses that “contribute to the reconciliation and resolution of past conflicts.” That principle is even more valid and important now than it was when we agreed to it. Let that be the guide to all decisions that we make together about the future of this special place.

### 3) Specific Comments

I am submitting these comments as an individual citizen. However, I would like to state my full support for the comments provided to the WDNR by the Sauk Prairie Conservation Alliance. I am a founding member of the Alliance, and have complete confidence in their judgment and constructive role they have played, and will continue to play, in our community as an advocate for the Badger reuse vision. Specifically, and based on the rationale provided above, I endorse the SPCA’s proposed improvements in the draft plan to:

- Place primary emphasis on ecological restoration and habitat management as the core of the SPRA Plan.
- Provide a budget and proposed allocation for habitat restoration in the plan that reflects its high priority within the property.
- Change the name of the SPRA to the “Sauk Prairie Conservation Area” and to incorporate the Ho-Chunk Nation’s forthcoming name for its portion of the Badger lands.
- Avoid further consideration of a shooting range at any time in the future for the SPRA.
- Avoid further consideration of ATV use at any time in the future for the SPRA.
- Remove all reference to dual-sport motorcycles in the final SPRA master plan.

- Remove all reference to rocketry from the Plan as an incompatible, high-impact, and potentially harmful activity.
- Support a permanent snowmobile trail along the perimeter of the SPRA and oppose snowmobile trails in the interior of the Badger property on or adjoining the Great Sauk Trail.
- Limit hunting season on the property from November 15<sup>th</sup> until May 1<sup>st</sup>.
- Remove the proposed dog training area from the plan until WDNR undertakes a thorough needs analysis and an acoustic assessment of noise impacts on rare grassland species, visitors and unleashed dogs; include a proposal for seasonally limited dog training only after impacts are assessed and only if DFRC concludes that dog training represents no conflict to their operation.
- Regarding potential mountain bike and horse trail use: undertake more careful analysis of impacts, restrictions, and opportunities. (It is my personal recommendation that the interested users in these categories be engaged in an open way to develop better understanding of the BRP goals and how their groups can contribute to its realization. It may be that these can be compatible activities, and can be phased in as land restoration proceeds.)
- Remove reference to a "special events area" in the Magazine Area; incorporate this area into the trail system proposed for the other segments of the SPRA, with a focus on hiking trails.
- Expand the hiking trail system and develop hiking trails that are independent from other trail uses. Manage at least some areas for the more primitive types 1 and 2 recreation.
- Partner with the Ho-Chunk Nation and the Dairy Forage Research Center in planning, seeking funding for, and constructing a large, centrally located, easily accessible visitor center/museum; make clear reference to such a collaboration in the final plan.
- Remove the proposal for extensive development of parking and an amphitheater at the reservoir/overlook site. While this is an important location within the SPRA, it ought to be maintained a quiet place of contemplation and reflection, rather than a primary and heavily trafficked destination. While alternative modes of access (e.g., regular shuttle buses) can be provided, the core visitor experience ought to be focused at the proposed visitor center.
- Include in the plan a clear and thoughtful new section that addresses areas of collaboration with the other landowners at Badger, thereby treating all 7,400 acres as a property of the whole.

In addition to these recommendations, I would like to add several further specific comments.

#### Neotenic salamanders

I am concerned about the fate of the unique population of approximately 1200 neotenic Eastern Tiger Salamanders in the East Reservoir within the SPCA. Although it may not be practical to maintain this population in perpetuity, it ought not to be destroyed. This is a particular and important example of the importance of research in the reuse of the Badger property. There is still much to learn about and from this unique biological feature. The salamanders also provide a unique and important interpretive opportunity (alongside the site's geological features and its prominence as an overlook).

Whatever solution is ultimately arrived at, we have—and should take—the time to come to a mutually satisfactory resolution here. For example, as other phases of redevelopment occur at the SPCA, at least one reservoir could be maintained for some time, alongside a day-use area and overlook. This would also give time for researchers to better understand and compare the incidence of diseases in this population with the occurrence in the nearby source Eastern Tiger Salamander populations. This would allow the 1200+ neotenic salamanders to be released rather than euthanized, as is now planned. It would also allow for continued study by researchers at Winona State (MN) University and UW-

Baraboo/Sauk County. In addition to these biological values, I must also question the short-term prioritizing and costs of razing the reservoirs. The draft plan's Appendix 2 (pp. 143-144) details the disproportionate costs of this proposal. The costs of removing the reservoirs, constructing a large parking lot and amphitheater, developing visitor facilities, etc. is approximately \$2.6M—about equal to the projected \$2.5M cost of upgrading and developing all other roads and trails at the SPRA.

This seems to me a plain matter of misplaced priorities given limited funds. Given the unique biological and educational value of this population, the lack of WDNR financial resources statewide and at SPCA, and other pressing needs—especially desperately needed habitat management at the SPCA—the proposals for the reservoirs are hard to understand. There are also liability issues involved, but these can be addressed through other strategies in the near-term future. I urge the WDNR to thoroughly rethink the plans for this special site. Let's get it right; and to get it right, let's not be in an expensive hurry.

