

Assessing the distribution and habitat of Iowa Darters (*Etheostoma exile*) in Illinois

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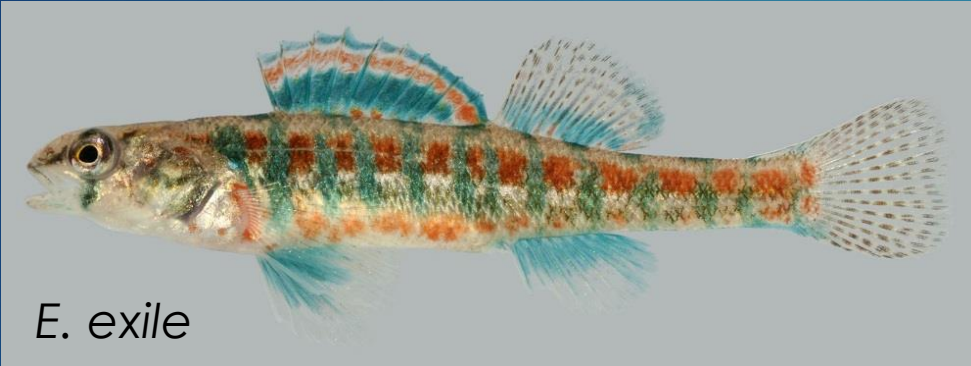
ILLINOIS NATURAL HISTORY SURVEY

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Iowa Darter (*Etheostoma exile*)



