NEBRASKA INVASIVE SPECIES CONFERENCE 2008

COORDINATING EFFORTS ACROSS BOUNDARIES

Nebraska Invasive Species Conference
February 6 - 8, 2008
Lincoln, Nebraska
Country Inn & Suites Conference Center

TABLE OF CONTENTS

The Nebraska Environmental Trust
preserving NATURAL NEBRASKA™ for future generations

NEBRASKA COOPERATIVE FISH & WILDLIFE RESEARCH UNIT

NEBRASKA INVASIVE SPECIES CONFERENCE

Welcome to the Nebraska Invasive Species Conference! This conference provides an opportunity for you to find out more about invasive species issues and management efforts from across the state. We hope you will take the opportunity to share information amongst each other so that we can all work together towards the betterment of Nebraska's natural resources.

NEBRASKA INVASIVE SPECIES PROJECT: Monitoring, Mapping, Risk, and Management

The Nebraska Cooperative Fish & Wildlife Research Unit, along with state and national partners, have joined together to provide information to the public and private sector on invasive species issues. This includes disseminating information on basic invasive species biology, monitoring and management methods, and actual and potential impacts and risks of invasive species throughout the state.

Goals:

- Provide resources on the potential spread and impact of invasive species in Nebraska
- Provide resources on actual and potential maps of invasive species range
- Disseminate Information regarding identification and management of potential invaders
- Provide a centralized information clearinghouse on management, impacts, and the potential spread of currently established invasive species via a web portal
- Provide outreach within Nebraska to agencies and individual stakeholders regarding the monitoring, mapping, risk, and management of invasive species

Partners:

- USGS Nebraska Cooperative Fish & Wildlife Research Unit
- University of Nebraska—Lincoln (UNL)
- UNL Center for Advanced Land Management Information Technologies (CALMIT)
- The Nature Conservancy
- Nebraska Department of Agriculture
- Nebraska Game & Parks Commission
- USDA Animal and Plant Health Inspection Service (APHIS)
- USDA Natural Resources Conservation Service (NRCS)
- National Park Service

Funding Provided By:

- The Nebraska Environmental Trust

For invasive species resources and conference proceedings, please visit our website at:

- ***http://snr.unl.edu/invasives***

For more information, please contact:

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NEBRASKA INVASIVE SPECIES CONFERENCE

SCHEDULE

Wednesday Feb 6th		Location	Presentation
6:00pm - 8:00pm	*Hors d'oeuvres*	Country Inn & Suites Lincoln Room	**Welcome Social** *Live entertainment from the* ***Bluegrass Hoppers!***
Enjoy a relaxing evening in the state capital!			

Thursday Feb 7th		Location	Presentation
7:00am - 8:00am	*Snacks*	Nebraska Room	**Continental Breakfast**
8:00am - 8:20am		Nebraska Room	**Craig Allen, USGS** Welcome!
8:20am - 8:50am	*Keynote*	Nebraska Room	**Keith Duncan, New Mexico State** Considerations for Invasive Woody Plant Management
8:50am - 9:40am	*Keynote*	Nebraska Room	**Randy Westbrooks, USGS** Invasive Species - Coming to Nebraska: Update on Efforts to Develop a National Early Detection and Rapid Response System for Invasive Plants in the U.S.
9:40am - 10:00am		Nebraska Room	**Dana Larsen, NRCS** Cowboys and Horse(weeds): New Opportunities for Nebraska Graziers in Invasive Plant Management on Rangelands
10:00am -10:20am		Nebraska Room	**Vicki Wohlers, USDA** USDA-APHIS-PPQ: Safeguarding U.S. Plant Resources from Invasive Plant Pests
10:20am - 10:50am	*Snacks*	Nebraska Room	**Break & Poster Session**
10:50am - 11:10am		Nebraska Room	**Chris Helzer, TNC** Effective Control of Invasive Species: Identifying Root Causes and Designing Appropriate Strategies

11:10am - 11:30am		Nebraska Room	**Charles Brooks, NWCA** Weed Superintendents the First Line of Defense
11:30pm - 11:50pm		Nebraska Room	**Sam Wilson, NGPC** Feral Pigs in Nebraska an Environmental and Agricultural Threat
11:50pm - 1:00pm	*Lunch (Provided)*	Nebraska Room	**Craig Allen, USGS** Welcome Remarks
1:00pm - 1:20pm		Nebraska Room	**Tom Bragg, UNO** Invasive Species: Not Always Exotics
1:20pm - 1:40pm		Nebraska Room	**Mitch Coffin, NDA** Nebraska's Noxious Weed Program: Past, Present, and Future
1:40pm - 2:10pm	*Snacks*	Nebraska Room	**Break & Poster Session**
Breakout Sessions		**Location**	**Presentation**
2:10pm - 4:30pm		Capitol Room	**Breakout Session 1** **Partnerships and Cooperatives** Coordinator: Steve Riley, NGPC Assistant: Jim Merchant, CALMIT
2:10pm - 4:30pm		Board Room	**Breakout Session 2** **Legislation Issues and Policies** Coordinator: Tim McCoy, NGPC Assistant: Vicki Wohlers, USDA-APHIS-PPQ
2:10pm - 4:30pm		Omaha Room	**Breakout Session 3** **Future of Invasive Species Management** Coordinator: Mace Hack, TNC Assistant: Craig Allen, USGS
2:10pm - 4:30pm		Lincoln Room	**Breakout Session 4** **Threatened or Endangered Species** Coordinator: Mark Humpert, NGPC Assistant: Annabel Major, NECFWRU

