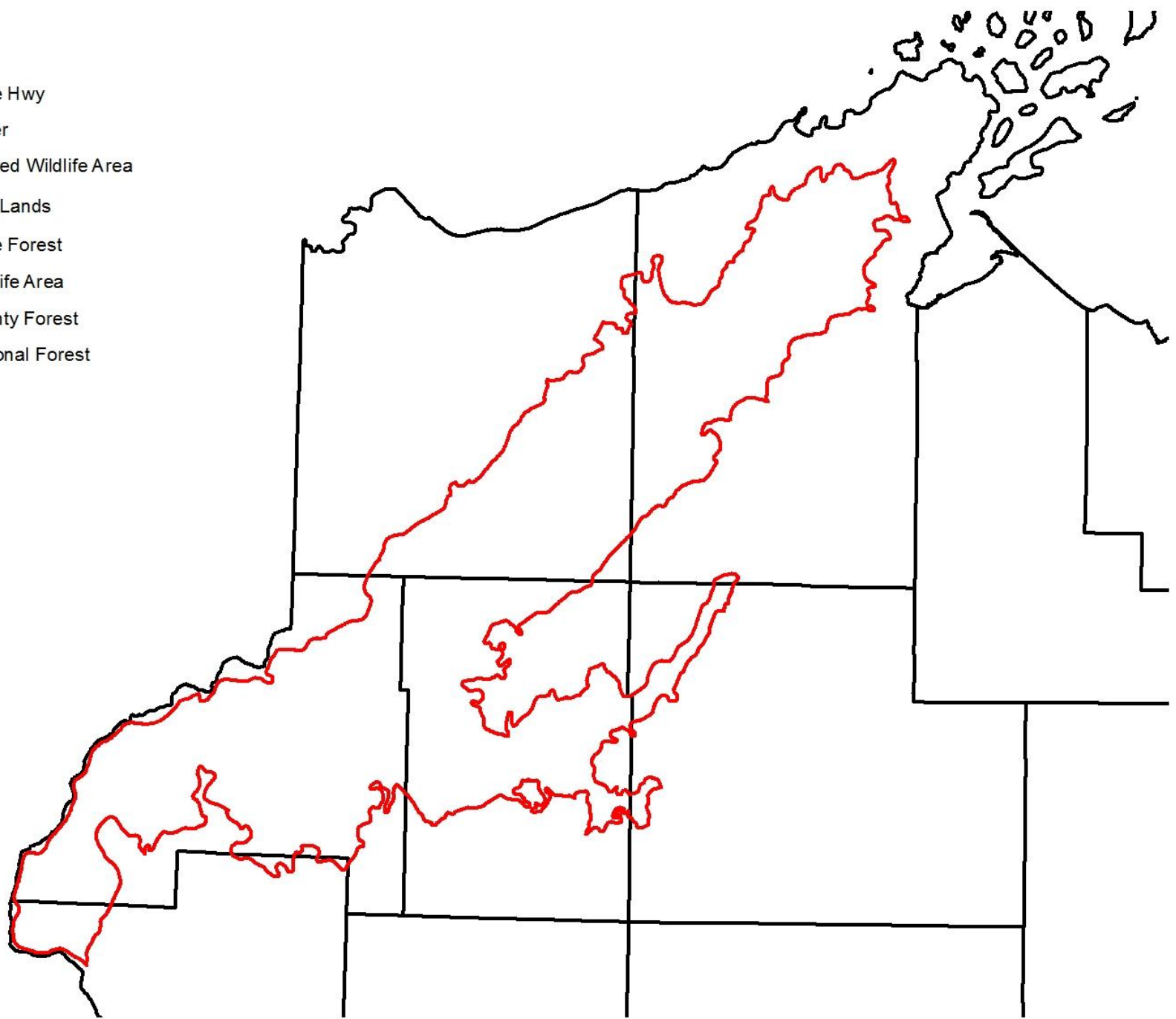


Wisconsin's Northwest Sands: A Fire Landscape

Bob Hanson
NW Sands Wildlife Biologist
Robert.Hanson@wisconsin.gov

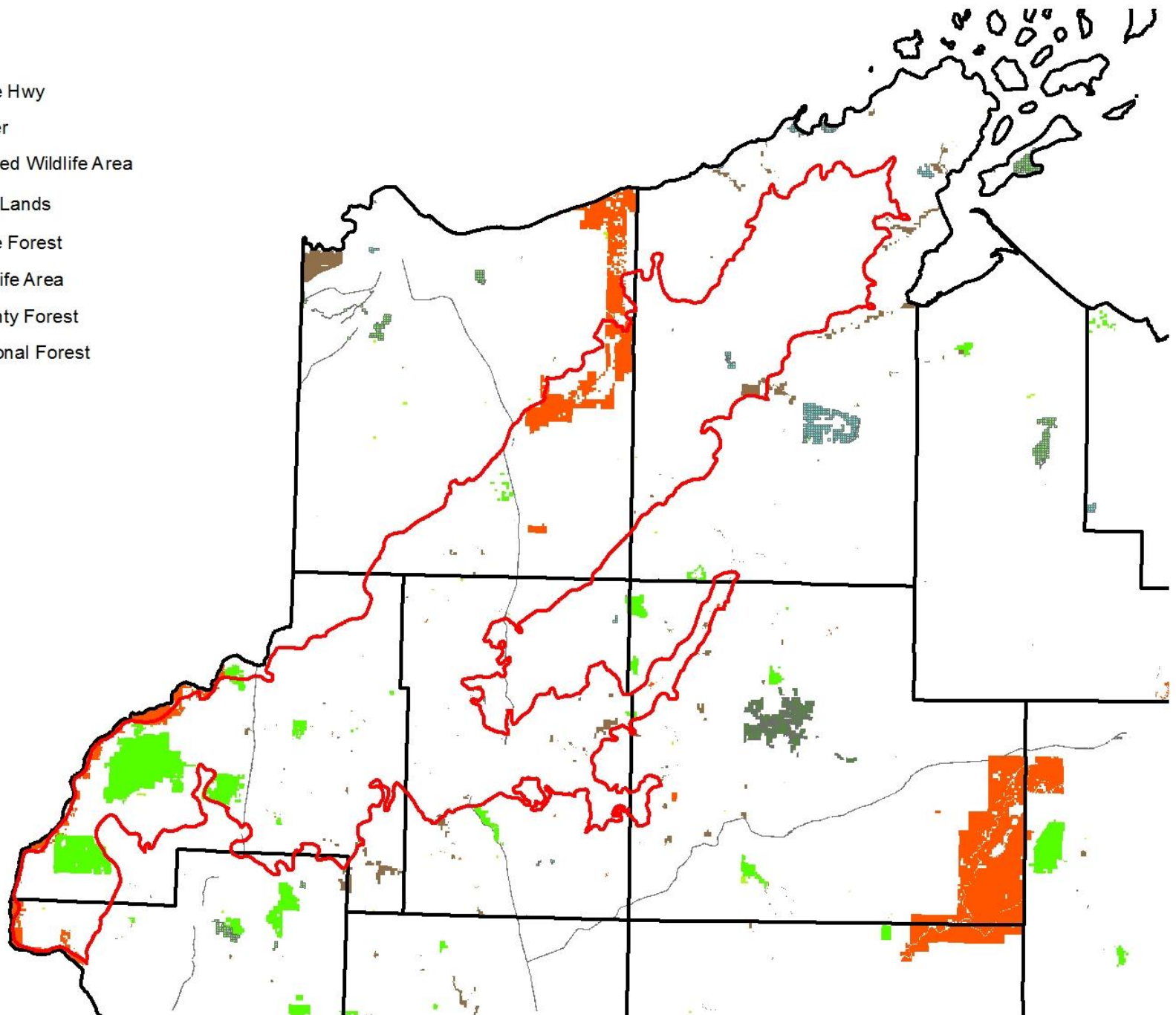
Legend

- State Hwy
- Water
- Leased Wildlife Area
- Fish Lands
- State Forest
- Wildlife Area
- County Forest
- National Forest



