

**Conservation Estate Portfolio for the
Red-headed Woodpecker
(*Melanerpes erythrocephalus*)**

**Bird Conservation Region 23
(Prairie Hardwood Transition)**



Photo by J. A. Spendelow

<http://www.mbr-pwrc.usgs.gov/id/framlst/i4060id.html>

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Preface

Mapped patterns in the distribution and abundance of rare or focal species can be useful in identifying priority areas for conservation. We have modeled and mapped rare bird abundance in the upper midwestern United States for more than a dozen species of conservation concern. Our work has focused on the Prairie Hardwood Transition (Bird Conservation Region 23). This portfolio describes the conservation context of one species in the Prairie Hardwood Transition. We outlined areas of peak predicted abundance relative to federal, tribal, and state managed lands. This juxtaposition of predicted relative abundance and land management authorities is the conservation estate for this focal species. Identifying these land management authorities relative to areas in which the species is most abundant may help to focus conservation resources in those areas in which they may do the most good.

Data References

Major Cities depicted using data acquired from the National Atlas of the United States web site (<http://nationalatlas.gov/mld/citiesx.html>). Major cities were determined to be those that had a population in 2000 of greater than 5,000 persons.

Major Roads depicted using data acquired from the National Atlas of the United States web site (<http://nationalatlas.gov/mld/roadtrl.html>). Roads were determined to be Major if they were classified as *Principal Highway* or *Limited Access Highway* according to the data field “Feature”.

States data were created by Geographic Data Technology, Inc. This data was published by Environmental Systems Research Institute (ESRI) and made available for distribution.

Counties data were acquired from the National Atlas of the United States web site (<http://www.nationalatlas.gov/mld/countyp.html>).

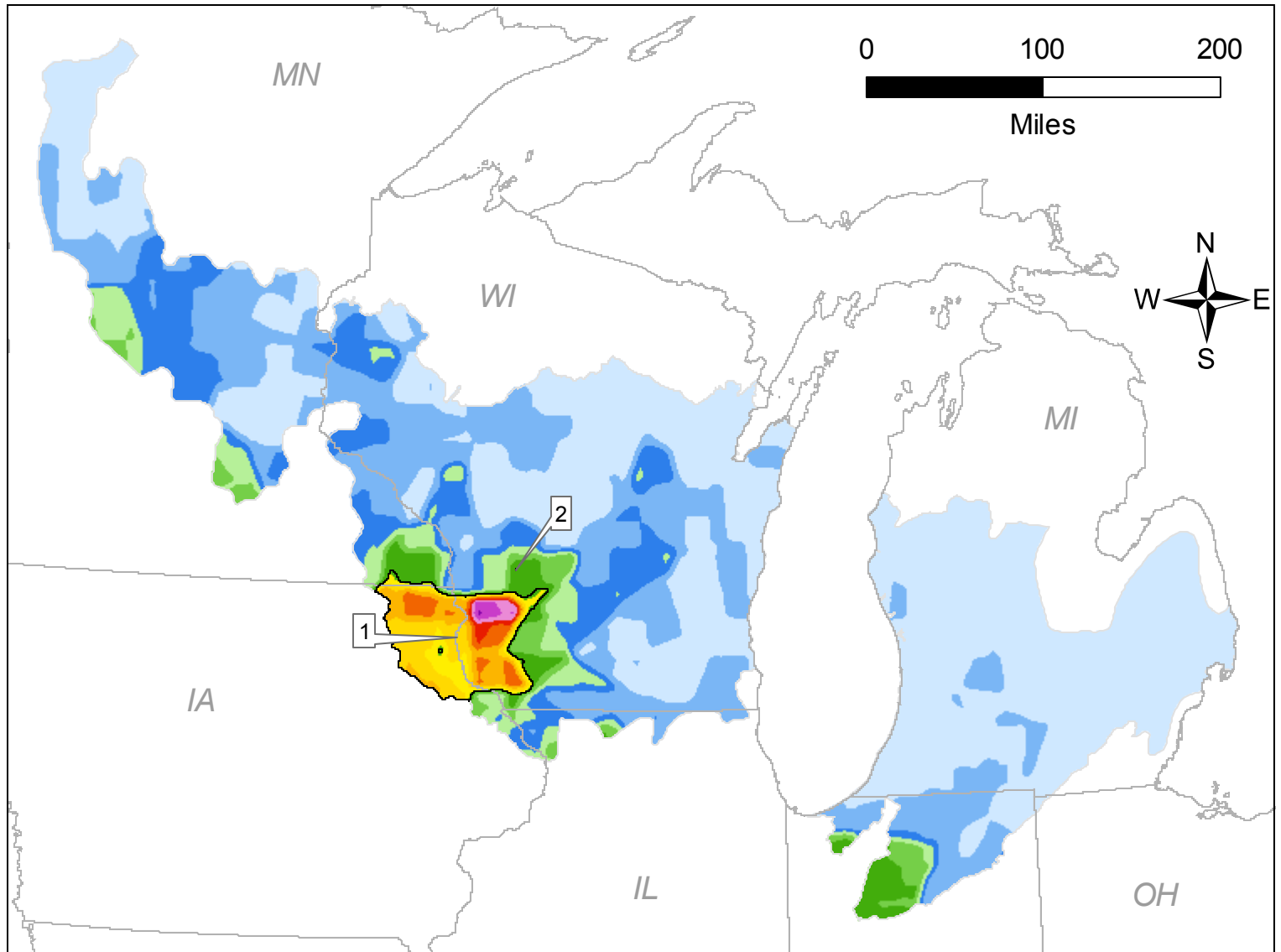
Federal and State lands depicted using Protected Areas Database, version 4: (<http://www.consbio.org/cbi/projects/PAD/index.htm>). Federal and State lands were identified based upon the data field “Owner”.