### Badger's historic apple trees

Through the Sauk Prairie Conservation Alliance, and in my capacity as an adjunct associate professor in the UW-Madison Department of Forest and Wildlife Ecology, I have personally been involved in efforts to study the historic apple (and other fruit) trees of the former Badger Plant. Along with a group of Sauk Prairie Conservation Alliance volunteers and UW-Madison graduate student Kate Braun, I have worked on this project over the last three growing seasons, in cooperation with all the Badger landowners. We have made a good start on understanding better the abundance, distribution, status, diversity, qualities, history, and conservation needs of these rare remnant trees. I am pleased to see these trees, and their biological and cultural value recognized, in the draft master plan. In particular I appreciated the call to “[preserve] specimen trees to the degree practical,” and to propagate these trees in an orchard near the future visitor center. I encourage including a statement that highlights several immediate needs:

- Continue work to inventory and describe all these trees.
- Develop a conservation plan for the maintenance and propagation of the tree.
- Undertake historical research to document the origins of these trees.
- Encourage discussion and preliminary planning for a “memorial apple orchard” to honor the families whose farms were sacrificed for the construction of the Badger Army Ammunition Plant in 1942.
- Take all these steps cooperatively with the other landowners, and for the entirety of the Badger lands.

### **3) Conclusion**

The WDNR's draft master plan for the SPCA has come a long way over the last three years and has taken notable steps forward in honoring the commitments that the WDNR made in acquiring this property. As detailed in my comments, it still has a ways to go in advancing us toward the vision defined in the consensus report of the Badger Reuse Committee and related agreements. As the WDNR incorporates the comments on its draft plan, I strongly encourage WDNR staff to be in close and constant communication with its neighbors on the Badger lands, and with the community partners who have worked so hard to make the most of this remarkable opportunity, in this special landscape. We are at an historic moment in this land's continuing story, and the land deserves our careful and respectful attention. That in turn requires us to be careful and respectful in our relationships upon it.

**Rob Nurre**  
*E13170A Man Mound Road, Baraboo, Wisconsin 53913*

25 September 2015

John Pohlman  
Wisconsin Department of Natural Resources  
P.O. Box 7921  
Madison, Wisconsin 53707

Dear Mr. Pohlman,

I want to begin my public comments on the Wisconsin Department of Natural Resources' Draft Master Plan for the Sauk Prairie Recreation Area with a note of thanks to you and the other natural resource professionals who have worked at crafting this Plan. There are many places in this Plan that exemplify the traditional, long-held commitment of the WDNR to the dedicated care for Wisconsin's precious natural resources, their protection and their restoration. This is obviously the work of dedicated professional who have a long personal history and commitment to the traditional visions of the WDNR to care for Wisconsin's natural resources.

The 3,400 acre portion of the former Badger Army Ammunition Plant, the Badger lands, that has been given by the federal government to the people of Wisconsin, to be managed for them by the WDNR, is a spectacular and, for the WDNR, unprecedented opportunity to engage in the restoration of a very large area of prairie, savanna and oak woodland communities. This opportunity is compounded in a landscape perspective to manage this land in connection with the vast areas of woodlands in public and private ownership in the Baraboo Hills, open lands included in the nearby Riverlands Conservancy as well as the nearby lowlands along the Wisconsin River. Taken together, these lands create a huge landscape-scale area providing a wide variety of habitat types that provide for an array of native plants and animals. The state's portion of Badger lands lies directly at the heart of this area and provides a keystone connection and transition between these other areas.

The specific history of the Badger lands also provides the WDNR with an opportunity, as well as an obligation, to engage in cooperative and collaborative management of its lands in conjunction with the other landowners of the former Badger Army Ammunition Plant lands, specifically the Ho-Chunk Nation, the Dairy Forage Research Center, the Bluffview Sanitary District and the Town of Sumpter. Through a nearly two-decade long process which has come to be known as the "Badger Re-use Process", the public, interested organizations, local municipalities, governmental agencies at the local, state and federal levels, the county, state and federal governments, and a Native American nation, have worked together to hammer out a consensus agreement for the future of the some 7,100 acres of the Badger lands. A key document in this process is the 2001 Final Report of the Badger Reuse Committee. Now that the lands have been almost entirely transferred, it is time to for everyone who has been involved in this long planning process to work together to see that the shared visions are actually implemented on the land

itself. As the largest single manager of the Badger lands, controlling the lands which will likely be most accessible to the public, and as the land manager which has the greatest direct accountability to the public, I believe that the WDNR has the responsibility to take a leadership position the cooperative and collaborative management of the Badger lands as a whole.

My public comments on the Draft Master Plan for the Sauk Prairie Recreation Area are intended to assist you and others within WDNR as you work to revise and improve the Plan in anticipation of eventual approval by the WDNR Board of a Final Master Plan. I believe that, as a whole, the Plan is quite good, and in many places, particularly in terms of restoration, is exceptional. I will organize my comments in four general areas: restoration, recreation, interpretation/visitor services, and management/administration.

### Restoration

I believe that the primary emphasis of the WDNR's management of the Sauk Prairie Recreation Area should be on the restoration of the prairie, savanna, oak woodlands and other natural communities which are the native landscape of this area. While this is my personal opinion, I believe it is a view that is well supported in the many discussions and documents related to the reuse of the Badger lands. This does not mean that recreational uses of the land cannot be accommodated, but these recreational uses must be compatible and consistent with the restoration priority, and I would even add be supportive of the restoration.

This, of course, brings up the question of why a "recreation area" should have its primary emphasis on "restoration" rather than "recreation". While I will address this further in a later section of these comments, I believe that when the Badger lands were created as a WDNR project, they were designated as a "recreation area" rather than being a park, wildlife area, or other designation, because it was believed that the broad range of allowable management strategies under the recreation area designation would be needed for the vast restoration that would be undertaken on this property. Thus it was designated a recreation area to allow for restoration, and not because recreation was to be the priority.

For the most part, the restoration work provided for in the Plan is very good. It calls for a very ambitious undertaking of restoring nearly all of the WDNR managed 3,400 acres to native communities. This will be a decades-long process that will undoubtedly require resources beyond what the WDNR can provide itself. The following are specific comments for improvement of the Plan in the area of restoration.