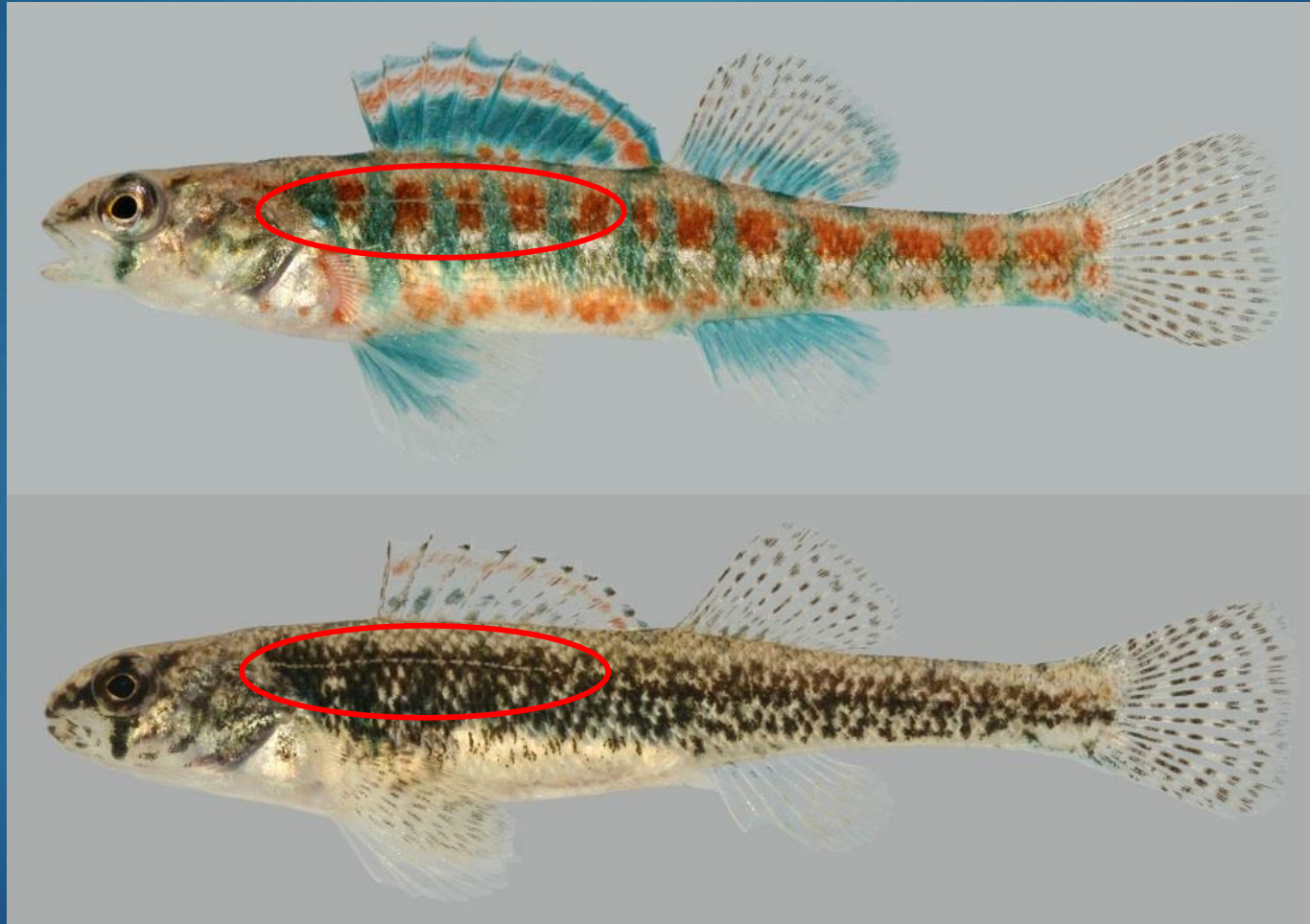
Similar species



Similar species

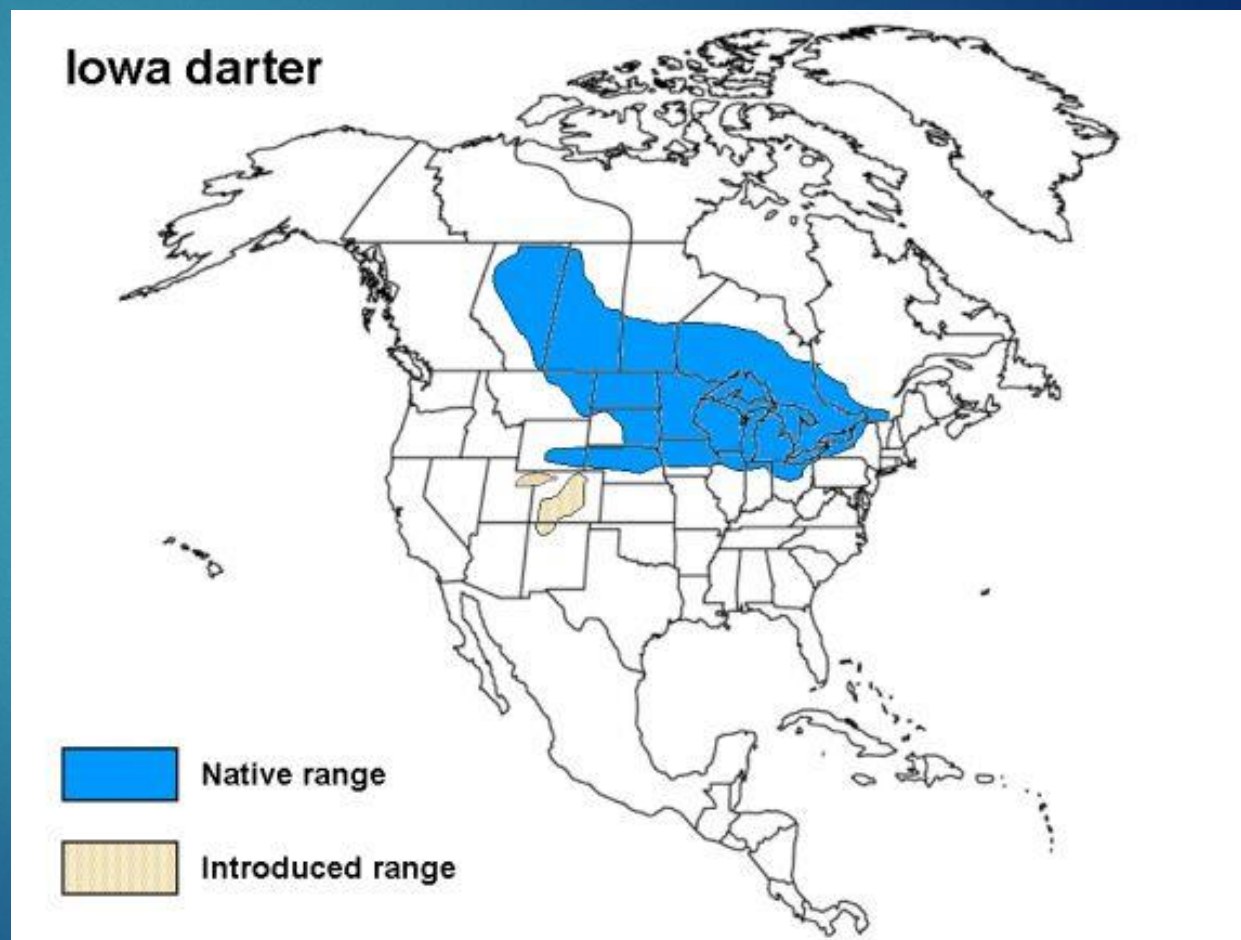


Iowa Darter (*Etheostoma exile*)

