

# Science from the Midwest

## Identifying the Vulnerability of Grassland Birds to Climate Change

*Prairie ecosystems and the grassland birds that rely on them for habitat may be particularly vulnerable to rapid changes in climate. Extensive portions of prairie have already been lost due to agriculture and urbanization, and as a result grassland birds have declined more than any other bird group in the last four decades.*

### THE ISSUE:

- ⇒ Climate change is poised to exacerbate existing threats to these birds as temperatures in certain prairie ecosystems are expected to rise and extreme weather events, such as drought, may become more common.

### OUR SCIENCE:

- ⇒ By identifying how birds are currently responding to climate change, coupled with an effort to model their exposure to future changes, researchers are working to forecast how grassland bird populations might change in the region.

### IMPACT:

- ⇒ Results can be used to help managers evaluate the efficacy of current grassland bird management practices and determine whether these strategies need to be altered, given the projected response of populations to climate change.



## Informing Management of Floodplain Conservation Lands

*Recent extreme floods on the Mississippi and Missouri Rivers have motivated the expansion of state and federally owned floodplain conservation lands. In addition to conservation benefits, these lands provide valuable ecosystem services such as processing excess nutrients, sequestering carbon, and reducing flood risk.*

### THE ISSUE:

- ⇒ Floodplain lands are highly dynamic and challenging to manage. In order to successfully manage floodplains into the future, managers need to be able to anticipate how floodplain hydrology is likely to change over time, based on changes in climate and land use.

### OUR SCIENCE:

- ⇒ Researchers are identifying what is currently known about floodplain hydrology in the region, as well as what information gaps exist that could hinder current and future decision-making. Based on these results, researchers are working with stakeholders to develop practical, cost-effective approaches to fill these gaps.

### IMPACT:

- ⇒ The results of this effort will help guide the development of relevant and accessible science products that can help floodplain managers make decisions today that will hold up in the face of changing future conditions.





## A Tool to Inform the Conservation of Fish Habitats

*An estimated 40% of Northeastern and Midwestern streams are at risk for habitat degradation due to urbanization, agriculture, and other human land uses.*

### THE ISSUE:

- ⇒ Changing climate conditions are expected to further alter the region's stream habitats, which support diverse and economically-valuable fish species.

### OUR SCIENCE:

- ⇒ Fully understanding the current and future conditions of streams is essential for conserving and maintaining fish populations and their habitats. To facilitate management, researchers developed a decision-support tool that integrates an assessment of the current condition of stream habitats with estimates of how these habitats may change in the future.

### IMPACT:

- ⇒ Using this tool, managers can evaluate how streams in their region of interest are currently being impacted by human land use, and determine whether the condition of these stream habitats may change as climate changes. This tool can aid managers in identifying priority streams that should be targeted with protection and restoration in order to maintain important fish habitat into the future.



## NorEaST: A Tool for Mapping Stream Temperature

*In the Northeast and Midwest, changing climate conditions are expected to alter stream temperature and flow over the coming decades – with implications for fish and other aquatic species.*

### THE ISSUE:

- ⇒ Resource managers require information on historic, current, and future projections of stream temperature in order to effectively manage stream habitats now as well as proactively plan for future conditions. However, many agencies lack the resources to routinely collect and analyze this type of data.

### OUR SCIENCE:

- ⇒ Researchers developed an interactive web tool known as NorEaST, which maps current and historical stream temperatures for New England, Mid-Atlantic, and Great Lakes States. Stream temperature is currently being monitored at more than 10,000 locations across 30 states.

### IMPACT:

- ⇒ This tool enables resource managers to identify normal “baseline” stream temperatures for an area of interest, and compare how current and projected future temperatures may deviate from the norm. Access to this information can help managers identify which strategies will work now, and how management may need to adjust to adapt to anticipated future changes.



### About the Climate Science Centers

These projects were funded by the DOI Northeast Climate Science Center (CSC). The Northeast CSC is part of a network of eight regional CSCs covering the continental U.S., Alaska, Hawaii, and U.S. Affiliated Pacific Islands. The CSCs are managed by the USGS National Climate Change & Wildlife Science Center. Learn more about us: [nccwsc.usgs.gov](http://nccwsc.usgs.gov)

**2016 Proceedings**  
**Midwest Deer & Wild Turkey Study Group Meeting**  
**August 22<sup>nd</sup> – 25<sup>th</sup>, 2016**  
**Carrollton, Kentucky**



Submitted by:  
Kentucky Department of Fish & Wildlife Resources



**MIDWEST**  
Association of  
Fish & Wildlife  
Agencies

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## **Background**

The Midwest Deer and Wild Turkey Study Group (MDWTSG) meeting is an annual gathering of wildlife managers sanctioned by and affiliated with the Midwest Association of Fish and Wildlife Agencies. Primary objectives of the meeting include dissemination of deer and wild turkey management strategies, discussion of emerging or existing issues associated with deer and wild turkey management, and coordination of regional deer and wild turkey management or research efforts. The meeting location rotates among the Midwestern states that are active within the group.

Forums such as the MDWTSG meeting provide valuable opportunities for state deer and turkey biologists to become acquainted with emerging issues and exchange information and ideas related to deer and turkey research and management. The need for state fish and wildlife agencies to establish and maintain deer and turkey biologist positions and support travel of these biologists to the annual MDWTSG meeting is imperative for exchanging information to promote quality wildlife management and research in each state. It is more important than ever that state agencies are at the forefront of issues related to deer and turkey management in order to protect the heritage and recreational opportunities of hunting for future sportsmen and sportswomen.

## **Meeting Time and Place**

The Kentucky Department of Fish & Wildlife Resources (KDFWR) hosted the 2016 MDWTSG meeting at the General Butler State Resort Park in Carrollton, Kentucky on August 22-25. The MDWTSG appreciates the financial support provided by the Quality Deer Management Association (QDMA) and the Nation Wild Turkey Federation (NWTF) in sponsoring the evening socials. Additionally, we thank Cabela's for donating gift cards.

## **Attendance**

Fifty-1 participants attend the 2016 meeting, including state deer and turkey biologist from 13 Midwest member states (Indiana, Iowa, Illinois, Kansas, Kentucky, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin) and attendees from other organizations and institutions including the NWTF, the QDMA, the NDA, Michigan State University, South Dakota State University and the University of Kentucky. A complete list of attendees and contact information for deer and turkey state biologists are available in Table 1.

## **Executive Summary**

Attendees at the 2016 MDWTSG meeting were welcomed by Steve Beam, KDFWR Wildlife Director. Following the meeting introduction, there were seven presentations that occurred during the joint session, including the following topics:

- Hunter Legacy
- Field to Fork
- Disease
- Midwest Deer Metrics
- State of Kentucky Deer
- State of Wild Turkey
- Kentucky Access Programs



Following the joint session, a number of presentations were given during both the deer and wild turkey break-out sessions. These topics included:

- Deer Vulnerability
- Deer Mortality
- National Deer Alliance Update
- QDMA Update
- DMAP
- County Deer Advisory Councils
- Deer Dynamics
- Dispersal Rates and Path Selection of Deer in an Agriculture Landscape
- NWTF Update
- Learn to Hunt Programs/Turkey Tracts
- Population Ecology of Wild Turkeys in Northern Missouri
- Changing Turkey Management Zones
- Direction following the 11<sup>th</sup> Turkey Symposium

State status reports were presented in both the deer and wild turkey break-out sessions.

## Business Meeting

The Business Meeting was conducted as a joint session involving both deer and wild turkey program leaders. The 2017 MDWTSG meeting will be hosted by the Iowa Department of Natural Resources.