### Land Management Classifications

The commitment to restoration of the land would be much more strongly indicated if all of the land, except those small areas which are used for infrastructure, would be classified as habitat management areas or native community management areas. While compatible recreation would be allowed in these areas, this would clearly state that the primary emphasis for the entire property is restoration and eventual management as habitat or native community areas. Perhaps there could be a separate overlay of recreational management area classifications that

supplements, rather than supplants, the habitat and native community management classifications.

In the Plan, only one small seventeen acre area is classified as being for native community management. This is the remnant Hillside Prairie and some adjacent land in the Magazine Area. While far from pristine, the approximately five acres of the remnant Hillside Prairie have been the focus of volunteer efforts for over a decade. The intent appears to be to expand this remnant out to the boundaries of the nearest roads to fill in the seventeen acres. In the various ecological studies of the Badger lands that have been done over nearly a quarter century, many other remnants of native communities have been located and documented. These were often found to be seriously degraded by invasive species, grazing history and lack of natural fire management, however they provide a starting point from which restoration can occur. The restoration component of the Plan should be improved by a detailed review of the additional remnant and classifying them, and their surroundings, as native community management areas.

#### Current Management Area Classification versus Future Management Area Classification

The habitat and native community management area classifications appear to be based on the current condition of the land rather than the intended condition once restoration is accomplished. While this is appropriate, the Plan would be improved if it made provisions for changing the classification of land from habitat management to native community management once the restoration is done. Currently the vast majority of the land in the SPRA is dominated by non-native species and non-native communities. These are recognized as habitat management areas. Some of these serve the role as surrogates of native communities. The WDNR's ambitious goal is to restore nearly all of the SPRA lands to native communities. When this is realized, these areas should be reclassified as native community management areas to recognize their restored condition. This classification would be much more appropriate for maintaining these areas as natural communities into the future. A clear process should be established within the Plan to allow for this transition of classification as the lands are restored.

#### Assessment of Restoration Progress

Although the WDNR has significant experience and expertise in land management and restoration, the restoration work at the SPRA will be at a scale that has seldom, if ever, been undertaken. Thus, there is a great opportunity for assessment and research of the effectiveness of land management and restoration techniques during the work on this property. The Plan would be improved by including provisions for ongoing assessment and research throughout the restoration process and beyond.

#### Restoration as Recreation

For many years, until the WDNR first opened the SPRA to the public briefly in spring 2014, and again, apparently permanently, in spring 2015, one of the very few ways that the public could get "behind the fence" and onto the Badger lands was to be involved in volunteer restoration projects sponsored by the Sauk Prairie Conservation Alliance. In recent years the focus of that work has been on the Hillside Prairie. Due to the large area involved with the restoration of the land at the

SPRA, much of this restoration work will need to be done using mechanical equipment and processes drawn from conservation agricultural. There will, however, always be a need for the sort of hand work that can be done by volunteers working alone or in groups to plant seeds, or weed out invasives or, any one of a myriad of tasks involved with restoration. In its restoration plans for the SPRA, I believe that the WDNR should put a strong emphasis on public involvement in the restoration process. This can be managed by the WDNR itself or in collaboration with groups such as the Sauk Prairie Conservation Alliance. Such public involvement would build strong support for the WDNR's work on this property and serve as a compatible and supportive recreational opportunity for the public.

### Partnerships and Outside Support and Involvement

As previously noted, the restoration of most of the 3,400 acres of the SPRA is a huge undertaking that will require many years and a very large financial commitment. Particularly in the current era of shrinking budgets for the WDNR, it is unlikely that the WDNR itself will be able to find the funding needed to accomplish the spectacular goals set out in the Plan. This reality is acknowledged in the plan itself. The Plan would be improved by a greater emphasis on a sustainable process by which the WDNR will include other organizations and agencies in the management of the SPRA's restoration. While much of the history and tradition of WDNR will serve the SPRA well, there has also often been mindset that only WDNR staff will manage lands within its property boundaries. While some properties have developed "friends" groups, often their involvement is limited to assigned tasks or fundraising. In order to accomplish the goals of restoring the land at SPRA, the WDNR will need to develop true partnerships with its neighboring landowners as well as other groups that share the vision of restoring the land.

### Recreation

While public recreation should be a component of the Sauk Prairie Recreation Area, it should be secondary to the primary focus on restoration of the land. Perhaps the most useful description of how to understand this balance between restoration and recreation comes from the WDNR's 2012 Regional and Property Analysis which used the term "compatible" in describing the appropriate recreational opportunities in relation to the ecological restoration. While there may be room for discussion as to exactly what is "compatible", in my mind it includes only those recreational uses which do not degrade the restoration of the land and the biological communities in terms of damage to plants and animals or their environment due to soil disturbance, sounds, contamination or any other detrimental effects. Further, in the WDNR's 2004 application for lands at Badger to the National Parks Service, it specifically committed to "low-impact" recreation and gave the examples of "hiking, picnicking and primitive camping". Thus, I believe that the recreational opportunities at the SPRA should focus on, and be limited to, those uses which are both "low-impact" in nature and "compatible" with the restoration of the land.

The following comments are intended to improve the Plan in the area of recreation:

### Motorized recreational vehicles

The use of motorized recreational vehicles such as ATVs and “dual-sport” or other such off-road vehicles are inconsistent with the commitment to “low-impact” and “compatible” recreational opportunities. Due to the noise created by these vehicles and soil disturbance, they do not belong at the SPRA. The only publicly operated motor vehicles that should be allowed at the SPRA are highway licensed cars, trucks and motorcycles and these should only be allowed on designated roads. The possible exception to this would be the use of snowmobiles along a path just inside the north, east and south perimeter of the property as an alternative to the adjacent path that has been maintained on private lands for years. No snowmobile use should be allowed within the SPRA property, including on the Great Sauk Trail. Also, exception could be made for the limited use of motorized vehicles for individuals with mobility problems.