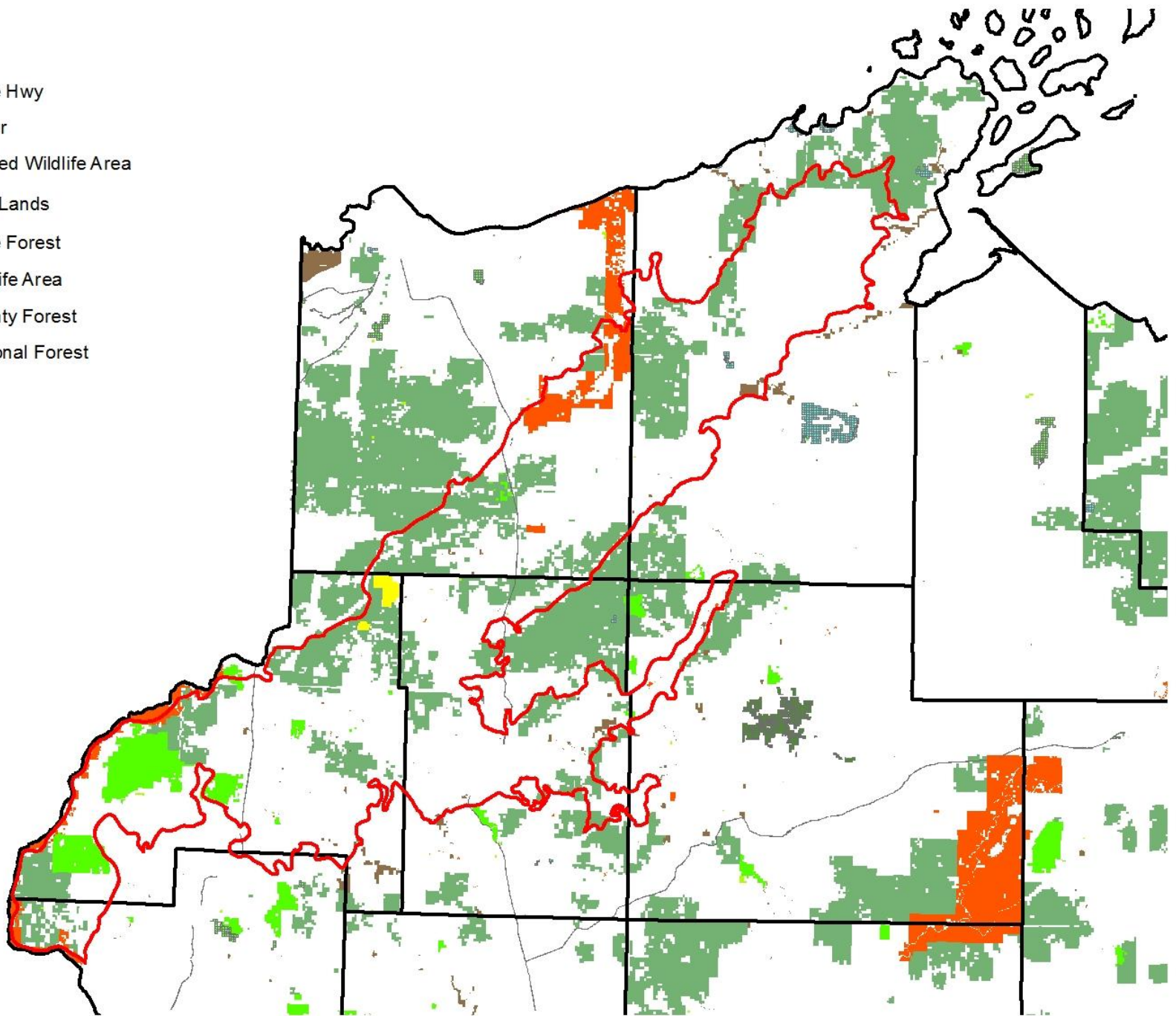
Legend

- State Hwy
- Water
- Leased Wildlife Area
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- State Forest
- Wildlife Area
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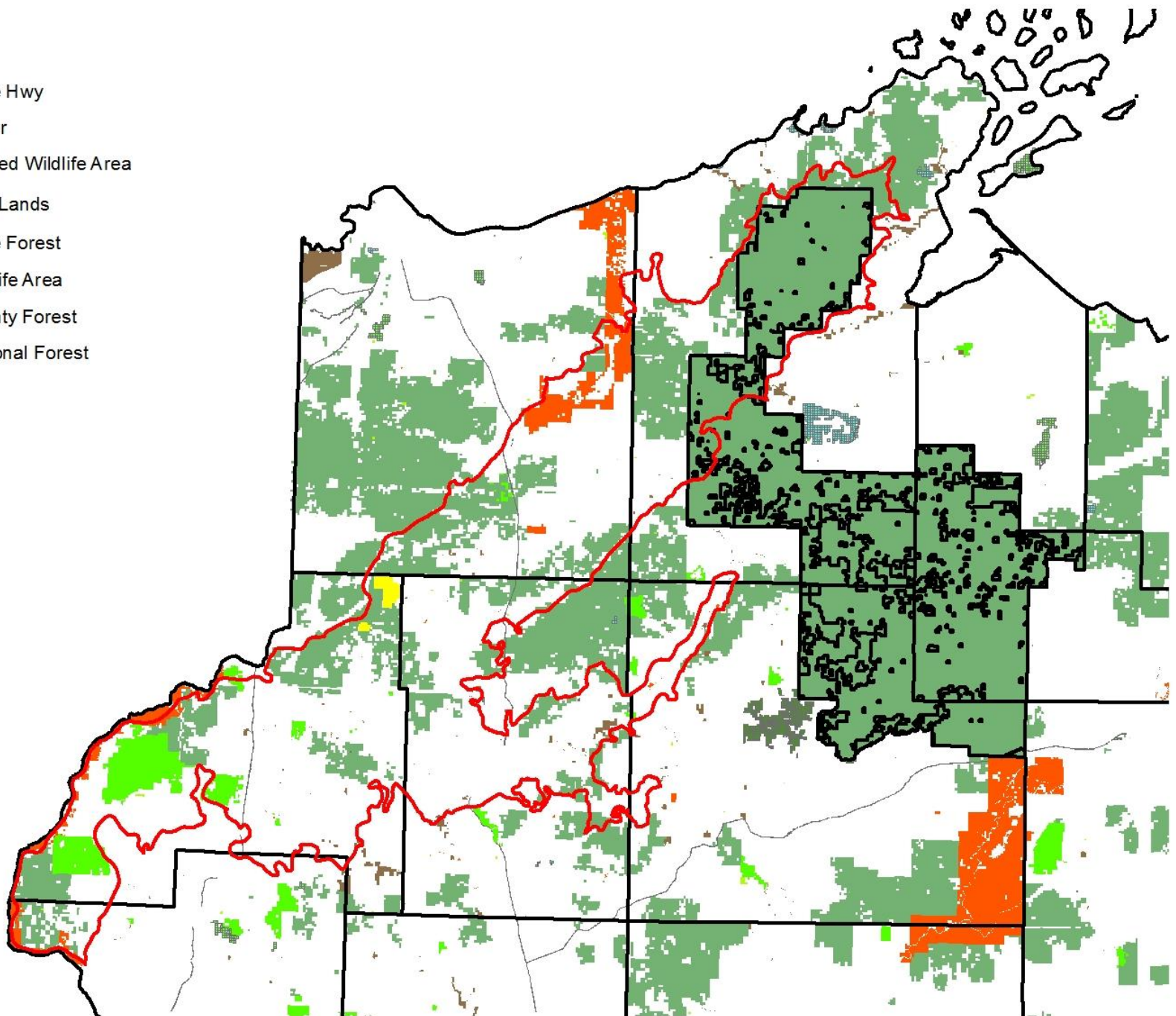
Legend

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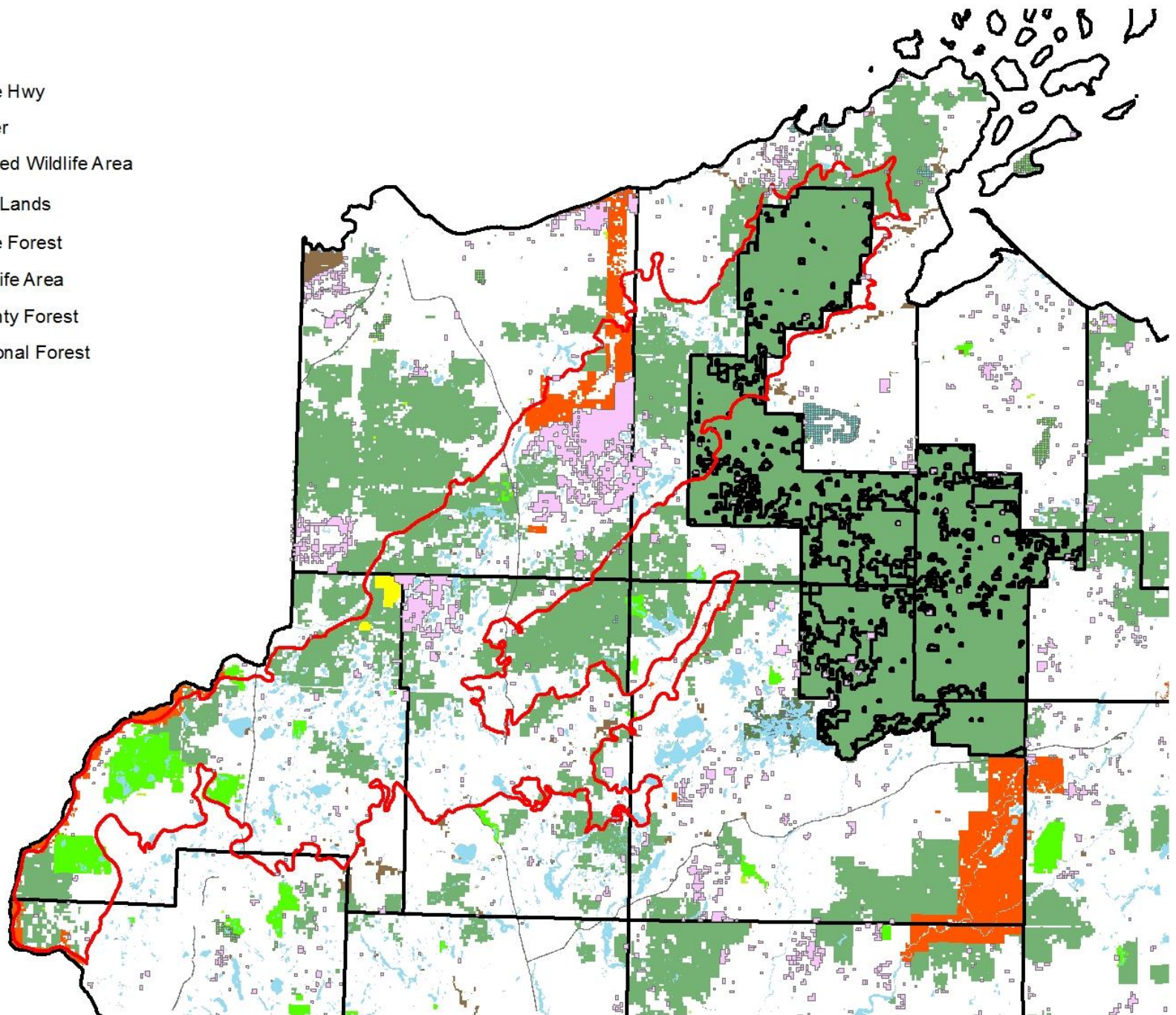
Legend

