



# Scaup Mortality due to Trematodiasis on the Upper Mississippi River and in Northern Minnesota



Stephen Winter<sup>1</sup> and Charlotte Roy<sup>2</sup>

<sup>1</sup>USFWS, Upper Mississippi River National Wildlife and Fish Refuge, Winona, MN; stephen\_winter@fws.gov

<sup>2</sup>Minnesota Department of Natural Resources, Grand Rapids, MN charlotte.roy@state.mn.us

## Introduction

- Mortality of waterbirds due to trematodiasis was first documented on the Upper Mississippi River National Wildlife and Fish Refuge (Refuge) in 2002 and in northern Minnesota in 2007.
- To date, confirmed mortality events in both geographic locations have been confined to relatively limited areas:
  - Pools 7, 8, and 9 on the Upper Mississippi River
  - Lakes Winnibigosh, Bowstring, and Round in northern Minnesota.
- Collection of data on mortality of lesser scaup (*Aythya affinis*) due to trematodiasis has been conducted in both locations since 2007.

## Methods

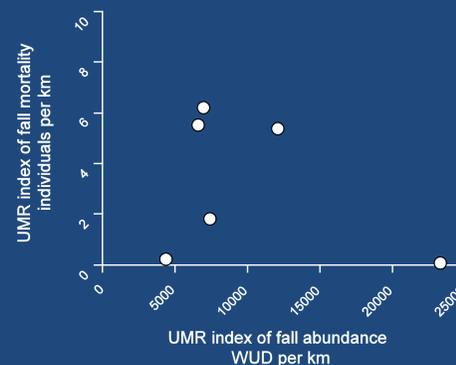
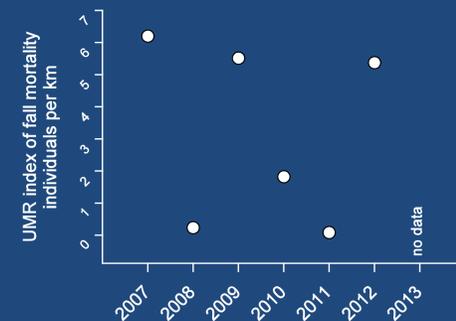
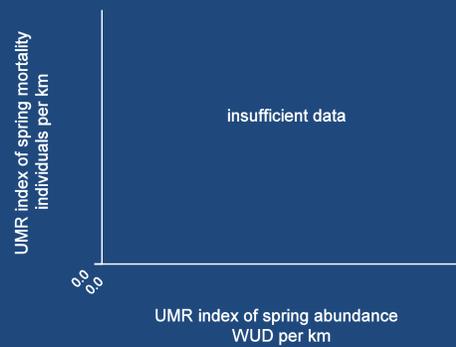
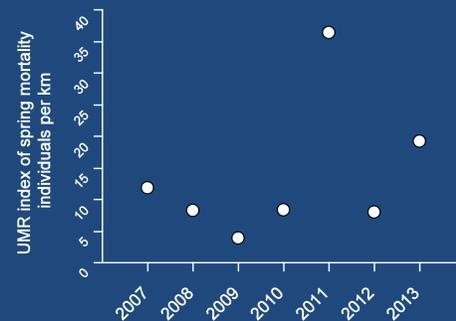
### Upper Mississippi River site:

- Spring and fall lesser scaup mortality surveys were conducted approximately weekly by boat and from shore by traversing fixed routes with known length.
- An index of lesser scaup mortality was calculated by dividing the number of dead lesser scaup detected during surveys by the length (km) of survey route traversed.
- Fall lesser scaup abundance surveys were conducted approximately weekly with an aircraft traversing fixed routes with known length.
- An index of lesser scaup abundance was calculated by:
  - Calculating the Waterfowl Use Days (WUD) for each year.
  - Dividing the WUD for each year by the length (km) of survey route traversed that year.