4:30pm - 6:30pm		Nebraska Room	**Free Time** **Enjoy Lincoln!**
6:30pm	*Dinner (Provided)*	Nebraska Room	
7:00pm	*Keynote: Dinner Presentation*	Nebraska Room	**James Stubbendieck, UNL** Nebraska's Dynamic Landscape
Friday Feb 8th		**Location**	**Presentation**
8:30am - 8:40am		Nebraska Room	**Jim Merchant, CALMIT** Welcome!
8:40am - 8:50am		Nebraska Room	**Sunil Narumalani, UNL** Mapping and Quantifying Invasive Vegetation Species Along the North Platte Using Hyperspectral Remote Sensing
8:50am - 9:00am		Nebraska Room	**Thomas Powers, UNL** An Overview of Invasive Species Research at UNL
9:00am - 9:20am		Nebraska Room	**Mark Pegg, UNL** Biology and Control of Bighead and Silver Carp in North America
9:20am - 9:40am		Nebraska Room	**Mark Brohman, NET** How Do Nebraska Environmental Trust Funds Come Into Play In Invasive Species Control?
9:40am - 10:00am		Nebraska Room	**Steve Rasmussen, NFS** The Great Plains Tree and Forest Invasives Initiative
10:00am - 10:30am	*Snacks*	Nebraska Room	**Break &** **Poster Session**
10:30am - 12:00pm		Nebraska Room	**Panel Discussion** Creating an Action Plan for Nebraska. How to Proceed From Here?
12:00pm	*Lunch (Provided)*	Nebraska Room	**Craig Allen, USGS** Closing Remarks
End of Conference. Have a safe trip home!			

Please consider visiting downtown Lincoln and the University of Nebraska-Lincoln City and East campuses.

KEYNOTE SPEAKERS

Randy Westbrooks
Invasive Species Prevention Specialist
U.S. Geological Survey
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Randy Westbrooks, a native of Gaffney, South Carolina, USA, received his B.S. and M.S. degrees in biology from the University of South Carolina (1976, 1978), and his Ph.D. in Botany and Weed Science from North Carolina State University (1989). Since 1979, Dr. Westbrooks has served as an Invasive Species Prevention Specialist with the U.S. Government, in the Department of Agriculture (Animal and Plant Health Inspection Service), and the Department of Interior (U.S. Geological Survey). Internationally, Dr. Westbrooks is working to develop a Global Early Warning System for Invasive Species – in cooperation with the IUCN Invasive Species Specialist Group, based in Auckland, New Zealand. On the domestic front, Dr. Westbrooks is working with a number of interagency groups to develop a National Early Detection and Rapid Response System for Invasive Plants in the United States. Currently, the effort is focusing on the establishment of State EDRR Coordinating Committees to coordinate the development of other local, state, and regional elements of the national system. Throughout his 28+ year federal career, Dr. Westbrooks has written numerous articles and publications on invasive species, including the U.S. Weed Fact Book - "Invasive Plants – Changing the Landscape of America", which was first published in 1998. The Weed Fact Book is currently being updated for publication again in 2008. Dr. Westbrooks' Motto is: *Partnerships Now…. Weeds Won't Wait!*

Title: Invasive Species – Coming to Nebraska. Update on Efforts to Develop a National Early Detection and Rapid Response System for Invasive Plants in the United States.

Summary: To minimize the establishment and spread of new non-native invasive plants in the United States, a cooperative interagency effort is being made by the U.S. Geological Survey and other agencies to develop a National Early Detection and Rapid Response System (EDRR) for Invasive Plants. In support of this effort, a coordinated framework of interagency partner groups (State Invasive Species Councils, State EDRR Coordinating Committees, and Invasive Plant Task Forces) is being developed at the local, state, and national levels to increase EDRR capacity through: early detection and reporting of suspected new plants to appropriate officials (by trained volunteers and agency field personnel); ID and vouchering of submitted specimens (by cooperating botanists); archival of new plant records in regional and national plant databases [e.g., the Invasive Plant Atlas of New England (IPANE)]; rapid assessment of new plant species for invasiveness (by federal and state weed scientists); and rapid response to confirmed invaders (by impacted land owners/managers, and invasive plant task forces). Initially, in 2003, an EDRR System Design Plan was developed and published by the Federal Interagency Committee for Noxious and Exotic Weeds (FICMNEW). In phase two of the project, a number of state and regional groups are cooperating to develop and field test the components of the system. Work to develop EDRR Guidelines for volunteer training, rapid assessment, and rapid response, is also proceeding. Natural resource conservation and agriculture agencies and organizations in Nebraska can assist in this effort through creation of a Nebraska Invasive Species Council, a Nebraska EDRR Coordinating Committee, and by support of 'on-the-ground' task forces such as the Platte River Valley Cooperative Weed Management Area and the Middle Niobrara Weed Awareness Group. Once implemented nationwide, the system will provide an important second line of defense against new invasive plants, and will complement federal efforts to prevent new introductions at U.S. ports of entry. With both exclusion and EDRR systems in place, the nation will be better able to defend against future economic and environmental losses due to 'plants out of place'.