- State Hwy
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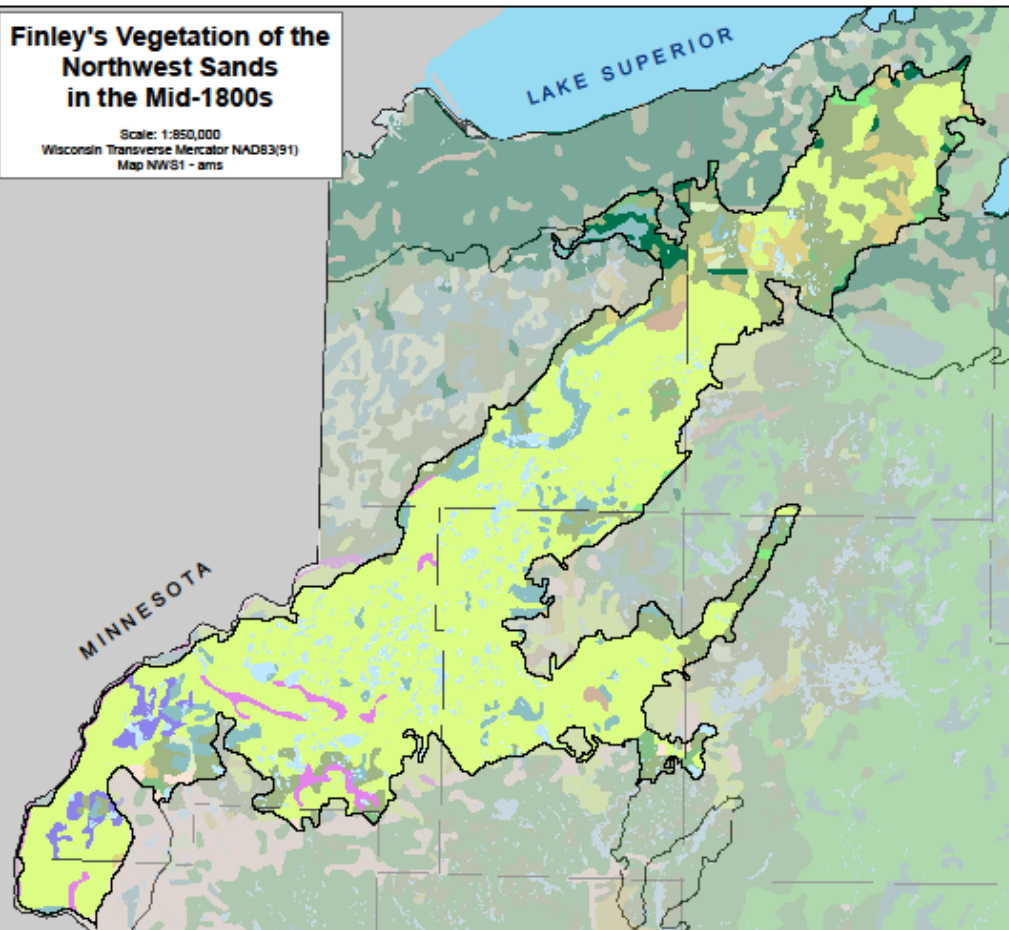
Legend

- State Hwy
- Water
- Leased Wildlife Area
- Fish Lands
- State Forest
- Wildlife Area
- County Forest
- National Forest



Finley's Vegetation of the Northwest Sands in the Mid-1800s

Scale: 1:850,000
 Wisconsin Transverse Mercator NAD83(91)
 Map NWS1 - ams



- Oak - white oak, black oak, bur oak
- Oak openings - bur oak, white oak, black oak
- Jack pine, scrub (hill's), oak forest and barrens
- White pine red pine
- Aspen, white birch, pine
- White Spruce, fir, tamarack, white cedar, white birch, aspen
- Beech, hemlock, sugar maple, yellow birch, white red pines
- Hemlock, sugar maple, yellow birch, white pine, red pine
- Sugar maple, yellow birch, white pine, red pine
- Beech, sugar maple, basswood, red oak, white oak, black oak
- Sugar maple, basswood, red oak, white oak, black oak
- Swamp conifers - white cedar, black spruce, tamarack, hemlock
- Lowland hardwoods - willow, soft maple, box elder, ash, elm
- Marsh and sedge meadow, wet prairie, lowland shrubs
- Open water

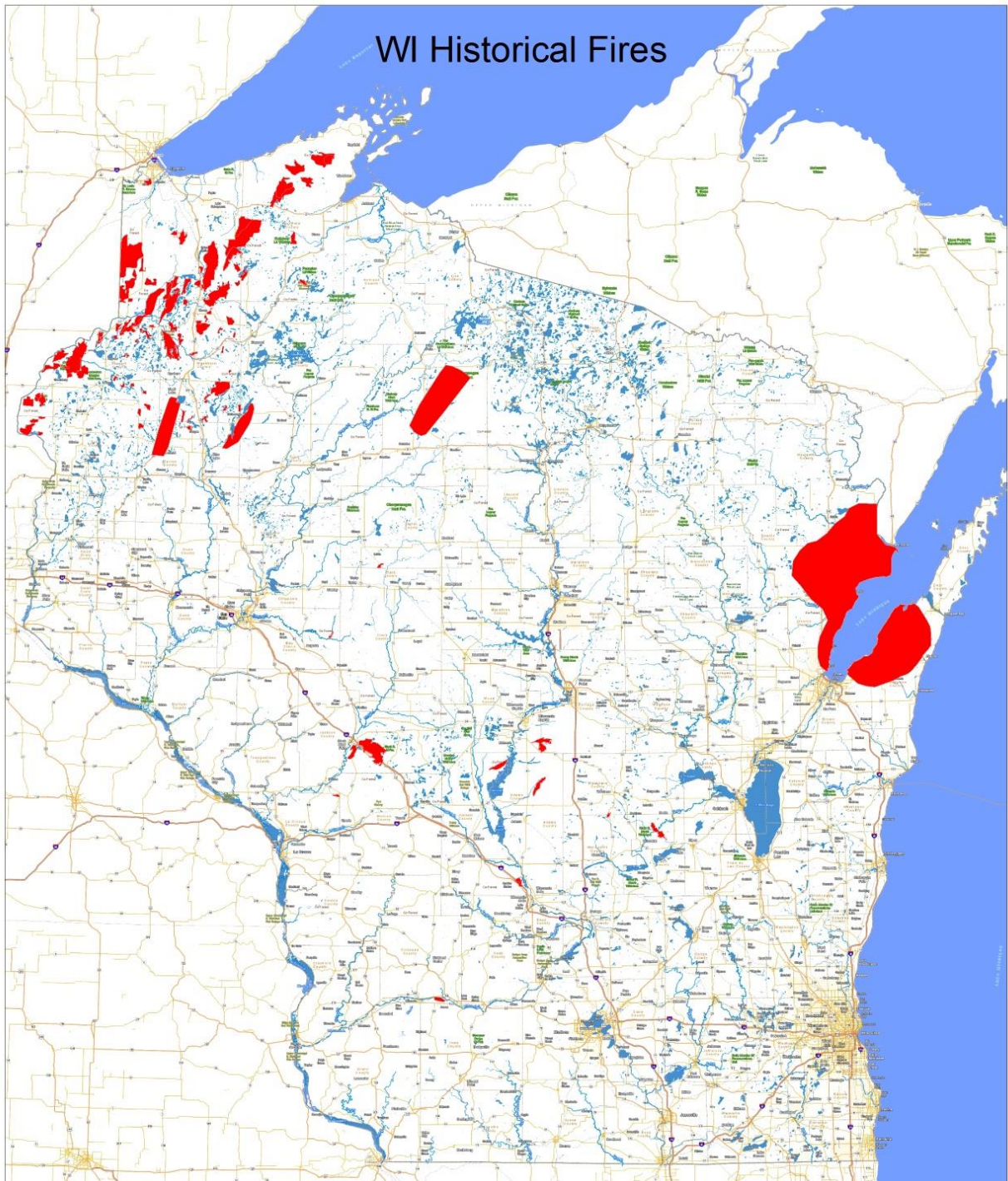
- Prairie
- Brush
- Ecological Landscape
- County Boundaries

Vegetation delineations made by Robert W. Finley - 1976 Professor of Geography Emeritus, University of Wisconsin Center System. Digital data prepared by Maribeth Milner and Steve Ventura, University of Wisconsin - Madison.

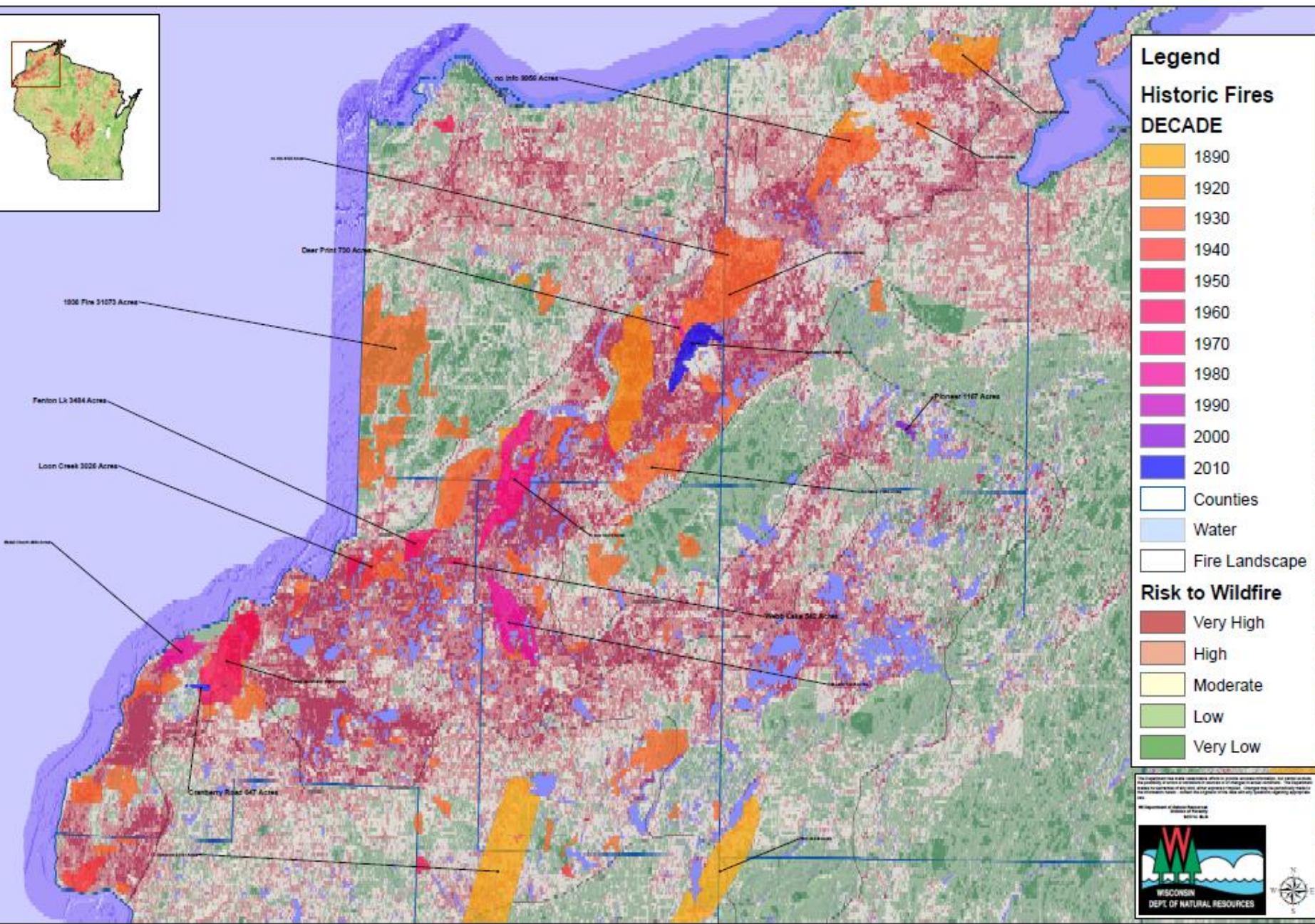
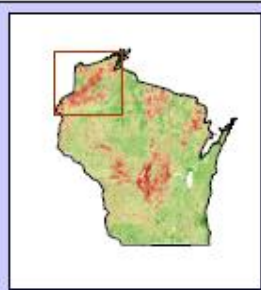
More information about this dataset as well as access to this dataset may be found at: <http://dnr.wi.gov/maps/gis/>