Tribal lands depicted using data acquired from the National Atlas of the United States web site (<http://www.nationalatlas.gov/mld/indlanp.html>).

Methodology

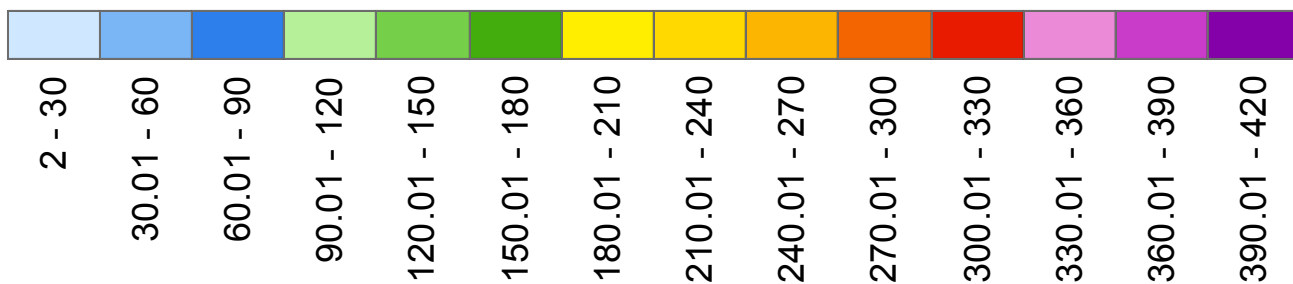
For detailed methodology on avian abundance modeling, see: http://www.umesc.er.usgs.gov/terrestrial/migratory_birds/bird_conservation_methods.html

Predicted Relative Abundance and 10-Highest Peaks of Predicted Relative Abundance for the Red-Headed Woodpecker



