

7 years of 10 year Case Study: Impacts of Ecological Restoration on Grassland Bird Communities at MCCD North Branch Conservation Area

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Overview

- Grassland Restoration & Management History
- Goals of Case Study
- Study Design
- Brush Clearing Impacts on Grassland Birds
- Prescription Burn Impacts on Grassland Birds
- Birds & Sweet Clover Management
- Observations & Burning Questions



Grassland Restoration History

- Tallgrass Dominated in 80's and 90's
- 1993 Glacial Park:
 - 2.3lb/ac Big Bluestem *Andropogon gerardii*
 - 0.5lb/ac Little Bluestem *Andropogon scoparius*
 - 1.9lb/ac Switch Grass *Panicum virgatum*
 - 2.3lb/ac Indian Grass *Sorghastrum nutans*
 - 20 forbs
- Birds preferred Eurasian fields to restorations

Tallgrass Fuel Burns

- Good Fire Intensity
 - Good fuel for brush management
 - Good fuel for growing season/sweet clover burns
- Large Burn Window
- Limited Smoke Management Concerns



Grassland Restoration History

- Eurasian Cool Season grassland
 - 1lb/ac Smooth Brome
 - 1lb/ac Redtop
 - 1lb/ac Kentucky Bluegrass
 - 1lb/ac Timothy
 - 1lb/ac Orchard grass
 - 1lb/ac Oats
 - Zero forbs
- Consistent Producer for grassland birds

Cool Season Fuel Burns

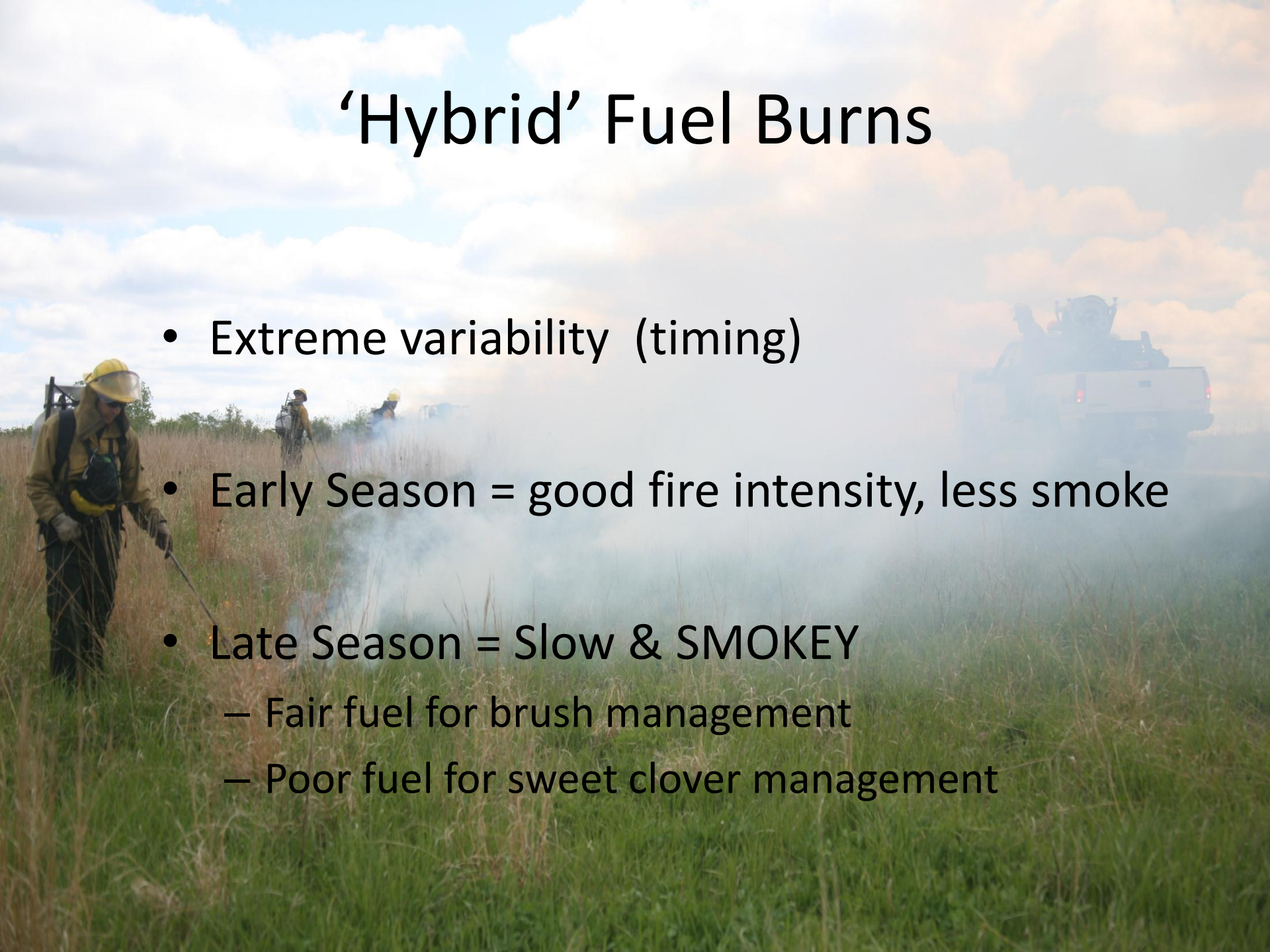
- Low Fire Intensity
 - Poor fuel for brush management
 - Poor fuel for sweet clover burns
- Small Burn Window
- Major Smoke Management Concerns

