The background of the slide is a photograph of a river. In the foreground, there is a large, dark, weathered log or piece of driftwood on the right side. The river water is blue and has some ripples. In the background, there is a line of green trees and some houses or buildings partially visible through the foliage. The sky is light blue with some white clouds.

# **Greater Redhorse (*Moxostoma valenciennesi*) and River Redhorse (*Moxostoma carinatum*) Status and Distribution in the Fox River near Aurora, Illinois**

**Leonard Dane**  
**Fisheries Biologist**  
**Deuchler Environmental, Inc.**

**5<sup>th</sup> Annual Fox River Summit**

**March 10, 2017**  
**Burlington, WI**

# Today's Discussion

- Brief Project Overview
- Study Area
- Study Plan
- Past Studies
- Results
- Conclusions



# Project Overview – Purpose

- Contracted by Fox Metro Water Reclamation District to study any potential effects of the District's Discharges on the Fox River.



# Project Overview – Components

- Quality Assurance Project Plan (QAPP)
- Water Quality Monitoring
- Effluent Plume Delineation
- Biological Sampling
  - Mussels
  - Macroinvertebrates
  - Fishes





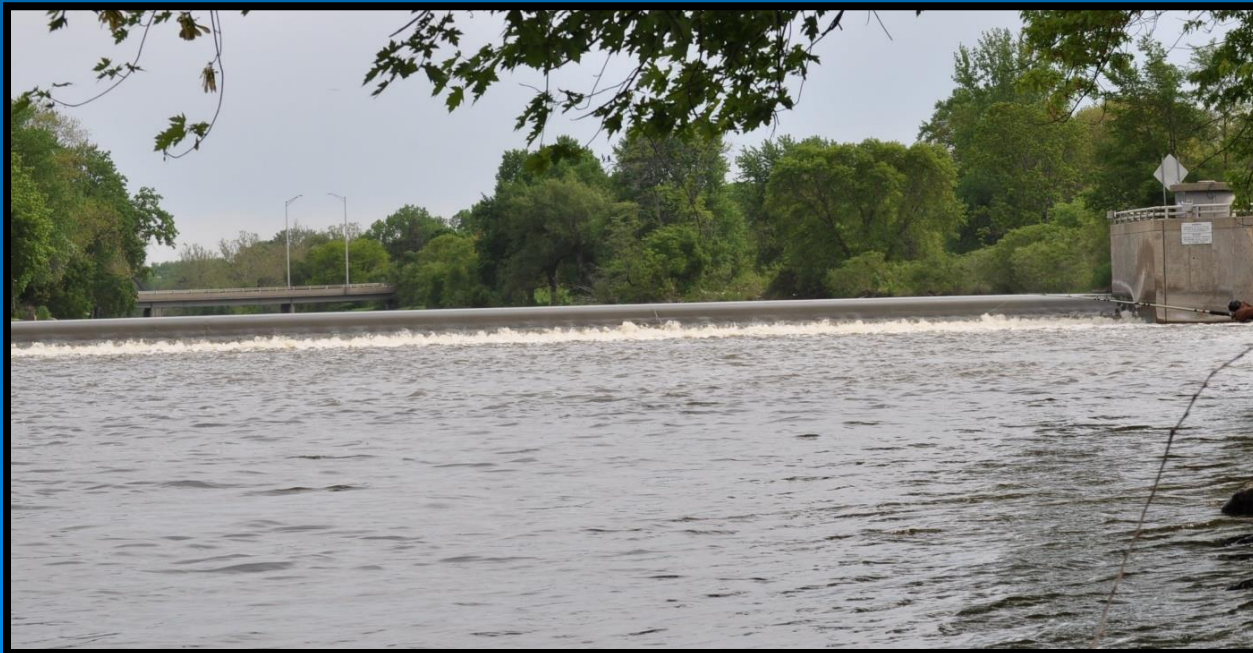
# Project Overview – Biology

- Mussel sampling completed in 2012
  - 2016 mussel relocation
- Fish and Macroinvertebrates
  - Four locations upstream and four locations downstream of the District's discharges
  - Tributary sampling



# Study Area

- Four Dams impacting the study area
  - North Aurora
  - Galena
  - Montgomery
  - Yorkville



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# Study Plan

- Sampling area divided into a LDB and RDB
- Each location electrofished for 30 minutes
- Sampled at least twice a year
- Sample area is a mix of runs and pools
- Fish are measured, weighed, examined for anomalies and released



# T/E Redhorse – Past Studies

- Max McGraw Wildlife Foundation, 2000
- Fish passage feasibility study
- 14 River Redhorse collected from d/s of South Batavia Dam to Yorkville Dam
- Max McGraw did not encounter any Greater Redhorse