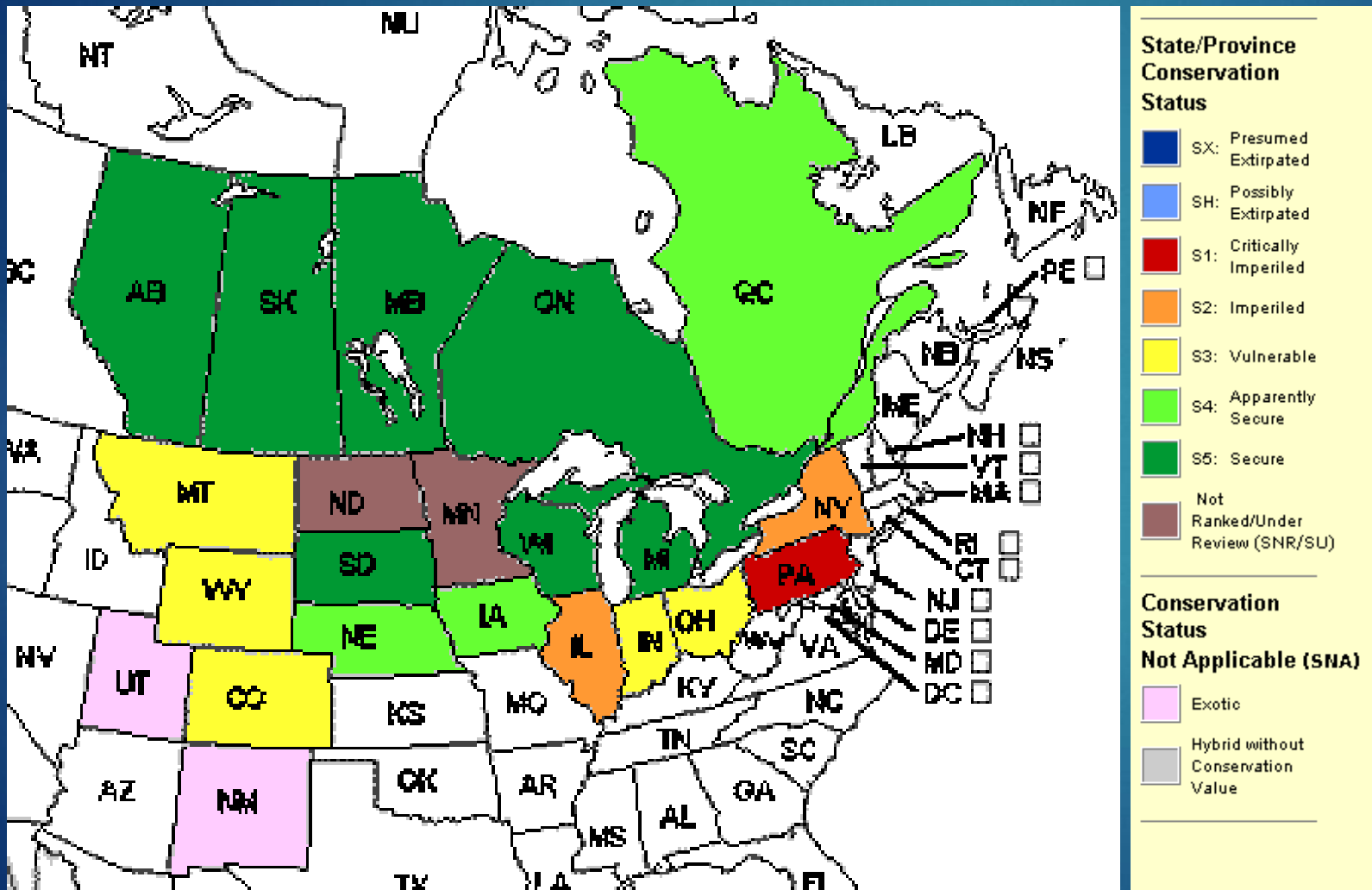


Range

- ▶ Farthest north and west range
- ▶ Lakes, ponds, slow moving streams
- ▶ Vegetation



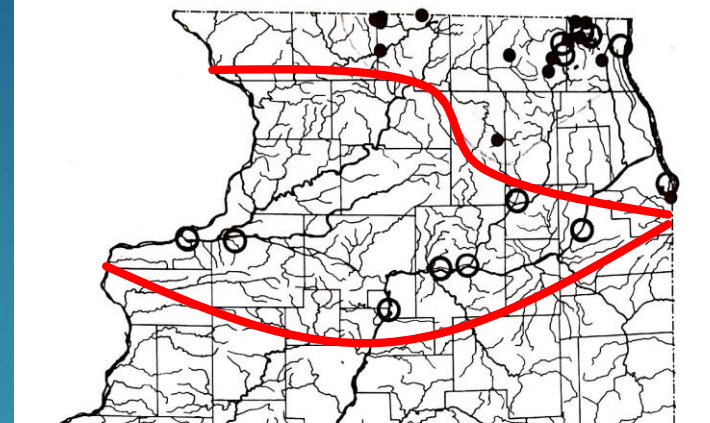
Nature Serve Data



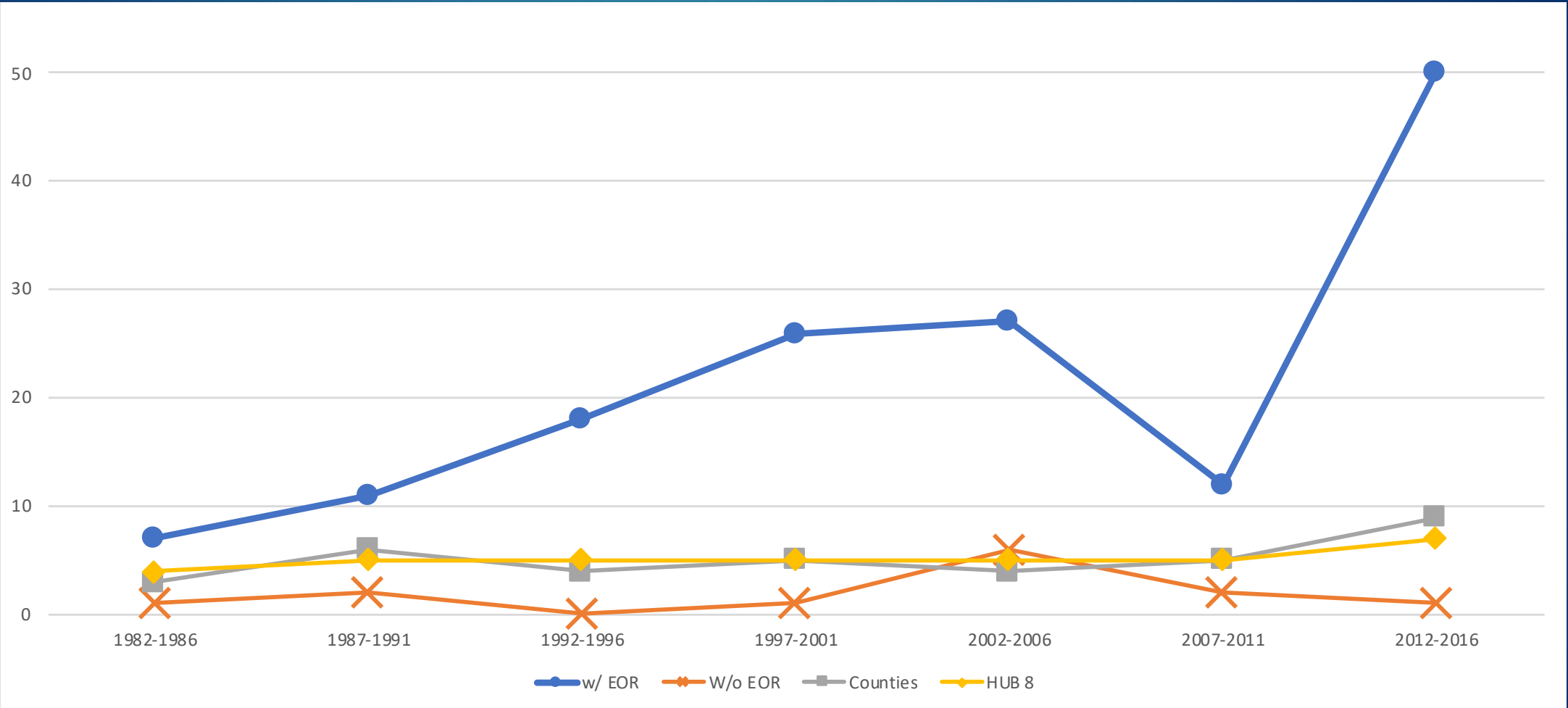
- ▶ Overall = G5
- ▶ Illinois = S2
- ▶ Indiana = S3
- ▶ Iowa = S4
- ▶ Wisconsin = S5