Grassland Restoration History

- Tallgrass bird responses prompted 'Hybrid'
 - 1.2lb/ac Redtop *Agrostis alba*
 - 1.2 lb/ac Smooth Brome *Bromus inermis*
 - 1.2 lb Kentucky Blue *Poa pratensis*
 - 6lb/acre Little Blue *Andropogon scoparius*
 - 6lb acre Side Oats *Bouteloua curtipendula*
 - 18 Forbs
- Grassland birds accepted

'Hybrid' Fuel Burns

- Extreme variability (timing)
- Early Season = good fire intensity, less smoke
- Late Season = Slow & SMOKEY
 - Fair fuel for brush management
 - Poor fuel for sweet clover management



Hybrid: Structure & Dominance



December 20, 2012

Grassland Restoration History

Hybrid bird responses prompted Grassland Bird Mix

-1.3lb/ac Little Blue

Andropogon scoparius

-3.6 lb/ac Side Oats

Bouteloua curtipendula

-1 oz/acre June Grass

Koeleria cristata

-1.1 lb/acre Dropseed

Sporobolus heterolepis

-19 Forbs

-Tallgrass additions in the future

Some grassland birds accepted, so far....



Grassland Structure Comparison



MCCD Traditional Management

- Grazing reduced or removed
- Rare, occasional haying
- Brush cutting and herbiciding
- Crisis management mowing and herbiciding
- Dormant season prescribed fire; 3 to 5 yr rotation



10-Year Case Study Goals

**Evaluate Grassland Bird Responses
To Management Activities
To Seed Mixes
Establish Native Prairie Mix Acceptable to Birds
Determine Appropriate Management Balance
between Vegetation and Wildlife**

Brush Clearing Projects 2005
North Branch

0 500 1,000 2,000 Feet

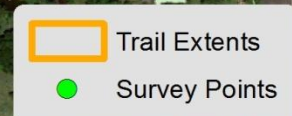
Site Boundary
Brush Cleared

N



Study Design

- Point counts of singing males May-August
- 3 Routes of AM daily transects every 7-10 day
- Point counts averaged to obtain annual data