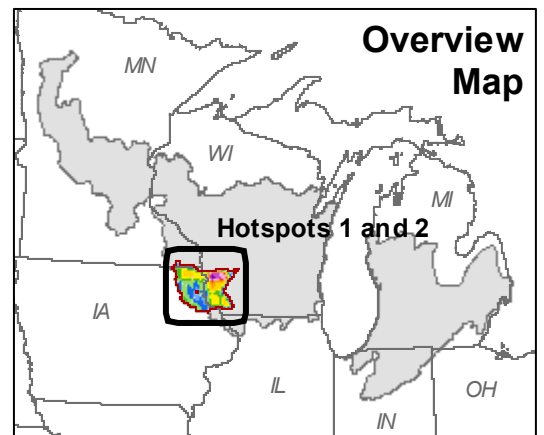
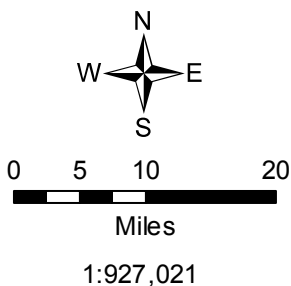
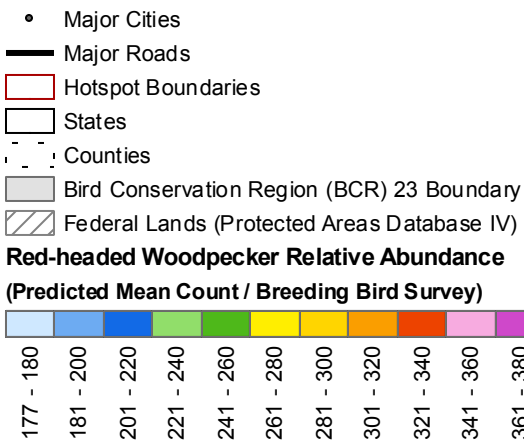
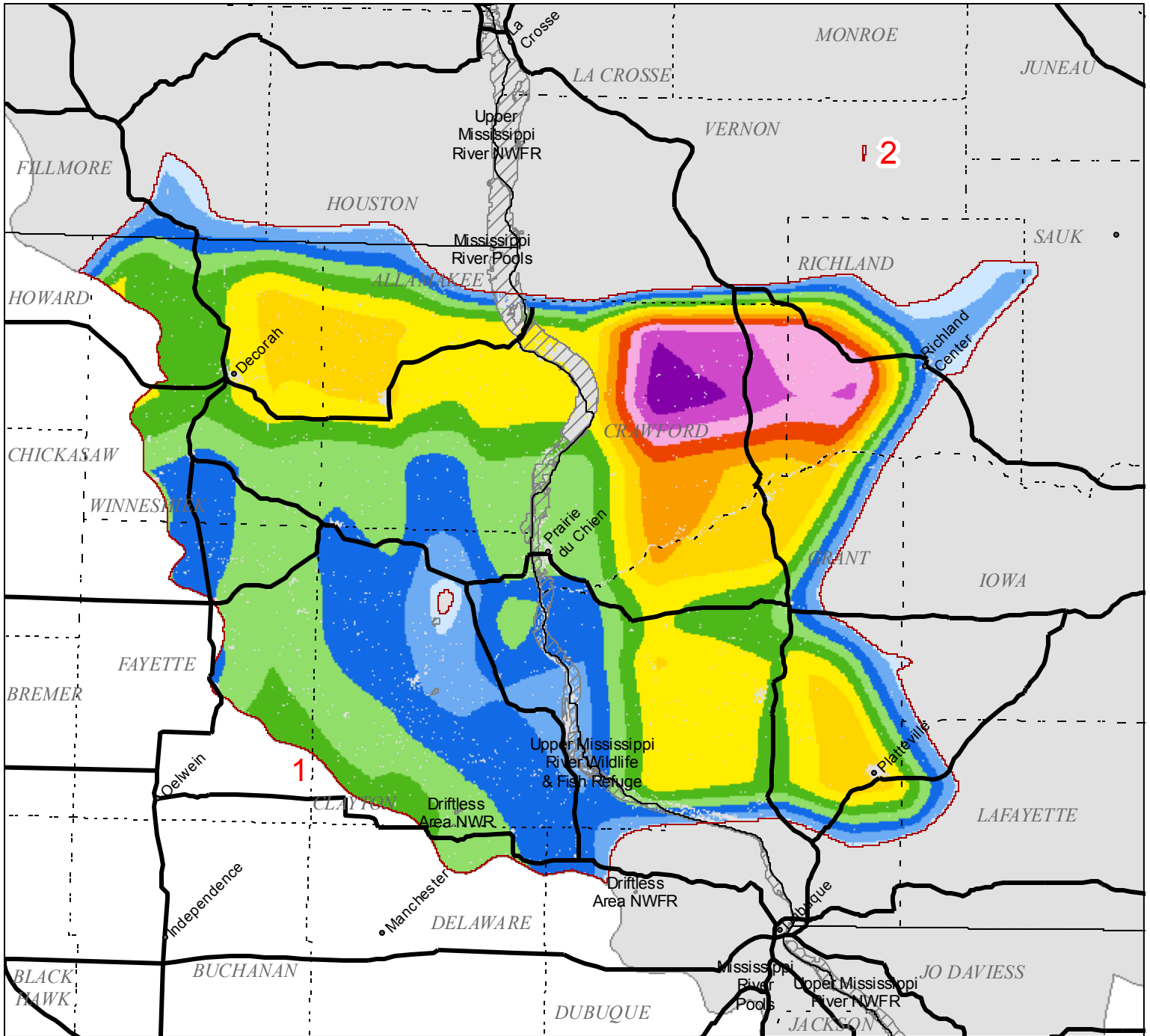
-  Top 2 hotspots
-  States
-  Bird Conservation Region (BCR) 23 Boundary

Red-headed Woodpecker Relative Abundance
(Predicted Mean Count / Breeding Bird Survey)