Range in Illinois

- ▶ Restricted to northern Illinois
 - ▶ Streams and glacial lakes
- ▶ Reduced Range
 - ▶ Habitat degradation - Drainage of sloughs, marshes, and natural lakes; removal of aquatic veg; introduced non-native species; and continued urbanization of northeastern Illinois (Smith 1979)
- ▶ State-Threatened (1989)
- ▶ Status assessment early 2000's (Burr & Stewart 2003)

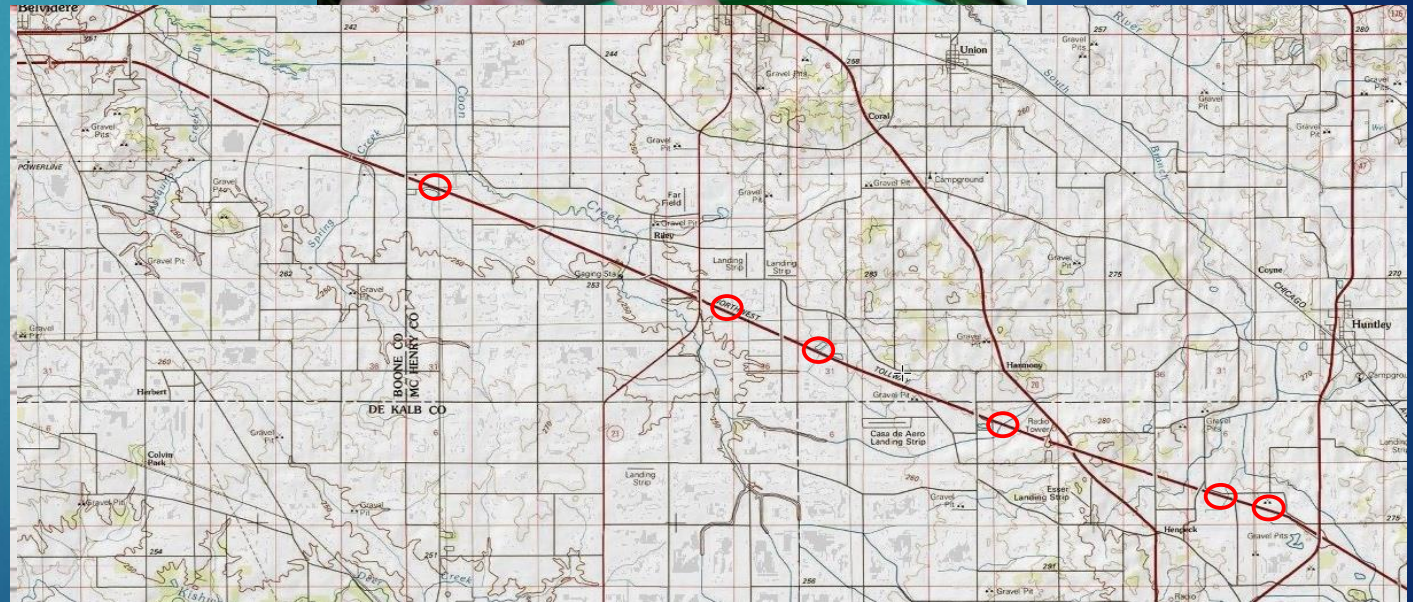


IDNR Heritage Data



Roadway Projects = New Records

- ▶ ISTHA and IDOT Surveys
- ▶ Headwater streams
- ▶ Indicated a need for assessment