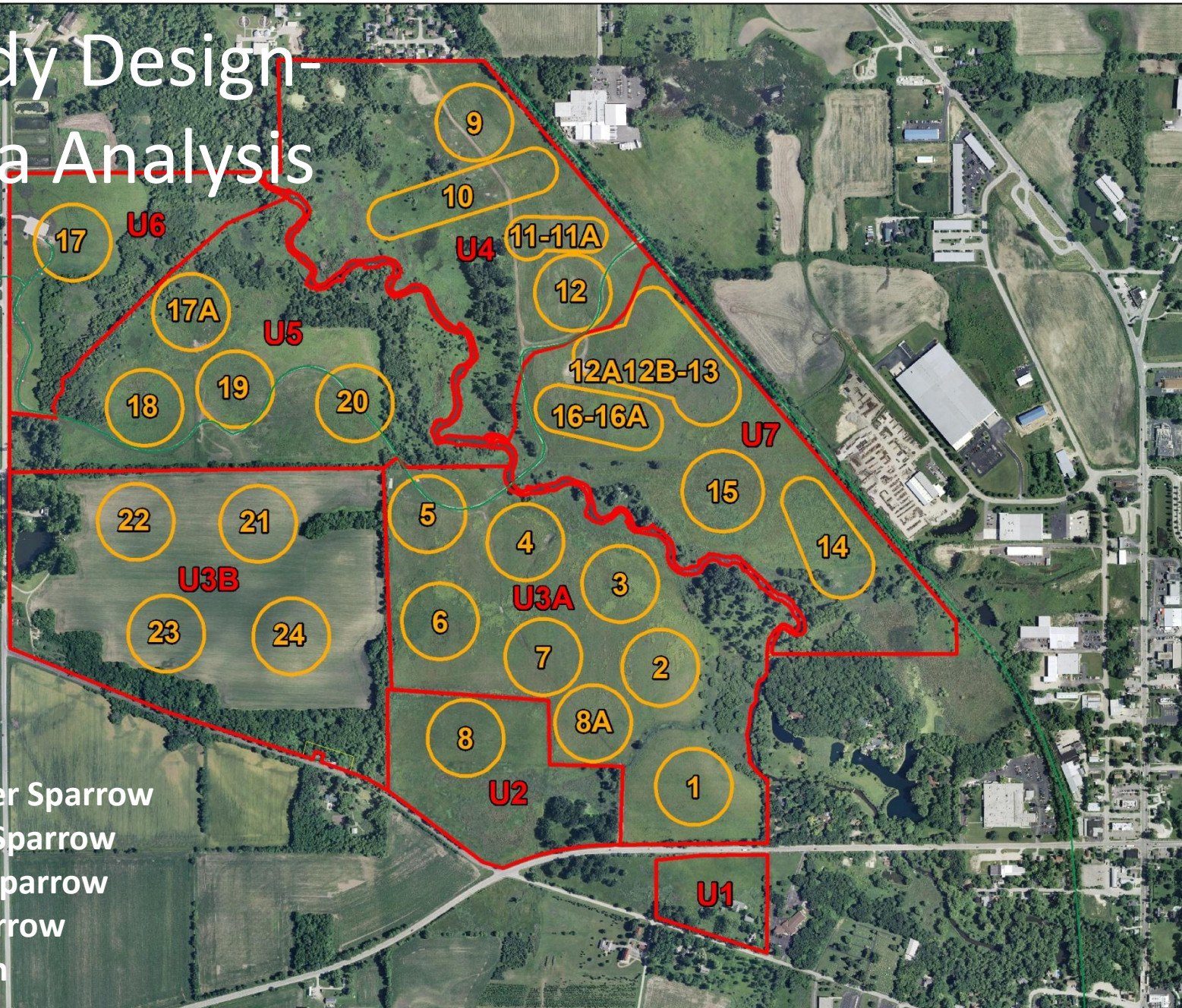


Trail Extents and Survey Points
North Branch

0 500 1,000 2,000 Feet



Study Design- Data Analysis



- Bobolink
- Grasshopper Sparrow
- Henslow's Sparrow
- Savannah Sparrow
- Vesper Sparrow
- Sedge Wren