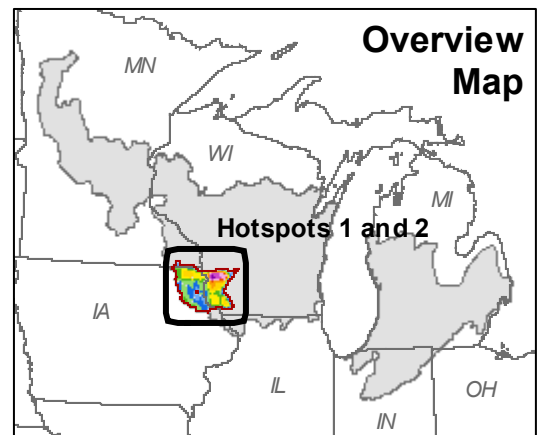
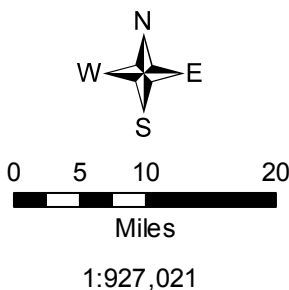
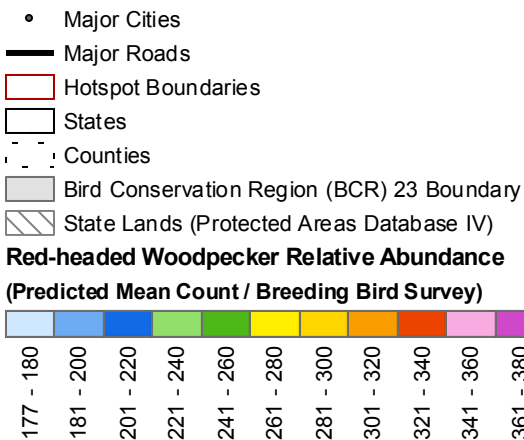
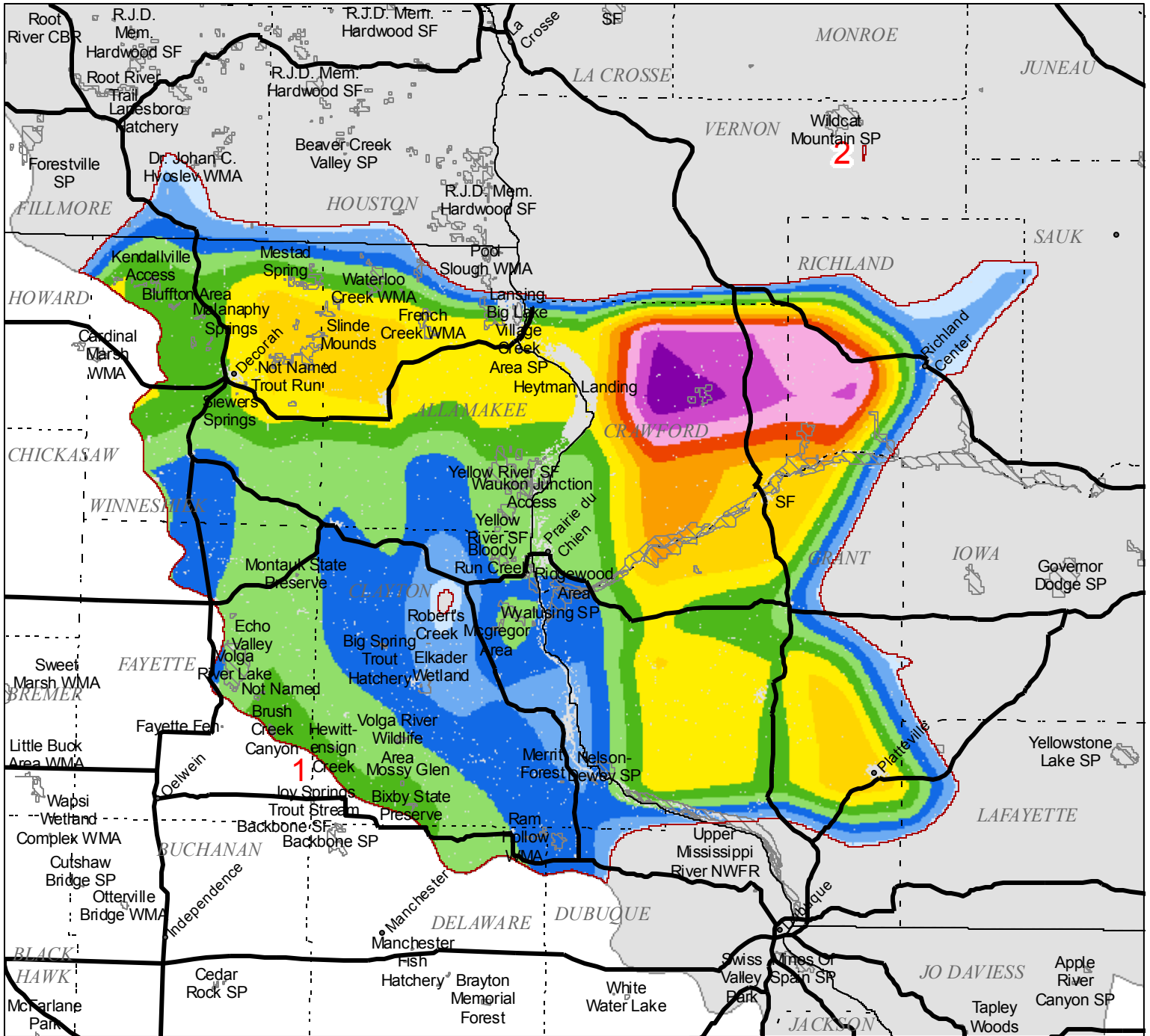
Red-Headed Woodpecker (RHWO) Predicted Relative Abundance Overlayed with Federal Lands