# T/E Redhorse – Past Studies

- IDNR conducts basin surveys on a rotational basis
- Most recent IDNR surveys for Fox River 2002, 2007, 2012
  - Four River Redhorse collected in '02
    - Two near Oswego
    - Two near Wedron
  - No state listed species collected in '07 or '12
- IDNR concluded River Redhorse are in low abundance

# T/E Redhorse – DEI

- No River Redhorse collected by DEI
- 36 Greater Redhorse collected by DEI
- First collected in 2010
  - Verified by IDNR staff and Field Museum staff and was added to the Field Museum collection
- New record to the Aurora area
- Once thought to be extirpated from Illinois





# T/E Redhorse – DEI

- When Greater Redhorse are encountered, electrofishing is stopped
- Identified using caudal peduncle scale counts (14 – 16)
- Photographed and released



# T/E Redhorse – DEI

- Collected in tail-water and run habitat with gravel, cobble, and boulder substrate
- Similar distribution u/s and d/s
- Most downstream catches occurred from June –September
- Most upstream catches May – June, October





# T/E Redhorse – DEI

- Collected each year 2010-2016
  - 2010 – 11 - 8 upstream, 3 downstream
  - 2011 – 1 downstream
  - 2012 – 1 upstream
  - 2013 – 10 - 5 upstream and 5 downstream
  - 2014 – 7 - 4 upstream and 3 downstream
  - 2015 – 6 - 2 upstream and 4 downstream
  - 2016 – None collected



# T/E Redhorse – DEI

## ➤ % of total catch 2010-2016

- 2010 – 0.06% of total catch
- 2011 – 0.01% of total catch
- 2012 – 0.01% of total catch
- 2013 – 0.09% of total catch
- 2014 – 0.07% of total catch
- 2015 – 0.06% of total catch





# T/E Redhorse – DEI

Location	Greater Redhorse Collection Date	Temp. of Effluent (°C)	Fox River at Mill St. (°C)	Data Collection Date	Difference between Effluent and River (°C)
FMWRD RDB	6/16/2010	18.30	23.49	06/17/2010	-5.19
FMWRD RDB	7/15/2010	20.48	26.99	07/14/2010	-6.51
FMWRD RDB	6/6/2011	18.24	26.32	06/08/2011	-8.08
Orchard Rd RDB	5/16/2013	15.52	19.24	05/16/2013	-3.72
Hudson Park RDB	6/17/2013	17.61	23.01	06/20/2013	-5.40
Violet Patch Park RDB	7/23/2013	19.89	25.15	07/24/2013	-5.26
Violet Patch Park RDB	7/10/2014	18.73	24.40	07/11/2014	-5.67
Violet Patch Park RDB	8/18/2014	20.72	24.78	08/21/2014	-4.06
Com-Ed RDB	8/21/2015	20.10	22.60	08/20/2015	-2.50
Com-Ed RDB	8/21/2015	20.10	22.60	08/20/2015	-2.50
Com-Ed RDB	8/21/2015	20.10	22.60	08/20/2015	-2.50
FMWRD RDB	9/28/2015	20.76	21.19	09/23/2015	-0.43
MEAN					-4.31 °C

# T/E Redhorse – DEI

- Length at annuli data from Becker 1983 – Fishes of Wisconsin – was used to generate an average length at age.
- Greater Redhorse collected ranged from 3 to 10 years old



# Conclusions

- Once river warms up fish seek refuge in areas of cooler, faster flowing water
- Seek refuge in treated effluent plume during heat of summer
- Collected annually from 2010 – 2015 indicating a viable population within the study area



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# Conclusions

- The Dams within the study area are restricting the movement, recruitment, food sources, and habitat of the Greater Redhorse



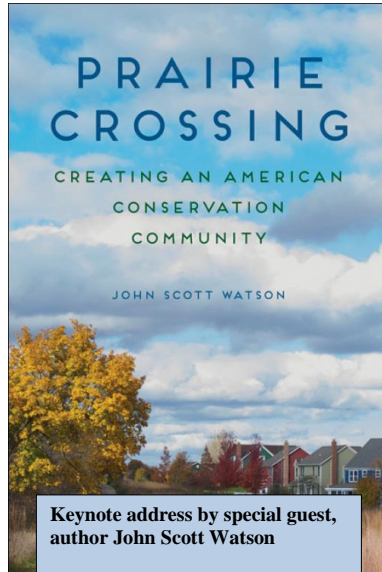
# QUESTIONS?