Bird Points
North Branch

0 500 1,000 2,000 Feet

Management Units
Master Bird Points




North Branch 1939

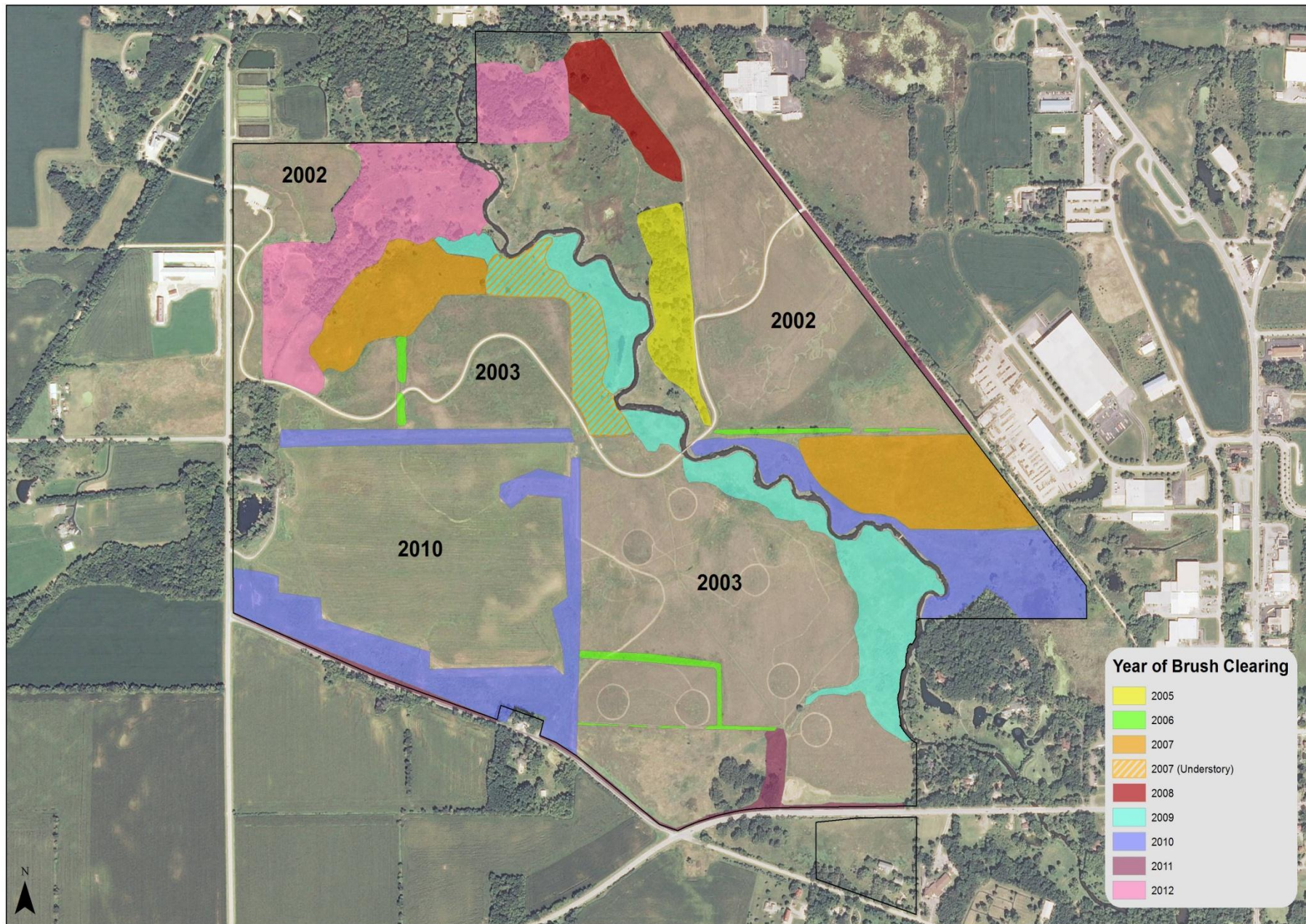


North Branch 1999



0 470 940 1,880 Feet

A horizontal scale bar with four segments, each representing 470 feet, for a total length of 1,880 feet.