**Table 1: List of Participants**

Name	Agency	Email	Phone
Tom Micetich	Illinois Department of Natural Resources	<a href="mailto:tom.micetich@illinois.gov">tom.micetich@illinois.gov</a>	309-543-3316
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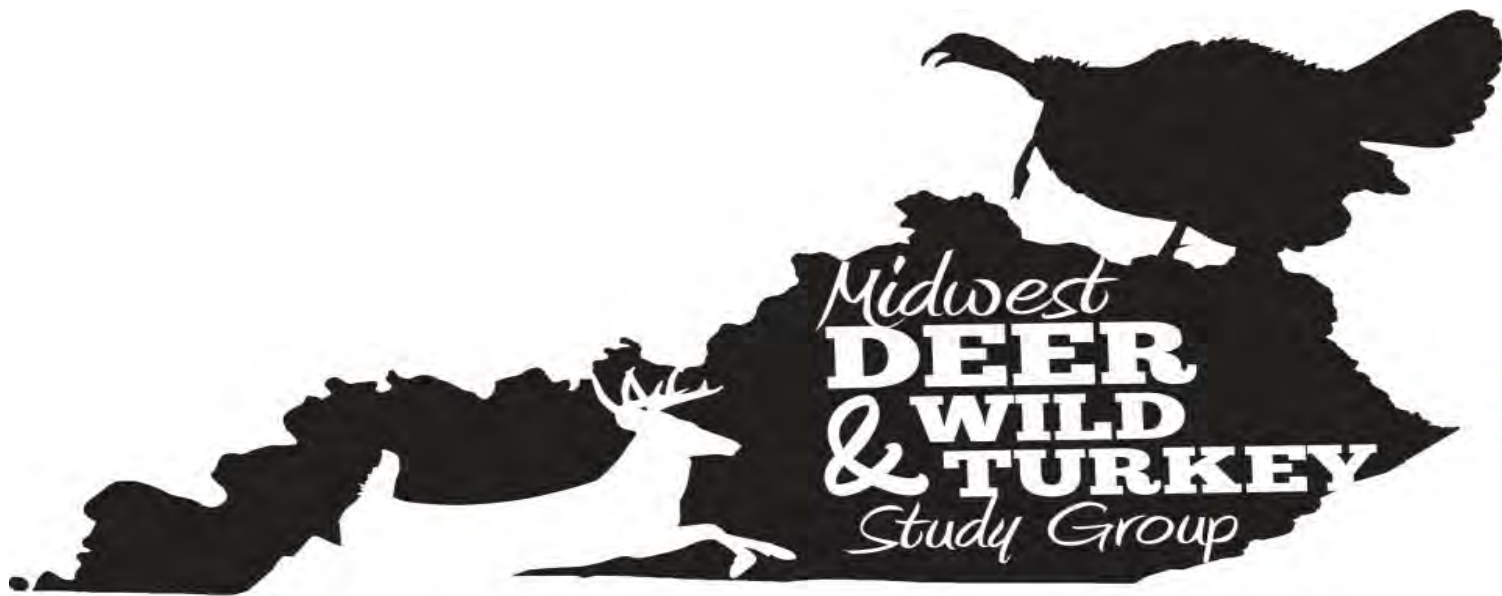
	Resources		
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**Table 2: Previous Midwest Deer & Wild Turkey Study Group Meeting Locations**

Year	State	Location	Date
1977	Missouri	Missouri Fountain Grove Wildlife Area	January 17-19
1978	Wisconsin	Wisconsin Wyalusing State Park	January 16-17
1979	Iowa	Iowa Rathburn Fish Hatchery	January 15-18

1980	Minnesota	Minnesota Whitewater State Park	January 21-24
1981	Indiana	Indiana Harrison-Crawford State Park	January 19-22
1982	Ohio	Ohio Lake Hope State Park	January 18-21
1983	Nebraska	Nebraska Louisville 4-H Camp	January 17-21
1984	Kansas	Kansas Camp Aldrich	January 16-19
1985	South	South Dakota Black Hills	May 7-10
1986	North	North Dakota Camp-of-the-Cross	January 20-23
1987	Michigan	Michigan Kellogg Biological Station	January 27-29
1988	Illinois	Illinois Touch of Nature	February 1-4
1989	Missouri	Missouri YMCA Camp of the Ozarks	January 23-26
1990	Wisconsin	Wisconsin Bethel Horizons Prairie Center	January 15-18
1991	Iowa	Iowa Conservation Education Center	January 14-17
1992	Minnesota	Minnesota Whitewater State Park	January 13-16
1993	Indiana	Indiana Harrison-Crawford State Park	January 11-14
1994	Ohio	Ohio Canter's Cave 4-H Park	January 30-February 2
1995	Nebraska	Nebraska Mahoney State Park	January 15-18
1996	Kansas	Kansas Camp Pecusa	January 14-16
1997	South	South Dakota Camp NeSoDak	August 24-27
1998	North	North Dakota Camp Grafton	August 9-12
1999	Ontario	Ontario Blue Springs Scout Reserve	August 15-18
2000	Michigan	Michigan Thunder Bay Resort	August 20-23
2001	Illinois	Illinois Dixon Springs Ag. Station	August 19-22
2002	Missouri	Missouri Conception Abbey	August 18-21
2003	Wisconsin	Wisconsin Bethel Horizons Prairie Center	August 24-27
2004	Iowa	Iowa Conservation Education Center	August 22-25
2005	Minnesota	Minnesota Eagle Bluff Envir. Learning Center	August 21-24
2006	Indiana	Indiana Camp Ransburg, BSA	August 20-23
2007	Ohio	Ohio Canter's Cave 4-H Park	August 19-22
2008	Nebraska	Nebraska Fort Robinson State Park	September 14-17
2009	Kansas	Kansas Rock Springs 4-H Camp	September 14-17
2010	North	North Dakota Camp Grafton	August 22-25
2011	Michigan	Michigan Ralph A. MacMullen Center	September 25-28
2012	South	South Dakota Custer State Park	October 16-19
2013	Illinois	Illinois Allerton Park	August 18-21
2014	Missouri	Missouri YMCA Camp of the Ozarks	September 9-12
2015	Wisconsin	Wisconsin Perlstein Conference Center	September 8-11
2016	Kentucky	General Butler State Resort Park	August 22-25





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## Midwest Deer & Wild Turkey Study Group Meeting

General Butler State Resort Park, Carrollton KY

Monday, August 22 – Thursday, August 25, 2016

# Agenda

### **Monday, August 22<sup>nd</sup> (All times are Eastern Standard)**

4:00-8:00 p.m.	Registration	Lodge Office
6:00 p.m.	Dinner	Lodge Dining Room
7:00 p.m.	Evening Social	Cabin 535

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### **Tuesday, August 23<sup>rd</sup>**

7:00-7:45 a.m.	Registration continued	Lodge Office
7:00-8:00 a.m.	Breakfast	Lodge Dining Room

<b>8:00 a.m.</b>	<b>Joint Meeting (details below)</b>	<b>Conference Center</b>
8:00-8:10 a.m.	House Keeping Items Gabe Jenkins, Kentucky Department of Fish and Wildlife Resources	
8:10-8:15	Welcome Steve Beam, Kentucky Department of Fish & Wildlife Resources	
8:15-8:45 a.m.	Hunter Legacy: Jamie Cook, Kentucky Department of Fish & Wildlife Resources	
8:45-9:15 a.m.	Field to Fork: Brain Clark, Kentucky Department of Fish & Wildlife Resources	
9:15-9:45 a.m.	Disease: Iga Stasiak, Kentucky Department of Fish & Wildlife Resources	
9:45-10:00 a.m.	Break	
10:00-10:30 a.m.	Midwest Deer Metrics: What, How, and Why We Measure Robert Rolley, Wisconsin Department of Natural Resources	
10:30-11:00 a.m.	State of Kentucky Deer: Gabe Jenkins, Kentucky Department of Fish & Wildlife Resources	
11:00-11:30 a.m.	State of Kentucky Wild Turkey: Zak Danks, Kentucky Department of Fish & Wildlife Resources	
11:30- 12:00 p.m.	Kentucky Access Programs: Gabe Jenkins, Kentucky Department of Fish and Wildlife Resources	
12:00-1:00 p.m.	Lunch	Lodge Dining Room
1:00-5:00 p.m.	Breakout Sessions (details below)	
5:00-6:00 p.m.	Free Time	
6:00-7:00 p.m.	Dinner	Stone Shelter
7:00 p.m.	Evening Social	Cabin 535