Keith Duncan
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Keith W. Duncan is a professor with New Mexico State University Cooperative Extension Service and Agriculture Experiment Station. Dr. Duncan earned a Bachelor's (1974) and Master's (1976) degree from Texas Tech University and Ph.D. (1981) in Range Science from Texas A&M University. Dr. Duncan worked with Lilly Research Laboratories as a field research scientist before moving to New Mexico in 1984 as the Brush and Weed Specialist. Dr. Duncan is responsible for conducting statewide research/demonstration trials on noxious rangeland and noncropland plants.
Title: Considerations for Invasive Woody Plant Management
Summary: A brief overview of the planning considerations, woody plant characteristics, and tools available for woody plant management.

James Stubbendieck
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James Stubbendieck is Director of the Center for Great Plains Studies and Professor of Grassland Ecology at the University of Nebraska. He conducts research on the ecology and propagation of the endangered blowout penstemon, influences of prescribed burning on grasslands, and long-term vegetation dynamics. He has authored over 100 scientific articles and 12 books. Over the past decade, he collected old photographs depicting Nebraska's landscape and re-photographed those scenes to document and explore landscape dynamics.
Title: Nebraska's Dynamic Landscape
Summary: Changes in Nebraska's vegetation and landscape are documented with paired photographs, one photograph of each pair shows the historical view and the second is a modern photograph of the same site

PRESENTERS

Dana Larsen
State Rangeland Management Specialist, Natural Resource Conservation Service
Title: Cowboys and Horse(weed)s: New Opportunities for Nebraska Graziers in Invasive Plant Management on Rangelands
Summary: Invasive plant management using livestock is not a new concept, yet it has seldom been used as a first line of defense in treatment scenarios. Utilization of leafy spurge, phragmites, eastern red cedar, and other invasive grasses and forbs by livestock can be incorporated into long-term grazing strategies to check the spread of invasive and noxious plants. This presentation explains some grazing planning considerations for invasive plant control with examples of how some of these grazing techniques are being used in Nebraska.

Vicki Wohlers
State Plant Health Director, USDA/APHIS/PPQ
Title: USDA-APHIS-PPQ: Safeguarding US Plant Resources from Invasive Plant Pests
Summary: This talk will be an overview of USDA-APHIS-PPQ's role in preventing the entry and establishment of invasive plant pest including insects, plant diseases, noxious weeds, and other injurious organisms. This safeguarding function continues even as there are increasing volumes of goods and passengers coming into the United States. PPQ operation programs include pest exclusion, pest detection (early pest detection and rapid response), pest eradication, and pest management/control.

Chris Helzer
Program Director, The Nature Conservancy
Title: Effective Control of Invasives: Identifying Root Causes and Designing Appropriate Strategies
Summary: Effective control of invasive plant species depends on the land manager's ability to understand the way in which the invasive species competes with desirable species. Many times, changing the conditions within which the plants are growing can be as important as directly attacking the invasive species itself. There are numerous examples of species which have become invasive because of impacts to the resilience of the community being invaded. Working to increase the resilience (and resistance to invasion) of plant communities and/or changing the disturbance regime in that community to favor native desirable plants can greatly increase the effectiveness of invasive species control efforts and help to prevent new invasions.

Charles Brooks
President, Nebraska Weed Control Association
Title: Weed Superintendents the First Line of Defense
Summary: This talk will tell the audience about the Nebraska Weed Control Association and who makes up the organization, how the NWCA works, and how this can help them when they have invasive plant problems and questions. This will include an update on the watch list plants so they can help us identify the next invader in Nebraska.

Sam Wilson
Nongame Mammal/Furbearer Program Manager, Nebraska Game and Parks Commission
Title: Feral Pigs in Nebraska an Environmental and Agricultural Threat
Summary: Wild pigs are not native to North America but have been present since soon after Europeans arrived in the New World. Domestic pigs retain the ability to survive in the wild and have escaped or been released in many areas of the United States. Eurasian Wild Boar have also been released for sport hunting and have hybridized with local feral populations. Historically these populations were confined to the southeastern U.S. and California but they have expanded their range greatly in the last 15 years, with the help of humans, and are now present in 39 States. Feral pigs pose a unique set of problems for the environment and for local economies due to their high reproductive capacity and feeding behavior and are estimated to cause over $800,000,000 in damage per year in the U.S. Feral pigs are also highly mobile reservoirs for diseases such as swine brucellosis and pseudorabies that pose a danger to wildlife and domestic animals. The Nebraska Game and Parks Commission have been tasked with eliminating or controlling feral pigs in Nebraska and are currently engaged in eradication programs in 4 counties. A brief history of feral pigs in Nebraska and the techniques used for eradication and damage control will be detailed in this presentation.