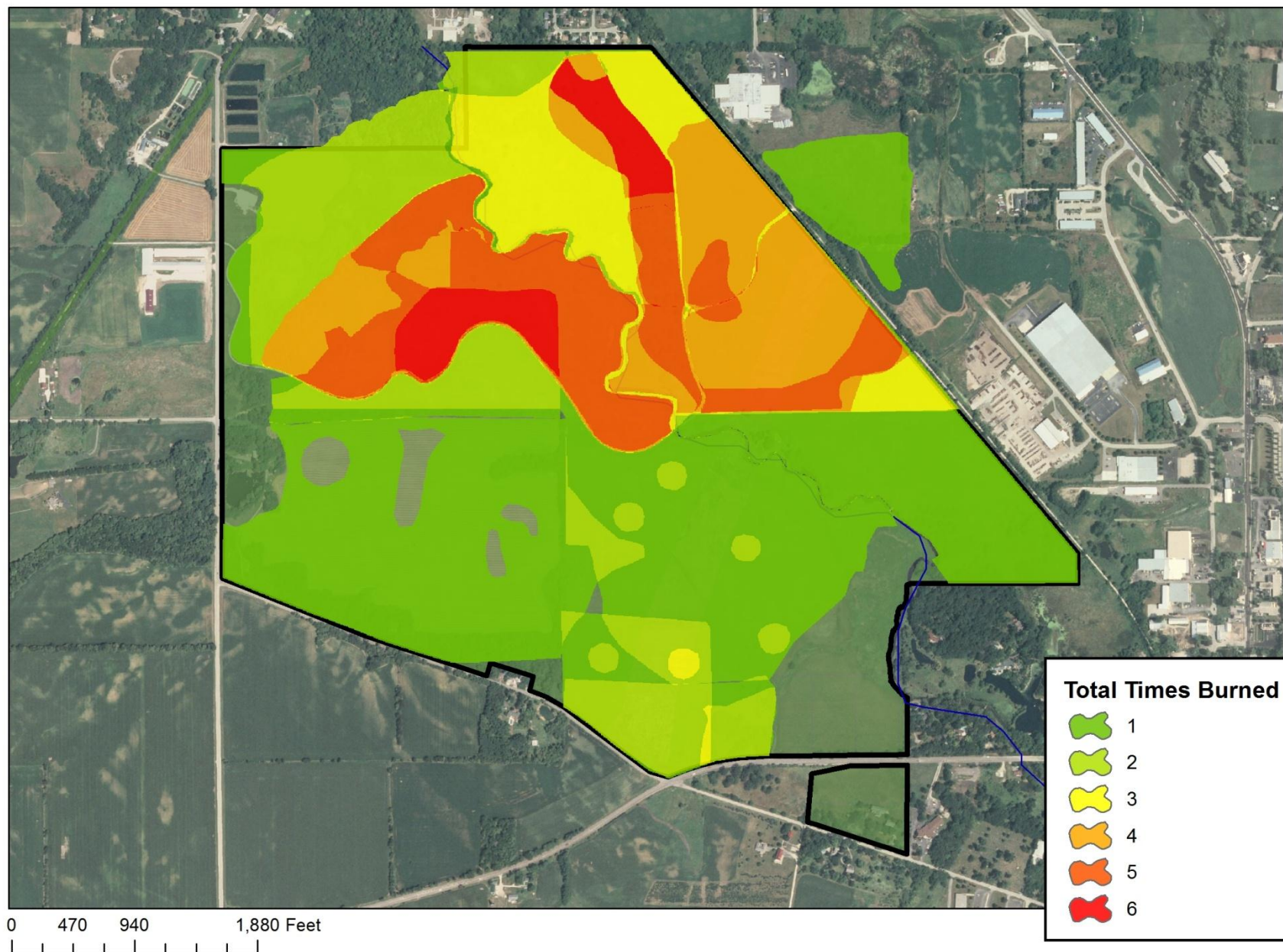


North Branch
Brush Clearing Projects 2005-2012

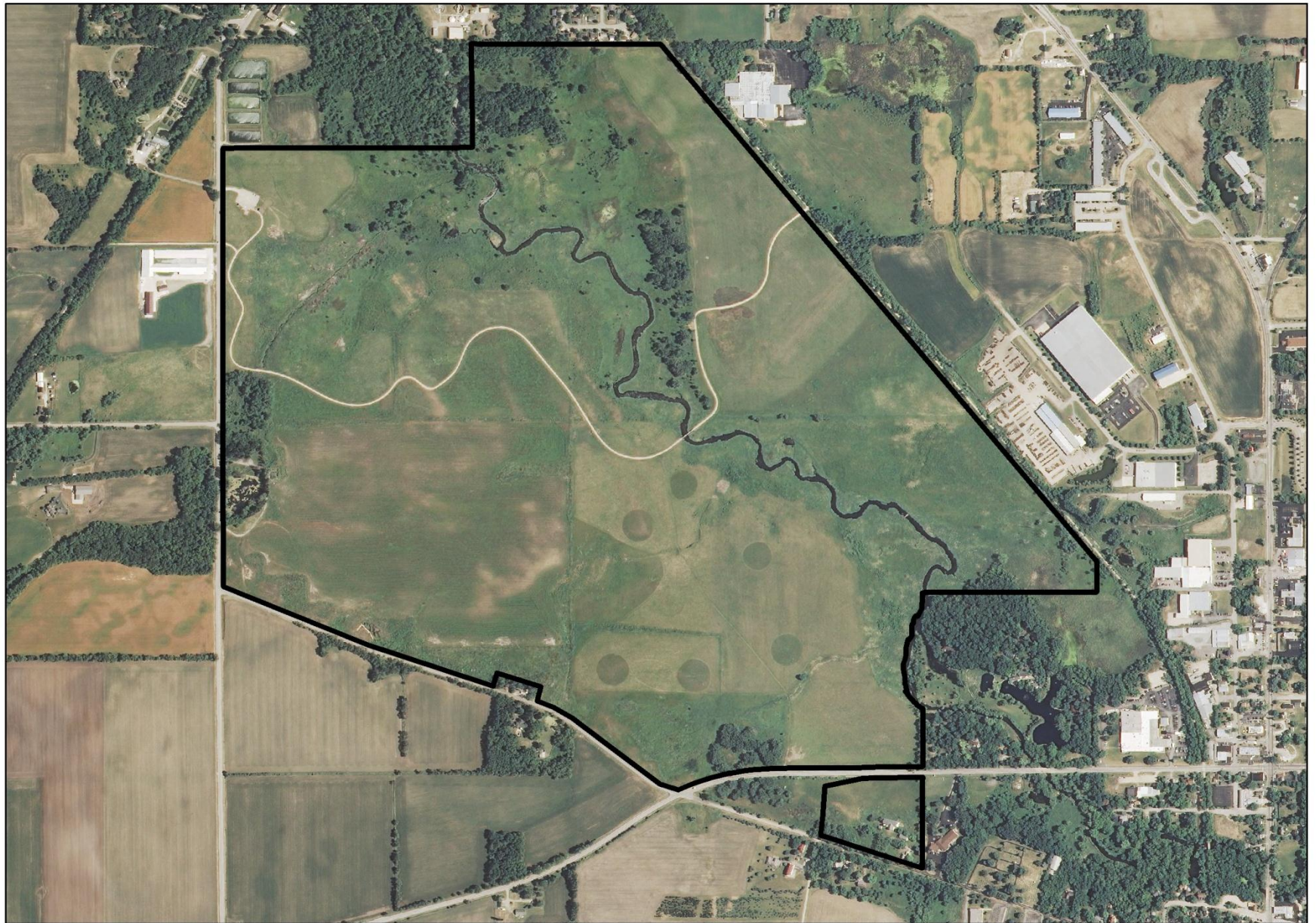
0 375 750 1,500 Feet

2011 Aerial Date Saved: 5/15/2012 7:30:52 AM

North Branch Burns 2002-2012



North Branch 2012



0 470 940 1,880 Feet

A horizontal scale bar with four segments, each labeled with a value: 0, 470, 940, and 1,880 Feet.

