

***CERULEAN WARBLER (Setophaga cerulea)
LANDSCAPE AND HABITAT SELECTION
WITHIN THE UPPER MISSISSIPPI RIVER
NATIONAL WILDLIFE AND FISH REFUGE***

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Cerulean Warbler (*Setophaga cerulea*)

Minnesota – State Special Concern

Wisconsin – State Threatened

Federal – Species of Concern



Upper Mississippi River National Wildlife & Fish Refuge A Globally Important Bird Area



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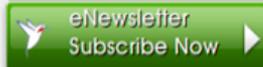


Links & Info

- [About ABC's IBA Program](#)
- [Find an IBA in Your State](#)
- [Selection Criteria](#)
- [Alphabetical List of Sites](#)

- [Privacy Policy](#)
- [Contact Us](#)

BNN: Saving the Red



Find a Globally Important Bird Area by State

The map below links by state to all 500 sites designated by American Bird Conservancy as Globally Important Bird Areas. On each state page is the list of IBAs for that state with links to the homepage of the IBA itself. American Bird Conservancy has also collaborated with [eNature.com](#) to provide a field guide to the birds found at each IBA.

Some sites cross state boundaries and are listed here under each state. Where individual IBAs are part of a larger land area, the larger area is listed in parentheses.

[Click Here](#) for a pdf checklist of sites to mark those you have visited.

[Click here](#) for a complete alphabetical list of ABC Globally Important Bird Areas.



Yellow River Forest/Effigy Mounds National Monument A Globally Important Bird Area



The screenshot shows the Audubon website's Important Bird Areas Program page. The top navigation bar includes links for 'About Audubon', 'Take Action', 'Contact Us', and 'Home', along with a search box. A secondary navigation bar lists categories: 'Birds', 'Conservation', 'Education', 'Get Outside', 'About Us', 'Support Us', and 'Take Action'. The main content area features a large image of three men at a recognition ceremony, with the text 'PROTECTING OUR GREAT NATURAL HERITAGE' on the left. Below the image is a 'Donate' button with a map of the United States. A sidebar on the left contains a list of links: 'IBA Home Page', 'What is an IBA?', 'IBA Program Status', 'IBA Criteria', 'How Will IBAs Help Birds?', 'IBA Success Stories', 'What's Next?', 'What You Can Do', 'IBA contacts', and 'Links'. The main text area is titled 'IMPORTANT BIRD AREAS PROGRAM: A Global Currency for Bird Conservation' and describes the program's goals and challenges. A social media sidebar on the right shows a tweet from @AudubonIBAs dated 15 Dec, and a Facebook link for 'U.S. Important Bird Areas'. A 'Status of Program' link is at the bottom of the sidebar.

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PROTECTING OUR GREAT NATURAL HERITAGE

Recognition Ceremony at Fort Smallwood IBA, MD. Courtesy George Jett

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IMPORTANT BIRD AREAS PROGRAM

A Global Currency for Bird Conservation

A global initiative of [BirdLife International](#), implemented by Audubon and local partners in the United States, the Important Bird Areas Program (IBA) is an effort to identify and conserve areas that are vital to birds and other biodiversity. By working with Audubon chapters, landowners, public agencies, community groups, and other non-profits, Audubon endeavors to interest and activate a broad network of supporters to ensure that all Important Bird Areas are properly managed and conserved.

Coupled with [global warming](#), habitat loss and fragmentation are the most serious threats facing populations of birds across America and around the world. By working to identify and implement conservation strategies at Important Bird Areas, we hope to minimize the effects that habitat loss and degradation have on birds and other biodiversity. If we do not take action, populations of many birds may decline to dangerously low levels.

Watch the video below and explore our site to learn more about Important Bird Areas and how you can help.