Hotspots 1 and 2



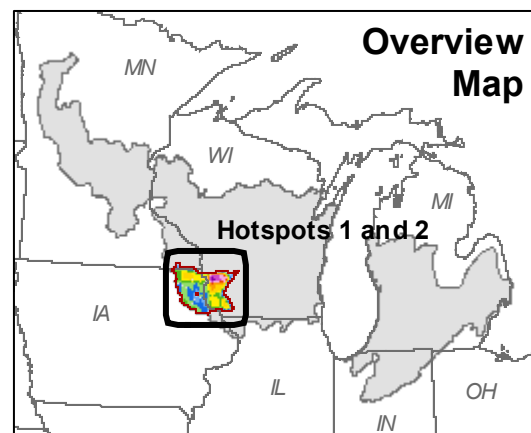
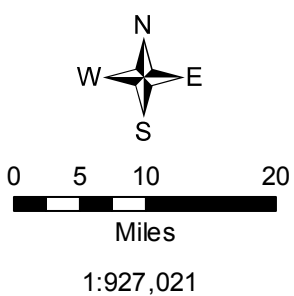
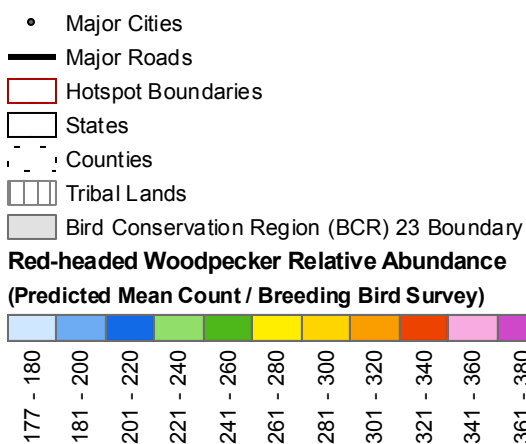
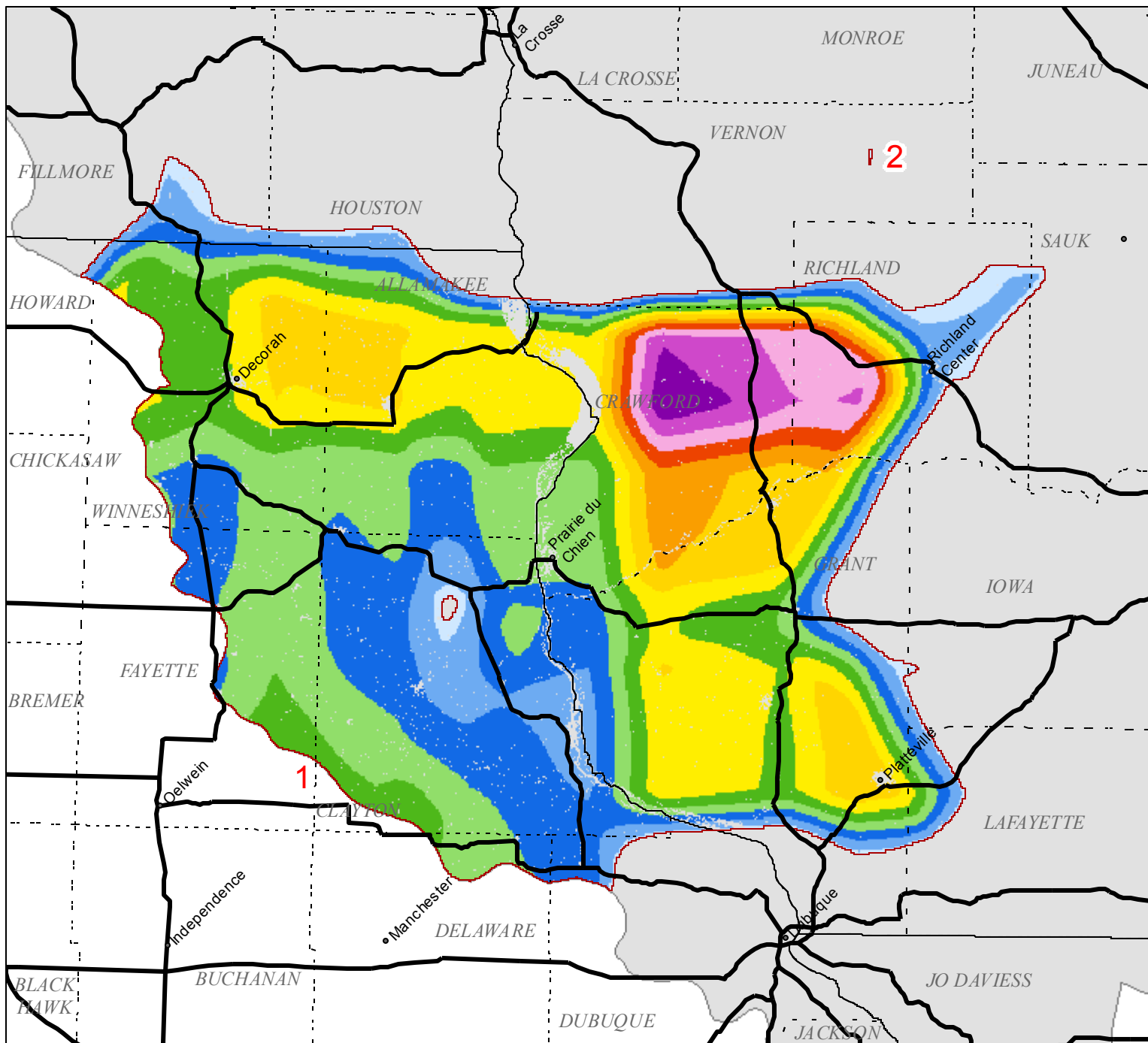
Red-Headed Woodpecker (RHWO) Predicted Relative Abundance Overlayed with State Lands