### Roads

The publicly accessible road network included in the plan provides for reasonable access to the property for visitors. Being mostly on existing roads, it does not require disturbing additional area or require costs for constructing new roadways. Speed limits should be carefully regulated to no more than 20 mph. Noise limits for vehicles on public roads should be strictly enforced to protect the soundscape of the property.

### Walking and Hiking Trails

The amount of hiking trails at the SPRA should be significantly increased in order to provide a full network of hiking trails that access all parts of the property. Walking and hiking are the most common recreational activity, but the current plan calls for only one significant trail from the site of the proposed visitor center to the bluff overlook. A full network of hiking trails should be developed that would allow hikers to traverse the property from the Wisconsin River at the southern end of the Southern Link area to northern edge of the Bluff Vista area as well as all other parcels. Such a network would likely eventually include some 20 miles of trail or more. In planning this network, consideration should be given to connecting this network to the hiking trails in Devils Lake State Park, the Ice Age Trail and other public trails. Additional shorter loop walking trails, with appropriate interpretive signage, should be developed at locations such as the Wisconsin River area and the bluff vista.

### Hunting

Hunting is identified as one of the statutory “nature-based” activities on WDNR managed lands. However, it is also a possible significant conflict for other users of the SPRA, particularly those who are seeking a quiet recreational experience and are engaged in “silent sports” such as hiking, birdwatching, cross-country skiing and general enjoying the solitude of a natural landscape. Currently, hunting seasons of one kind or another in Wisconsin extend from early September through late May, almost three-quarters of the year. While respecting the strong hunting tradition of this state, it is important to make fair accommodations for the large number of Wisconsin citizens who do not engage in hunting and who wish to be able to enjoy and experience our public lands during the autumn, winter and spring without conflicting with those

who are hunting. While I do not have a specific proposal, I would strongly encourage the WDNR to develop allowable hunting at the SPRA that would provide for other outdoor activities without usage conflicts by the use of geographical and/or temporal limitations on hunting. The proposal to stock captive bred, non-native ring-neck pheasants for put-and-take hunting in the Rocket Area is inappropriate and is not compatible with the restoration of native wildlife on the land. This proposal should be eliminated from the plan.

### Shooting Range

Although the shooting range that was suggested during the conceptual alternatives phase of the master planning process is not specifically included in this Draft Master Plan, this Plan does allow that such a range could be developed in the future. Such a range does not meet the qualifications of being compatible with restoration or low-impact recreation. The plan should explicitly eliminate the possibility of a shooting range at the SPRA in the future.

### Rocketry

For the reasons of incompatible use and not being low-impact in nature, rocketry should not be included in the Plan for the SPRA.

### Dogs

Consistent with other WDNR properties, visitors to the SPRA should be allowed to have leashed dogs under their control. The proposal for allowing unleashed dogs in the Magazine Area between August 1 and April 14, however, should be eliminated from the Plan. This area has been identified as a prime grassland bird breeding area and the use of this area as a “dog park” could seriously conflict with this nesting area. Although the time restriction would largely eliminate that conflict, the experience at other WDNR areas that only allow off-leash dogs in the non-breeding season indicates that these limits are not enforced and largely ignored so that off-leash dogs are in these areas year ‘round. The southernmost portion of the Magazine Area has also been proposed as a year ‘round dog training area. There is question about whether such an area is needed considering the large dog training areas which already exist at Mazomanie and Pine Island. Also, being in the area of a prime grassland bird breeding area, the disturbance of dogs and year ‘round gunfire as part of the training in this area should be carefully evaluated. Unless a clear need for this use of this area can be shown, it can be shown that it will not detract from the grassland bird breeding, this proposal should be eliminated from the Plan.

### Special Event and Special Event Staging Area

The proposals for special events and a special events staging area are very troubling from the perspective of compatible use and a commitment to low-impact recreational of the SPRA. While special events are allowed by permit at WDNR properties, the inclusion of a staging area for these events suggests that they will not only be allowed, but encouraged at the SPRA. Particularly troubling is that this staging area is located in the Magazine Area and the proposal specifically states “Because the Magazine Area is separated from the rest of the property, it provides a unique opportunity to potentially host special events that do not disrupt visitors to the

main part of the property.” This appears to be a continuation of the WDNR’s seeming attempt in the conceptual alternatives phase of placing generally undesirable or disruptive activities, in that case the ATV trails and shooting range, in this separate part of the property. In doing so, the expectation is clearly that the adjoining landowner, in this case the Dairy Forage Research Center should provide the buffer for these activities. Further it suggests that the DNR considers the Magazine Area not to have significant ecological value and can be sacrificed to these disruptive uses. In fact, most of the Magazine Area has been identified as an important grassland bird breeding area, and that area includes the only parcel, the Hillside Prairie, that has been classified as a native community management area. If the WDNR believes that the SPRA should accommodate and promote special events and a special events staging area, it should much more carefully define how those events will be managed to ensure that they are low-impact in nature and are not incompatible with the restoration of the land.