**Deer Breakout Session****Conference Center**

1:00-2:00 p.m.	Deer Vulnerability: Rebecca Cain, Michigan State University
2:00-2:20 p.m.	Deer Mortality: Joe McDermott, University of Kentucky
2:20-2:40 p.m.	National Deer Alliance Update: Nick Pinizzotto, NDA
2:40-3:00 p.m.	QDMA Update: Kip Adams, Director of Outreach
3:00-3:15 p.m.	Break
3:15-3:45 p.m.	DMA: Kevin Wallenfang, Wisconsin Department of Natural Resources
3:45-4:15 p.m.	County Deer Advisory Councils: Kevin Wallenfang, Wisconsin Department of Natural Resources
4:15-4:30 p.m.	Deer Dynamics: Dan Storm, Wisconsin Department of Natural Resources
4:30-5:00 p.m.	Dispersal Rates and Path Selection of Deer in an Agriculture Landscape: Matt Springer, University of Kentucky

**Wild Turkey Break Session****Conference Center**

1:00-1:30 p.m.	National Wild Turkey Federation National Updates: Jason Lupardis, NWTF Kentucky
1:30-2:00 p.m.	National Wild Turkey Federation National Updates: Ryan Boyer, NWTF Michigan
2:00-2:40 p.m.	Learn to Hunt Program / Turkey Tracts: Al Stewart, Michigan Dept. of Natural Resources
2:40-3:00 p.m.	Break
3:00-3:30 p.m.	Population Ecology of Wild Turkeys in Northern Missouri: Jason Isabelle, Missouri Department of Conservation
3:30-4:00 p.m.	Changing Turkey Management Zones: Mark Wiley, Ohio Dept. of Natural Resources



4:00-5:00 p.m.      Discussion – Direction following the 11<sup>th</sup> Turkey Symposium  
in Arizona: Chad Parent, Michigan State University

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## **Wednesday, August 24<sup>th</sup>**

7:00-8:00 a.m.	Breakfast	Lodge Dining Room
8:00-12:00 a.m.	Breakout Session – State Reports	Conference Center
12:00-1:00 p.m.	Lunch	Lodge Dining Room
1:00-2:30 p.m.	Round table Discussion	Conference Center
2:30-3:00 p.m.	Business Meeting	
3:30-6:00 p.m.	Special Event/Free Time	Stone Shelter Parking Lot
6:00-7:00 p.m.	Dinner	Lodge Dining Room
7:00 p.m.	Evening Social	Cabin 535

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## **Thursday, August 25<sup>th</sup>**

7:00-8:00 a.m.	Breakfast	Lodge Dining Room
8:00 a.m.	Departure	

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Alliance for Public Wildlife

*Living Legacy White Paper*

# The Challenge of CWD: Insidious and Dire

Only immediate action will avoid catastrophic outcomes

Valerius Geist, Professor Emeritus, University of Calgary

David Clausen, (former) Chair, Wisconsin Natural Resources Board

Vince Crichton, (former) Co-Chair, Canada's National Wildlife Disease Strategy

Darrel Rowledge, Director, Alliance for Public Wildlife





## **The Challenge of CWD: Insidious and Dire**

Living Legacy White Paper Series

Version 1.0

Printing March, 2017

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### **For more information**

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# MAFWA Ad-hoc Feral Swine Committee – 2017 Annual Report



Radio-marked "Judas" wild pig in Indiana

*Photo by S.E. Backs*

The Midwest Association of Fish and Wildlife Agencies established the Midwest Ad-hoc Feral Swine Committee (MFSC) in 2013. The purpose of the feral swine committee is to further MAFWA's function of promoting the conservation and management of wildlife resources in the face of rapidly expanding feral swine populations which directly endanger those wildlife resources. The Committee is to collect and compare feral swine information among the member states/provinces, and to provide management and policy recommendations to the Directors of MAFWA.

**MISSION:** Develop results-driven and science-based management actions to prevent the introduction and spread of feral swine and promote the eradication of existing populations of these animals in the Midwest.

## **CHARGES:**

- 1) Develop management plans for feral swine based on sound scientific and proven methods.
- 2) Promote and encourage research on economically feasible and effective methods of feral swine control.
- 3) Encourage uniform policies on the translocation and interstate movement of feral swine.
- 4) Discuss the role of federal entities in the control of feral swine in the Midwest.
- 5) Encourage partnerships among states and between state and federal entities to unify the battle against the spread of feral swine.
- 6) Advise the MAFWA Directors on issues relating to feral swine policy, inform the Directors of committee actions and execute any directives given by them.

## MAFWA Ad Hoc Feral Swine Committee 2017 Annual Meeting/Report

**Meeting Time and Place:** 1<sup>st</sup> National Wild Pig Task Force Meeting; March 1-2, 2017, Orange Beach, AL

**Attendance:** Steve Backs, IN, Chr.; Alan Leary, MO; Eric Nelson, MN.

**Summary:** During the last couple of years, states have transitioned into the integration of feral swine elimination efforts funded under the 2014 Farm Bill, now fully underway with USDA-APHIS-Wildlife Services' personnel dedicated solely to feral swine control or elimination. The increased Federal funding also provided additional equipment and tools (e.g., aerial shooting, GPS "Judas" collars). The number of feral swine removed has increased substantially across the Midwest but there is still a learning curve as to what are the most effective wild pig removal techniques in the Midwest. The exchange of information on the most effective removal techniques has primarily occurred by informal networking among State, Provincial and USDA-WS personnel. The MFSC has tried to facilitate the networking and information exchange opportunities by scheduling our annual meetings to coincide with the International Wild Pig Conference, as done by the Southeast Wild Pig Committee. Technical presentations and various topic forums at the International Wild Pig Conferences are invaluable sources of information on wild pig issues and management. The recently organized National Wild Pig Task Force (NWPTF) meeting is another networking opportunity. The NWPTF is collectively made up of conservation agency representatives from State, Federal, Private, University and NGO partners committed to the elimination of wild pigs across North America. The NWPTF serves as a technical advisory source and a communication medium for science-based information to help guide wild pig control, damage reduction, and/or eradication. The MFSC Chair (Steve Backs, IN) represents the Midwest States' Subcommittee of the NWPTF and Alan Leary (MO) serves as the chair of the NWPTF Policy Subcommittee; both also serve on the NWPTF steering committee. The NWPTF will meet in odd numbered years and the International Pig Conferences will meet in even years (2018 in Oklahoma City).

In the week prior to the NWPTF meeting, there was an unexpected label approval of the warfarin based "KAPUT" toxicant for controlling wild pig populations in Texas by the Environmental Protection Agency (EPA). The KAPUT labeling dominated much of the meeting discussions and a NWPTF subcommittee is now developing a guidance 'white paper' on warfarin toxicants for wild pig control, addressing some of the concerns related to non-target wildlife. Since the NWPTF meeting, the manufacturer of KAPUT voluntarily decided not to pursue the sale of KAPUT in Texas due to the amount of national controversy, threats of lawsuits, and proposed restrictive legislation in Texas that occurred following the EPA announcement. At the annual meeting Southeastern Association of Fish and Wildlife Agencies (Oct/2017; Louisville, KY) there will be a symposium on the use of toxicants and wild pigs related to the warfarin controversy titled, "Toxicants and Wild Pigs: Being Careful Not To Throw the Baby Out With the Bathwater"

<http://www.seafwa.org/conference/program/symposia/> .

**Director Action Items:** Charge 1: Begin development of a broad Midwest feral swine management plan based on sound scientific and proven methods. The MFSC again chose to table this charge due to the continual evolution of more effective wild pig control techniques, ever increasing body of knowledge from ongoing research, increasing efforts of the National Feral Swine Damage Management Program (USDA-APHIS-WS), and recent development of the NWPTF. Charges 2-6 are being accomplished through continued networking among the Committee representatives, attendance at the International Wild Pig Conferences, and representative participation in the NWPTF. Additionally, the MFSC decided to update the status information related to wild pigs across the Midwest States and Provinces as was presented in the 2014 and 2015 MFSC annual reports. Many of the parameters from those prior status assessments along with input from a couple MFSC representatives, were incorporated into a broader endeavor by Dr. Dwayne Etter and his assistant Ms. Mellisa Nichols, MI DNR. A web based questionnaire (66 questions) covering the population status, regulatory and legal status, research, and other topics related to wild pig management and control was sent to MFSC representatives and several other eastern states. The responses were compiled and are currently being summarized into tabular spreadsheet for distribution to MFSC committee representatives for future reference.