WI Historical Fires



Large Historic Fires in Northwest Wisconsin



Legend

Historic Fires

DECADE

- 1890
- 1920
- 1930
- 1940
- 1950
- 1960
- 1970
- 1980
- 1990
- 2000
- 2010

Counties

Water

Fire Landscape

Risk to Wildfire

- Very High
- High
- Moderate
- Low
- Very Low

The Department and its employees offer no guarantee, warranty, or representation for the use of the information on this map for purposes other than those for which it was prepared. No responsibility is assumed for any loss, either actual or consequential, arising from the use of the information on this map. Changes in the geographic information on this map may occur without notice. Contact the Department for more information.



8-21-38

FL. - 18. BRS - 10 - 77

Fire # 77

July 31, 1936

Fire # 78

8/7/36

EASTMAN TOPOGRAPHIC NITRATE

EASTMAN TOPOGRAPHIC NITRATE

1959 West Marshland Fire

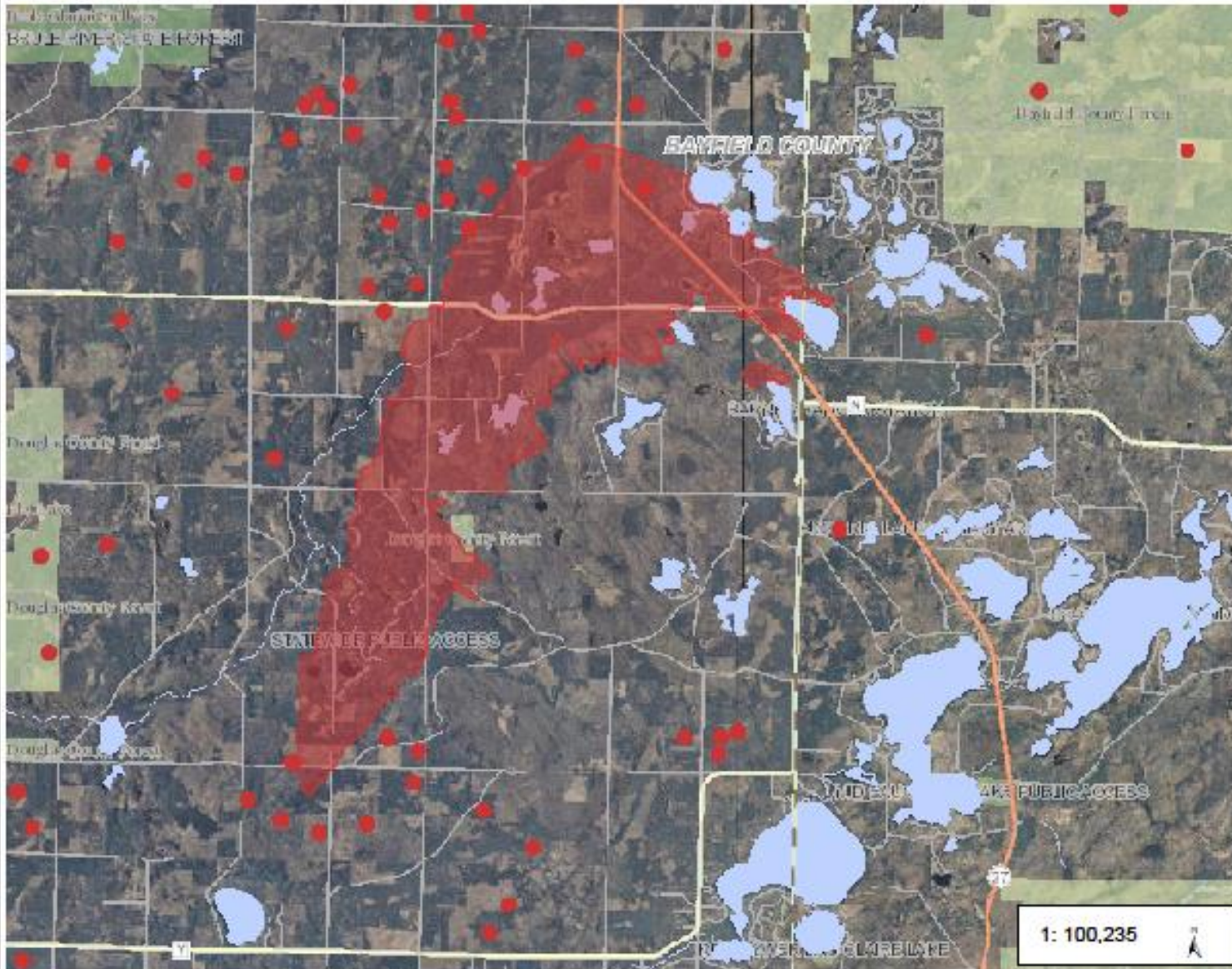








Histortic Sharp-tailed Grouse Leks and the Germann Road Fire



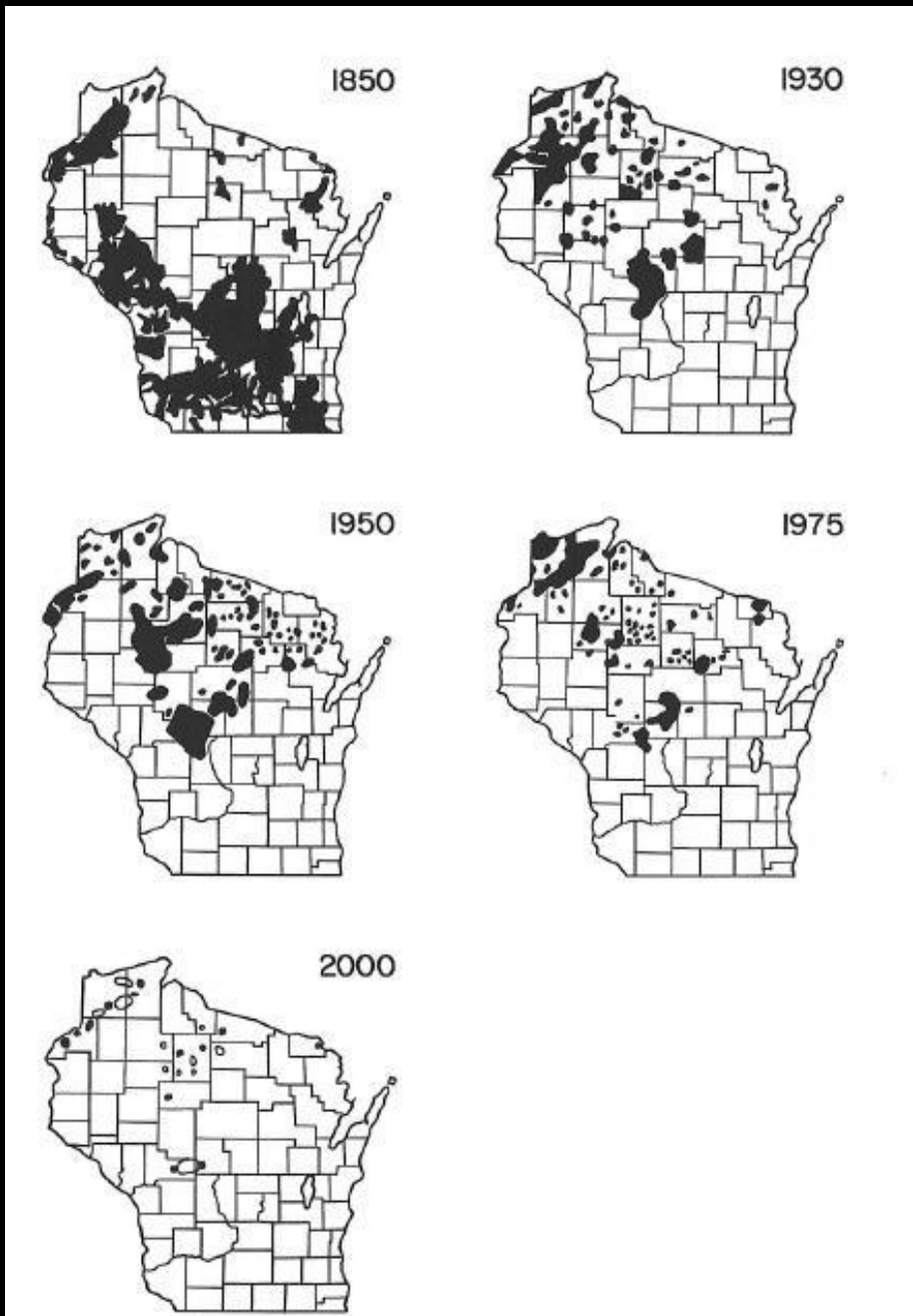
- Legend**
- Major Roads**
 - Interstates
 - US Highways
 - State Highways
 - Rivers and Streams
 - Great Lakes
 - Open Water
 - County Boundaries
 - Airports
 - State Natural Areas
 - DNR Managed Lands**
 - Fee
 - Easement
 - Lease
 - County Forests
 - National Forests
 - DNR Managed Lands Labels

