

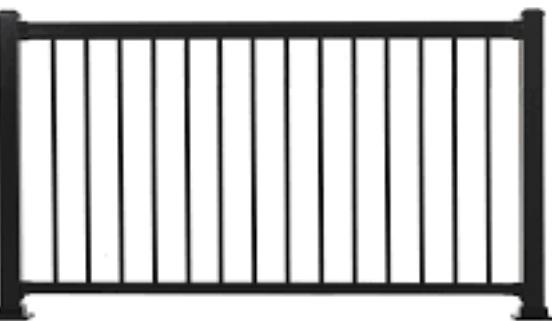
Elusive Migration: The Migration Ecology of Rails

Auriel M.V. Fournier, PhD - [@RallidaeRule](https://twitter.com/RallidaeRule)
(and many many others)



Section 1 – Rails and Wetlands

What on earth is a rail?



What on earth is a rail?

- Members of Rallidae
- Difficult to detect
- Elusive
- Well camouflaged (mostly)





What on earth is a rail?

- Globally distributed
- Huge variation in size
- Many island endemics
- Some are flightless

Photo by Dr. Alex Bond

North American Rallids



- Require Wetlands
- Threatened or declining
- Connect diverse stakeholders
- Plus they are Rail-y awesome ☺

When and how we look matters

- Time of day
- Time of year
- Method used



Sora



Virginia Rail



Mar 26

Apr 02

Apr 09

Apr 16

Apr 23





Fournier and Krementz 2017 Wildlife Society Bulletin





To find a rail

To find a rail









From Surveys to Numbers

Detection probability is HUGE

Survey Data + Statistical Models = Estimate Density



Great Lakes Wetland History

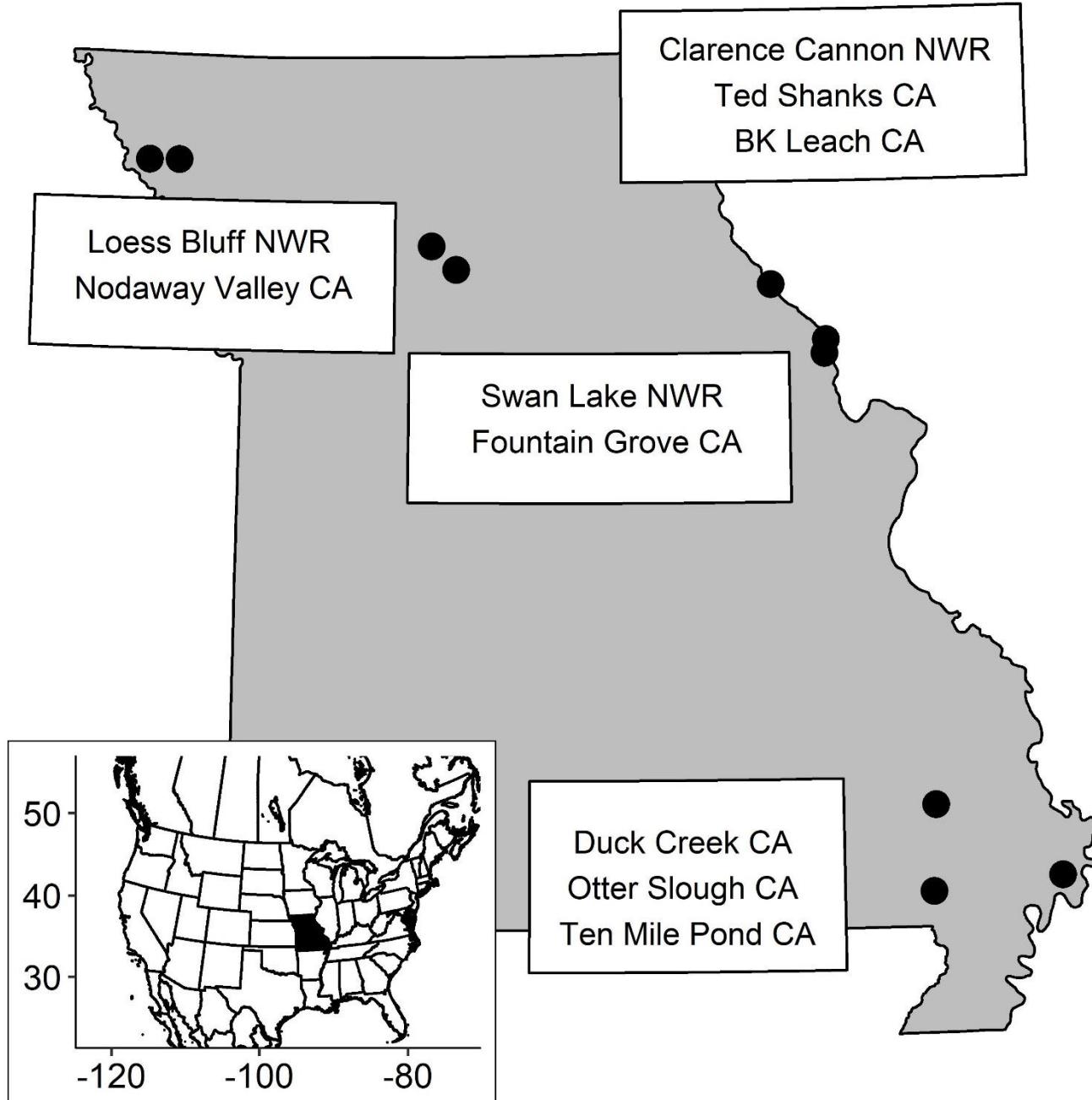
- Extensive huge wetlands
 - Vitally important to wildlife and the indigenous nations who live on this land
- As Europeans arrived, these wetlands were drained, primarily for agriculture
 - A battle that continues today
- Thankfully, some folks bought up some of those wetlands, those folks were primarily waterfowl hunters
 - Winous Point Shooting Club