**Director Information Items:** The value of the information exchanged at the International Wild Pig Conference is invaluable to keeping abreast of the quickly evolving "state of the art and science" of wild pig population control and hopefully, eventual elimination. The MFSC encourages providing support for representative attendance at the International Conference and the National Wild Pig Task Force meeting when possible, recognizing that participation of

all MFSC representatives is beyond their primary or even secondary job responsibilities. The hunting industry's marketing of wild pigs as a desirable, new opportunity for recreational sport hunting continues to work against efforts to effectively control or eliminate wild pigs throughout the Midwest. The resistance and lack of cooperation by some landowners is an obstacle to eliminating wild pigs, essentially creating 'wild pig refuges' or source populations that eventually disperse back into areas where pig removal was successful. The paradox is that some of these uncooperative, "recreation" type landowners are also recipients of State and Federal incentives for conservation practices or easements. Perhaps the MAFWA Directors can influence policy decisions to remedy this apparent contradiction in conservation incentives to facilitate better landowner cooperation with wild pig control and elimination efforts.

**Time and Place of Next Meeting:** To be determined and options need to be explored to help facilitate committee member attendance. The next International Wild Pig Conference is scheduled for April 17-20<sup>th</sup> 2018 and tentatively in Oklahoma City, Oklahoma.

#### **MAFWA Ad Hoc Feral Swine Committee – State Representatives (April, 2017)**

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## State/Province Status Reports Submitted

### Illinois (Submitted by Doug Dufford)

Here is a brief summary of the status of feral pigs in Illinois. The Illinois Department of Natural Resources contracts with USDA Wildlife Services for feral swine management in Illinois. As of last winter, all known feral hog populations had been removed from the state. We actively seek and follow up on reports of possible feral hog populations via deer and turkey hunter reports of feral swine (successful hunters are asked if they have observed feral swine while hunting, when they check in their deer/turkey), and reports received from the public. Reports received to date have been either pot-bellied pigs or loose domestic swine. An effort is made to identify the owners of these animals, so that they will be re-captured. If no owner can be located, the animals are captured and/or euthanized.

### Indiana (submitted by S. E. Backs)

Wild pigs (*Sus scrofa*) an exotic, non-native, invasive species were intentionally and illegally released in two different regions of southern Indiana in the early 1990's and primarily linked to sources in Louisiana, possibly Mississippi. DNA analysis of from euthanized wild pigs verified this to be true but also suggests other sources, likely released several years after the original releases. Morphologically, the wild pigs exhibited characteristics of the "Eurasian or Russian Boar" hybrids and not feral swine of domestic origin. Population control was previously conducted through unrestricted shooting. Since 2014, USDA-Wildlife Services – Indiana (USDA-WS) has now hired 4 technicians to work with cooperative landowners to implement a variety of wild pig population control techniques. An ongoing challenge is to educate landowners to integrate multiple control methods and develop the patience to capture complete pig sounder groups (adult sows and their progeny) for removal. During the calendar year of 2016, USDA-WS technicians with limited cooperation from IDNR personnel removed 130 wild pigs from Indiana using a variety of techniques: aerial shooting (10); selective or sharp shooting (13); and trapping (107). Removals were facilitated by the use of the "Judas pig" technique where a captured sub-adult pig is selected for radio-marking before being released to re-assemble with another group of pigs. Nine wild pigs were radio-marked with either GPS collars or Vhs transmitter ear tags. The radio-marked Judas pigs not only helped located other groups of wild pigs but an accumulation of data is being collected related to movement patterns and habitat use which will aid in future removal efforts. Biological samples were collected from slightly less than 50 dead wild for pigs and submitted disease testing (Classical Swine Fever, Leptospirosis, Toxoplasmosis, Senecavirus aka Seneca Valley Virus) and DNA profiling at the USDA-WS labs in Colorado.

The proliferation of pot-bellied pig reports around the state has become more of an administrative nuisance and unnecessary waste of limited personnel investigation time. Most pot-bellied pigs and their hybrids appear to be abandoned, escaped, or poorly confined pets. Free-ranging swine of all types can generally be shot on sight in Indiana with landowner permission. Several pot-bellied hybrids have been removed from IDNR properties.

### Iowa (Submitted by W. Bunker)

There were 7 reports of hogs in 2016. 4 of these reports were designated as feral situations and one animal was dispatched. One other was a hog found dead and the other two reports were sightings only and each involved the sighting of only 1 animal. All of these reports took place in different counties in Iowa. The other 3 reports were animals escaped from landowners. Two reports were from the same location at different times. In both instances these were pot-bellied pigs. (Animals have been dispatched at both these locations in early 2017). USDA/APHIS generally does the follow-up on these reports. They are working closely with the state veterinarian and Department of Agriculture. Their primary concerns lie with the potential for disease. The department of Natural Resources Wildlife Division plays a support role and becomes more aggressive if sightings are associated with Wildlife Management Areas.

## **Kansas** (Submitted by S. Hesting)

Feral swine are currently found in some areas of southern and eastern Kansas. Many of the smaller, outlying populations in the state were eradicated by USDA-APHIS-WS.

Feral swine are not considered game animals in Kansas and are under the jurisdiction of the Kansas Department of Agriculture, Animal Health Division (AHD). AHD contracts with USDA-APHIS-WS to control feral swine in the state. In 1995 the Kansas Legislature passed a Livestock and Domestic Animals Act. This act prohibits the importation and possession of feral swine. In addition, the statute, 47-1809, defines “feral swine” and describes penalties for possession and hunting of feral swine. There is no legal hunting of feral swine in Kansas; however, landowners can shoot any feral swine they find on their property, and these sightings must be reported to the KDA-AHD Livestock Commissioner in a timely manner.

Since 2006, over 6000 feral swine in Kansas have been eliminated. Complete eradication is currently not the goal in two feral swine core areas: Bourbon County to the southern edge of Linn County and in the Cowley/Chautauqua/Montgomery County area along the Oklahoma border. In all other areas in the state, eradication is the goal when hogs are discovered. Eradication is possible in Kansas, if feral swine are discovered soon enough and the topography, vegetative cover, and landowner cooperation allow access to the areas. Kansas allows no sport hunting of feral swine, which has been a cornerstone statute in preventing the introduction of feral swine by hunters wanting to establish new populations to hunt. The continued promotion of feral hog hunting and hog hunting equipment to “control” feral hog populations in popular magazines and televised shows, and the lack of mandatory felony convictions for moving live feral hogs are, simply, steps backward, if sound management and potential eradication is truly desired.

The USDA-APHIS-WS control strategy consists of a 3-prong approach, including aerial shooting, live trapping, and night shooting. Aerial shooting, although expensive, continues to be the most effective means of feral swine control in Kansas. Trapping was once again difficult in 2017, with the main reason thought to be related to mild winter conditions. Swine, finding other readily available forage, were not easily baited to capture sites with corn. Kansas USDA-APHIS-WS has currently removed a total of 422 feral pigs since 1 January 2017.

## **Kentucky** (submitted by Terri Bunjes)

In 2014, the Obion Creek feral pig population in far western KY was successfully eradicated using a variety of science-based adaptive management techniques. Corral traps, aerial gunning, night shooting, and snaring were used. Partnerships between city and county officials, KDFWR, Wildlife Services, and public cooperation contributed to this success.

KY currently has four disjointed breeding populations of wild pigs left. We are employing the same tactics that eliminated the Obion Creek population. Wildlife Services and KDFWR have worked to strengthen our partnership to more effectively eradicate feral pigs. KDFWR has increased efforts to reach out to landowners experiencing damage from feral pigs through word of mouth, social media, newsletters, and newspaper articles. This has resulted in the eradication of over 300 pigs in one area since January 2016.

## **Michigan** (submitted by Dwayne Etter)

### Summary:

Made additional strides towards eliminating feral swine from the Lower Peninsula (LP).

Identified an area of increasing feral swine activity in the central Upper Peninsula (UP).

Participated in two lawsuits regarding possession of prohibited swine.

Continued conducting research on feral swine: Movements and habitat use, Judas hogs, Ecological and agricultural damage, Use of eDNA to detect feral swine

Awarded an Invasive Species Grant to USDA-WS to assist with research and to conduct targeted removal.