			NORTH BRANCH PRESERVE											M.C.C.D.		
								Savannah Sparrows								
Grassland Bird Study	with Prescribed Burn Indicators															
and	with Brush Cutting Indicators															
Totals by Unit:														Overall		
Bird Common Name	Unit	Points	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total	Percent	
Savannah Sparrow	2	8	1								1	1	1	4	2%	
Percent of Site Usage:	2		100%								4%	4%	4%			
Savannah Sparrow	3A	1-7+8A		3		3	11	12	12	18	12	8	9	88	35%	
Percent of Site Usage:	3A			100%		50%	34%	80%	55%	62%	46%	32%	39%			
Savannah Sparrow	3B	21-24									9	11	11	31	12%	
Percent of Site Usage:	3B										35%	44%	48%			
Savannah Sparrow	4	9-12					5			4	2	1	2	14	5%	
Percent of Site Usage:	4						16%			14%	8%	4%	9%			
Savannah Sparrow	5	17A-20					1		5	4	2	1		13	5%	
Percent of Site Usage:	5						3%		23%	14%	8%	4%				
Savannah Sparrow	6	17				1			2				B	3	1%	
Percent of Site Usage:	6					17%			9%							
Savannah Sparrow	7	12A-16A				2	15	3	3	3		3		29	11%	
Percent of Site Usage:	7					33%	47%	20%	14%	10%		12%				
Total Site Usage by Year:			1	3		6	32	15	22	29	26	25	23	182	100%	
							B	= Brush cut during Breeding Season								
								= Unit Partially Burned								

NORTH BRANCH PRESERVE

M.C.C.D.

Bobolinks

Grassland Bird Study
and

with Prescribed Burn Indicators

with Brush Cutting Indicators



Patch size
connected 20 acres

Grassland
Bird Mix

Totals by Unit:

Bird Common Name	Unit	Points	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total	Percent
Bobolink	2	8						2	4	3	3	3	3	18	7%
Percent of Site Usage:	2							7%	9%	9%	12%	9%	12%		
Bobolink	3A	1-7+8A				17	22	19	28	30	19	24	20	179	71%
Percent of Site Usage:	3A					49%	85%	68%	64%	86%	73%	75%	80%		
Bobolink	3B	21-24										2	2	4	2%
Percent of Site Usage:	3B											6%	8%		
Bobolink	4	9-12				7		2	5			1		15	6%
Percent of Site Usage:	4					20%		7%	11%			3%			
Bobolink	5	17A-20					2					1		3	1%
Percent of Site Usage:	5						8%					3%			
Bobolink	6	17											B		
Percent of Site Usage:	6														
Bobolink	7	12A-16A				11	2	5	7	2	4	1		32	13%
Percent of Site Usage:	7					31%	8%	18%	16%	6%	15%	3%			
Total Site Usage by Year:						35	26	28	44	35	26	32	25	251	100%
							B								

Cool Season

Legend:
 = Brush cut during Breeding Season
 = Unit Partially Burned

NORTH BRANCH PRESERVE

M.C.C.D.

Grasshopper Sparrows

Grassland Bird Study
and

with Prescribed Burn Indicators
with Brush Cutting Indicators

Totals by Unit:

														Overall	
Bird Common Name	Unit	Points	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total	Percent
Grasshopper Sparrow	2	8						2		1	2			5	2%
Percent of Site Usage:	2							6%		4%	4%				
Grasshopper Sparrow	3A	1-7+8A		4	3	6		14	14	14	14	14	9	92	36%
Percent of Site Usage:	3A			100%	100%	24%		44%	37%	54%	31%	32%	29%		
Grasshopper Sparrow	3B	21-24									15	18	17	50	20%
Percent of Site Usage:	3B										33%	41%	55%		
Grasshopper Sparrow	4	9-12				10		4	12	4	6	5	2	43	17%
Percent of Site Usage:	4					40%		13%	32%	15%	13%	11%	6%		
Grasshopper Sparrow	5	17A-20					1	4	5	6	5	5	3	29	11%
Percent of Site Usage:	5						14%	13%	13%	23%	11%	11%	10%		
Grasshopper Sparrow	6	17					3						B	3	1%
Percent of Site Usage:	6						43%								
Grasshopper Sparrow	7	12A-16A				9	3	8	7	1	3	2		33	13%
Percent of Site Usage:	7					36%	43%	25%	18%	4%	7%	5%			
Total Site Usage by Year:				4	3	25	7	32	38	26	45	44	31	255	100%
							B	= Brush cut during Breeding Season							
								= Unit Partially Burned							