Hotspots 1 and 2



Red-Headed Woodpecker (RHWO) Predicted Relative Abundance Overlaid with Tribal Lands

Hotspots 1 and 2



**Red-headed Woodpecker Predicted Relative Abundance Summary by Hotspot
Federal Managed Lands Versus Lands Not Under Federal Management**

Description	Area (sq km)	Mean Predicted Count / Breeding Bird Survey				SD	Sum*	Percent Area Managed/ Unmanaged	Percent Sum* Managed/ Unmanaged
		Min	Mean	Max	Range				
Hotspot 1 - Unmanaged by Federal	10,826.20	0.00	243.35	395.00	395.00	56.22	2,927,259,904	97.85	98.99
Hotspot 1 - Managed by Federal	237.53	0.00	113.30	288.00	288.00	114.15	29,902,400	2.15	1.01
Hotspot 2 - Unmanaged by Federal	1.17	0.00	176.86	177.00	177.00	4.91	229,923	100.00	100.00
Hotspot 2 - Managed by Federal	0.00								

SUMMARY

Total Area Unmanaged (sq km)	10,827.37	Sum* Total Unmanaged	2,927,489,827
Total Area Managed (sq km)	237.53	Sum* Total Managed	29,902,400
Total Area (sq km)	11,064.90	Total Sum*	2,957,392,227

Total Area Unmanaged %	97.85	Sum* Total Unmanaged %	98.99
Total Area Managed %	2.15	Sum* Total Managed %	1.01

* Sum refers to the cumulative predicted relative abundance values for each cell (900 sq meters) in each managed category.

A note on interpretation: If the "Total Area Unmanaged" and "Sum* Total Unmanaged" exceeds that of their respective Managed cells, this indicates a majority of the area and population is outside of direct governmental jurisdiction. If the "Sum* Total Managed %" is less than the "Total Area Managed %", this indicates that the conservation estate does a poorer job than a random placement of managed lands. Conversely, if the "Sum* Total Managed %" exceeds that of the "Total Area Managed %", then the conservation estate does a better job than a random placement of the conservation estate.

Red-headed Woodpecker Predicted Relative Abundance Summary by Hotspot State Managed Lands Versus Lands Not Under State Management

Description	Area (sq km)	Mean Predicted Count / Breeding Bird Survey				SD	Sum*	Percent Area Managed/ Unmanaged	Percent Sum* Managed/ Unmanaged
		Min	Mean	Max	Range				
Hotspot 1 - Unmanaged by State	10,773.20	0.00	240.52	395.00	395.00	60.79	2,879,109,888	97.37	97.36
Hotspot 1 - Managed by State	290.55	0.00	241.78	389.00	389.00	70.07	78,055,000	2.63	2.64
Hotspot 2 - Unmanaged by State	1.17	0.00	176.86	177.00	177.00	4.91	229,923	100.00	100.00
Hotspot 2 - Managed by State	0.00								

SUMMARY

Total Area Unmanaged (sq km)	10,774.37	Sum* Total Unmanaged	2,879,339,811
Total Area Managed (sq km)	290.55	Sum* Total Managed	78,055,000
Total Area (sq km)	11,064.92	Total Sum*	2,957,394,811

Total Area Unmanaged %	97.37	Sum* Total Unmanaged %	97.36
Total Area Managed %	2.63	Sum* Total Managed %	2.64

* Sum refers to the cumulative predicted relative abundance values for each cell (900 sq meters) in each managed category.

A note on interpretation: If the "Total Area Unmanaged" and "Sum* Total Unmanaged" exceeds that of their respective Managed cells, this indicates a majority of the area and population is outside of direct governmental jurisdiction. If the "Sum* Total Managed %" is less than the "Total Area Managed %", this indicates that the conservation estate does a poorer job than a random placement of managed lands. Conversely, if the "Sum* Total Managed %" exceeds that of the "Total Area Managed %", then the conservation estate does a better job than a random placement of the conservation estate.