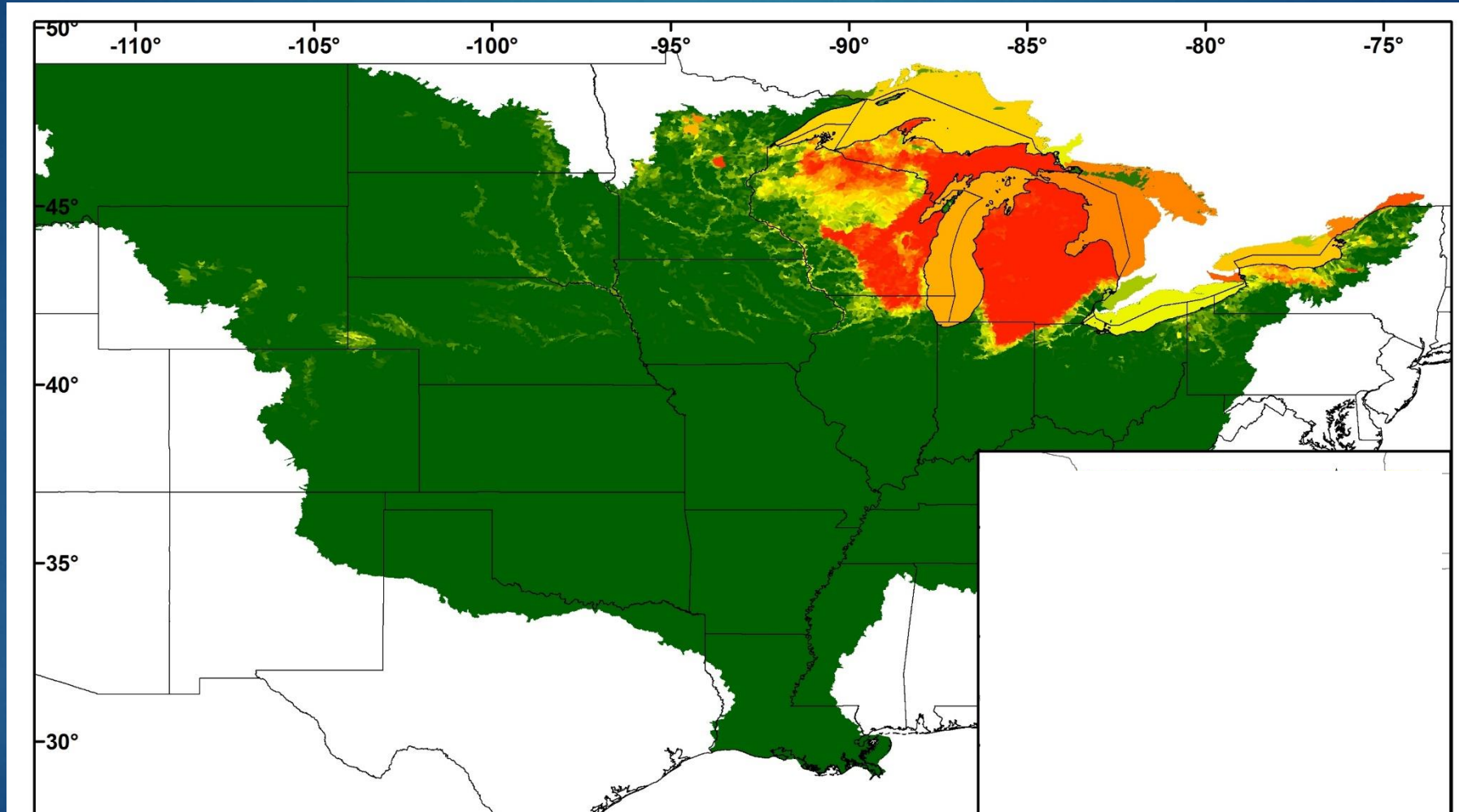


Goals

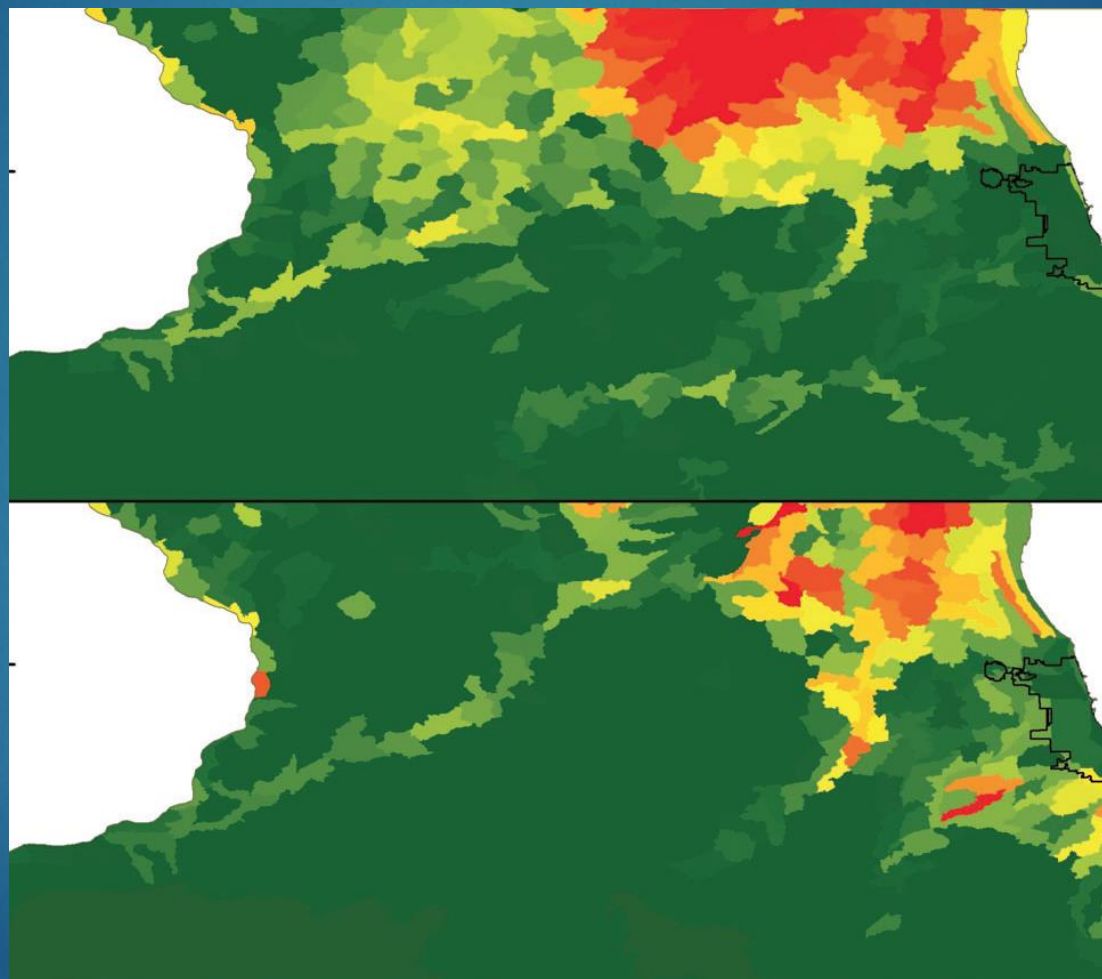
- ▶ Assess Iowa Darter distribution in Illinois streams
 - ▶ Create species distribution model
 - ▶ Field test
 - ▶ Refine
- ▶ Habitat Association