Tweets [Follow](#)

 **Important Bird Areas** 15 Dec
@AudubonIBAs
I love Dropbox because it lets me do my work easily and quickly!
[db.tt/s1XCcnM6](#)
[Show Summary](#)

Audubon 29 Oct
Tweet to @AudubonIBAs

 Find us on **Facebook**

 **U.S. Important Bird Areas**

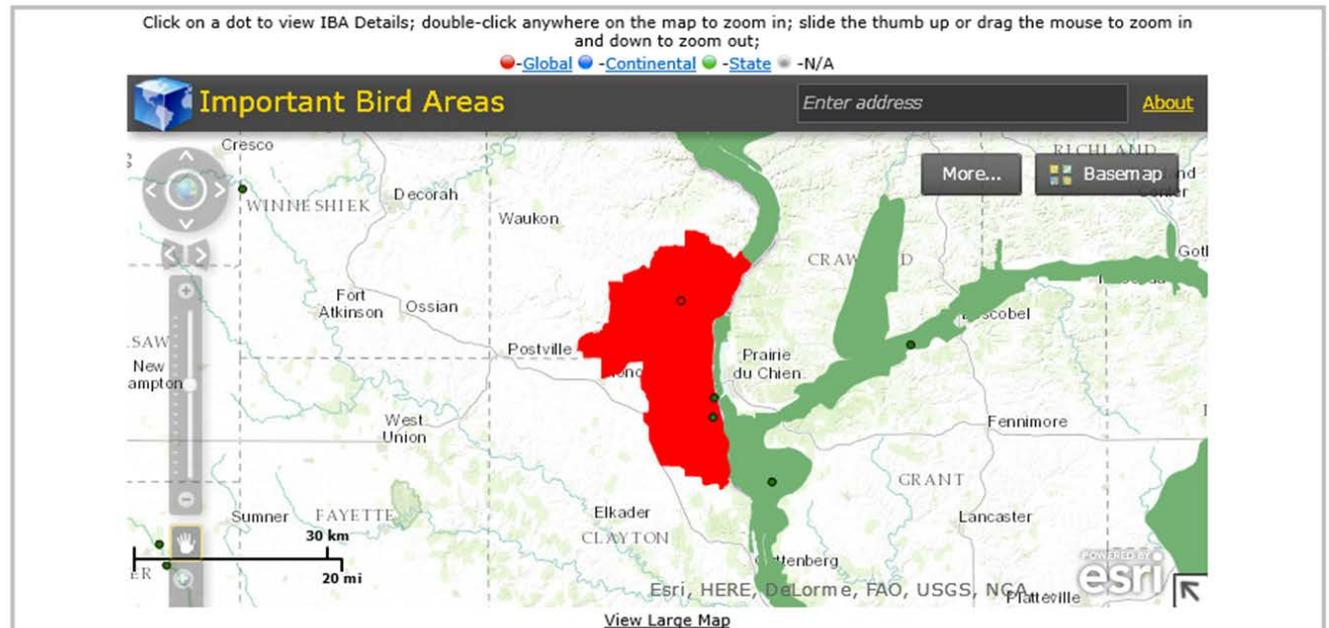
[Status of Program](#)