Grassland Bird Mix

Patch
Size

			NORTH BRANCH PRESERVE											M.C.C.D.			
									Vesper Sparrows								
Grassland Bird Study	with Prescribed Burn Indicators																
and	with Brush Cutting Indicators																
Totals by Unit:														Overall			
Bird Common Name	Unit	Points	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total	Percent		
Vesper Sparrow	2	8															
Percent of Site Usage:	2																
Vesper Sparrow	3A	1-7+8A				10	1		3					14	50%		
Percent of Site Usage:	3A					83%	100%		100%								
Vesper Sparrow	3B	21-24									4	5	3	12	43%		
Percent of Site Usage:	3B										100%	100%	100%				
Vesper Sparrow	4	9-12				2								2	7%		
Percent of Site Usage:	4					17%											
Vesper Sparrow	5	17A-20															
Percent of Site Usage:	5																
Vesper Sparrow	6	17											B				
Percent of Site Usage:	6																
Vesper Sparrow	7	12A-16A															
Percent of Site Usage:	7																
Total Site Usage by Year:						12	1		3		4	5	3	28	100%		
							B	= Brush cut during Breeding Season									
								= Unit Partially Burned									

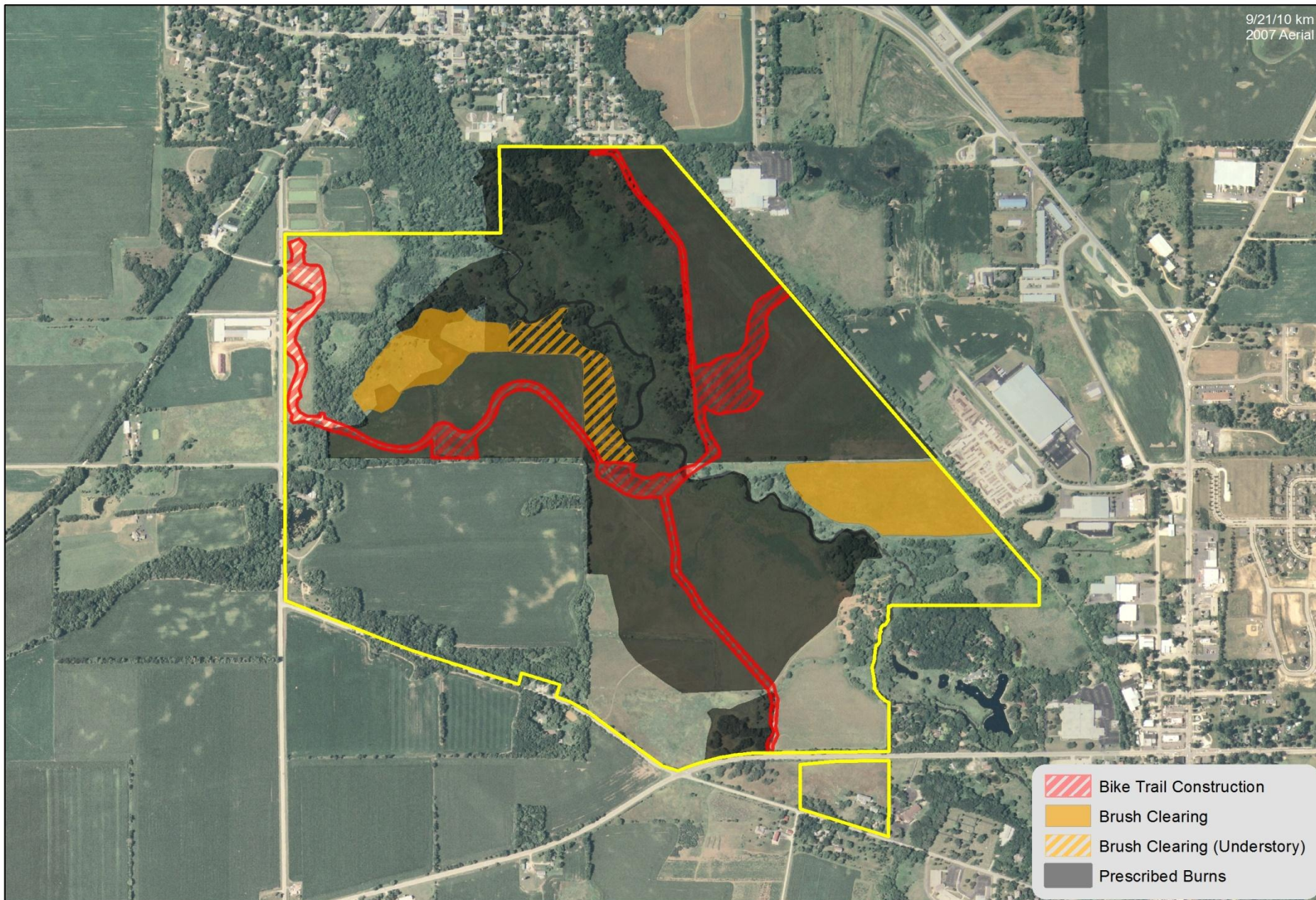
hay
late 04

Bird Mix Mow 3x '10; 2x '11

B = Brush cut during Breeding Season

= Unit Partially Burned

9/21/10 km
2007 Aerial



Management and Development Impacts 2007
North Branch

0 500 1,000 2,000 Feet



			NORTH BRANCH PRESERVE											M.C.C.D.	
									Sedge Wrens						
Grassland Bird Study	with Prescribed Burn Indicators														
and	with Brush Cutting Indicators														
Totals by Unit:														Overall	
Bird Common Name	Unit	Points	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total	Percent
Sedge Wren	2	8				1								1	2%
Percent of Site Usage:	2					6%									
Sedge Wren	3A	1-7+8A	5	2		8			3	3	8		1	30	45%
Percent of Site Usage:	3A		100%	100%		47%			50%	50%	62%		25%		
Sedge Wren	3B	21-24													
Percent of Site Usage:	3B														
Sedge Wren	4	9-12							2	1	1	5		9	14%
Percent of Site Usage:	4								33%	17%	8%	45%			
Sedge Wren	5	17A-20									1	2		3	5%
Percent of Site Usage:	5										8%	18%			
Sedge Wren	6	17											B		
Percent of Site Usage:	6														
Sedge Wren	7	12A-16A				8	2		1	2	3	4	3	23	35%
Percent of Site Usage:	7					47%	100%		17%	33%	23%	36%	75%		
Total Site Usage by Year:			5	2		17	2		6	6	13	11	4	66	100%