The conservation infrastructure information shown on this map has been obtained from various sources, and are of varying age, reliability and resolution. These maps are not intended to be used for navigation, nor are these maps an authoritative source of information about legal land ownership or public access. No warranty, expressed or implied, is made regarding accuracy, applicability for a particular use, completeness, or legality of the information depicted on this map. For more information, see the DNR Legal Notices web page: <http://dnr.wi.gov/legal/>

3.2 0 1.58 3.2 Miles

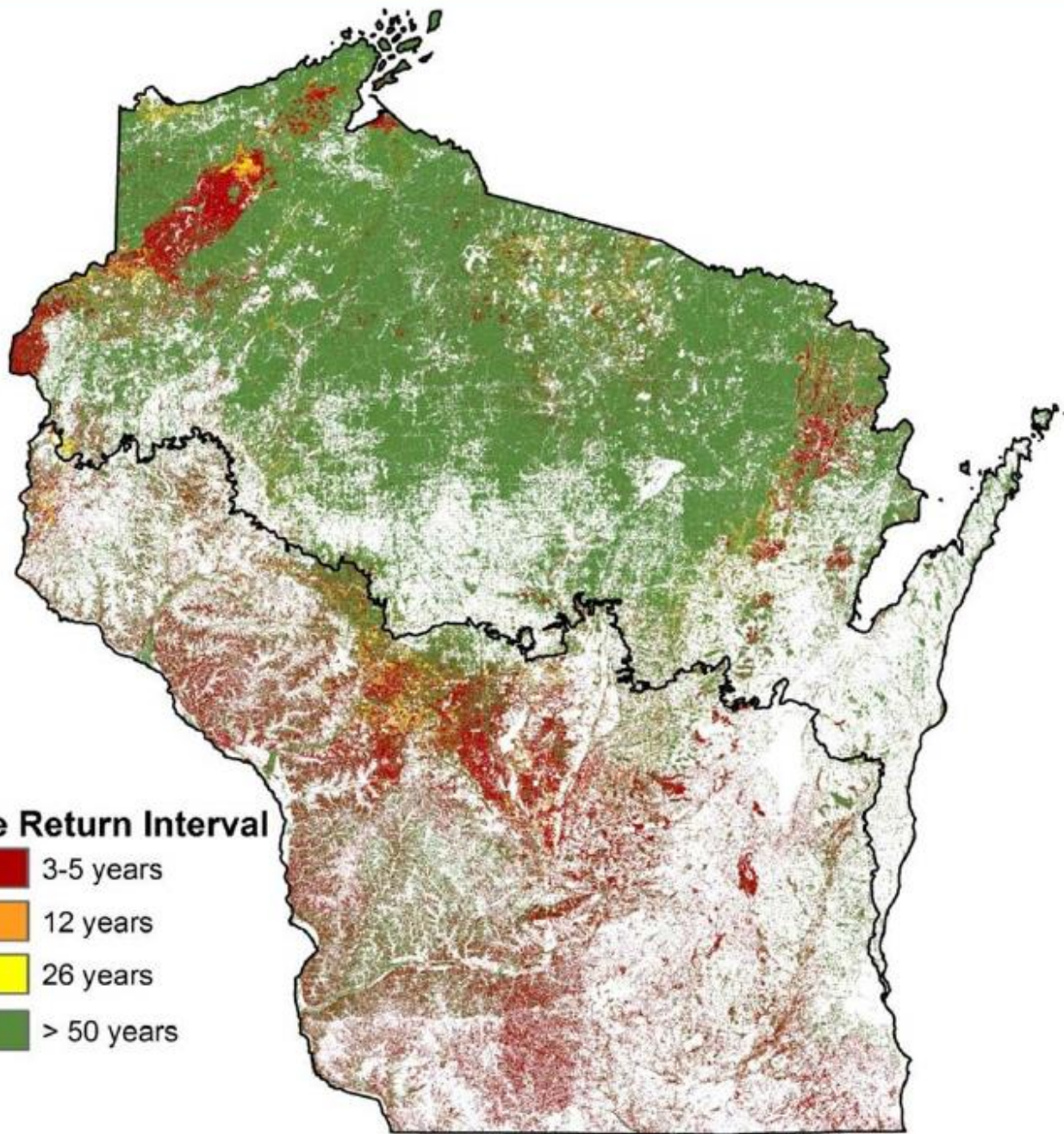
NAD_1983_HARN_Wisconsin_TM

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Distribution of sharp-tailed grouse in Wisconsin from 1850-2000 (Gregg and Niemuth 2000).