Our Study Area

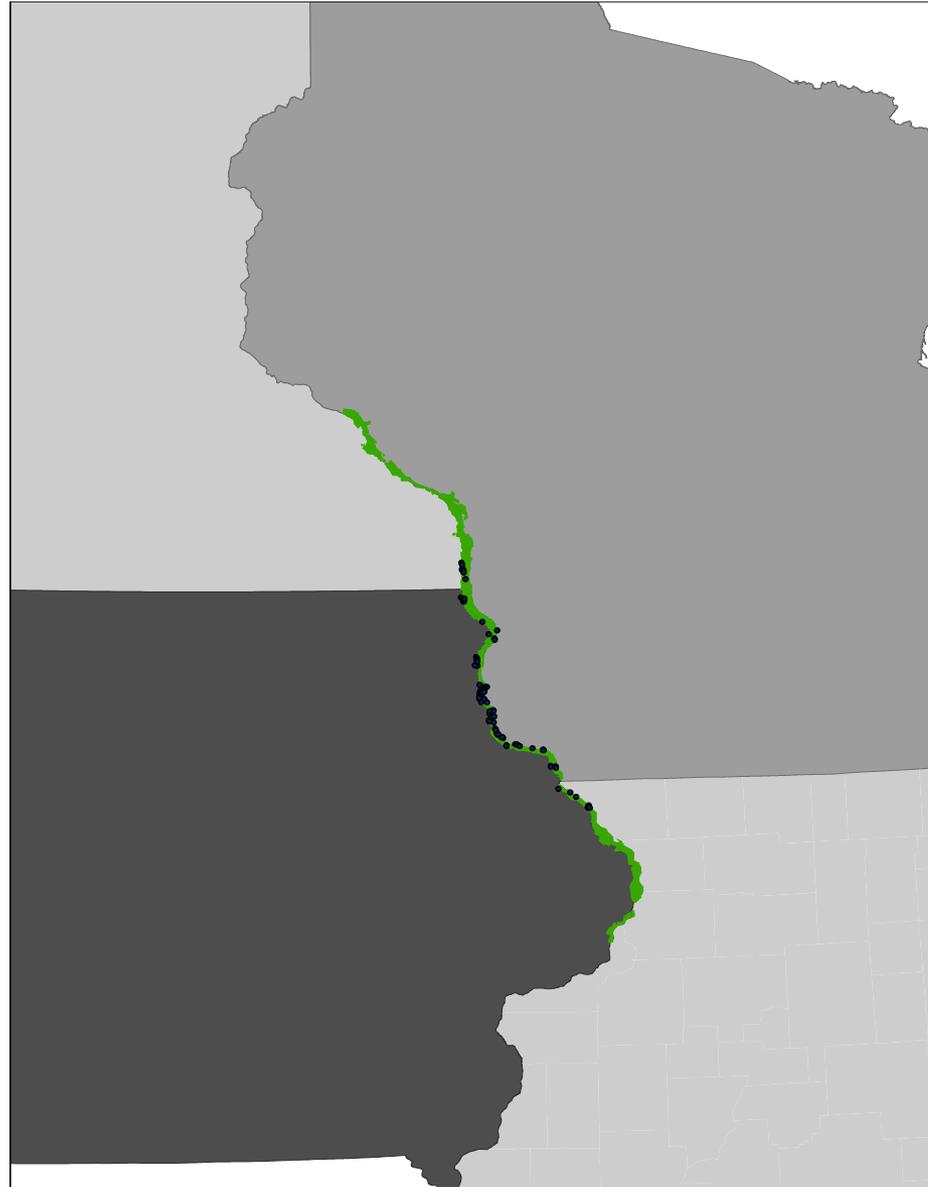


Audubon

Important Bird Areas



Our Study Area





Properties Included in Study

- Upper Mississippi River National Wildlife and Fish Refuge
- Yellow River State Forest (IA)
- Pikes Peak State Park (IA)
- Effigy Mounds National Monument (IA)
- Fish Farm Mounds Wildlife Management Area (IA)
- Lansing Wildlife Management Area (IA)
- North Cedar/Sny Magill Wildlife Management Area (IA)
- Rush Creek State Natural Area (WI)
- Wyalusing State Park (WI)
- Nelson Dewey State Park (WI)
- Fenley State Recreation Area (WI)
- Private Property