							B	= Brush cut during Breeding Season							
								= Unit Partially Burned							

Fire and
Trail Impact

NORTH BRANCH PRESERVE

M.C.C.D.

Henslow's Sparrows

Grassland Bird Study
and

with Prescribed Burn Indicators

with Brush Cutting Indicators

Fire and
Trail Impact

Totals by Unit:

Bird Common Name	Unit	Points	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total	Percent
Henslow's Sparrow	2	8								2		2	2	6	2%
Percent of Site Usage:	2									11%		6%	8%		
Henslow's Sparrow	3A	1-7+8A		9		16	12		2	17	13	19	15	103	40%
Percent of Site Usage:	3A			100%		80%	27%		40%	89%	65%	59%	63%		
Henslow's Sparrow	3B	21-24													
Percent of Site Usage:	3B														
Henslow's Sparrow	4	9-12				1	3		3		3	7	3	20	8%
Percent of Site Usage:	4					5%	7%		60%		15%	22%	13%		
Henslow's Sparrow	5	17A-20					8							8	3%
Percent of Site Usage:	5						18%								
Henslow's Sparrow	6	17					5						B	5	2%
Percent of Site Usage:	6						11%								
Henslow's Sparrow	7	12A-16A				3	17				4	4	4	32	13%
Percent of Site Usage:	7					15%	38%				20%	13%	17%		
Total Site Usage by Year:				9		20	45		5	19	20	32			
							B								

B = Brush cut during Breeding Season
= Unit Partially Burned

Partial Unit
burns

June 12

Sweet Clover Management

- Treatment: Mow (July)
 - Bird impact
 - Regrowth and seed
 - Hard on equipment
- Treatment: Spray (Sept-June)
 - Delivery mechanism impact
 - Impact to non target natives
- Treatment: Burn (April/following May)
 - Faunal impacts
 - Smoke management and permitting
 - Results variable with Fuel type

May 4, 2010

Sweet Clover Burn



May 4, 2010

Sweet Clover Burn



May 6, 2010

Sweet Clover Burn





Tale of Two Burns



Sweet Clover (post) Burn

- May 10, 2010



Sweet Clover (post) Burn

- June 8



Sweet Clover Post-Burn (hybrid)

- June 8, 2010





June 28, 2012

**Can growing season burning positively impact “fire negative”
(litter positive) Grassland birds and accomplish fire-management goals?**

Observations

- Defragmentation expands usable grassland
- Negatives to management and development
- Core grassland important to abundance
- Henslow's and fire
- Burning, Birds and Sweet Clover
- Creative planning can reduce impacts, maximize benefits

Thanks & Questions

Ok, who
let one?

What was
he talking
about?

Not a
clue?