Mean Fire Return Interval

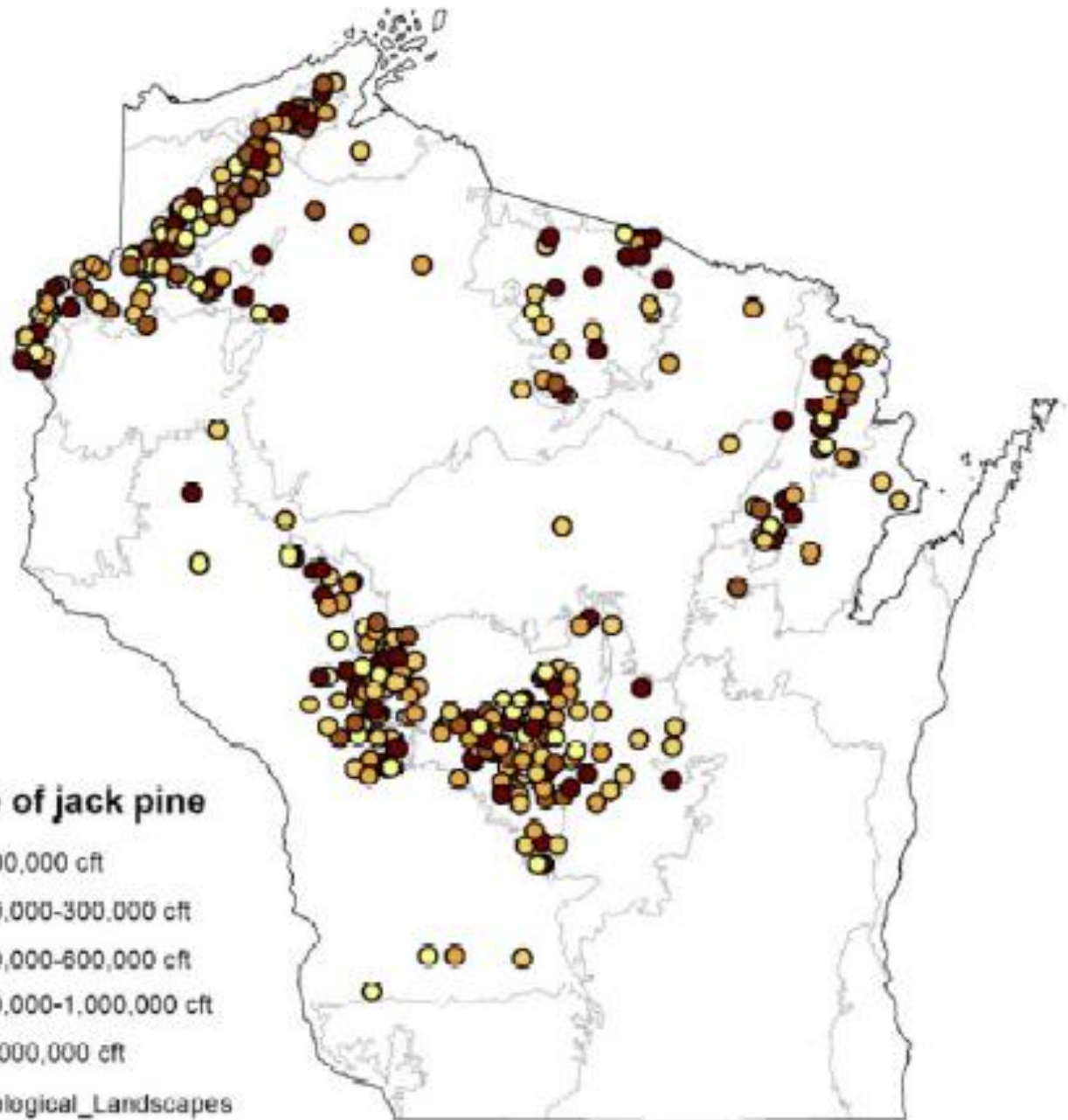


Map created by Sarah Carter

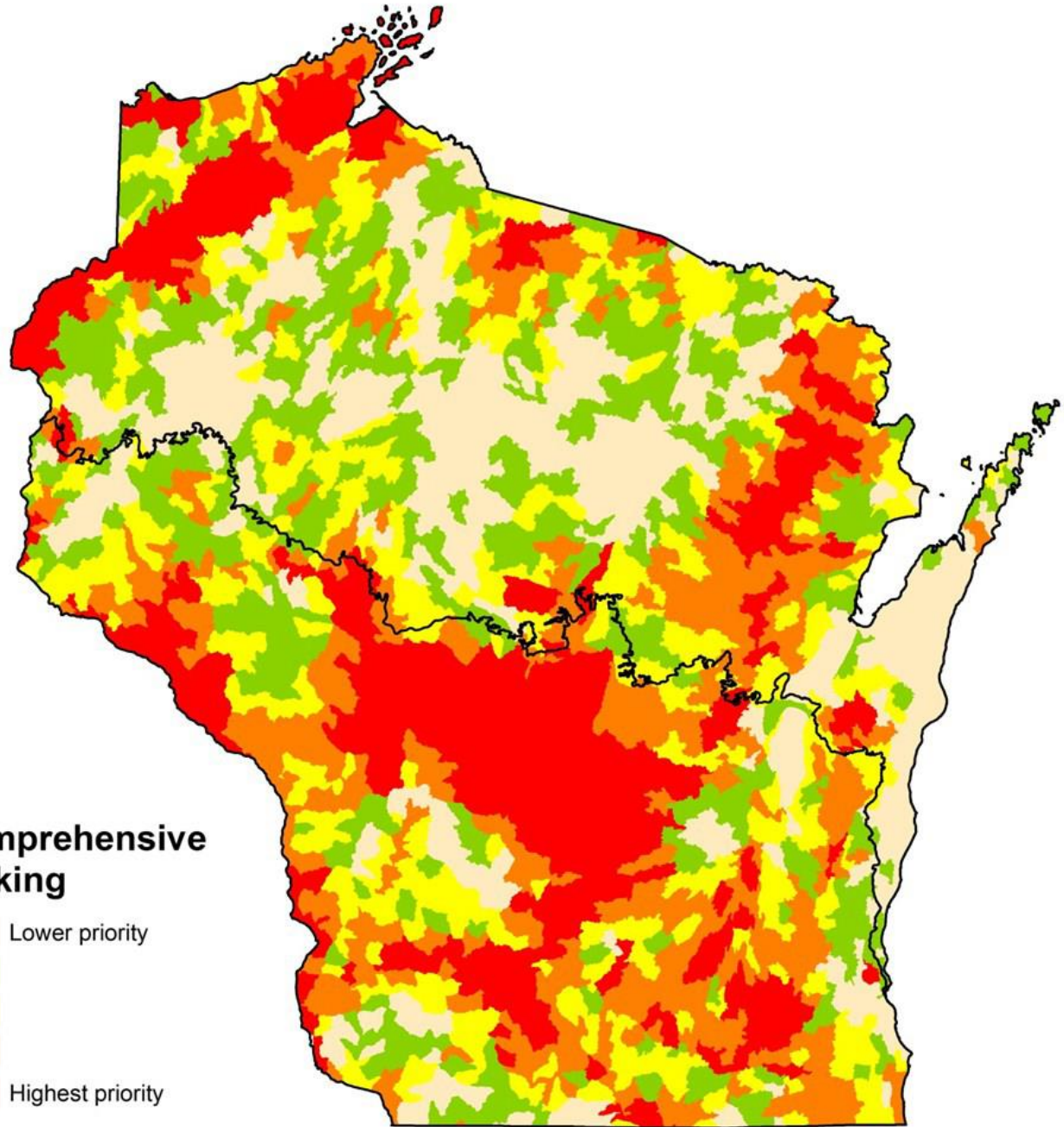
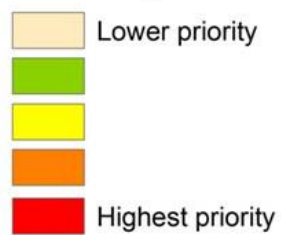
Volume of jack pine

-  <100,000 cft
-  100,000-300,000 cft
-  300,000-600,000 cft
-  600,000-1,000,000 cft
-  >1,000,000 cft

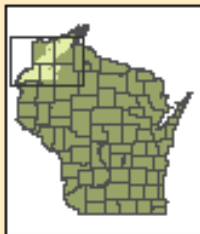
 Ecological_Landscapes



Comprehensive ranking

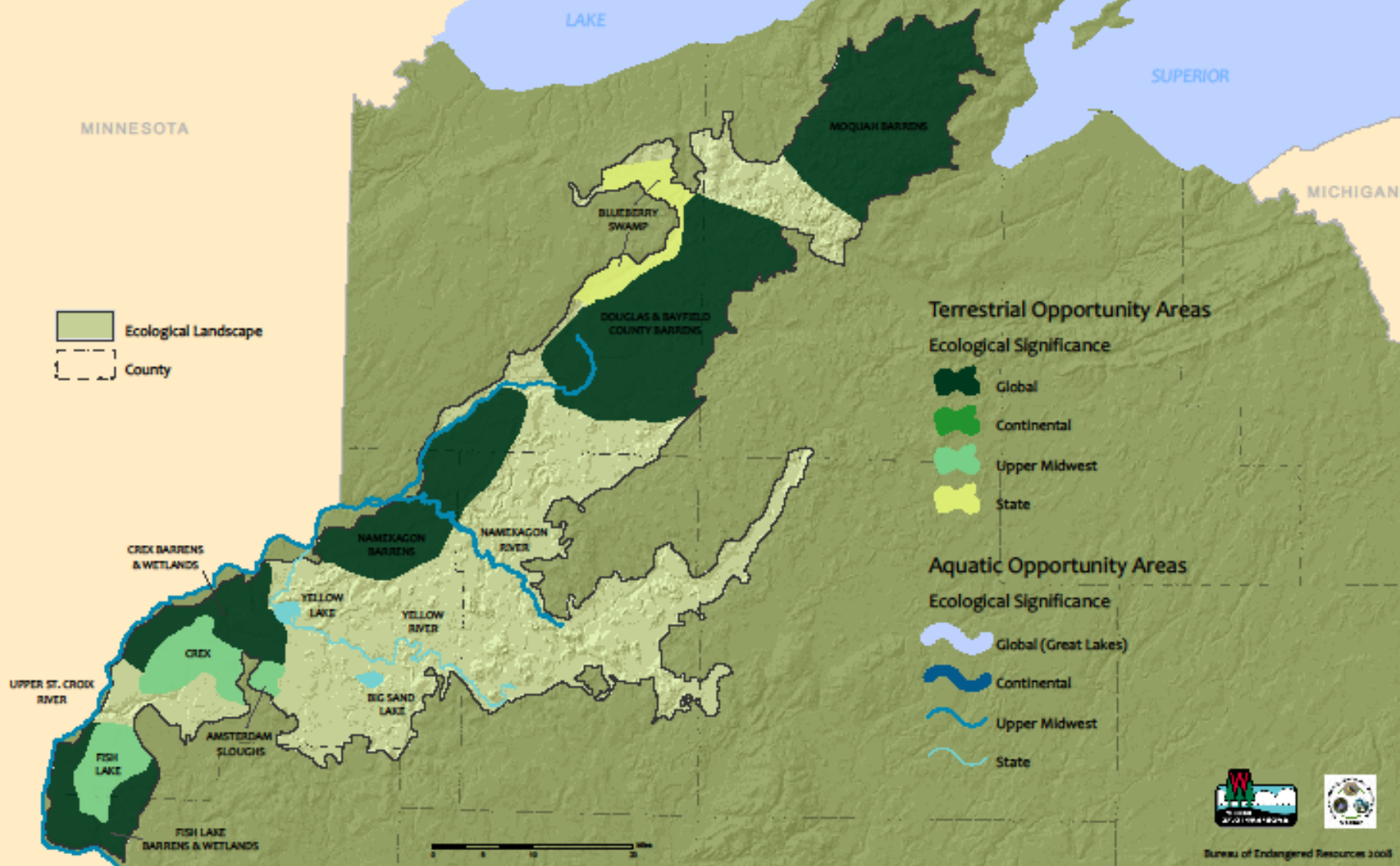


MAP CREATED BY SARAH K. CARTER



Wisconsin's Priority Conservation Opportunity Areas for Wildlife Species of Greatest Conservation Need 2008-2015

Northwest Sands Ecological Landscape



NW Sands Species of Greatest Conservation Need

Select barrens-dependent SGCN (birds, reptiles and invertebrates only) listed by WDNR's Wisconsin Wildlife

Action Plan (<http://dnr.wi.gov/landscapes/index.asp?mode=detail&Landscape=2&Section=species>).

Reptiles & Amphibians

- Bullsnake
- Northern Prairie Skink

Birds

- Black-billed Cuckoo
- Bobolink
- Brown Thrasher
- Eastern Meadowlark
- Field Sparrow
- Golden-winged Warbler
- Northern Harrier
- Red-headed Woodpecker
- Sharp-tailed Grouse
- Upland Sandpiper
- Vesper Sparrow

Invertebrates

- Karner Blue Butterfly
- Gorgone Checkerspot
- Tawny Crescent
- Henry's Elfin
- Olympia Marble
- Dusted Skipper
- Mottled Dusky-wing
- Cobweb Skipper
- Indian Skipper
- Phlox Moth
- Graceful Clearwing