Funding Partners

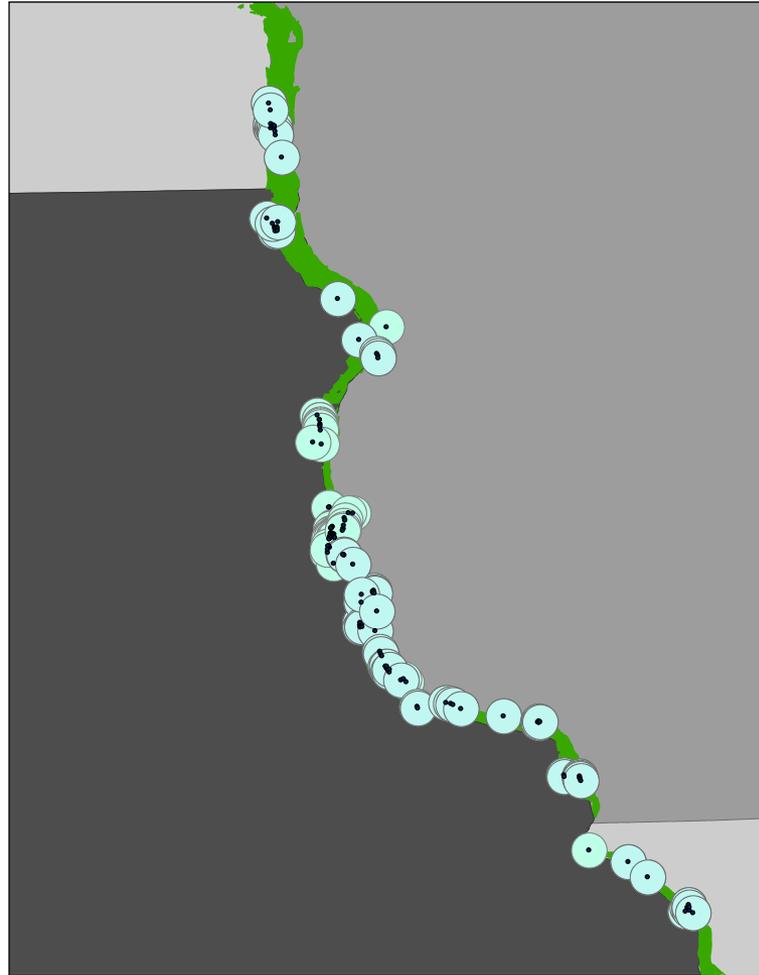
- U.S. Fish & Wildlife Service
- National Park Service
- The Audubon Society
- U.S. Army Corps of Engineers



Methods

- Conducted 10 minute point counts
- Point counts located in floodplain forest and upland forest
- Used three negative point counts to confirm absence
- Modeled presence/absence with landscape and stand data
- Buffered around point count locations at 3000m, 100m, and 50m levels

3000M Buffer Clips





Landscape Variables

- Sixteen (16) habitat classes
- 2002 land cover data used for analysis
- Developed by the Iowa Department of Natural Resources
- Fifteen (15) to thirty (30) meter pixels
- Measured distance from point to upland/floodplain forest interface

Upland/Floodplain Interface





Project Goal

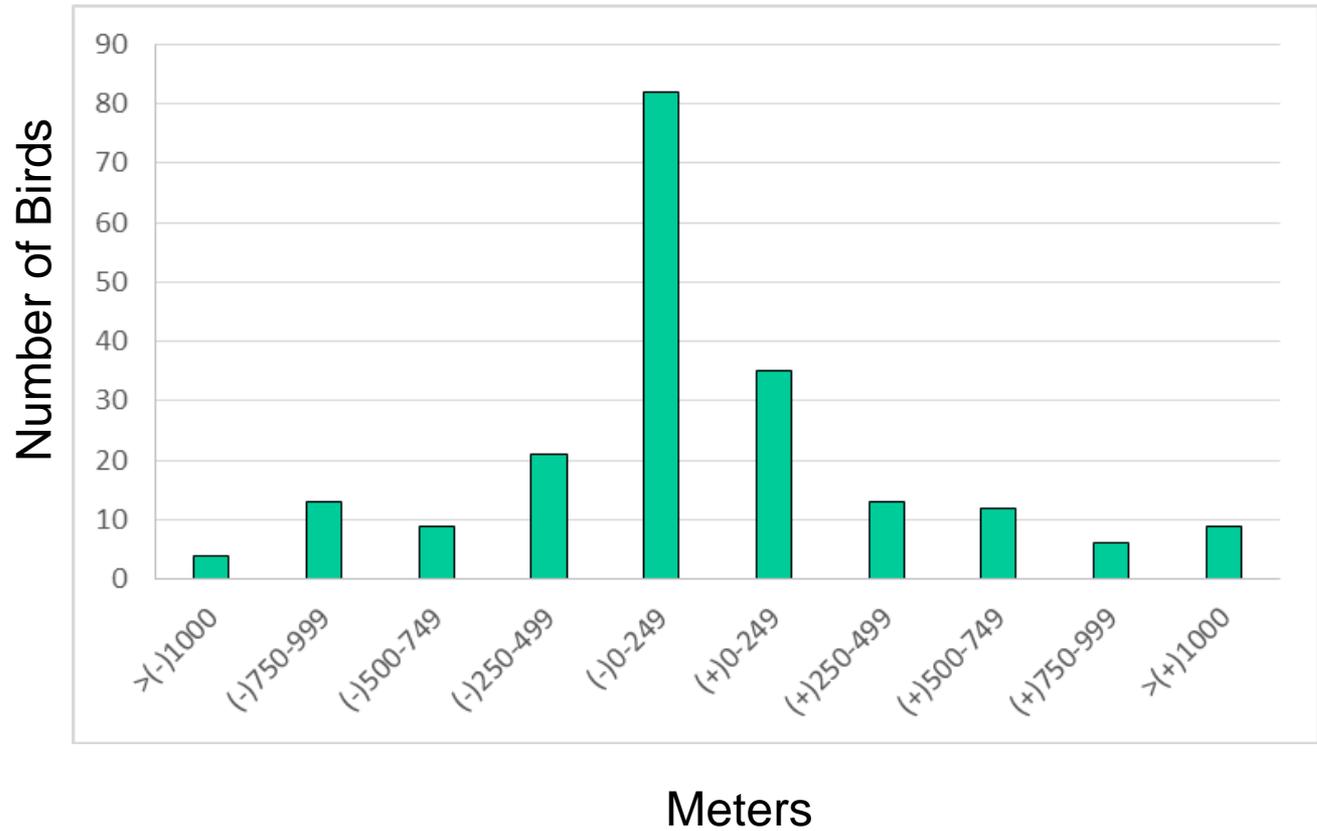
- Determine areas of Upper Mississippi River selected by cerulean warblers
- Use findings to guide restoration efforts within the Upper Mississippi River National Wildlife & Fish Refuge