Historic Species Distribution Model

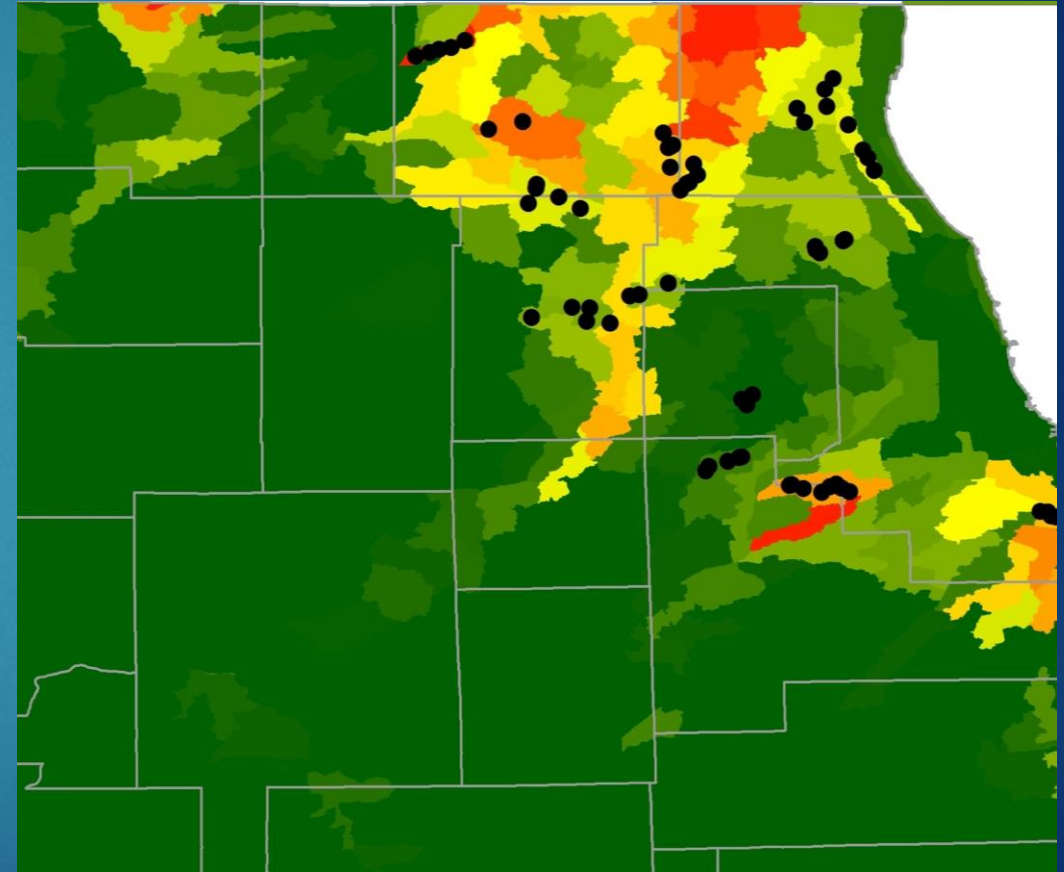


Historic vs Contemporary



Field Sampling

- ▶ Site selection (HUC12)
 - ▶ 10 low, 10 medium, and 10 high
- ▶ June – September 2016
 - ▶ < 32 kick-sets per site per visit

