



ODONATA USE OF LAND COVER IN THE UPPER MISSISSIPPI RIVER VALLEY, 2013–2018

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Introduction and Objective

Odonates (dragonflies and damselflies) use a variety of habitats but require aquatic habitats for egg and larval life stages. Citizen science Odonate surveys conducted during 2013–2018, along approximately 180 km of the Upper Mississippi River, provided an opportunity to explore relationships between Odonates and the habitats where they are found during surveys. Our objective was to use a Geographic Information System to determine land use characteristics associated with Odonate survey locations.

Methods

Data Collection

- Odonate surveys were conducted in an opportunistic manner during the flight season from 2013–2018 by Daniel E. Jackson. Surveys were conducted in areas within or adjacent to Pools 5a–10 on the Upper Mississippi River National Wildlife and Fish Refuge, Trempealeau National Wildlife Refuge, and adjacent non-refuge locations (Figures 1a and 1b).
- At each survey location: geocoordinates were recorded; Odonates were identified to the lowest possible level of taxonomic resolution; and a qualitative description of habitat was recorded (145 unique qualitative habitat descriptions were later collapsed into 28 broad categories for subsequent assessment).
- Two sets of data were used in analyses within ArcGIS Pro: (1) geocoordinates of Odonate survey locations, and (2) Land Cover/Use data (31-class) provided by the Upper Mississippi River Restoration program's Long Term Ecological Monitoring element (LTRM).
- The Buffer geoprocessing tool from the Analysis toolset was used to create 50-m buffers around each survey location and the Clip tool was used to determine the LTRM land cover categories within each buffer.

Results and Discussion

- A total of 3,671 Odonate observations were made at 142 survey locations.
- Odonate observations were associated with 28 broad qualitative habitat categories and 20 LTRM land cover categories (Figures 2a and 2b).
- Preliminary results suggest that habitat characteristics differ between the small-scale qualitative descriptions recorded during survey events, and the larger-scale 50-m buffers of LTRM land cover data.
- Qualitative habitat descriptions recorded during survey events may provide insight into habitats used by adult Odonates at the time of the survey event, and within close proximity to the survey location.
- Larger-scale habitat assessments may provide information about habitats used at times other than when survey events occurred, and for non-adult portions of the Odonate life cycle.

Acknowledgements

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Figure 1. Odonate survey locations in Pools 5a and 6 of the Upper Mississippi River (a); Odonate survey locations within Trempealeau National Wildlife Refuge (b); illustration of a 50-m buffer around an Odonate survey location and the LTRM land cover categories (class 31) within that buffer (c).

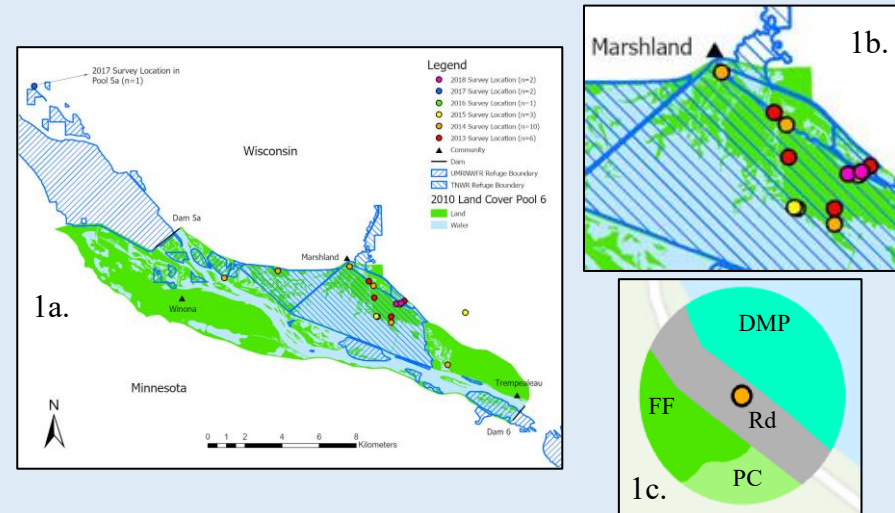


Figure 2. Qualitative habitat descriptions recorded during Odonate surveys (a); LTRM land cover categories (class 31) contained within 50-m buffers around Odonate survey locations (b).