Results

Analysis	Variable	Delta AIC (Intercept)	Absent (M)	Present (M)
3000M	Distance	0.0 (29.3)	-396.5 (58.6)	72.9 (37.6)
3000M	Water	8.6 (20.7)	22.6 (3.2)	8.9 (1.2)
100M	Distance	0.0 (32.0)	-396.5 (58.6)	72.9 (37.6)
50M	Distance	0.0 (32.3)	-396.5 (58.6)	72.9 (37.6)

*No other AIC values within 10.0; n=207

Results





Second Analysis

- **Data limited to locations within floodplain forest**
- Used three negative point counts to confirm absence
- Modeled presence/absence with landscape and stand data
- Buffered around point count locations at 3000m, 100m, and 50m levels



Results (Floodplain Only)

Analysis	Variable	Delta AIC (Intercept)	Absent (M)	Present (M)
3000M	Water	0.0 (33.4)	23.3 (3.3)	5.6 (1.1)
3000M	Total Forest	0.6 (32.8)	36.1 (2.6)	63.3 (2.7)

*No other AIC values within 10.0; n=130



Results (Floodplain Only)

Analysis	Variable	Delta AIC (Intercept)	Absent (M)	Present (M)
100M	Total Forest	0.0 (22.9)	93.2 (1.2)	73.5 (2.6)
50M	Total Forest	0.0 (23.1)	97.8 (1.0)	74.9 (3.0)
*No other AIC values within 10.0; n=130				



Third Analysis

- **Data limited to floodplain forest locations with stand level data**
- Modeled presence/absence with landscape and stand data
- **Stand data include: tree density, snag density, basal area, canopy density, forest vertical complexity, sapling density, etc**
- Buffered around point count locations at 3000m, 100m, and 50m levels



Results

(Floodplain With Stand Data)

Analysis	Variable	Delta AIC (Intercept)	Absent (M)	Present (M)
3000M	Total Forest	0.0 (17.6)	35.0 (3.2)	69.8 (6.0)
3000M	Deciduous Forest	4.3 (13.3)	29.1 (2.8)	57.7 (5.9)
3000M	Water	7.5 (10.1)	21.2 (4.3)	4.2 (1.6)

*No other AIC values within 10.0; n=33



Results (Floodplain Only)

Analysis	Variable	Delta AIC (Intercept)	Absent (M)	Present (M)
100M	Total Forest	0.0 (22.9)	94.3 (1.8)	73.8 (5.4)
50M	Total Forest	0.0 (23.1)	99.6 (0.3)	78.5 (5.7)