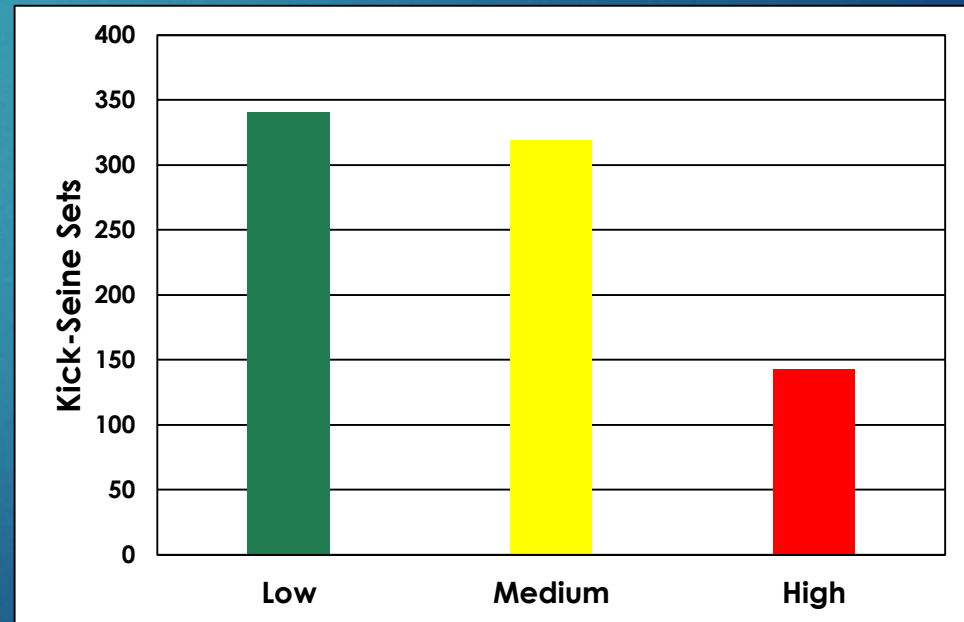


Results

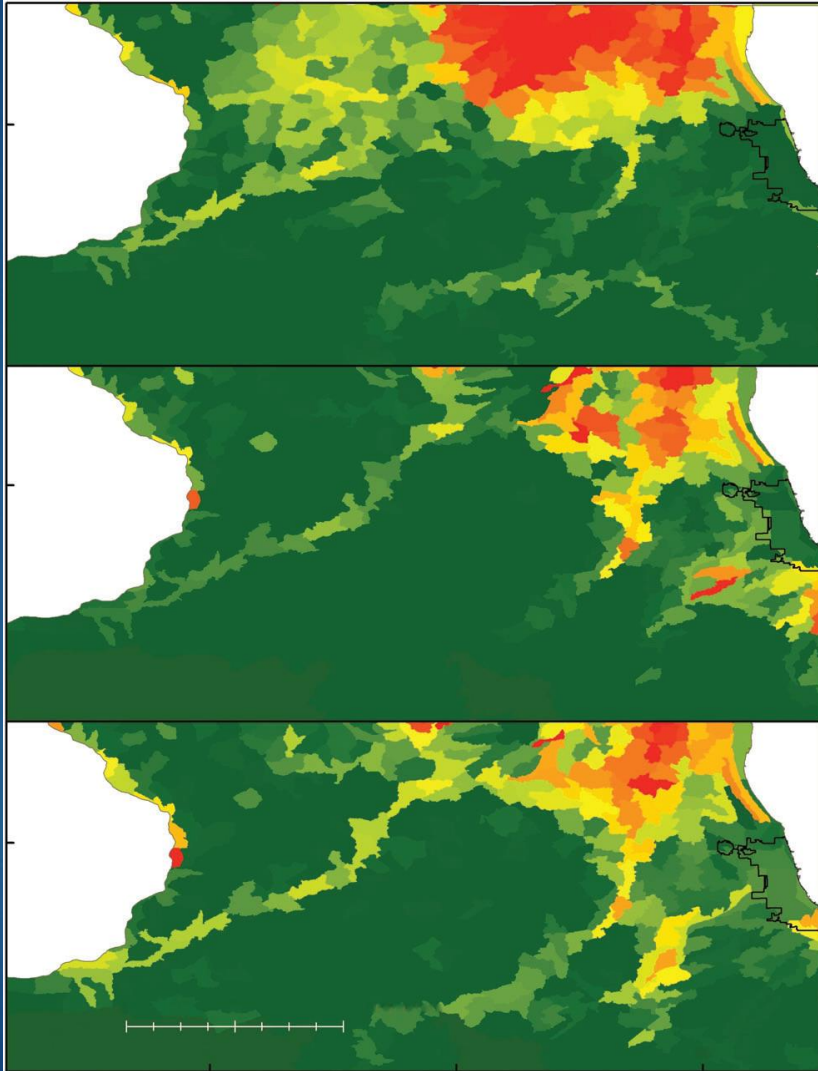
- ▶ Nine new records
- ▶ Model accuracy/effort
- ▶ Species associations



NANFA (<http://www.nanfa.org>)