### **Interpretation and Visitor Services**

An important component of property master plan is how visitors will be accommodated and assisted in understanding the natural and cultural history of the area. The SPRA includes several unique opportunities and challenges for these components of a plan. Most obviously among these is the nearly seventy year history of this land as being a part of huge army ammunition plant that provided product for World War II, the Korean War and the Viet Nam War. While the demolition of the plant and the planned restoration of the land will leave little obvious evidence of this part of the land’s history, it remains a very important story to be told. As important as this part of the history is, however, it should not overshadow the important natural history of this land, the role of the Native People, the nearly century long settlement of this land by European farmers, nor the important story of the process of planning for the post-ammunition plant use of this land and the land restoration process that will continue for decades. In planning for the interpretive messages that will be presented to visitors to the SPRA, all of these messages must be balanced.

Visitor services also include the infrastructure of roads, parking lots, buildings and signage that are needed by the visitors. Like recreational opportunities, these should be evaluated based on their compatibility with the primary purpose of restoration of the land and that they are low-impact in nature.

The following comments are intended to help improve the interpretation and visitor service portions of the plan.

#### **Permanent Visitor Center**

The Plan proposes the future development of a visitor center to be located near where the Gateway Corridor opens into the larger portion of the property. This relatively small building is intended to provide office space, restroom facilities, a meeting room as well as serve as an entrance station for the SPRA, museum space for the Badger History Group, and presumably educational and interpretive display space concerning the full natural and cultural history of the property. While not advocating a huge building, it is very difficult to envision how all of these

uses will be accommodated in a building that is only projected to be 3,000 square feet in size. Additionally, the Plan does not call for the cooperation and collaboration on a combined visitor center to include all of the Badger landowners to tell the collective story of the history and of their current management of the Badger lands. To improve the plan, the proposal for the visitor center should be reconsidered to include the other Badger landowners and to plan for sufficient space to accommodate all needs for this facility.

#### Temporary Visitor Center (Building 207)

The plan calls for the use of the existing Building 207 as a temporary visitor center, or entrance facility, for the SPRA for a period of 10 to 15 years. During this time the building will include WDNR staff offices, restroom facilities, office and storage space for the Badger History Group, as well as exhibit space. This will require a significant investment to upgrade this building to meet building codes and accessibility requirements, although this building is slated for eventual demolition. It will clearly be important for the WDNR staff associated with SPRA to have workspace on the property and a place where they can interact with visitors. Especially during this early phase of the restoration of the land, it will be very important to have a place where visitors can learn about the property, its natural and cultural history, the restoration work that is being done and the recreational opportunities that are available. The WDNR should carefully consider if the Building 207 is the most appropriate facility for this use for a significant period of time, or if there are other options that would serve the need more effectively.

The Badger History Group is to be commended for the important work they have undertaken in preserving the history of the Badger Army Ammunition Plant including the archives and artifacts which they have collected. This is a crucial part of the history of this land. If the WDNR can accommodate providing space for this group and its collections in Building 207 for the near-term future, it is entirely appropriate for it to do so.

However, in its planning for temporary use of Building 207 the WDNR should not confuse the exhibits that have been created by the Badger History Group, as good as they are, as filling the need for a complete presentation for the public of information about the property, its natural and cultural history, the restoration work that is being done and the recreational opportunities that are available. To do this in the space available in Building 207 will require a substantial reduction in Badger History Group exhibits which are almost entirely focused on the ammunition plant era, and the addition of exhibits that would be necessary to tell the full story of the SPRA lands and provide the need information for visitors. Significantly more planning is needed to determine how the WDNR will provide information about, and an introduction to, the SPRA for visitors during the next decade or longer until a permanent visitor center is available.

#### Bluff Vista

The Plan correctly identifies the overlook at the Bluff Vista as being a key destination point for visitors to the SPRA. It provides good access to this area through both roads as well as hiking and biking trails. Visiting this site has been, and undoubtedly will be, a highlight of any trip to the Badger lands. Having an observation deck with quality interpretive materials at this site will enhance this experience. Due to the unique geological features of this area and its location in the

transition zone from oak woodland to the forests of the Baraboo Bluffs, it is an especially appropriate place for one or more interpretive walking trails. The Plan might, however, be trying to make too much of a good thing. It is unclear how the addition of an amphitheater at this location is useful to the overall visitor services of the SPRA. While an amphitheater somewhere on the property would be useful, locating it at the Bluff Vista, a location that will likely see heavy use, seems to provide significant chances of user conflicts between visitors wanting to take advantage of the overlook, and those attending events at the amphitheater. It would seem more appropriate to locate an amphitheater in connection with a visitor center which would allow for greater visitor accommodations. Also, if located at the Bluff Vista, visitors coming just for some event would have a long drive through the property rather than a more central location.

### **Management and Administration**

The management and administration of the SPRA over the projected fifteen to thirty years for which the proposed Draft Master Plan will be in effect contains many challenges and opportunities. Some of these are based on commitments which the WDNR has made in accepting this land for the people of Wisconsin, immediate budget constraints which may, or may not, extend into the future, and many unknown factors which may influence what can be accomplished on the land. A successful master plan should provide enough vision and direction so that there is a clear intent of the use of the property through time, but also include the tools necessary to adapt that plan as needed.

The following comments are intended to improve the Plan in the areas of management and administration.

### **Cooperation and Collaboration with other Badger Landowners and Managers**

The Final Report of the Badger Reuse Committee's first value calls for the management of the Badger lands [as much as possible] as a single property among its owners. The WDNR's application for lands at Badger commits the WDNR to planning for the property as a whole. While acknowledging the WDNR's statutory responsibilities and process for master planning for its properties, the Draft Master Plan for the SPRA does not meet the most basic threshold for planning for the Badger lands as a whole, or even acknowledges its responsibility and commitment to do so. To suggest that the WDNR's master plan, stacked up with the separate plans developed by the other landowners, constitutes a cooperative and collaborative master plan for the entire property is simply absurd. The Plan as it has been presented would, at best, allow for some limited level of joint problem solving between the Badger landowners. It does not include any kind of mechanism to ensure cooperative and collaborative efforts into the future.