*No other AIC values within 10.0; n=33



Summary

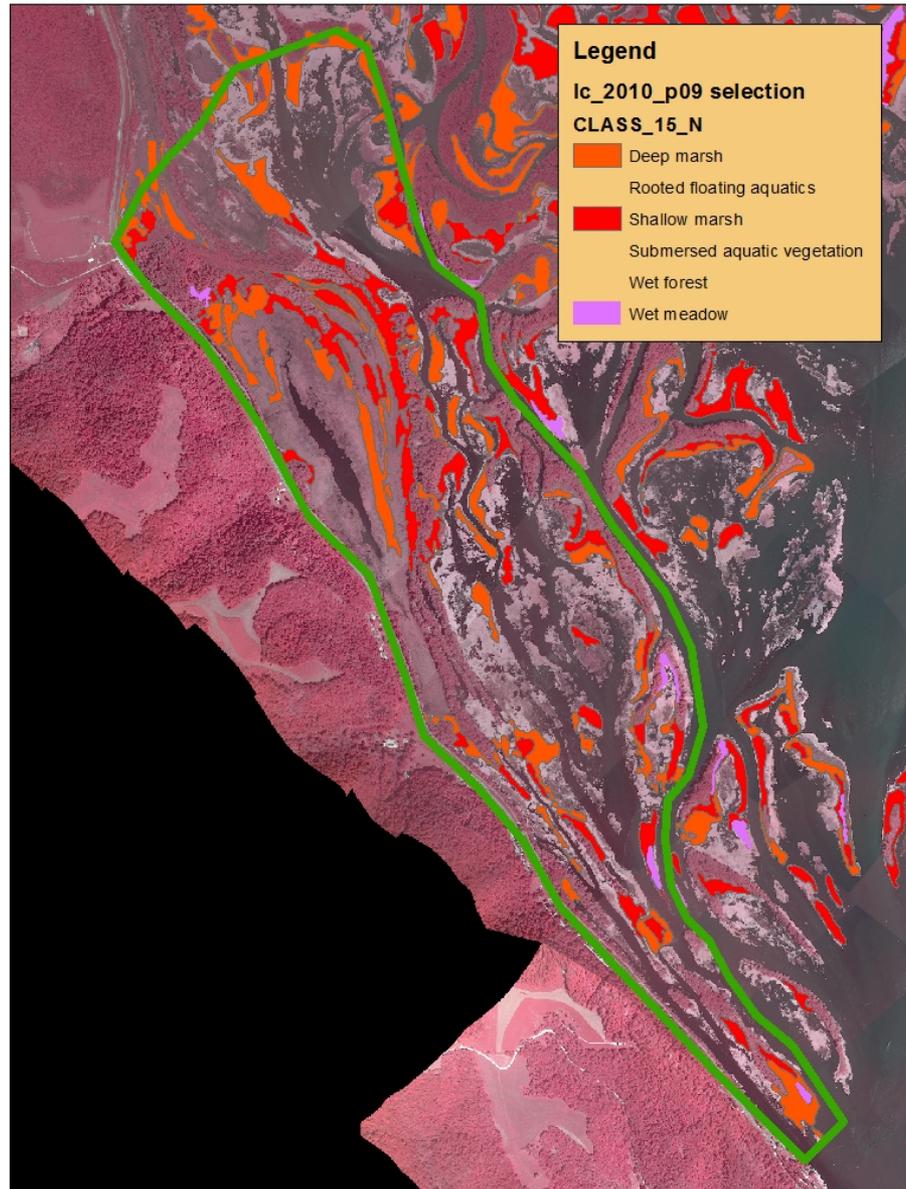
- At landscape level, the distance between floodplain and upland forest interface most valuable for predicting cerulean warbler presence
- Within the flood plain, the amount of forest within the landscape and amount of water, to a lesser extent, were useful for predicting cerulean warbler presence
- With stand-level data added, these same variables and deciduous forest cover were useful for predicting cerulean warbler presence
- The relationship between forest cover changed between the 3000M level and the 100M and 50M levels



Management Conclusions

- Restoration efforts should focus on near-shore habitat
- Within the floodplain restoration efforts should maximize forest patch size
- Forest gaps should be incorporated into restoration plans

Restoration Example



Questions?