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**Keynote address by special guest,  
author John Scott Watson**

John will discuss his experience with the Prairie Crossings community and discuss how this residential development which was carved out of century-old farmland near Chicago, Illinois is a novel experiment in urban public policy that preserves 69 percent of the land as open space. The for-profit project has set out to do nothing less than use access to nature as a means to challenge America's failed culture of suburban sprawl.

The 32<sup>nd</sup> annual conference will feature a wide variety of presentations from professionals in private industry, public agencies, and research facilities. A full day of technical sessions will be held on Thursday and Friday (March 30-31); Saturday (April 1) will have half day workshops hosted. The complete agenda and speaker list will be available on the ILMA website in February.

Professional Development Hours will be provided for those guests which attend the either the 2-day conference sessions and/or the workshops; 10 PDHs will be provided for the conference sessions, 4 will be provided for attending one of the workshops.

**Crystal Lake Holiday Inn Conference**

800 South Route 31  
Crystal Lake, IL  
60014

*A special room rate of \$89 per night has been set for guests attending the conference. Be sure to state your stay is with the Illinois Lake Management Association when making reservations.*

Please visit the website [[www.ilma-lakes.org](http://www.ilma-lakes.org)] for full registration details.





# Techniques – Fish Sampling





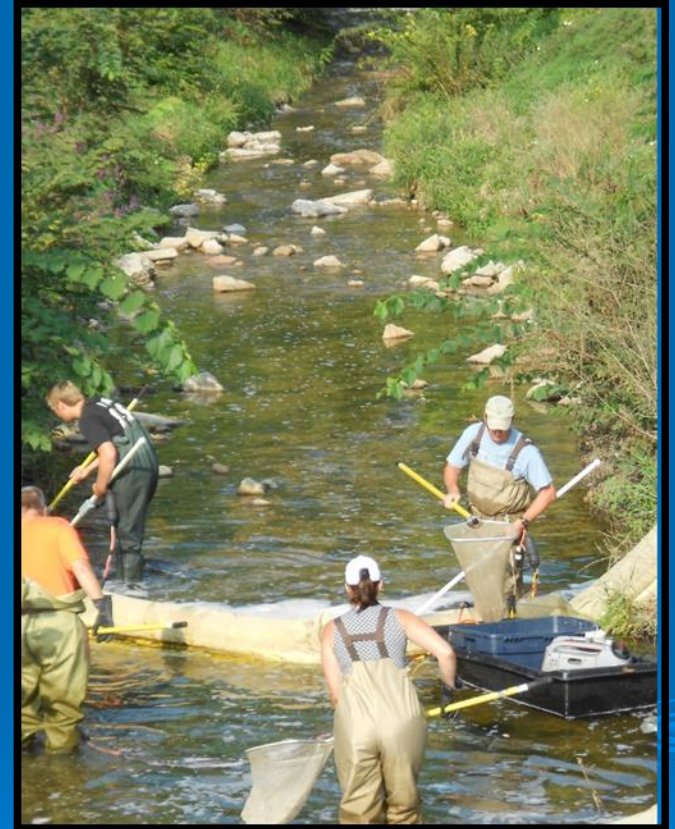
# Techniques – Fish Sampling



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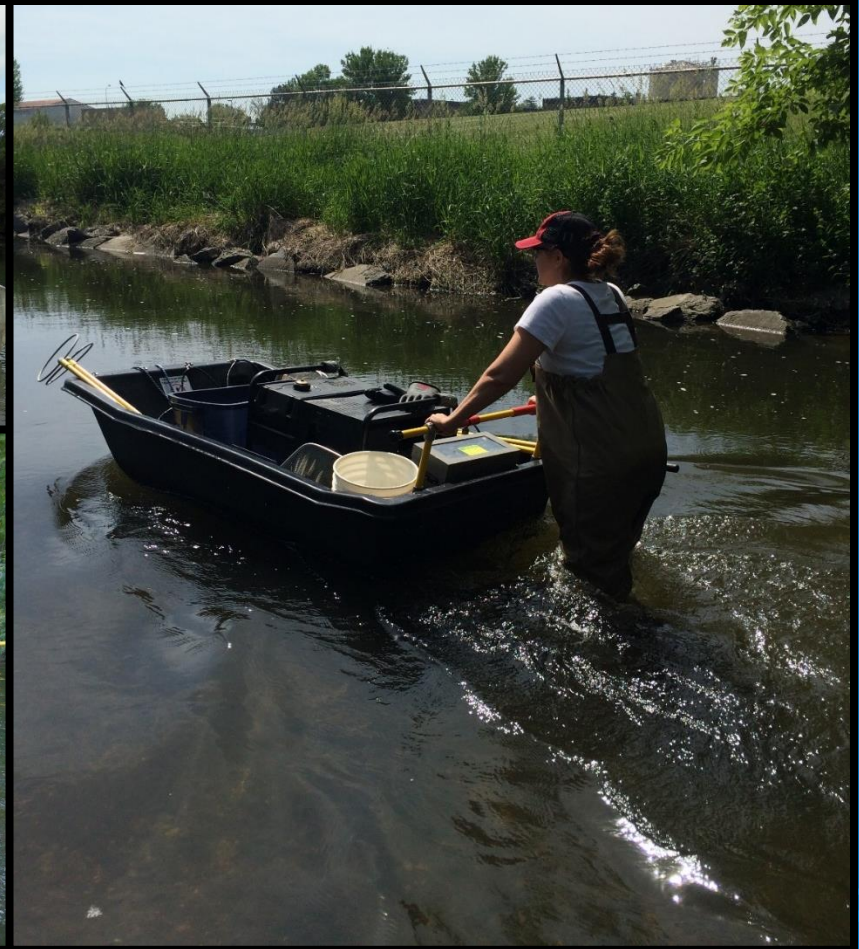