Distribution Models



Historical

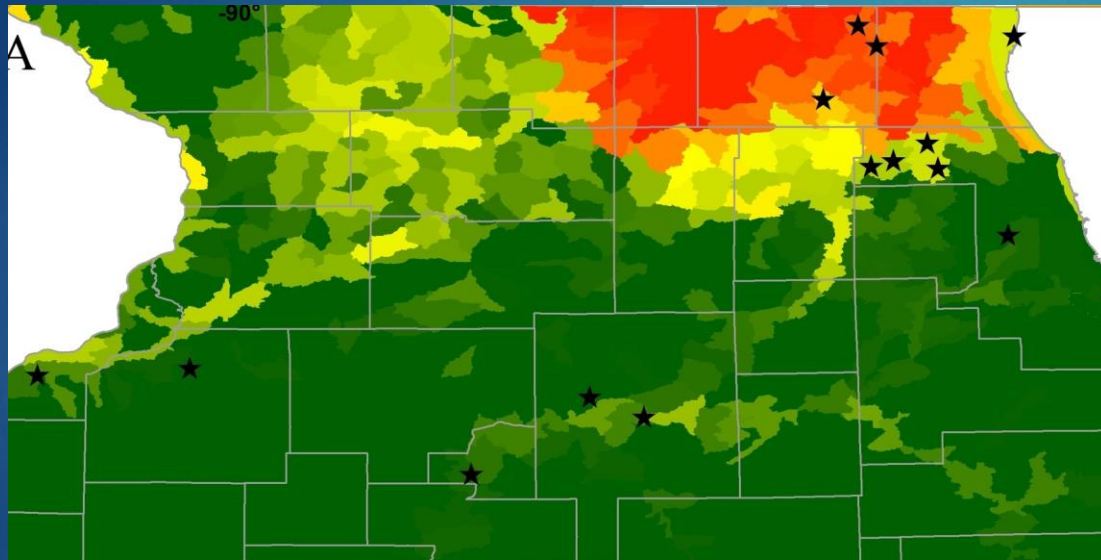
Current

Current (Refined)

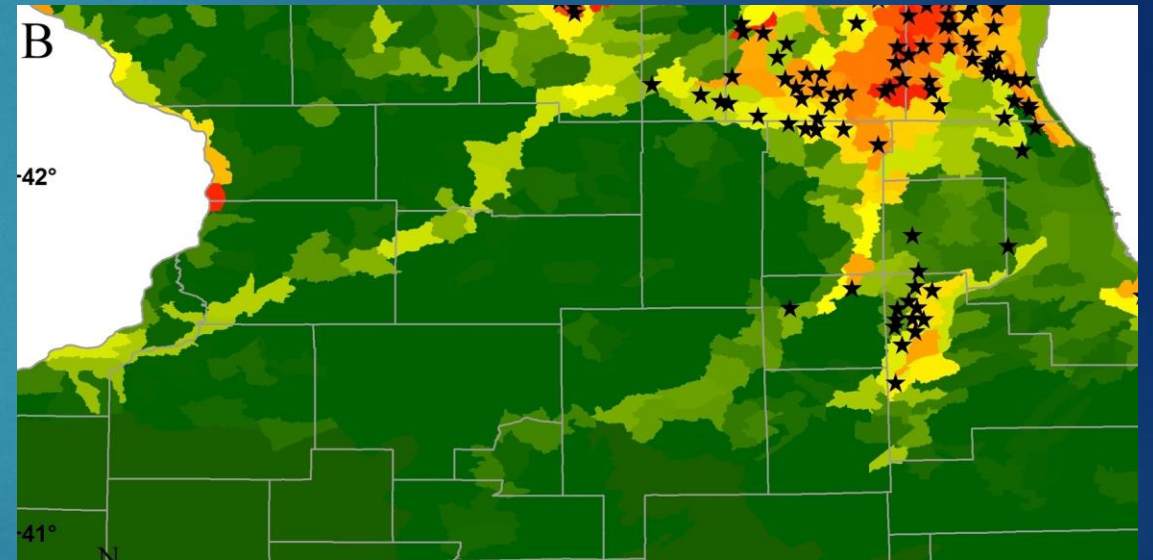
Distribution Models

Historical

Current



Stars = Pre-1960 records



Stars = Post-2000 records

Habitat

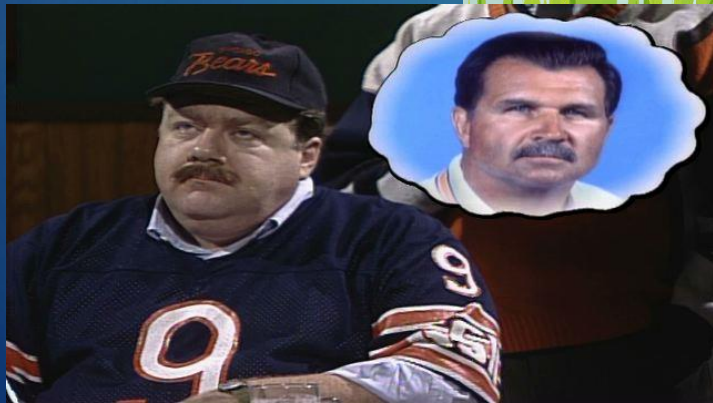
- ▶ Water Temperature
- ▶ Depth
- ▶ pH
- ▶ Aquatic Vegetation

Variable	Sites with Iowa Darters	Site without Iowa Darters
Depth (m) (95% CI)	0.31 (0.27 – 0.35)	0.15 (0.12 – 0.18)
pH (95% CI)	7.67 (7.58 – 7.77)	7.97 (7.85 – 8.08)
Aquatic Veg. (95% CI)	42.6 (13.8 – 71.3)	7.5 (0.6 – 14.4)

Habitat – This Not That



Summary



Summary – Future Directions

- ▶ Importance of field testing models
- ▶ Density Component
 - ▶ Statewide population estimate
- ▶ Targeted sampling of larger water bodies
- ▶ Genetics
 - ▶ Lake/Quarry populations
- ▶ Proposed Delisting
 - ▶ Threatened → SGCN



Acknowledgements

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- ▶ AUM, CAS, CUMV, FMNH, INHS, IDNR Heritage, FLMNH, MSUM, MSB, OSUM, OS, ROM, SINMNH, TU, UAIC, UCM, UMMZ, UWFC, KU Biodiversity Institute



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Questions?



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