Worked with the University of Michigan-Flint (UM-Flint) and Michigan State University (MSU) to test detection of feral swine using winter helicopter surveys.

## Activity and Removal:

In 2016, MDNR worked with USDA-WS, UM-Flint and MSU to lethally remove 7 feral swine (1 male, 6 females) from Gladwin and Arenac Counties (LP). Four of these swine were killed during a research capture and 2 were killed to retrieve GPS-collars. The boar was shot by USDA-WS after several failed attempts to capture him for GPS-collaring. We are aware of 2 additional GPS-collared feral swine killed by hunters in Arenac County and USDA-WS killed an additional animal in adjacent Midland County. This four-county area (including Bay County) located in the east-central LP was the last known remaining “core area” for feral swine in the LP. A three-year effort (2014-2016) using GPS-collared feral swine to assist in locating and removing additional animals resulted in 22 feral swine removed from this area by USDA-WS. There was also considerable hound hunting pressure, and although these activities often hampered trapping efforts, hunters removed additional animals from this core area. We received only one reported sighting of feral swine from this area during deer season, which is down considerably from previous years. Using trail cameras in areas frequented by GPS-collared animals, USDA-WS detected only 1 additional un-collared animal that could not be accounted for prior to deer season.

We continue to receive scattered reports of feral swine throughout the LP. Most animals were confirmed as escaped domestics, potbelly pigs and some Russian boars. Compared to 2010-2013, there is general agreement among hunters, and MDNR and USDA-WS staff that feral swine densities were down considerably in 2016 throughout the LP. In 2016, MDNR provided additional funding for feral swine removal to USDA-WS and they follow up on all reported sightings. We continue to receive scattered reports of feral swine hunter kills and sightings throughout the UP. The majority of these reports are of Russian boars from southeast Marquette and northwest Delta Counties (central UP). USDA-WS focused trapping efforts in this region, but no animals were captured or killed in 2016.

**Legal Actions:** In 2016, MDNR participated in two lawsuits regarding possession of illegal swine (e.g., Russian boars or hybrids thereof). One case was heard in Marquette County Circuit Court in June/July (Greg Johnson/Bear Mtn Lodge vs MDNR). In this case, the court upheld the contention of MDNR that Mr. Johnson possessed illegal swine. Mr. Johnson is appealing this decision. In October 2016, the second case (Roger Turunen vs. MDNR) was heard in Baraga County Circuit Court. In this case the court ruled that MDNR failed to provide compelling evidence that the pigs possessed by Mr. Turunen were illegal swine. MDNR has appealed this decision.

## Research:

In 2016, MDNR continued conducting research with partners MSU, UM-Flint and USDA-WS. Additional support and funding for this project was provided by Safari Club International-Michigan Involvement Committee and the Michigan Pork Producers. Trapping of feral swine was conducted by USDA-WS with support from MDNR, MSU, and UM-Flint. Trapping resulted in 3 GPS-collared females in 2016 and one collared female remained from 2015. Hunters killed 2 collared animals in April and USDA-WS killed the remaining 2 collared swine in late October after several months of no detections of additional uncollared animals with this pair. The GPS-collaring phase of the research project is ending, with opportunistic collaring as pigs are caught in other areas (e.g., UP). Feral swine equipped with GPS-collars will continued to be used for locating animals throughout the state for lethal removal.

## **Missouri** (Submitted by A. Leary)

There is a very strong and productive partnership related to feral hog elimination efforts in the state of Missouri. This partnership is led by the Missouri Department of Conservation (Department) and the US Department of Agriculture. In 2016 the Department of Conservation and its partners removed 5,358 feral hogs from the state. That is up from a total of 3,649 removed in 2015. In June of 2016 the Department of Conservation passed a regulation to prohibit the take of feral livestock on lands owned, leased or managed by the Department. The purpose of this regulation is to discourage people from intentionally releasing feral hogs to establish new populations. The Department is working with its partners to pass similar regulations for lands they own and manage. In 2016 the Department and its partners developed a Statewide Strategic Feral Hog Elimination Plan. In 2016 the Department of Conservation expanded on a very aggressive outreach campaign to raise awareness of the feral hog issue in the state. Early in 2016 the Department signed an



agreement with various agricultural and environmental organizations in which these organizations donated funds for the Department to purchase hog trapping supplies and conduct educational activities for landowners.

**Ohio** (submitted by C. McCoy)

USDA-WS spent 2,624 man hours on feral swine monitoring and removal in calendar year 2016. Efforts resulted in the removal of 130 feral swine (8-firearms, 2-helicopter, 120-trapping). Monitoring efforts consisted of 71 trail cameras, 3 VHF transmitters (Judas pigs), and 1 GPS collar. USDA-WS personnel conducted feral swine removal/monitoring on over 85,000 acres in 2016, and now have permission to perform feral swine control on over 1 million acres.

**Minnesota** (Submitted by E. Nelson)

In 2016 Minnesota is still feral swine free. We do have instances of escaped domestic swine “at large”. A total of 9 swine at large complaints were investigated up to October of 2016. We were successful in implementing 2015 legislation that gave authority to the Department of Natural Resources to remove swine allowed to be living in the wild. USDA Wildlife Services staff removed 7 swine that had been at large and allowed to be living in the wild. We are reliant on USDA Wildlife Services to conduct all swine removal activities. Our DNR Division of Fish and Wildlife is funded by license fees so we do not have a funding mechanism to remove swine at large. A feral swine committee is working on drafting a feral swine response plan for the state with lessons learned from our first year of implementing our removal authority under state statute. The committee is composed of staff from Minnesota DNR Division of Fish & Wildlife and Ecological & Water Resources, USDA Wildlife Services, and Minnesota Board of Animal Health.

**Nebraska** (Submitted by Sam Wilson)

In 2003 the Nebraska State Legislature enacted statutes that prohibit pig hunting. Nebraska Game and Parks Commission regulations also prohibit the possession or release of wild pigs. These laws and regulations remove any incentive for people to own, move or release feral pigs in the state. The Nebraska Game and Parks Commission is tasked with eliminating feral pigs upon their discovery. Eradication efforts have primarily taken place since 2004. Shooting from a helicopter – in cooperation with Wildlife Services – has proven to be the most successful method of eradication; although other methods such as trapping and shooting over bait are used. We believe the legal framework that removes incentives for people to own or release wild pigs has been the most important factor in allowing for the complete eradication of feral pigs in Nebraska.

Complied and Respectfully Submitted by Steven E. Backs, Chr., MAFWA Ad-hoc Feral Swine Committee 5/3/17



# **MIDWEST FURBEARER GROUP ANNUAL REPORT JUNE 2017**

## **MEETING TIME AND PLACE**

The Iowa Department of Natural Resources (IA DNR) hosted the Midwest Furbearer Workshop June 5 – 8<sup>th</sup>, 2017. The meeting was held in Decorah, IA at Luther College's Baker Village. The field tour covered wildlife management areas and conservation easements along the Upper Iowa River Corridor.

## **ATTENDANCE**

Thirty five (35) participants attended the workshop in 2017, including state furbearer biologists from 10 Midwest member states (Indiana, North Dakota, Nebraska, Kansas, Minnesota, Michigan, Wisconsin, Missouri, Kentucky, and Iowa) plus Arkansas. Additional attendees included representatives from: South Dakota Game, Fish & Parks, Kansas State University, Iowa State University, Western Illinois University, South Dakota State University and the U.S. Fish & Wildlife Service Upper Mississippi National Wildlife Refuge. A complete list of attendees and contact information for state furbearer biologists is available in Appendices 1 and 2.

The Furbearer Committee welcomes two new Midwest state furbearer biologists to this year's workshop - Geriann Albers (Indiana Dept. of Natural Resources) and Laura Conlee (Missouri Dept. of Conservation). Both have valuable furbearer experience from other states they worked in previously.

## **EXECUTIVE SUMMARY**

Forums such as the Midwest Furbearer Workshop provide valuable opportunities for state furbearer biologists to become acquainted with emerging issues and exchange information and ideas related to furbearer research and management. As such, the need for state fish and wildlife agencies to establish/maintain furbearer biologist positions and support travel of furbearer biologists to the annual Midwest Furbearer Workshop is imperative to promote quality furbearer management and research in each state. It is more important than ever that state agencies are in the forefront of issues related to furbearer management and regulated trapping in order to ensure abundant populations, address important conflicts, and provide sustainable recreational opportunity.