Tom Bragg
Professor**,** Department of Biology**,** University of Nebraska at Omaha
Title: Invasive Species: Not Always Exotics
Summary: While exotic species present unique threats to Nebraska's native ecosystems, displaced native species can be equally detrimental. Eastern red cedar (Juniperus virginiana), rough-leaved dogwood (Cornus drummondii), and smooth sumac (Rhus glabra), are among native species that threaten native plant and animal communities, particularly grasslands. For example, due mainly to fire suppression, eastern red cedar and Ashe juniper (Juniperus ashei) had invaded 6 million acres of grassland in Oklahoma by 1994 with an estimated continuing loss of more than 700 acres per day. Similar increases of eastern red cedar in parts of Nebraska potentially have similar results. Part of the cedar problem was the extensive use of the species to create windbreaks and wildlife habitat with an estimated 1.2 million seedlings being planted in Nebraska by the 1990s. To a lesser extent, rough-leaved dogwood and smooth sumac have both extended their range in the Great Plains. However, unlike cedars which do not survive top-killing, these and other deciduous species pose an even greater threat since they are aggressive sprouters following fire or cutting. Whether the increase of native woody species is a benefit or a detriment is dependent on the land management objectives of individual sites.

Mitch Coffin
Program Manager, Nebraska Department of Agriculture, Noxious Weed Program
Title: Nebraska's Noxious Weed Program: Past, Present, and Future
Summary: Nebraska has had some type of Noxious Weed law or regulations since 1873. This first law was called the Canada thistle law and remained without alteration until 1965. This new act (1965) was based on a model law written by the National Association of State Departments of Agriculture (NASDA). During the next thirty-five years the main focus regarding noxious weeds seemed to focus mainly around production agriculture. It was agreed that noxious weeds were a threat in waste areas, but the main focus remained on agricultural areas that provided some type of income to landowners. In the late 1990's, Nebraska took several steps to address noxious weeds in all land use habitats. Noxious weeds found in riparian and waste areas were a serious threat to Nebraska's natural resources and deserved more attention than in the past. While current state designated noxious weeds could be found in these areas, the explosion of purple loosestrife, saltcedar, and phragmites along with concerns regarding ground and surface water, recreation and wildlife became overwhelming factors. Noxious and invasive weeds have no boundaries. They do and will grow anywhere regardless of ownership or its intended use. We all have a duty to control and/or report uncontrolled noxious and invasive weeds.

Sunil Narumalani
Co-authors: Deepak Mishra, Paul Merani, and Robert Wilson
Professor, CALMIT, School of Natural Resources, University of Nebraska
Title: Mapping and Quantifying Invasive Vegetation Species along the North Platte using Hyperspectral Remote Sensing
Summary: This research focuses on mapping and quantification of invasive plant species along the floodplain of the North Platte River, east of Lake McConaughy in Keith and Lincoln Counties, NE using airborne remote sensing data. Emphasis is given to five of the most common invasive species including Salt Cedar (Tamarix sp.), Russian Olive (Elaeagnus angustifolia), Phragmites (Phragmites australis), Canada Thistle (Cirsium arvense), and Musk Thistle (Carduus nutans). An aerial remote sensing platform for hyperspectral data collection was used for this investigation. An intensive field investigation was also conducted to collect sample location points for each of the species in order to facilitate the classification and perform accuracy assessement. The image classification procedures yielded spatial distribution maps of each species along the corridor. Once the locations of these invasive plants are known, appropriate control and management procedures can be implemented in those areas.

Thomas Powers
Professor of Plant Pathology, University of Nebraska-Lincoln
Title: An overview of Invasive Species research at UNL
Summary: A wide range of research on invasive species has been conducted at UNL. These research efforts include prediction, monitoring, and prevention of exotic pest establishment. Habitats have been studied to assess their potential for resisting invasion. Management options have been developed and notably, non-target effects of control have been measured. Much of this research was conducted independently, outside of the conceptual framework of invasive biology.

Mark Pegg
School of Natural Resources, University of Nebraska-Lincoln
Title: Biology and Control of Bighead and Silver Carp in North America
Summary: Bighead carp and silver carp, collectively known as Asian carp, emerged on the national scene in the early 2000s. The unique behavioral response these fish have when startled has led to national and international attention to the range expansion of both species in the Central United States. This presentation will provide a general introduction to bighead and silver carp, their means of introduction, biology, and threats to native species. Emerging technologies for control will also be discussed.