Dale Bohlke





Upland Sandpiper



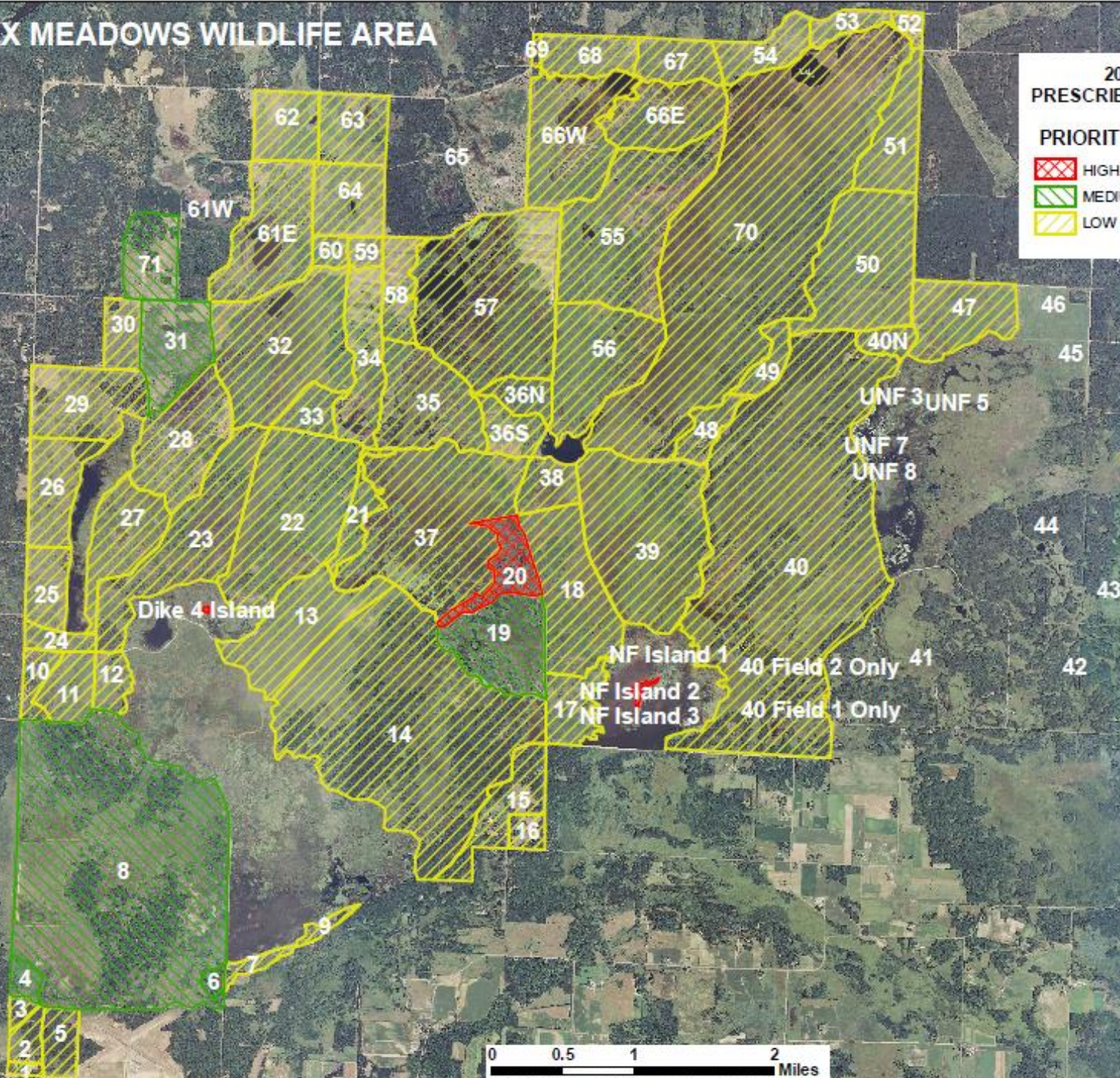
Eastern Towhee

CREX MEADOWS WILDLIFE AREA

2009 GLG
PRESCRIBED BURN PLAN

PRIORITY

- HIGH
- MEDIUM
- LOW



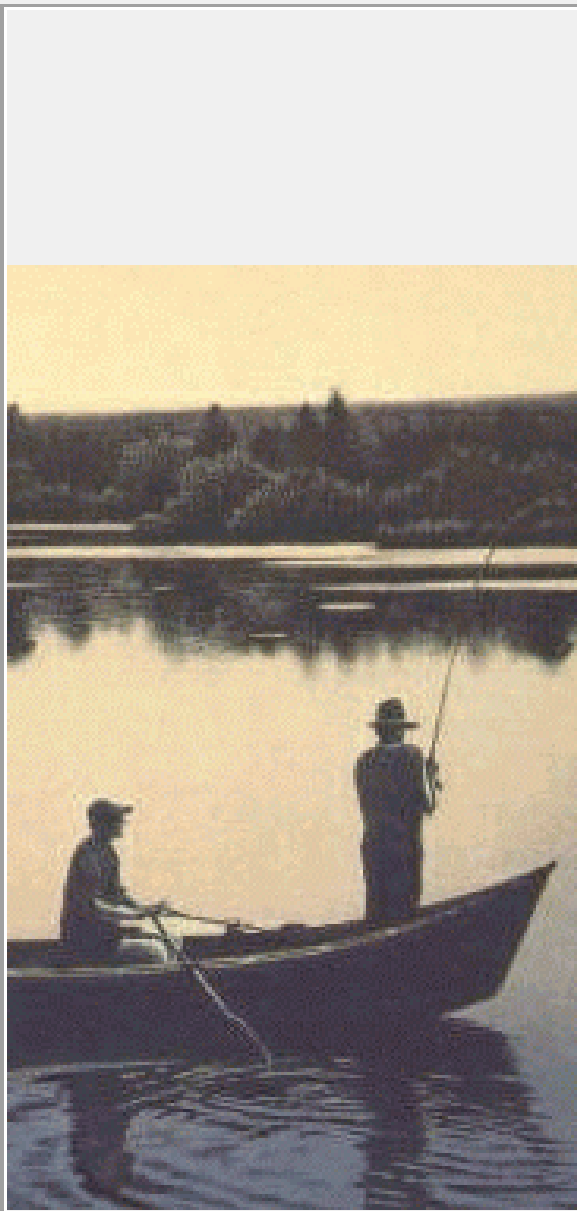












Dry Bulb Temperature 50 - 69 oF

Relative Humidity 30 - 34 %

Reference Fuel Moisture 5 %

Month Feb Mar Apr Aug Sep Oct

Time of Day 12:00 - 13:59

Elevation Difference Level (within 1000 ft)

Slope 0 - 30%

Aspect South

Fuel Shading Exposed (< 50% shading)

Fuel Moisture Correction 1 %

Fine Dead Fuel Moisture 6 %



Inputs: SURFACE

Description → Crex 50, Using Fuel Model 3

Fuel/Vegetation, Surface/Understory

Fuel Model → 3

Fuel Moisture

1-h Moisture % → 6

10-h Moisture % →

100-h Moisture % →

Live Herbaceous Moisture % →

Live Woody Moisture % →

Weather

Midflame Wind Speed (upslope) mi/h → 2, 4, 6, 8, 10, 12, 14

Terrain

Slope Steepness % → 0

Run Option Notes

Maximum reliable effective wind speed limit IS imposed [SURFACE].

Calculations are only for the direction of maximum spread [SURFACE].

Fireline intensity, flame length, and spread distance are always
for the direction of the spread calculations [SURFACE].

Wind is blowing upslope [SURFACE].

Output Variables

Surface Rate of Spread (maximum) (ch/h) [SURFACE]

Flame Length (ft) [SURFACE]

Crex 50, Using Fuel Model 3

Midflame Wind Speed mi/h	ROS (max) ch/h	Flame Length ft
2	38.6	8.0
4	89.1	11.8
6	148.4	14.9
8	214.3	17.7
10	285.5	20.2
12	361.4	22.5
14	441.3	24.6



Crex Meadows Burn Unit # 26

Years from last burn: 5

Dead oven dried tons/acre: 1.81

Live oven dried tons/acre: 1.96

Total Fuel load oven dried tons/acre: 3.77

Live Fuel Moisture 31.05%





Inputs: SURFACE

Description → Crex 50, Using Custom Fuel Model; High Load/Live Fuels

Fuel/Vegetation, Surface/Understory

Initialize from a Fuel Model

Fuel Model Type		→	D
1-h Fuel Load	ton/ac	→	1.8
10-h Fuel Load	ton/ac	→	0.
100-h Fuel Load	ton/ac	→	0.
Live Herbaceous Fuel Load	ton/ac	→	0.
Live Woody Fuel Load	ton/ac	→	1.969
1-h SA/V	ft ² /ft ³	→	1500
Live Herbaceous SA/V	ft ² /ft ³	→	1500
Live Woody SA/V	ft ² /ft ³	→	1500
Fuel Bed Depth	ft	→	1.0
Dead Fuel Moisture of Extinction	%	→	25
Dead Fuel Heat Content	Btu/lb	→	8000
Live Fuel Heat Content	Btu/lb	→	8000

Fuel Moisture

1-h Moisture	%	→	6
10-h Moisture	%	→	
100-h Moisture	%	→	
Live Herbaceous Moisture	%	→	
Live Woody Moisture	%	→	31

Weather

Midflame Wind Speed (upslope) mi/h → 2, 4, 6, 8, 10, 12, 14

Terrain

Slope Steepness % → 0

Crex 50, Using Fuel Custom High Load

Midflame Wind Speed mi/h	ROS (max) ch/h	Flame Length ft
2	11.3	6.0
4	25.2	8.7
6	41.5	11.0
8	59.6	12.9
10	79.1	14.8
12	99.9	16.4
14	121.9	18.0

Crex Meadows Burn Unit # 25

Years from last burn: 5

Dead oven dried tons/acre: 0.68

Live oven dried tons/acre: 0.60


Total Fuel load oven dried tons/acre: 1.27

Live Fuel Moisture 40.91%


















Inputs: SURFACE






Description  Crex 50, Using Custom Fuel Model; Low Load/Live Fuels

Fuel/Vegetation, Surface/Understory

Initialize from a Fuel Model

Fuel Model Type			D
1-h Fuel Load	ton/ac		.677
10-h Fuel Load	ton/ac		0.
100-h Fuel Load	ton/ac		0.
Live Herbaceous Fuel Load	ton/ac		0.
Live Woody Fuel Load	ton/ac		.596
1-h SA/V	ft ² /ft ³		1500
Live Herbaceous SA/V	ft ² /ft ³		1500
Live Woody SA/V	ft ² /ft ³		1500
Fuel Bed Depth	ft		1.0
Dead Fuel Moisture of Extinction	%		25
Dead Fuel Heat Content	Btu/lb		8000
Live Fuel Heat Content	Btu/lb		8000

Fuel Moisture

1-h Moisture	%		6
10-h Moisture	%		
100-h Moisture	%		
Live Herbaceous Moisture	%		
Live Woody Moisture	%		40.9