At the 2017 meeting, numerous speakers presented information on topics related to camera trap survey methods, furbearer ecology, meso-carnivore interactions,

monitoring, and regulated trapping. Professional presentations were given on the following topics:

- Midwest regional gray fox genetics
- Eastern spotted skunk biogeography and survey information
- MN fisher study updates
- Habitat management plan for the Upper Mississippi National Wildlife Refuge
- Furbearer trapping data from the Upper Mississippi National Wildlife Refuge
- Spring spotlight survey data modeling in Iowa
- Prey availability, competition, and land-use of carnivores in urban areas
- Occupancy model dynamics of co-occurring canids
- Bobcat populations and range expansion in the Midwest
- Bobcat management with competing stakeholders
- Bobcat home range size in ag-dominated landscapes
- Spatial alignment and trail cam detection rates
- Camera trap session – WI, MN, and MI survey methods
- Distribution and habitat selection of swift fox in the northern great plains
- Habitat variables of river otters in Iowa
- Furbearer program updates from Indiana and Iowa
- CITES tagging methods in Kentucky
- Muskrat declines across North America
- Impacts of invasive hybrid cattails on distribution of muskrats
- Mt lion habitat suitability in North Dakota
- Wisconsin beaver management

The Decorah area and Luther College campus offered a diverse outdoor setting for attendees to hike trails, trout fish, and explore. As usual, the breaks, evening hours, and business meeting also allowed much exchange of information on current results from population and harvest surveys, current challenges and issues in furbearer management within each state, and an opportunity to discuss new or proposed research projects. The workshop provided a good venue for discussing new ideas or issues that affect multiple state agencies. Summaries of these topics are presented below as Director Action or Information Items.

## **DIRECTOR ACTION ITEMS**

None

## DIRECTOR INFORMATION ITEMS

1. Large Carnivore Subcommittee – For background on this topic, see the 2016 Report. Although the Furbearer Committee in 2016 felt there was no need to form a specific sub-committee on large carnivores, we agreed that we could do more to keep the Directors up-to-date on regional large carnivore topics since there is no specific MAFWA wolf, bear, or cougar committee. Additional discussion at this year's workshop suggested a desire for us to add some status updates for large carnivores into the Furbearer Committee report.

At this time, the Midwest Furbearer Committee has agreed to incorporate large carnivores in the following way:

- Incorporate the sharing of significant information on large carnivores at the annual Midwest Furbearer Workshop which would preclude the need to hold an additional separate meeting by state furbearer biologists for large carnivores.
- Significant technical information on large carnivores will be shared during the annual Midwest Furbearer Workshop via presentations and in the annual workshop report. Significant information on large carnivores will include findings from recent research, changes in the distribution of bears, wolves, and mountain lions, changes in large carnivore harvest seasons, and changes in their protected status.
- Each state will provide a large carnivore status update and any notable changes beginning in this 2017 report (Appendix 5).

At least 3 meetings are held either regionally or nationally related to black bears, gray wolves, and mountain lions – the Midwest Wolf Stewards meeting, the Eastern Black bear workshop, and the Mountain lion workshop typically held in the western U.S. While these meetings vary in breadth of the audience, all provide an opportunity for biologists to network with other biologists and share information on management and research.

Biologists from MN, WI, MI, and Ontario typically attend the Midwest Wolf Stewards workshop, though it is open to all states. To allow for more biologist-to-biologist discussion, at the last 2 Midwest Wolf Stewards meetings State wolf biologists met in advance of the main conference to discuss wolf management and research updates, issues, and needs. Agency biologists agree that this 'pre-meeting' serves a worthwhile purpose and will continue to be held in advance of the larger Wolf Stewards meeting. The Wolf Stewards meeting is normally held every year, but it will not be held next year because there is an International Wolf Meeting to be held in Minneapolis in 2018 and that will serve to



replace next year's Wolf Stewards meeting.

Four Midwest furbearer biologists (NE, KS, ND, and MO) attended the recent mountain lion workshop held in May in Colorado. This workshop is held every three years. Within the Midwest, 3 states have documented breeding populations (NE, SD, and ND). Several other states have had a notable number of confirmations over the years; Missouri now has a total of 69 confirmed instances of mountain lion presence and has confirmed detection of a female through DNA evidence.

Currently, the Eastern Black Bear Workshop meets every other year and was last held in 2016. Currently, established populations of black bears in the Midwest exist in MN, WI, MI, MO, and KY. Biologists from these Midwest states often attend this workshop or other bear meetings. Proceedings of the Eastern Black bear workshop typically contain a table showing bear population and harvest statistics for all eastern states. A summary of key metrics for black bears, wolves, and mountain lions in the Midwest is shown in Appendix 5.

2. Otter avoidance with beaver trapping – Laura Palmer (KY furbearer biologist) shared with the group that USDA – Wildlife Services (WS) is in the process of developing a study to examine otter avoidance in beaver traps as part of their beaver management areas program (bmap). Any states who are able to provide input from their prior experience or interested in participating in the study should contact Colleen Olfenbuttel or Todd Menke (USDA – WS, North Carolina).
3. The Southeast Region is interested in the possible collaboration of muskrat research with other regions. Research would focus on survival and cause-specific mortality. If states from the Midwest Region are interested in participating Laura Palmer (KY) and Colleen Olfenbuttel (North Carolina) can be contacted.
4. Population modeling – The committee discussed the pros and cons of Statistical Population Reconstruction (SPR) and Integrated Population Modeling (IPM). Some states are interested in attaining population estimates of secretive furbearer species that are hard to survey with regular survey methods, especially if existing and usually cost-effective data from harvest information such as tooth age, trapper effort, etc. are already being collected. Missouri is working with Josh Millsbaugh to develop and test bobcat and otter SPR models. Michigan is developing modeling for fisher and marten. Minnesota recently published a paper on incorporation of telemetry data into SPR models. Iowa has a project to use IPM for otters and possibly bobcats. The Midwest Committee agreed

that population modeling may be a good topic to include at next year's workshop.

5. Trapper effort data collection – the committee discussed the importance of collecting data annually on trapper effort. This information is comparatively cheap to obtain and can be extremely useful as a population index, is required as an input into SPR models for estimating abundance, and subsumes the many variables (e.g., fur prices, gas prices, unemployment) that can influence harvest in sometimes complicated or interactive ways. Some states have been collecting trapper effort data for several years, while other states have not. And that it's important collect data on trap nights. The committee agreed that more effort should be made to collect trapper effort data, and more discussion is needed to ensure that effort data are obtained in similar manners across jurisdictions, thereby facilitating regional analyses of population trends.
6. Bears and CITES Tagging – In 2015 - 2016, and largely coordinated by AFWAs Fur Resources Technical Working Group (FRTWG), furbearer/bear biologists were engaged with the USFWS to 1) improve the CITES permit process for sending biological samples from bears to Canada (e.g., for DNA analysis) and 2) consider establishing a CITES tagging process for bear pelts that is similar to wolves, bobcats and otters. Primary concerns among the states have been a slow and cumbersome process for sending biological samples out-of-country and potential waste of a fur resource due to the high cost of a CITES export permit for an individual bear hunter (permit cost often exceeds pelt value). To date the FRTWG has conducted a survey of bear biologists to assess interest/concerns, though the survey may need to be re-done due to concerns over the level of CITES understanding by respondents. In addition, the FRTWG helped coordinate a webinar between USFWS staff and bear biologists. As a result of the various discussions, some changes have been made to the permit process for scientific specimens, but the new 'pre-approval' process still takes up to 2 months to complete, is only valid for 6 months, and final issuance of any specific permit will still take a minimum of 1–2 weeks, so is not a real solution for many urgent situations (e.g., rapid DNA confirmations in cases involving human attacks). Furthermore, USFWS remains reluctant to start the process necessary (i.e., Federal Register) to move toward a bear pelt tagging system similar to wolf, otter and bobcat that allows states to apply for CITES authority and then issue tags directly to bear hunters/trappers. Their primary concern appears to be their sense of a lack of demand, but this fails to consider that low demand may be a result of lack of knowledge among hunters that such opportunity even exists in addition to the high cost of an individual permit (~ \$100); if bobcat/otter trappers had to purchase

individual permits, in most years we predict there would be little demand to export pelts of these species as well. As such, the FRTWG and Midwest Furbearer Committee are encouraging more local discussion between Regional AFWA associations and their respective Regional FWS Offices to try and encourage further simplification of the process for biological specimens as well as a Federal register proposal to create a CITES pelt tagging process for bears similar to otter, bobcat, and wolves. A substantial portion of the national bear harvest comes from 3 Midwest states (MN/WI/MI) so the issue is relevant to MAFWA. Currently, AFWA will continue to try to work with the US F&WS on this issue but for now there are no further changes pending.