Mark Brohman
Executive Director, The Nebraska Environmental Trust
Title: How do Nebraska Environmental Trust Funds Come Into Play in Invasive Species Control?
Summary: The Nebraska Environmental Trust has funded a few invasive species grant applications and it has turned down others. Currently there are five pending applications for invasive species control and a few applications that include some invasive species control, but that is not the primary purpose of the application. The Trust sees invasive species control as an important part of preserving and restoring native habitat. Some methods are still seen as 'experimental' and the more research and information that an applicant can provide with their application, the better chance of funding from the Trust.

Steven Rasmussen
District Forester - Great Plains Initiative Coordinator, University of Nebraska-Lincoln, Nebraska Forest Service
Title: The Great Plains Tree and Forest Invasives Initiative
Summary: The emerald ash borer (EAB), (Agrilus planipennis, Fairmaire) is a new and significant threat to this nation's ash tree resources. First identified in Michigan in 2002, it has since been discovered in Ohio, Indiana, Illinois, Maryland, West Virginia and Ontario, Canada. It has been estimated that already over 25 million ash trees have been killed with currently no good options available for containment. State and federal quarantines are in place and involve significant survey, containment and eradication operations in affected areas. The northern Great Plains states have the highest percentage of ash in the nation. Some Nebraska communities have green ash comprising up to 35% of their tree resource. In the natural woodlands, green ash is the second most common occurring hardwood tree in the state. In addition, green ash has been the most common planted hardwood tree in conservation and rural plantings during the last several decades. The four northern Great Plains states (KS, NE, ND, SD) have been awarded a two year grant from the USDA Forest Service to work together to address the threat of invasive species and specifically EAB; develop partnerships; create awareness; and help prepare communities, public entities, and tree owners against invasives. This presentation will give an update on the situation of EAB as an invasive species and how the four states are working together to address the threat.

BREAKOUT SESSIONS

The purpose of these breakout sessions is to go further into discussions regarding important topics in invasive species management for the state. This is an opportunity to brainstorm with others involved in invasive species management, ask questions, and present ideas to increase the effectiveness and efficiency of efforts throughout the state. Your session coordinator will help guide the discussion, and an assistant will be available to record the information discussed. Your registered breakout session number is noted on your name badge.

(1) Partnerships and Cooperatives
Coordinator: Steve Riley
Certified Wildlife Biologist,
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Assistant: Jim Merchant, CALMIT

(2) Legislation Issues and Policies
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Assistant: Vicki Wohlers, USDA-APHIS-PPQ

(3) Future of Invasive Species Management
Coordinator: Mace Hack
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Assistant: Craig Allen, USGS

(4) Threatened or Endangered Species
Coordinator: Mark Humpert
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Assistant: Annabel Major, NECFWRU

POSTER ABSTRACTS

Please take some time to visit the posters and learn about projects going on throughout the state. All of the posters have been entered into two separate categories: Student and Non-Student. The poster competition awards will be presented during the Friday luncheon.

Author: Aaron Alai
Title: The Predicted Distribution of the Invasive Species Podarcis sicula (Italian Wall Lizard)
Abstract: The perpetual distribution and release of Podarcis sicula in Long Island could have detrimental effects on local ecosystems, and local human populations. The two objectives of this study are to first examine, on a national-scale, the current and potential distribution of Podarcis sicula. And secondly, to analyze fertility and survivorship data in order to determine how fast their populations can spread; and which age classes in the populations are the major contributors to the spread. To accomplish these objectives, conditions similar to Long Island were extrapolated from six data sets and overlaid over the U.S.; overlapping data were used as an indicator of potential habitat. Life history was examined which allowed the production of Leslie and sensitivity matrices. Analyses of the overlaying geographic data indicate the lizards have a large amount of potential habitat, and are continuing to spread. The Leslie and sensitivity matrices indicate that first year lizards are the most important in terms of fertility and survivorship to the population growth.

Authors: Mary Bomberger Brown, Christine J. Thody
Title: Tern and Plover Conservation Partnership--Conservation. Sensible Solutions.
Abstract: We study and protect endangered interior least terns (Sternula antillarum athalassos) and threatened piping plovers (Charadrius melodus) in a way that minimizes conflicts between birds, industry, homeowners, and local communities. Both species are listed as Tier 1 At-Risk species under the Nebraska Natural Legacy Plan. Our approach is to work with all interested parties to find sensible, proactive solutions to protect terns, plovers, and other components of the Platte River ecosystem, while ensuring that business, industry, and private interests are free to continue to operate with minimal interference. The Partnership was founded in 1999 to prevent and resolve conflicts between birds and the sand and gravel mining industry. We have expanded to include NRDs, housing developments, and others in our protection activities.
The Partnership: Protects tern and plover colonies from predation and human disturbance. Works with conservation organizations on the wintering grounds in Mexico to protect the birds during the non-breeding season. Works closely with industry, homeowner's associations, local governments, conservation organizations and the public. Increases awareness and appreciation of conservation issues by participating in events that educate and involve the public, industry and government. Maintains an active research program. The more we know about terns and plovers, the more effective our protection efforts will be. Monitors tern and plover colonies through our community based "Adopt-a-Colony" volunteer program. Involves students through our "Job Shadowing" program.