This situation is particularly regrettable in an era when resources for public land management are harder and harder to come by. Instead of working to create a new model for the thoughtful management of the land through cooperation, collaboration and partnerships, this plan appears to just deal with the WDNR's concerns for the land that it manages and its own internal limitations. The Badger lands have often been described as a "once-in-a-lifetime" opportunity to have a new and creative approach to land management on this magnificent but abused piece of land. To do

so would require a certain amount of vision, forethought and even risk-taking. None of these attributes are displayed in significant amount in the Plan. Although the Plan does propose a quite spectacular restoration of a large area, it does not show the initiative and creativity that could and should be accomplished with a truly cooperative and collaborative commitment with the other Badger landowners.

To remedy this situation, the WDNR should now, while its master plan is still in draft form, begin significant and detailed discussions with the Ho-Chunk Nation, the Dairy Forage Research Center, the Bluffview Sanitary District and the Town of Sumpter as to how the WDNR's draft plans can be integrated with these owners plans for their lands and into comprehensive plan that will meet the commitments that the WDNR has made. It is insufficient just to ask these other landowners to comment on the WDNR plan, there must be a true collaborative and cooperative process undertaken. This may well delay the WDNR's adoption of a Final Master Plan for the SPRA, but in the end a better overall plan will be created. As the WDNR has seemingly been hampered by not being able to do anything at the SPRA until a master plan is approved, perhaps it could get around that problem by approving, once it has been improved as a result of this public comment period, an interim management plan that could serve until a final master plan can be developed in conjunction with the other Badger landowners.

#### The Name of the Property

As introduced early on in these comments, the name which has been given to the WDNR's portion of the Badger lands is inappropriate and misleading. The first problem is in the use of the word "recreation" in the name. It appears that the designation of the property as a "recreation area" was because, of all the available WDNR property designations, recreation areas, rather than state parks, state forests, wildlife areas, or other designations, allows for the broadest range of land management techniques that were thought to be needed for the level of restoration required at for the WDNR's portion of the Badger lands. To my knowledge, the WDNR does not have a "restoration area" designation available, though that would seem to be a better designation for this land. The original intent was not to prioritize recreation on this land, but rather recreation area was the designation which, oddly, would provide the most opportunities for restoration.

The names of many of the WDNR's properties do not include the official designation of the land. Thus I would suggest, in order to more accurately reflect the intended emphasis for the management of this land, the word "Recreation" be removed from the name and replaced with either the word "Restoration", or a more generic "Conservation".

Also the term Sauk Prairie in the name is somewhat problematic. In fact little of the land managed by the WDNR was part of the pre-settlement prairie of this area, but rather was part of the savanna and oak woodlands at the edge of the prairie. In addition, the term "Sauk Prairie" is an over-used term in the area used for a hospital, numerous businesses, the combined villages of Prairie du Sac and Sauk City, as well as at least one conservation organization. Finally, the Ho-Chunk Nation, one of the WDNR's neighboring landowners in the Badger lands, might very well not appreciate the land being referred to using the name of a traditionally rival tribe.

Before the Sauk Prairie Recreation Area name becomes ingrained in usage, it is time to change it entirely to something that is more appropriate.

Finally, within the property the WDNR has chosen to use for two of its management areas, Rocket and Magazine, names that relate to the past use of the land during the ammunition plant era. Other areas have more appropriate names that describe the natural features of the areas. I would encourage the use of better names for these two areas that focus more on the future and the natural features.

These rather extensive comments are intended to provide observation and recommendation to improve the Wisconsin Department of Natural Resources' Draft Master Plan for the Sauk Prairie Recreation Area. In general, the Plan is quite good, particularly in the area of restoration of the native landscape, but there are many areas where I believe the Plan can be significantly improved particularly to insure that the proposed recreational uses of the land adhere to the WDNR's commitments for low-impact recreation which is compatible with the restoration of the land.

I appreciate the opportunity to provide these public comments and I trust that they will be used, along with other comments received, to craft an even better Master Plan.

Sincerely,

Rob Nurre

Mary Ridgely

4126 Old Stage Road

Brooklyn, WI 53521

John Pohlman - LF/6

WI Department of Natural Resources

P O Box 7921

Madison WI 53707-7921

Dear John:

I would like to comment on the Sauk Prairie Recreational Area Master Planning. I live in the Oregon/Brooklyn area and would love to see another horse trail option in this area.

One suggestion I have is to expand the equine trails to include the outside loop of snowmobile trails. Since the two groups will use the trail at different times, the overlap seems appropriate.

Thank you for your continued support of multi-use trails in the SPRA. I look forward to enjoying the scenic beauty of the area.

Sincerely,

A handwritten signature in cursive script that reads "Mary Ridgely". The signature is written in black ink and is positioned to the left of the typed name below it.

Mary Ridgely

September 14, 2015

John Pohlman - LF/6  
WI Department of Natural Resources  
P O Box 7921  
Madison WI 53707-7921

Dear John:

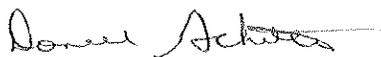
I would like to comment on the Sauk Prairie Recreational Area Master Planning. I am a horse owner and enjoy trial riding by myself and with friends and I'm always looking for areas that offer multi-use trails. The SPRA is also within an easy drive from my home.