7. Midwest Regional Gray Fox Genetics Update – Beginning in 2012, the USFWS published a 90-day finding that listed of the “Plains spotted skunk” and “Prairie gray fox” was warranted and they initiated a status review for these species/sub-species. Because of concerns over the taxonomy of these entities, various efforts to collect DNA samples have been undertaken, including collaboration between Midwest fur biologists and Dawn Reding from Luther College. Dawn Reding gave a presentation during the workshop updating attendees of the findings so far. Due to cooperation from several states, Dawn has been able to conduct genetics work on gray fox tissue from several regions throughout the U.S. in addition to the Midwest, either from freshly collected tissue or older tissue from museum specimens. So far, the genetics work shows some differences occur in an east to west gradient, but the Midwestern gray fox are similar genetically to gray fox in the eastern U.S. Midwest states will no longer need to collect gray fox tissue samples for this project. Though T&E listing may be resolved, concern still exists in several Midwest states about the apparent decline in gray fox populations.
8. Spotted Skunks – Blake Sasse (Arkansas Game & Fish Commission) updated the committee that he’s working to inventory the prevalence/locations of spotted skunks (eastern/western) in the U.S. He emphasized to the group that pro-active monitoring for spotted skunks and possible tissue sampling (similar to gray fox) may be beneficial to future research efforts. He urged states to let him know of confirmed spotted skunks from their state and that he can compile over time. Encouraged increased awareness by furbearer biologists and diligence with reporting them because every little bit helps in understanding their current distribution.

The Midwest Furbearer Working Group thanks state Directors for their continued support of travel of state furbearer biologists to the annual Midwest Furbearer Resources Workshop. With tight budgets and restricted travel this annual

workshop continues to be a critical component of sound resource management in the Midwest. Annual meetings allow for an open, thorough exchange of information and knowledge resulting in efficient, effective, and sound management of these unique species.

## **TIME AND PLACE OF NEXT MEETING**

The North Dakota Game & Fish Department will host the 2018 Midwest Furbearer Workshop. An exact time and location is yet to be determined. A complete list of previous host states is available in Appendix 4.

John Erb (MN furbearer biologist) passed on information to the committee from Laura Palmer (KY furbearer biologist) that the Southeast Region has proposed to hold a joint meeting with the Midwest Region in 2019. The proposed location at this time is Oklahoma. The Midwest Furbearer Committee is in general agreement to participate. The objective of the joint meeting is to share information among regions. More details to carry out the joint regional meeting will emerge in 2018.

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## **Appendix 1. 2017 Midwest Furbearer Workshop Attendees.**

<b>Name</b>		<b>Agency/Affiliation</b>
Adam	Ahlers	Kansas State University
Gerianne	Albers	Indiana DNR
Adam	Bump	Michigan Department of Natural Resources
Bill	Clark	Iowa State University (retired)
Laura	Conlee	Missouri Department of Conservation
John	Erb	Minnesota DNR
Vince	Evelsizer	Iowa DNR
Lile	Fox	Iowa Department of Natural Resources
Matthew	Gross	South Dakota Game; Fish & Parks
Terry	Haindfield	Iowa DNR
Tim	Hiller	Wildlife Ecology Institute & FTA
David	Hoffman	Iowa DNR
Drew	Howing	Iowa Lakes Community College
Chris	Jacques	Western Illinois University
Jim	Jansen	Iowa DNR
Dan	Kaminski	Iowa DNR
Andrew	Kellner	Iowa DNR
Robert	Klaver	USGS; Iowa Coop F&W Research Unit
Robert	Lonsinger	University of Wisconsin-Stevens Point
Logan	McEwan	Iowa DNR
Emily	Mitchell	South Dakota State University
Melissa	Nichols	Michigan DNR
Bridget	Nixon	Iowa State University
Laura	Palmer	Kentucky Department of Fish & Wildlife Resources
Matt	Peek	Kansas Dept of Wildlife; Parks and Tourism
Dawn	Reding	Luther College
Shawn	Rosler	Wisconsin DNR
Blake	Sasse	Arkansas Game and Fish Comm
Nathan	Schmitz	Iowa DNR
Tim	Swearingen	Western Illinois University
Stephanie	Tucker	North Dakota Game & Fish Department
Curtis	Twelmann	Wisconsin DNR
Kyle	Wait	Kansas State University
Sam	Wilson	Nebraska Game and Parks Commission
Stephen	Winter	USFWS – Upper Mississippi National Wildlife Refuge

## **APPENDIX 2. MAFWA Furbearer Biologists – Contact Information.**

### **Illinois**

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### **Indiana**

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### **Iowa**

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### **Kansas**

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PO Box 1525, Emporia, KS 66801  
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### **Kentucky**

Laura Palmer, KY Dept. of Fish and Wildlife Resources  
1 Sportsman's Lane, Frankfort, KY 40601  
800-858-1549 ext. 4528; [laura.palmer@ky.gov](mailto:laura.palmer@ky.gov)

### **Michigan**

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Dwayne Etter, Michigan Dept. Of Natural Resources  
4166 Legacy Parkway, Lansing, MI 48911  
517-284-4725; [etterd@michigan.gov](mailto:etterd@michigan.gov)

### **Minnesota**

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**Missouri**

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**Nebraska**

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**Ohio**

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**South Dakota**

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**Wisconsin**

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101 S. Webster St.  
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**Manitoba**

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**Saskatchewan**

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### **Appendix 3. 2017 Midwest Furbearer Workshop – Agenda.**

**Midwest Furbearer Workshop  
June 5 – 8, 2017  
Luther College, Baker Village  
Decorah, Iowa**

**AGENDA**

#### **Monday June 5th (Travel Day)**

5:00 - 9:00 PM	Registration
5:00 - 8:00 PM	Informal Networking Social

#### **Tuesday June 6th**

6:45 - 8:00	Breakfast Buffet (Included)
7:30 - 8:30	Registration
8:40 – 9:00	Welcome, Logistics, etc. Dawn Reding and Vince Evelsizer
9:00 - 9:20	Midwest Regional Gray Fox Genetics Study – An Update Dr. Dawn Reding, Luther College
9:20 - 9:40	Eastern spotted skunk historical biogeography and various surveys Blake Sasse – Arkansas Game & Fish Commission
9:40 - 10:00	The status of Fisher in Minnesota – an eight year study John Erb – Furbearer Biologist, Minnesota DNR
10:00 - 10:20	Habitat Management Plan for the Next 20 Years – Upper Mississippi National Wildlife Refuge Stephen Winter – US FWS Biologist, Upper Mississippi River National Refuge
10:20 - 10:40	Break
10:40 - 11:00	Twenty Years of Furbearer Trapping Data from the Upper Mississippi River National Wildlife & Fish Refuge Stephen Winter <sup>1</sup> and Brian Stemper <sup>2</sup> - US Fish and Wildlife Service, Upper Mississippi River National Wildlife & Fish Refuge
11:00 - 11:20	Evaluating spring spotlight survey data for modeling resource selection functions for mesocarnivores in Iowa Dan Kaminski – Spatial Analyst, Iowa DNR
11:20 - 11:40	Does prey availability, competition, or land-use change affect carnivore