Weather

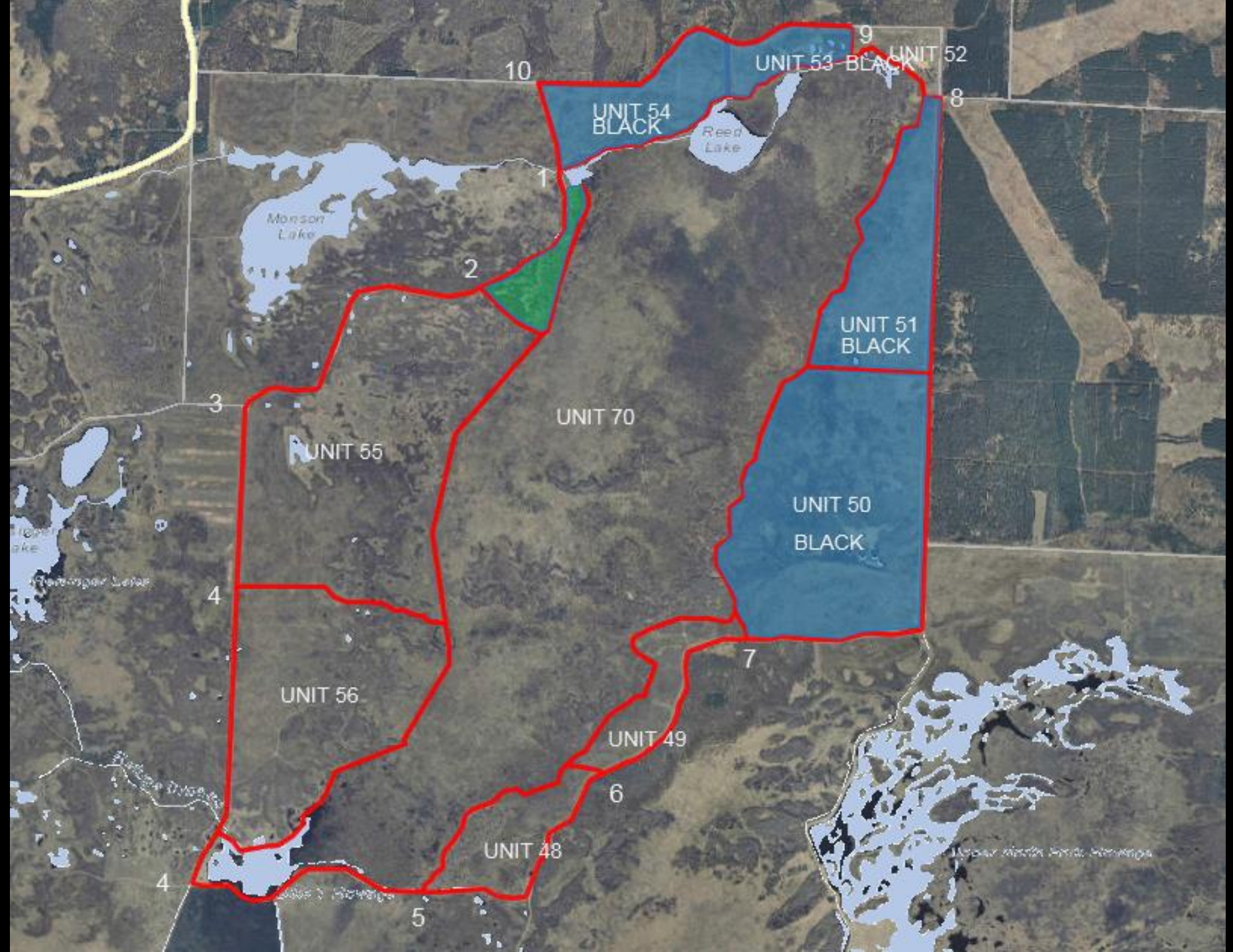
Midflame Wind Speed (upslope) mi/h  2, 4, 6, 8, 10, 12, 14

Terrain

Slope Steepness %  0

Crex 50, Using Custom Fuel Model; Low Load/Live Fuels

Midflame Wind Speed mi/h	ROS (max) ch/h	Flame Length ft
2	10.6	3.1
4	24.4	4.6
6	40.6	5.8
8	58.6	6.8
10	78.1	7.8
12	98.8	8.7
14	118.6	9.5



Fire Behavior Forecast

Date: April 30th, 2015

Location: Mimong

Input values (1300): Temp: 60 RH: 30 % 20 foot wind speeds: 8 mph Precip: 0

Haines Index – 5 Mod Haines Index - The index is composed of a stability term and a moisture term. This index has been shown to be correlated with large fire growth on initiating and existing fires where surface winds do not dominate fire behavior. The Haines Indices range from 2 to 6 for indicating potential for large fire growth.

SPECIFIC:

Fuel Model	O1a Short or Matted Grass 95% cured	O1b Tall Standing Grass % cured	C4 Immature Jack Pine 97% Fmc 10' tblc	C6 Pine Plantation 94% Fmc 30' tblc	M1 Boreal Mix, no leaf 30% conifer	S1 Jack Pine Slash
Flame length at head (ft)	11 - 13		8 - 9	4 - 5	6 - 8	21 - 23
Flame length on flank (ft)	5 - 6		5 - 6	2 - 3	4 - 5	13 - 14
Head fire ROS (ch/hr)	80 - 85		33 - 37	11 - 13	13 - 15	33 - 38
Critical ROS (ch/hr)	-		14	108	-	-
Probability of ignition (%)	94 %		63%	100%	43 %	93 %
Spread rate (acres)						
15 Minutes	13		5	<1	1	5
60 Minutes	203		75	8	13	82

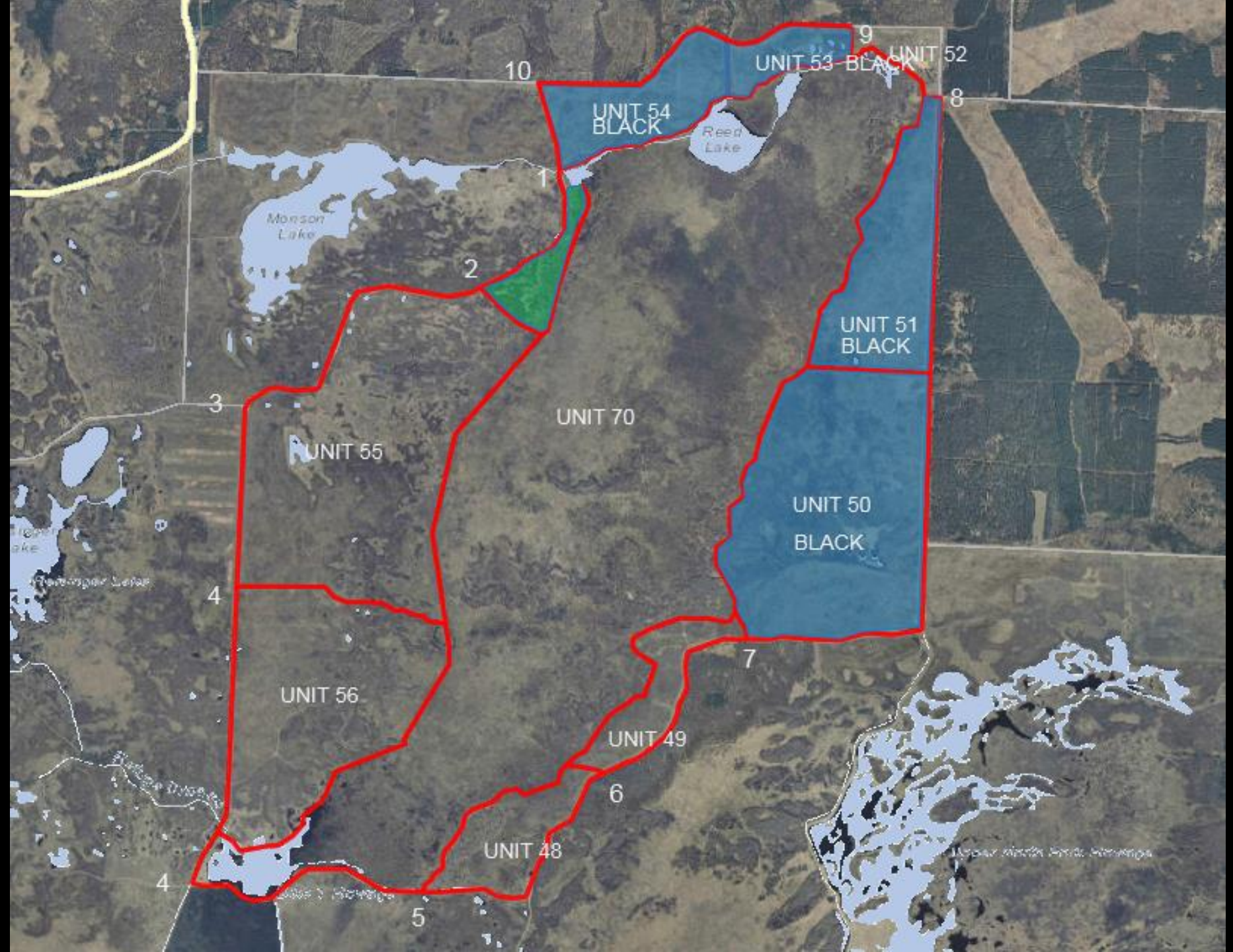
Today's Predicted Canadian Indices:

Station	FFMC	DMC	DC	ISI	BUI	FWI
Lind	91	36	63	7	36	15
Mimong	92	30	42	10	30	17

Notes:

- O1a run at 2.4 tons per acre
- Fmc = foliar moisture content. Tblc = to base of live crown.
- C4 immature PJ = head fire is predicted to be an intermittent crown fire, all other fires are predicted to be surface fires. Fire expected to stay on surface when base to live crown is 20 feet or more.













THE CRANBERRY FIRE

OCTOBER 1, 2013



ESCAPED PRESCRIBED FIRE REVIEW

CREX MEADOWS STATE WILDLIFE AREA

FINAL REPORT













A photograph of a forest fire. Thick, dark smoke billows from the ground, filling the sky. In the foreground, several charred, skeletal trees stand against a hazy, smoke-filled background. The ground is covered in charred wood and debris, with small flames visible in some areas.

All Clear?

Bob Hanson

NW Sands Wildlife Biologist

Robert.Hanson@wisconsin.gov

<http://dnr.wi.gov/topic/wildlifehabitat/stgrousemanagement.html>