**Red-headed Woodpecker Predicted Relative Abundance Summary by Hotspot
Tribal Lands Versus Lands Not Under Tribal Management**

Description	Area (sq km)	Mean Predicted Count / Breeding Bird Survey				SD	Sum*	Percent Area Managed/ Unmanaged	Percent Sum* Managed/ Unmanaged
		Min	Mean	Max	Range				
Hotspot 1 - Unmanaged by Tribal	11,063.70	0.00	240.56	395.00	395.00	61.05	2,957,169,920	100.00	100.00
Hotspot 1 - Managed by Tribal	0.00								
Hotspot 2 - Unmanaged by Tribal	1.17	0.00	176.86	177.00	177.00	4.91	229,923	100.00	100.00
Hotspot 2 - Managed by Tribal	0.00								

SUMMARY

Total Area Unmanaged (sq km)	11,064.87	Sum* Total Unmanaged	2,957,399,843
Total Area Managed (sq km)	0.00	Sum* Total Managed	0
Total Area (sq km)	11,064.87	Total Sum*	2,957,399,843

Total Area Unmanaged %	100.00	Sum* Total Unmanaged %	100.00
Total Area Managed %	0.00	Sum* Total Managed %	0.00

* Sum refers to the cumulative predicted relative abundance values for each cell (900 sq meters) in each managed category.

A note on interpretation: If the "Total Area Unmanaged" and "Sum* Total Unmanaged" exceeds that of their respective Managed cells, this indicates a majority of the area and population is outside of direct governmental jurisdiction. If the "Sum* Total Managed %" is less than the "Total Area Managed %", this indicates that the conservation estate does a poorer job than a random placement of managed lands. Conversely, if the "Sum* Total Managed %" exceeds that of the "Total Area Managed %", then the conservation estate does a better job than a random placement of the conservation estate.

**Red-headed Woodpecker Predicted Relative Abundance Summary by State
Federal Managed Lands Versus Lands Not Under Federal Management**

Description	Area (sq km)	Mean Predicted Count / Breeding Bird Survey				SD	Sum*	Percent Area Managed/ Unmanaged	Percent Sum* Managed/ Unmanaged
		Min	Mean	Max	Range				
IA - Unmanaged by Federal	6,982.18	0.00	204.88	287.00	287.00	62.64	1,589,479,936	96.80	98.85
IA - Managed by Federal	230.67	0.00	72.08	270.00	270.00	91.03	18,475,100	3.20	1.15
IL - Unmanaged by Federal	3,208.05	0.00	73.50	156.00	156.00	32.85	262,000,000	96.68	97.96
IL - Managed by Federal	110.30	0.00	44.52	125.00	125.00	44.09	5,456,800	3.32	2.04
IN - Unmanaged by Federal	13,070.80	0.00	69.81	176.00	176.00	53.27	1,013,859,968	99.68	99.87
IN - Managed by Federal	41.35	0.00	29.37	36.00	36.00	10.80	1,349,410	0.32	0.13
MI - Unmanaged by Federal	57,537.80	0.00	13.03	58.00	58.00	9.37	833,262,976	98.06	97.34
MI - Managed by Federal	1,139.19	0.00	17.97	35.00	35.00	6.22	22,746,900	1.94	2.66
MN - Unmanaged by Federal	49,220.50	0.00	50.62	222.00	222.00	38.34	2,768,189,952	98.73	99.23
MN - Managed by Federal	635.37	0.00	30.52	126.00	126.00	25.30	21,549,600	1.27	0.77
OH - Unmanaged by Federal	110.41	0.00	20.60	23.00	23.00	2.87	2,526,680	100.00	100.00
OH - Managed by Federal	0.00								
WI - Unmanaged by Federal	96,519.50	0.00	54.29	395.00	395.00	60.89	5,821,879,808	99.00	99.34
WI - Managed by Federal	976.24	0.00	35.79	288.00	288.00	57.66	38,825,200	1.00	0.66

SUMMARY

Total Area Unmanaged (sq km)	226,649.24	Sum* Total Unmanaged	12,291,199,320
Total Area Managed (sq km)	3,133.12	Sum* Total Managed	108,403,010
Total Area (sq km)	229,782.36	Total Sum*	12,399,602,330

Total Area Unmanaged %	98.64	Sum* Total Unmanaged %	99.13
Total Area Managed %	1.36	Sum* Total Managed %	0.87

* Sum refers to the cumulative predicted relative abundance values for each cell (900 sq meters) in each managed category.

A note on interpretation: If the "Total Area Unmanaged" and "Sum* Total Unmanaged" exceeds that of their respective Managed cells, this indicates a majority of the area and population is outside of direct governmental jurisdiction. If the "Sum* Total Managed %" is less than the "Total Area Managed %", this indicates that the conservation estate does a poorer job than a random placement of managed lands. Conversely, if the "Sum* Total Managed %" exceeds that of the "Total Area Managed %", then the conservation estate does a better job than a random placement of the conservation estate.