	distributions across urban land-use gradients? Wait KR and Ahlers AA
11:40 – 12:00	The application of occupancy models to investigate the dynamics of co-occurring canids Robert C. Lonsinger*, Eric M. Gese, Larissa L. Bailey, Lisette P. Waits
12:00 – 1:15	Lunch Buffet (Included)
1:20 - 1:40	Bobcat populations and range expansion in the Midwest Dr. William Clark - retired ISU professor of animal ecology
1:40 – 2:00	Managing a Resource and Recreation with Competing Stakeholder Interests: Michigan Bobcat Case Study Adam Bump - Furbearer Specialist, Michigan DNR
2:00 – 2:20	Evaluating home range size of bobcats in an agriculturally-dominated landscape of west central Illinois Tim Swearingin - Graduate Student, Western Illinois University
2:20 – 2:40	Influence of spatial alignment on photographic detection rates at remotely triggered camera stations <b>Tim C. Swearingin*</b> , Christopher N. Jacques, Robert W. Klaver, Chuck R. Anderson, C. S. DePerno, and J. A. Jenks
2:40 - 3:00	Break
3:00 – 3:20	<b>CAMERA TRAP SESSION</b> Wisconsin – Shawn Rossler – Furbearer Biologist, Wisconsin DNR
3:20 – 3:40	Minnesota - Evaluation of study design options for deployment of trail cameras in multi-furbearer occupancy surveys John Erb – Furbearer Biologist, Minnesota DNR
3:40 – 4:00	Michigan - Assessing Trail Cameras for Detecting an Expanding Bobcat Population in West-central Michigan Dwayne Etter, Sarah Mayhew, Adam Bump and Melissa Nichols* - Michigan DNR
4:00 – 4:20	Camera trap discussion – logistics, software, personnel
4:20 – 4:40	Distribution and Habitat Selection of Swift Fox ( <i>Vulpes velox</i> ) in the Northern Great Plains Emily L. Mitchell <sup>1</sup> , Tammy L. Wilson <sup>2</sup> , Donelle Schwalm <sup>3</sup> , and Jonathan A. Jenks <sup>1</sup>
Dinner	<u>Option A:</u> Go Local!--Optional Pints & Pizza Social at Toppling Goliath Brewing Co. with Mabe's Pizza (buy your own) from <b>5 - 8pm</b>  <u>Option B:</u> Go Local!--McCaffrey's Dolce Vita <b>departing at 6 pm</b> Wood fire pizza and other dinner options, set in a wooded valley

## Wednesday June 7th

6:45 – 8:00	Breakfast Buffet (Included)
7:30 - 8:00	Registration
8:30 – 8:50	Iowa Furbearer Trends in Population and Harvest - Overview Dave Hoffman – Iowa Department of Natural Resources
8:50 - 9:10	Habitat variables and river otter in Iowa Bridie Nixon, Ph.D Candidate – Iowa State University
9:10 – 9:30	CITES tagging – the Kentucky Way Laura Palmer – Furbearer Biologist, KY Dept of Fish & Game
9:30 – 9:50	Indiana Furbearer Update Gerianne Albers – Indiana Dept. of Natural Resources
9:50 - 10:10	Muskrat Declines Across North America Dr. Adam Ahlers – Kansas State University
10:10 - 10:30	BREAK
10:30 – 10:50	Quantifying the impacts of invasive hybrid cattails on the spatial distribution of muskrats. Larreur M, Windels SK, Olson BT, and Ahlers AA.
10:50 - 11:10	Mountain Lion habitat suitability modeling in North Dakota Stephanie Tucker – Furbearer Biologist, North Dakota Game & Fish Dept
11:10 - 11:30	WI Beaver Management Plan Shawn Rossler – Furbearer Biologist, Wisconsin DNR
11:30 – 11:50	Discussion – Future Furbearer Topics on the Horizon (Trail Cams, Drones, Models, Surveys, Budgets, etc)
11:50 - 1:00	LUNCH Buffet (Included) & Silent Auction Wrap-up
1:00 – 1:15	Load onto bus and prepare to Depart for Field Tour
1:15 – 5:00	Field Tour of Upper Iowa River Corridor including a “Daytime Coon Calling” with a dog. (GW) Demo
5:00 – 8:00	Dinner (On Your Own)

## Thursday June 8th

6:45 – 8:00	Breakfast Buffet
8:00 – 9:00	Lodging Checkout
9:00 – 11:30	Business Meeting ( <b>State Furbearer Biologists and Invited Guests Only</b> )
-	State Reports
-	Location for 2018 Midwest Furbearer Workshop
-	Other
11:30 AM	Adjourn – Safe Travels Home! (Lunch on your own)

#### Appendix 4. Host States of Midwest Furbearer Workshops.

Year	State	Year	State
1979	Kansas	2012	Missouri
1983	Wisconsin	2013	Illinois
1984	Illinois	2014	Ohio
1985	Iowa	2015	Indiana
1987	Minnesota	2016	Minnesota
1988	Indiana	2017	Iowa
1989	Missouri		
1990	Nebraska		
1991	South Dakota		
1992	Ohio		
1993	Oklahoma		
1994	North Dakota		
1995	West Virginia		
1996	Michigan		
1997	Illinois		
1998	Kansas		
1999	Wisconsin		
2000	Missouri		
2001	Ohio		
2002	Iowa		
2003	Minnesota		
2004	Illinois		
2005	North Dakota		
2006	Michigan		
2007	Nebraska		
2008	Kansas		
2009	Kentucky		
2010	South Dakota		
2011	Wisconsin		



## Appendix 5. Large Carnivore Status Report.

### Mountain Lions

	Protected (Y/N)	Estimated Population	Harvest (Y/N)	Recent changes in Distribution
<b>Illinois</b>	N/A			
<b>Indiana</b>	Y	0	N	rare visitor
<b>Iowa</b>	N	<5	N	occasional visitor
<b>Kansas</b>	Y	0	N	None, still getting infrequent dispersers
<b>Kentucky</b>		0	N	N/A
<b>Michigan</b>	Y	No breeding population	N	A few transients each year
<b>Minnesota</b>	Y	No breeding population	N	Decline in transients apparent from 2014 – 2016 compared to 2010 - 2013
<b>Missouri</b>	Y	No breeding population.	N	6-10 transients confirmed each year. 69 Confirmations since 1994.
<b>Nebraska</b>	Y - game animal	No statewide estimate. Pine Ridge Unit: 22-33 (2010-15 surveys)	2014 harvest, no harvest since	3 populations formed since mid-2000s.
<b>North Dakota</b>	Y	N/A	Y	N
<b>Ohio</b>	N/A			
<b>South Dakota</b>	N/A			
<b>Wisconsin</b>	Y	No breeding population	N	Rare transients
<b>Manitoba</b>	N/A			
<b>Ontario</b>	N/A			
<b>Saskatchewan</b>	N/A			

### Black Bears

	Protected (Y/N)	Estimated Population	Harvest (Y/N)	Recent changes in Distribution
Illinois	N/A			
Indiana	Y	<5	N	occasional visitor
Iowa	N	<5	N	occasional visitor
Kansas	Y	0	N	None, still getting infrequent dispersers
Kentucky	N	400 in core area	Y	expanding population
Michigan	N- game species	~12,000	Y	expanding population
Minnesota	Y –game species	12 ~ 15,000	Y	decline from late 90's to ~ 2010, slight increase since
Missouri	Y	300-350	N	Growing and expanding population
Nebraska	Y - game animal	0	N	rare visitor
North Dakota	Y	N/A	N	Occasional visitor
Ohio	NA			
South Dakota	N/A			
Wisconsin	Y – game animal	28,900	Y	Expanding
Manitoba	N/A			
Ontario	N/A			
Saskatchewan	N/A			

### Gray Wolves

	Protected (Y/N)	Estimated Population	Harvest (Y/N)	Recent changes in Distribution
Illinois	N/A			
Indiana	Y	0	N	rare visitor
Iowa	Y	<5	N	occasional visitor
Kansas	Y	0	N	None, have only confirmed one
Kentucky		0	N	N/A
Michigan	Y	~618	N	UP fully occupied
Minnesota	Y	~ 2200 (in 2016)	N	none
Missouri	Y	0; No breeding population	N	Rare visitor
Nebraska	Y	0	N	rare visitor
North Dakota	Y	N/A	N	Occasional visitor
Ohio	N/A			
South Dakota	N/A			
Wisconsin	Y	925-952	N	Expanding
Manitoba	N/A			
Ontario	N/A			
Saskatchewan	N/A			