Author: James Eckberg, Svata Louda, Brigitte Tenhumberg, Drew Tyre
Title: Native Herbivores Repel Exotic Plant Invasion
Abstract: A current challenge in ecology is to understand the role of native herbivores in limiting plant invasions. The spatial scale of local native herbivore-exotic plant interactions and the effect of herbivores on exotic plant extinctions remain unclear. In this study, we quantified the effect of herbivore on experimentally introduced populations of the non-invasive, non-native Cirsium vulgare across two cohorts and eight sites. Herbivores consistently impacted seedling demographics through space and time. However, the magnitude of these effects varied widely from virtually preventing all recruitment to reducing establishment probability by only 0.10. These results extend our spatio-temporal inference of biotic resistance and point to a spatio-temporally dynamic role of native herbivores in repelling exotic plant invasions.

Author: Nicole Haxton in conjunction with USDA-APHIS-PPQ
Title: Don't Move Firewood
Abstract: My poster is not to display a research project. It is an outreach poster that is to send the message of why people should not move firewood between different locations within the United States. This poster shows the invasive plant pests that are moved with firewood and the damages that they can cause at their new location. Mainly, my poster is made to deter citizens from moving firewood by showing them the consequences of these actions and the amount of money it can cost a city when they ignore my message. This poster also discusses the ways that the federal and state governments are trying to control the movement of these invasive species by prohibiting the movement of firewood with the use of quarantines.

Authors: W. Wyatt Hoback and Kerri M. Skinner
Title: ESCAPE: A Website to Educate About the Impacts of Exotic Species
Abstract: Our goals for this project were to develop a website which allows users to learn about exotic species. We created learning modules which allow users to test their knowledge about exotic species, to investigate the ethics of exotic species control, and to explore case studies to learn more details about exotic species. We structured the site in a non-linear, modular way to allow users to easily navigate through the learning materials and to allow teachers to use specific parts of the website. The organization of the links guides visitors from the general to the detailed, allowing exploration of details driven by user interest. We have incorporated graphics whenever possible while minimizing the time needed to load pages. We provide a thistle identification key to allow website visitors to learn identification of common plants which include both native and exotic species. Because our pages present high resolution views of leaves (top and bottom), stems, flower heads, whole plant, and root, users can identify thistles in Nebraska without the need for taxonomic expertise.

Author: Thad Miller
Title: Using the Relative Risks Model to Prioritize Invasive Plant Management and Rare Species Conservation
Abstract: Non-indigenous invasive species (NIS) are considered a significant threat to rare and endangered species (RES). Though experts debate the degree to which NIS are responsible for declines in populations of RES, public and private land owners devote substantial resources toward the control of NIS. It is common to evaluate NIS based on their potential or likely ecological impact but little research is devoted to determining the degree to which specific NIS threaten specific RES. We used the relative risks model to explore the risks posed to rare and endangered plants and plant communities by floristic NIS in Nebraska. We modeled the suitable habitats for 9 NIS, which we subsequently compared to documented occurrences of rare and endangered plants and plant communities in a Geographic Information System. This, in combination with our assessment of ecological impacts of each NIS, provided relative risk rankings for the NIS and relative vulnerability rankings of rare and endangered species and communities in a regionally explicit framework. Finally, we used Monte Carlo simulation to determine how the uncertainty of input variables influenced risk scores. Initial results indicate that the Western High Plains and the Nebraska Sand Hills are at greater risk than other ecoregions of the state.