**Red-headed Woodpecker Predicted Relative Abundance Summary by State
State Managed Lands Versus Lands Not Under State Management**

Description	Area (sq km)	Mean Predicted Count / Breeding Bird Survey				SD	Sum*	Percent Area Managed/ Unmanaged	Percent Sum* Managed/ Unmanaged
		Min	Mean	Max	Range				
IA - Unmanaged by State	7,046.34	0.00	200.41	287.00	287.00	67.80	1,569,100,032	97.69	97.58
IA - Managed by State	166.51	0.00	210.02	287.00	287.00	70.84	38,856,000	2.31	2.42
IL - Unmanaged by State	3,278.40	0.00	72.67	156.00	156.00	33.63	264,720,992	98.80	98.98
IL - Managed by State	39.95	0.00	61.62	126.00	126.00	36.45	2,735,440	1.20	1.02
IN - Unmanaged by State	12,948.40	0.00	69.82	176.00	176.00	53.14	1,004,489,984	98.75	98.94
IN - Managed by State	163.72	0.00	58.92	174.00	174.00	59.42	10,719,100	1.25	1.06
MI - Unmanaged by State	56,466.40	0.00	13.17	58.00	58.00	9.39	826,316,032	96.23	96.53
MI - Managed by State	2,210.56	0.00	12.09	58.00	58.00	8.09	29,693,900	3.77	3.47
MN - Unmanaged by State	48,427.60	0.00	50.49	222.00	222.00	38.30	2,716,620,032	97.14	97.38
MN - Managed by State	1,428.22	0.00	46.08	188.00	188.00	36.77	73,120,200	2.86	2.62
OH - Unmanaged by State	101.07	0.00	20.79	23.00	23.00	2.58	2,334,500	91.54	92.39
OH - Managed by State	9.34	0.00	18.53	22.00	22.00	4.54	192,175	8.46	7.61
WI - Unmanaged by State	94,536.00	0.00	54.38	395.00	395.00	60.92	5,712,309,760	96.96	97.47
WI - Managed by State	2,959.68	0.00	45.13	389.00	389.00	59.10	148,396,992	3.04	2.53

SUMMARY

Total Area Unmanaged (sq km)	222,804.21	Sum* Total Unmanaged	12,095,891,332
Total Area Managed (sq km)	6,977.98	Sum* Total Managed	303,713,807
Total Area (sq km)	229,782.19	Total Sum*	12,399,605,139

Total Area Unmanaged %	96.96	Sum* Total Unmanaged %	97.55
Total Area Managed %	3.04	Sum* Total Managed %	2.45

* Sum refers to the cumulative predicted relative abundance values for each cell (900 sq meters) in each managed category.

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**Red-headed Woodpecker Predicted Relative Abundance Summary by State
Tribal Lands Versus Lands Not Under Tribal Management**

Description	Area (sq km)	Mean Predicted Count / Breeding Bird Survey				SD	Sum*	Percent Area Managed/ Unmanaged	Percent Sum* Managed/ Unmanaged
		Min	Mean	Max	Range				
IA - Unmanaged by Tribal	7,212.85	0.00	200.64	287.00	287.00	67.89	1,607,949,952	100.00	100.00
IA - Managed by Tribal	0.00								
IL - Unmanaged by Tribal	3,318.35	0.00	72.54	156.00	156.00	33.69	267,456,992	100.00	100.00
IL - Managed by Tribal	0.00								
IN - Unmanaged by Tribal	13,112.10	0.00	69.68	176.00	176.00	53.24	1,015,209,984	100.00	100.00
IN - Managed by Tribal	0.00								
MI - Unmanaged by Tribal	58,154.70	0.00	13.15	58.00	58.00	9.38	849,969,024	99.11	99.29
MI - Managed by Tribal	522.27	0.00	10.41	13.00	13.00	1.94	6,041,010	0.89	0.71
MN - Unmanaged by Tribal	47,959.20	0.00	51.50	222.00	222.00	38.55	2,744,339,968	96.20	98.37
MN - Managed by Tribal	1,896.59	0.00	21.55	68.00	68.00	7.69	45,404,100	3.80	1.63
OH - Unmanaged by Tribal	110.41	0.00	20.60	23.00	23.00	2.87	2,526,680	100.00	100.00
OH - Managed by Tribal	0.00								
WI - Unmanaged by Tribal	96,268.00	0.00	54.62	395.00	395.00	61.09	5,842,250,240	98.74	99.69
WI - Managed by Tribal	1,227.65	0.00	13.53	60.00	60.00	5.00	18,452,600	1.26	0.31

SUMMARY

Total Area Unmanaged (sq km)	226,135.61	Sum* Total Unmanaged	12,329,702,840
Total Area Managed (sq km)	3,646.51	Sum* Total Managed	69,897,710
Total Area (sq km)	229,782.12	Total Sum*	12,399,600,550

Total Area Unmanaged %	98.41	Sum* Total Unmanaged %	99.44
Total Area Managed %	1.59	Sum* Total Managed %	0.56

* Sum refers to the cumulative predicted relative abundance values for each cell (900 sq meters) in each managed category.

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