# Techniques – Fish Sampling





# Techniques – Fish Sampling



# Study Area

## ➤ North Aurora Dam to Yorkville Dam

Location	Year						
	2010	2011	2012	2013	2014	2015	2016
North Aurora Dam Tailwater	X						
Sullivan Road	X	X	X	X	X	X	X
Galena Dam Tailwater	X						
Hurds Island			X	X	X	X	X
Montgomery Dam Tailwater	X		X	X	X	X	X
Jefferson Street/Route 30	X	X	X	X	X	X	X
Fox Metro Water Reclamation District	X	X	X	X	X	X	X
Violet Patch Park	X	X	X	X	X	X	X
Hudson Park	X	X	X	X	X	X	X
Orchard Road	X			X	X	X	X
Saw Wee Kee		X	X				

Location	Habitat	Date	Total Length (mm)	Weight (g)	estimated age
FMWRD RDB	Run-Effluent	6/16/2010	575	2542	9
N Aurora Dam LDB	Tailwater	6/29/2010	412	845	5
N Aurora Dam LDB	Tailwater	6/29/2010	423	925	5
Galena Dam RDB	Tailwater	7/1/2010	544	2123	7
FMWRD RDB	Run-Effluent	7/15/2010	556	2049	7
FMWRD RDB	Run-Effluent	7/15/2010	586	2493	9
Mont Dam LDB	Tailwater	8/19/2010	423	960	5
Mont Dam LDB	Tailwater	8/19/2010	423	1002	5
Mont Dam LDB	Tailwater	8/19/2010	432	1013	5
Mont Dam RDB	Tailwater	8/20/2010	577	2677	9
Mont Dam RDB	Tailwater	11/3/2010	226	128	3
FMWRD RDB	Run-Effluent	6/6/2011	593	2687	10
Montgomery Dam Tailwater	Tailwater	8/6/2012	384	640	4
Orchard Rd RDB	Run	5/16/2013	530	1902	7
Montgomery Dam LDB	Tailwater	5/20/2013	435	970	5
Hurds Island RDB	Run	5/31/2013	578	2524	9
Hudson Park RDB	Run	6/17/2013	543	1900	7
Violet Patch Park LDB	Run	7/23/2013	521	1692	7
Violet Patch Park RDB	Run	7/23/2013	493	1650	6
Violet Patch Park RDB	Run	7/23/2013	543	1924	7
FMWRD LDB	Run	8/1/2013	435	1068	5
Hurds Island RDB	Run	10/4/2013	485	1524	6
Montgomery Dam LDB	Tailwater	10/14/2013	502	1652	6
Montgomery Dam RDB	Tailwater	10/14/2013	560	2408	8
Hurds Island RDB	Run	6/10/2014	540	2406	7
Violet Patch Park RDB	Run	7/10/2014	570	2292	8
Montgomery Dam LDB	Tailwater	7/11/2014	555	2402	7
Violet Patch Park RDB	Run	8/18/2014	584	2388	9
Hurds Island RDB	Run	8/25/2014	551	2354	8
Hurds Island RDB	Run	10/7/2014	560	2614	8
Violet Patch Park LDB	Run	10/20/2014	540	2328	7
Montgomery Dam LDB	Tailwater	10/28/2014	532	2030	7
RT 30 LDB	Run	7/20/2015	512	1828	6
Montgomery Dam LDB	Tailwater	8/10/2015	584	2602	9
Fox Metro RDB	Run	8/21/2015	542	2128	7
Fox Metro RDB	Run	8/21/2015	551	2378	7
Violet Patch Park RDB	Run	8/21/2015	606	2738	10
Fox Metro RDB	Run-Effluent	9/28/2015	568	2650	8