Upon review of the master plan, I'm glad equine trails have been included in the draft. I do have a few suggestions: With parking for 10 trailers, the spots could easily be filled – would this area be able to be expanded if use proved a need – allowing for more spots for parking trailers? Another area of concern, the days when rockets would be deployed. Personally I wouldn't want to ride near this area and probably would avoid the park on those days. If a shooting range were built in the future, consider combining those two into one area and away from any trails. As shooting is normally more continuous than launching rockets, horses will more easily adapt to a reoccurring noise than a less frequent one over their heads.

The Southern Kettle Moraine has trails that are used by snowmobiles during the winter and horses during other seasons. Please consider allowing horses to be included on the outside loop of snowmobile trails. This would expand the riding area providing more time on the trails.

Thank you for your continued support of multi-use trails in the SPRA. I look forward to enjoying the scenic beauty of the area in the future.

Sincerely,



Donell Schetter  
N2372 County Road A  
Fort Atkinson, WI 53538

September 21, 2015

John Pohlman – LF/6  
Wisconsin Department of Natural Resources  
PO Box 7921  
Madison, WI 53707-7921

Dear Mr. Pohlman:

Response to WDNR's Draft Master Plan for the Sauk Prairie Recreation Area:

I have followed the land use of the former Badger Army Ammunition Plant for many years. My grandparents were one of the 80 families forced off their farm in the early 1940's. When I was a child it was allowed on certain Sundays for former residents to have supervised visitation to the cemeteries where relatives are buried. I often accompanied my grandparents and parents on these trips and heard my grandparents speak of their life in that space. My grandparents were good stewards of the land and greatly valued it.

I endorsed the Badger Reuse Plan that was developed by a committee of local, state, tribal and federal governments and local stakeholders. They worked to develop the best plan that would provide low-impact activities while working to restore the prairie. This is a unique opportunity to bring back the original prairie on such a large piece of land and I'm glad the draft WDNR plan includes the prairie restoration.

However, several aspects suggested in the WDNR's draft plan are NOT compatible with "low impact" activities. The suggested activities NOT compatible are the rocketry area and dual sport motorcycles. The "special events staging area" is also a source of concern. These do NOT fit with prairie lands, prairie birds, hikers, bicyclists, families with children, the general population and the Dairy Forage animals. The birds, in particular, were distressed during recent explosive activity used in decontaminating parts of the plant.

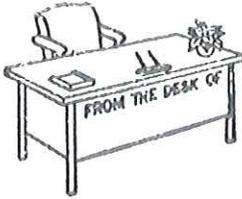
I urge the WDNR to eliminate these noisy, high-impact activities from the plan. They do not fit the definition of "low impact recreation." The rocketry and dual sport motorcycles areas would be noisy, tear up the soil and be disruptive to neighbors of this land and birds that now find their home in these prairie lands. The special events area could lead to user conflicts and destruction of fragile prairies. These proposed noisy, disruptive activities have a high potential to create a problematic sharing of space with low-impact activities and I feel would result in accidents and incidents.

I endorse the Badger Reuse Plan of 2001 that calls for "low-impact in nature and should be compatible with other uses...and should have no detrimental impacts on the cultural and natural features of the property." The rocketry area, dual sport motorcycles, and special events area should be eliminated from the WDNR's plan.

Sincerely,



Leila Shenk  
4929 Whitcomb Drive #15  
Madison, WI 53711



Mary Carol Solum  
E13156 Solum Lane  
MERRIMAC, WISCONSIN 53561-8733

RECEIVED  
AUG 17 2015  
FACILITIES AND LANDS

August 13, 2015

Comments on the Draft Master Plan and Environmental Impact Statement for the Sauk Prairie Recreational Area

Yesterday I commented on the Plan and used a scale of 1-10, I gave it a 7 and said I would comment on the 3 points I docked in writing. The following are my less than positive remarks:

Once again you had me going in a very positive direction until you traded ATVs for motorcycles and rockets for the shooting range (which later in the document you admitted that the shooting range could come back up in the future.) Do you not understand what we have been saying? The Badger Reuse Plan was carefully crafted, please reread it. Years ago I was fortunate to meet one of the best planners around who said "The land will tell you what it NEEDS to be, it is up to you to listen."

You use the word compatibility frequently--Webster defines it as capable of existing together in harmony. People are looking for quiet places which are hard in this day and age to find.

Planning also involves looking at risk factors. Rockets can easily pose a substantial risk. Who pays for damages whether it be a prairie or some unfortunate landowners house. You mentioned the risk to the National Guard but nothing about any other possible risks. I would not like to see a prairie go up in smoke when it wasn't a scheduled burn done by people who know what they are doing. Remember where your closest fire station is and EMTS!

You do know you are siting the dog training area on ground that is restricted due to soil contamination--right?

And lastly, for now anyway, I direct you to page 127, the second paragraph under e. Groundwater contamination. This paragraph is a total insult to those of us who have spent over 20 years on the RAB Board encouraging the DNR as the regulator to make sure there's clean-up not COVER UP. CSWAB has been a valuable contributing organization and has served the public well and will continue to do so. (I think I know who wrote this.)

Thank you for the opportunity to comment. I'm probably not done!

