Patterns of Bird Migration at the Point au Sable Nature Preserve

*a “stopover smorgasbord“ in lower Green Bay*

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Cofrin Center for Biodiversity, University of Wisconsin-Green Bay
Pt. au Sable Nature Preserve
Point au Sable

Near place where Jean Nicolet landed in 1634
Until the mid-1800’s, Green Bay (Wisconsin’s first city) was an important outpost for the North American fur trade.
As early as 1673, lower Green Bay was noted as “full of bustards, ducks, teal and other birds being attracted there by the wild oats”

Diary of Joliet and Marquette
Early accounts describe the importance of waterfowl hunting in lower Green Bay. In the late 1800’s, market hunters killed thousands of birds in Green Bay for markets in Chicago and Milwaukee.
“As far back as the days when the French voyageurs and the Chippewa and Pottawatomie Indians traveled it [Green Bay] in their birch bark canoes it has been part of the greatest flyway for waterfowl in that state.”

“It has been estimated, and there is little reason for doubting it, that before restricted bag limits were put in force, not less than half a million waterfowl were shot at these places [Lower Green Bay and Pt. Sable] each fall.”

Pt. Sable became privately owned in late 1800’s.
Configuration of water varied, sometimes over just several years.
• By early 1960’s, Green Bay banker John Rose acquired ownership of point.
• Gauthier family acquired much of adjacent land.
Pt. au Sable Nature Preserve

First acquisitions: 1992 & 1993 (The Nature Conservancy)
1996: John ("Jake") Rose donated Point to The Nature Conservancy
2002: TNC donated 3 parcels to UW System/UW-Green Bay
Pt. au Sable Nature Preserve

2011: Three new parcels purchased by UW System / UW-Green Bay
Pt. au Sable Nature Preserve
Pt. au Sable Nature Preserve

Vegetation Assemblages
Pt. au Sable Nature Preserve

Upland Forest
Pt. au Sable Nature Preserve

Lowland Forest
Pt. au Sable Nature Preserve

Wet Meadow
Pt. au Sable Nature Preserve

Open Marsh
Pt. au Sable Nature Preserve

Beach
Pt. au Sable Nature Preserve

Wequiock Creek
Vegetation Dynamics

- Long term (lake level fluctuations)
- Annual (seasonal climatic changes)
- Daily/weekly (seiche, rainfall, wind)
Pt. au Sable Nature Preserve

1938
Pt. au Sable Nature Preserve

1966

1973
Pt. au Sable Nature Preserve
Pt. au Sable Nature Preserve
Pt. au Sable Nature Preserve

2011
Pt. au Sable Birds

> 216 species since 1999

Bird photos by Robert Royse
Pt. au Sable Bird Studies
Pt. au Sable Nature Preserve
Pt. au Sable Bird Research

Stephanie Beilke
Pt. au Sable Point Counts

Bird Survey Points
Point au Sable Natural Area
Green Bay, Wisconsin
February 2011
Evaluation of Avian Survey Effort at Point au Sable Natural Area in Brown County, Wisconsin

By: Erin Gnass and Nick Walton

Students of UWGB Environmental Science & Policy Graduate Program

March 1, 2011
Gnass and Walton (2011)

- Effort
  - 1999: 200
  - 2000: 150
  - 2001: 100
  - 2002: 75
  - 2003: 50
  - 2004: 25
  - 2005: 10
  - 2010: 5
  - 2011: 2

- Species Richness
  - 1999: 150
  - 2000: 100
  - 2001: 75
  - 2002: 50
  - 2003: 25
  - 2004: 10
  - 2005: 1
  - 2010: 5
  - 2011: 1

Legend:
- Chao Expected Richness: 229 (SE = 18.2)
- Total Observed Species: 191 (84.3% of expected)
Pt. au Sable Point Counts
N = 720

Total number of point counts

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<th>Point</th>
<th>Spring</th>
<th>Summer</th>
<th>Fall</th>
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Pt. au Sable Point Counts
N = 720

1  March 15-31
2  April 1 – 14
3  April 15 – 30
4  May 1 – 14
5  May 15 – 31

11  June 1 – 14
12  June 15 – 30
13  July 1 – 14
14  July 15 – 31
15  August 1 – 14

21  August 15 – 31
22  September 1 – 14
23  September 15 – 30
24  October 1 – 14
25  October 15 - 21

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Pt. au Sable Point Counts

Questions

• How do land bird assemblages vary among points?
• How do land bird assemblages vary among seasons?
• How do land bird assemblages vary within seasons?
Pt. Sable Land Bird Assemblages (Log avg.)

Each symbol represents one point during a 15 day period.
How do land bird assemblages vary among seasons?

1. Species assemblages are **most** variable during fall.
2. Species assemblages are **least** variable during summer.
Pt. Sable Land Bird Assemblages (Log avg.)

Each symbol represents one point during a 15 day period.
Pt. au Sable Point Counts

How do land bird assemblages vary among points?

1. Species assemblages are highly variable at most points.

2. Species composition overlaps extensively among points.
Pt. Sable Land Bird Assemblages (Log avg.)

Each symbol represents one point during a 15 day period.
Pt. Sable Land Bird Assemblages (Log avg.)

Each symbol represents one point during a 15 day period.
Pt. au Sable Point Counts

How do land bird assemblages vary within seasons?

1. Significant within-season variation is evident.

2. Species composition overlaps extensively among points.
Patterns of variation over **time** are more consistent than variation in **space** (among points) at Point au Sable.
• Many species show significant differences in occurrences between spring vs. fall migration periods.

• Further research may be needed to distinguish differences in detectability from real differences in occurrences.
Timing of management activities during migration periods is critically important.
Acknowledgments

- Point au Sable Research Endowment
- Family of David and Mary Ann Cofrin
- UWGB Cofrin Center for Biodiversity Staff
- University of Wisconsin-Green Bay, Dept. of NAS
- Many past student and faculty field researchers who have surveyed birds at the Point.
- Photographers: Robert Royse, Scott Giese, Kari Hagenow, David Lawrence