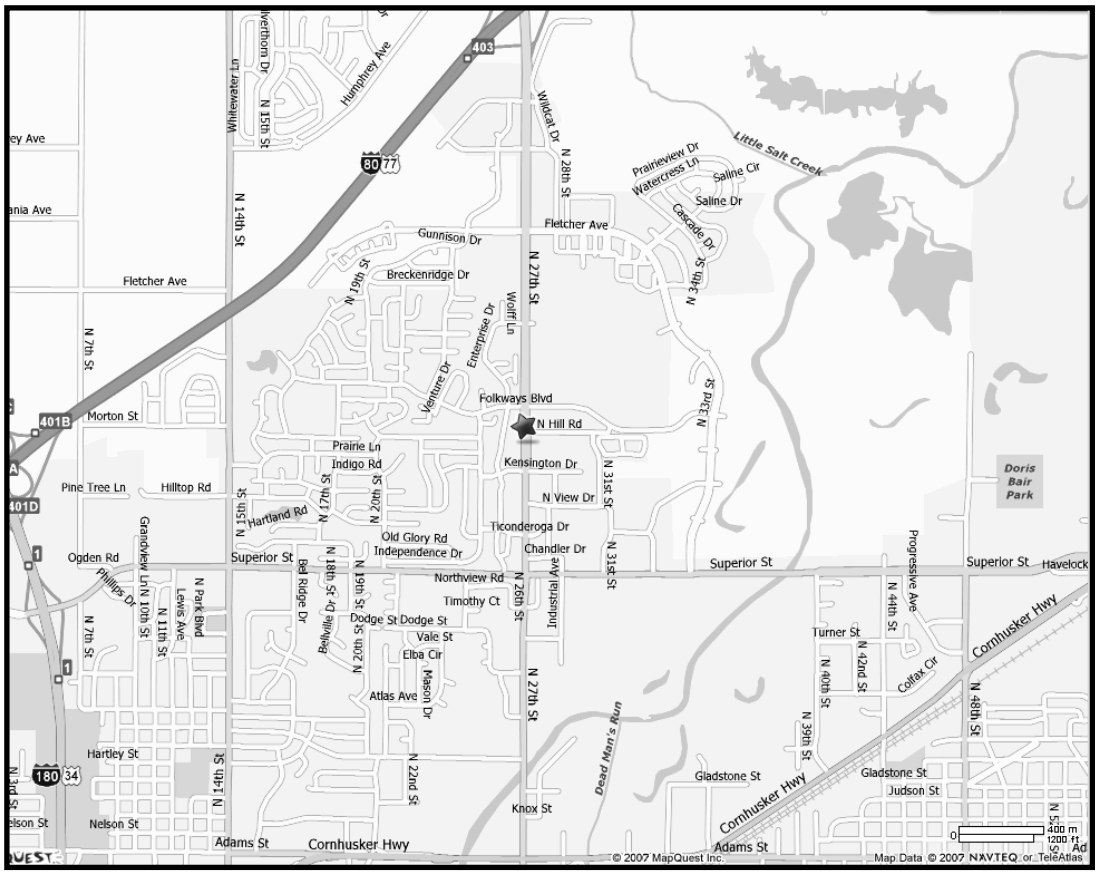
Author: Galen Niehues, PRIDE President, and Nancy Adler, PRIDE intern
Title: PRIDE Weed Management Group
Summary: Panhandle Research Integration for Discovery Education (PRIDE) is a Weed Management Group in the Nebraska Panhandle. Formed in 1997, PRIDE is dedicated to educating the public about the economic and environmental impacts of invasive plant species. PRIDE has undertaken several projects in the past ten years that have implemented the Integrated Pest Management techniques of biological control, seeding of competitive grasses, and intensive goat grazing, among others. PRIDE has also worked to educate landowners and implement best management practices for herbicide application.

Authors: Byron Sleugh*, Bob Masters, Mary Halstvedt, and Vanelle Peterson
Title: Management of Invasive and Noxious Weeds with Aminopyralid (Milestone®) and Other Herbicides
Abstract: With the introduction of aminopyralid, an innovative, non-restricted use active ingredient from Dow AgroSciences, successful strategies for managing many noxious and invasive species in ecologically sensitive sites can be developed. Aminopyralid was developed for selective broadleaf weed control in sites such as rangeland, pastures, rights-of-way, wildlife habitat, recreational areas, campgrounds, other non-cropland, and natural areas and was registered under the Environmental Protection Agency's Reduced Risk Pesticide Initiative. Aminopyralid is effective at rates between 53 and 120 g acid equivalent (ae) ha^{-1} with no injury to many cool- and warm-season grasses and is available commercially in the USA as Milestone®, Milestone® VM Plus, and ForeFront R&P™ herbicides. Aminopyralid and other Dow AgroSciences active ingredients consistently provide excellent control of invasive and noxious weeds such as Canada thistle (Cirsium arvense), musk thistle (Carduus nutans), spotted knapweed (Centaurea maculosa), Sericea lespedeza (Lespedeza cuneata) , and others in a wide variety of environments. Two years after fall applied aminopyralid treatments to Canada thistle an average of 90% control was observed. Spotted knapweed and sericea lespedeza were controlled 90-100% at 426 days after application of Milestone and PastureGard, respectively. These results indicate that herbicides are an important part of integrated approaches to managing noxious and invasive weeds in various habitats.

Author: Cynthia Taylor
Title: Nebraska Natural Legacy Project Flagship Initiatives Implement Management to Reduce Impacts of Invasive Species
Abstract: The Nebraska Natural Legacy Project (NNLP) has developed and is implementing a wildlife action plan for conserving Nebraska's wildlife and their habitats through the proactive, voluntary conservation actions of partners, communities and individuals. The Legacy plan identifies Biologically Unique Landscapes (BULs) in Nebraska, for each Biologically Unique Landscape, the Legacy plan identifies the stresses affecting species and habitats, the at-risk-species, and the conservation strategies to better manage for wildlife and their habitats. Management activities have already begun in six Flagship Initiatives, in cooperation with conservation organizations, Nebraska Game and Parks Commission, and private landowners. Conservation activities such as prescribed burning, patch-burn grazing, and direct removal of invasive plant species are some of the methods being used to promote development of quality habitat for at-risk and common species across Nebraska. Through cost-shared habitat improvement projects, landowners, land managers, and wildlife all benefit from this cooperative approach to conservation. Important to the success of this conservation effort are the partnerships that are formed and the education and outreach to local communities and individuals about wildlife, habitats, and techniques for on-the-ground management activities. Active participation of many partners will sustain continued habitat improvements well into the future.