Mary Carol Solum

25 September 2015

To the Wisconsin Department of Natural Resources:

Thank you for the opportunity to comment on the future of the Sauk Prairie Recreation Area and the collective lands of the former Badger Army Ammunition Plant

I am a Ph.D. in Botany (Plant Ecology) from UW-Madison, and have been Professor of Environmental Studies at UW since 1998. I first visited the former Badger Army Ammunition Plant (BAAP) in 1998. I became more involved through one of my students, Amanda Fuller, now the Executive Director of the Kentucky Academy of Science. Her master's thesis was on the topic of restoration challenges at BAAP. Since then I have been advisor to another student, Alison Duff, who evaluated the status of remnant vegetation at BAAP for her MS degree (and went on to obtain her Ph.D. on another topic). I have taught several undergraduate "capstone" seminars that had various aspects of the on-going BAAP re-use project as their theme. I have visited the site multiple times since 1998, and have attended many meetings with various groups dealing with aspects of BAAP and more recently the Sauk Prairie Recreation Area. In interest of full disclosure, I am a member of the Sauk Prairie Conservation Alliance. This is a personal statement and does not represent the views of the Nelson Institute for Environmental Studies or the University of Wisconsin - Madison.

As a person very concerned about the global loss of biodiversity and the ecological services that it provides, I have followed the evolution of the "Badger Project" with interest. The release of this large an area of land for conservation purposes is at least highly unusual if not unique. It is through the hard work and selfless dedication of volunteer citizens that the project has been brought to its present state, with the property divided among the three owners, guided by a policy of cooperation among them for the future development of the site.

I want to stress the importance of this cooperative arrangement. As we know, the history of the Badger property is complex, and there are scars left by perceptions of past injustices. It began with the displacement of Native Americans, to be followed by the forced evacuation of the farmers justified by the desperate struggle of the Allies against brutal dictatorships. Subsequently the operations that were unambiguously patriotic in World War II became clouded as the nation divided over the necessity of the war in Vietnam. The creation of the tri-partite Badger project is an opportunity to address this history and heal wounds by the creation of an area of outstanding natural beauty that will be open to all. It is well documented that natural surroundings, by themselves, promote a sense of well being and even improve physical health. The Badger project should aim to maximize these benefits.

I am therefore disappointed that the cooperative aspect of the Badger project is not given more prominence in the plan. I understand that the main objective was for the Wisconsin Department of Natural Resources (DNR) to lay out the objectives for their portion of the property. I ask that the larger project, the coordinated development of interpretation and

messaging, be addressed explicitly and in length in any revision or additional planning documents.

There are many good aspects to this plan, and I credit the Wisconsin Department of Natural Resources (DNR) with the thoroughness of their work, and their willingness to consider the conservation and restoration components as fully as they do.

I believe, however, that the extent to which the plan includes uses that are not low impact detracts from the larger and more important purpose of dedicating an area that can bring the healing power of nature to the citizens of Wisconsin.

I applaud the explicit recognition that the development of the SPRA will be a project of many decades. This underscores the reality that the introduction of the various elements proposed would occur over time. I endorse the sentiment expressed in this passage from the report: "SPRA will require significant effort by the Department and its partners to reach its recreation and conservation potential. It will also require flexibility in implementation - taking advantage of opportunities as they emerge, responding to future issues and challenges, and applying what is learned in an iterative process."

This describes what may be called an adaptive approach. For this process to yield the best results, it is important not to preclude future outcomes by locking in up front options that may prove to be inappropriate or unsustainable. I am pleased to note that the report acknowledges that the largest and most challenging aspect of this whole project is the restoration of a landscape approximating the pre-settlement condition - an area large enough to allow us to grasp the majesty of the natural setting that was transformed to create our present urban and agricultural regions. The concept of transitioning from the more open area of the former Sauk Prairie and adjacent open woodland to the denser forest of Devil's Lake SP speaks to this vision. Some development of hardscape facilities will be necessary to provide staging areas and travel routes to facilitate public access to the site. But the measure of their appropriateness should be the degree to which they enhance the natural wonder and reinforce the message that humans can heal nature.

Given recent trends, it seems certain that resources to accomplish this challenging objective will be limited. I therefore urge that the development of all hardscape and infrastructure be kept to a minimum for the at least the first (5 to 10?) years of the project so that the restoration can proceed as rapidly as possible and in an appropriately adaptive manner. To cite one example: A unique aspect of the SPRA is that there is not an acute need for trail or road construction to provide access. In fact, at present there are more roads than necessary. Thus construction of additional trails need not be a matter of urgency. In contrast, the remodeling of the existing Army administration building to become a visitor center should be given a high priority. It will be important to have a place where the "Badger vision" can be explained and interpretative materials made available.

We tend to forget how seemingly benign human activity affects natural processes. One of these influences is called out in the proposal - the negative effects of artificial lighting. It is commendable that the report rightly celebrates the fact the SRAP will be an area of "dark

sky." What is not given serious thought is the degree to which human activities impinge on our soundscapes. It has been said that the most endangered resource is silence. Objective studies show the negative effects of noise on people. We need sonic refuges. More accurately, however, it is not complete silence that we need, but rather to minimize human generated sound so that we can hear the background of nature's sounds – bird calls, wind in the trees. Some of the activities proposed for the site will significantly impact the soundscape. It is dispiriting to read in the report the reassurance that the roar of traffic on H12 will make the intrusive sounds of motorized vehicles on the SPRA less apparent.

I understand the impulse to accommodate as many uses as possible on what is, by Wisconsin standards, a large tract of land. But each additional use detracts from the main purpose. Most of them can be accommodated at other sites where their impact will be much less. The measure of whether an activity is to be allowed in SPRA should be whether it requires or substantially benefits from taking place in a natural area. And the degree of "substantial" must be measured against the possibility that the increment to satisfaction for one user will be gained by a decrement in that of another user. For example, a single motorcycle rider who might understandably prefer to ride through a natural area will likely (it depends on the decibel level and pitch) diminish the experience for many other users within earshot whose tranquility is disturbed by the sonic intrusion. These trade-offs must be thoughtfully weighed.

Respectfully submitted,

Paul H. Zedler  
Town of Dunn, WI