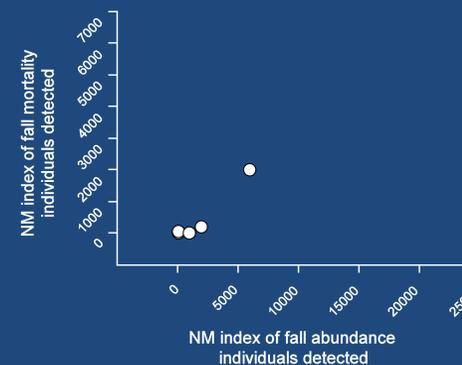
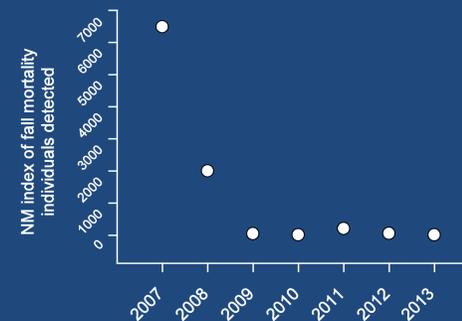
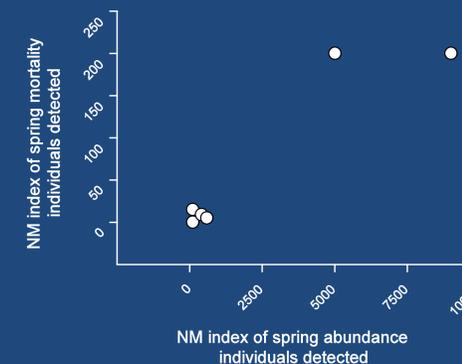
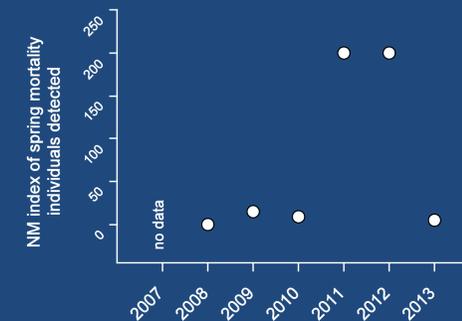
### Northern Minnesota site

- Spring and fall lesser scaup mortality surveys were conducted at Lake Winnibigoshish approximately weekly by boat and from shore.
- An index of lesser scaup mortality was calculated by summing the total number of dead and moribund birds detected at Lake Winnibigoshish during each survey season.
- Fall lesser scaup abundance surveys at Lake Winnibigoshish were conducted simultaneously with mortality surveys.
- An index of lesser scaup abundance at Lake Winnibigoshish was calculated by summing the total number of birds detected during each survey season.

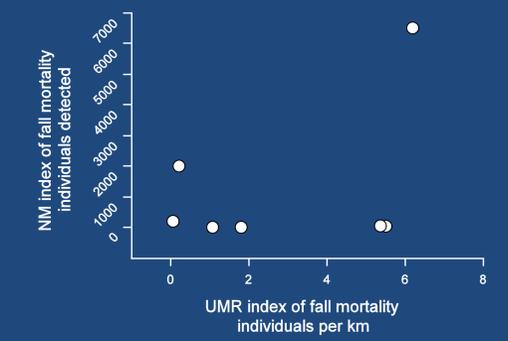
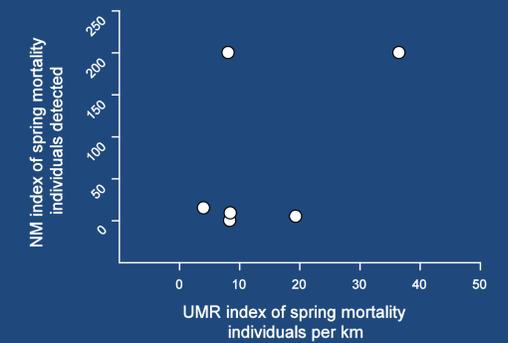
## Upper Mississippi River (UMR)



## Northern Minnesota (NM)



## Site Comparisons



## Discussion

- At the Upper Mississippi River site there is no apparent relationship between lesser scaup fall abundance and lesser scaup fall mortality.
- At the Northern Minnesota site the data suggest there is a relationship between lesser scaup abundance and lesser scaup mortality in both spring and fall.
- There is no apparent relationship between lesser scaup mortality at the Upper Mississippi River site and lesser scaup mortality at the Northern Minnesota site.
- At both sites, sparse data preclude statistical analyses and contribute to ambiguous conclusions. Further data collection may facilitate a better understanding of the dynamics of scaup mortality due to trematodiasis.

## Acknowledgements

Brian Gray at the USGS Upper Midwest Environmental Sciences Center provided valuable assistance in assessing and interpreting these datasets