Author: Stephen Vantassel
Title: Internet Center for Wildlife Damage Management
Abstract: With funding from USDA/CSREES-IPM Regional Grants, Scott Hygnstrom (University of Nebraska-Lincoln), Paul Curtis (Cornell University), Robert Schmidt (Utah State University), and Greg Yarrow (Clemson University) founded the Internet Center for Wildlife Damage Management (http://icwdm.org). Since 1995, the ICWDM has used the Internet to provide vital research-based wildlife damage management information to biologists, NWCO's, producers, and property owners. The ICWDM disseminates its information through a wide array of digital media, including, an online searchable library containing over 3200 publications and 500 images, educational videos, podcasts, and links to additional sources of information. The ICWDM also provided personalized assistance to over 350 people through its "Ask the Expert" area. Last year, the ICWDM welcomed over a million visitors from over 150 countries. Future plans include, new site design, and expansion of the digital library as adding control information beyond the 70 species already listed.

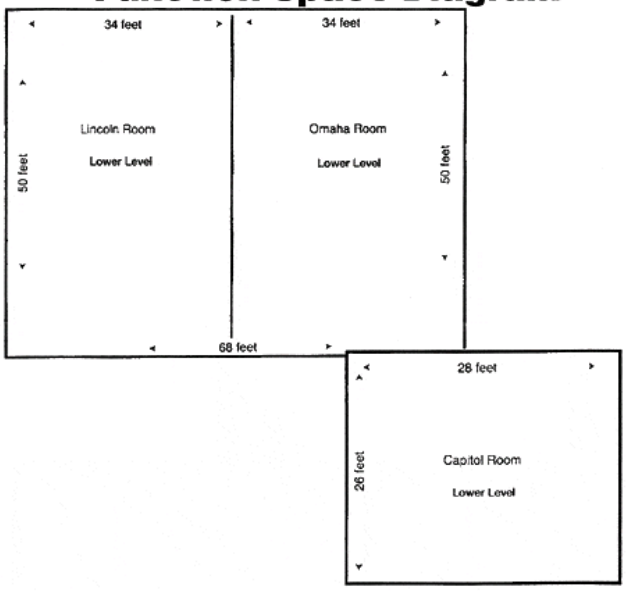
Author: Justin Williams
Title: Forecasting the Invasion and Distribution Potential of Non-Native Plant Species in Nebraska.
Abstract: Thousands of non-native plant species are established outside of cultivated areas in many countries. These species have the potential to become invasive, which poses both ecological and economic risks to ecosystems. Methods for anticipating the threat of potentially invasive species would allow managers to make informed decisions and take action to exclude or mitigate harmful species before they are established. The objective of my research is to determine the invasion and distribution potential of non-native plant species in Nebraska. My research will entail two main components. First, I will combine existing data from scientific collections, agency reports, literature review, and solicited expert opinion to rank the risk of potentially invasive species. I will use the I-Rank risk assessment framework, a qualitative species assessment designed to rank invasion threat or impact of non-native species. Second, I will select a subset of species and predict their potential geographic range in Nebraska. I will use classification trees to model the species' potential range using species' occurrence data and environmental predictive variables. Together, these two research components will yield information about which species pose the greatest invasion risk and where in Nebraska they are likely to occur.



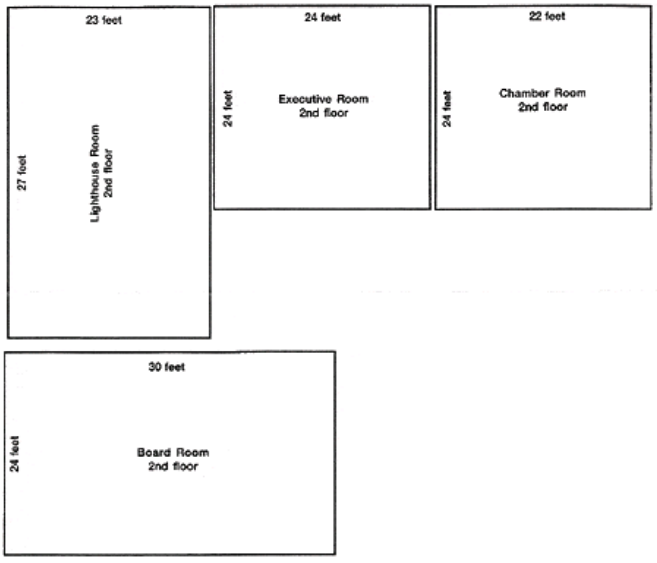
COUNTRY INN & SUITES CONFERENCE CENTER

The Country Inn & Suites Conference Center is located at 5353 North 27th Street, Lincoln, Nebraska. Take exit 403 South off of Interstate 80. More information call 402-476-5353. The hotel features high speed Internet (please contact the front desk for more information), indoor pool, fitness center, and is attached to the Beacon Hills Restaurant. The conference center is located on the South end of the building. Meetings spaces are shown below.

Lower Level Function Space Diagram



Upper Level Function Space Diagram



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