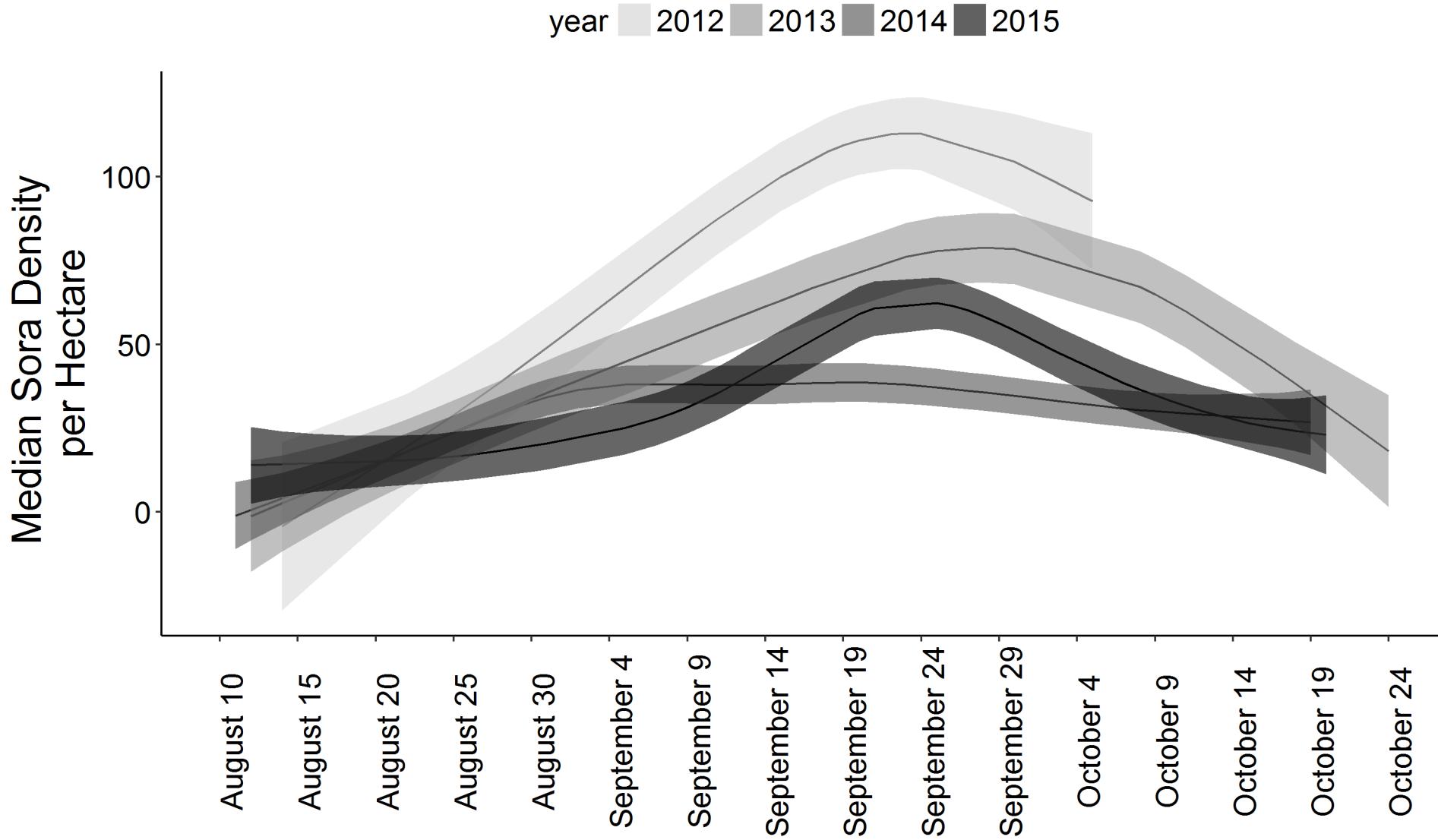


Impoundment Management

- Water level manipulation
- Soil or vegetation disturbance
- Timing is key





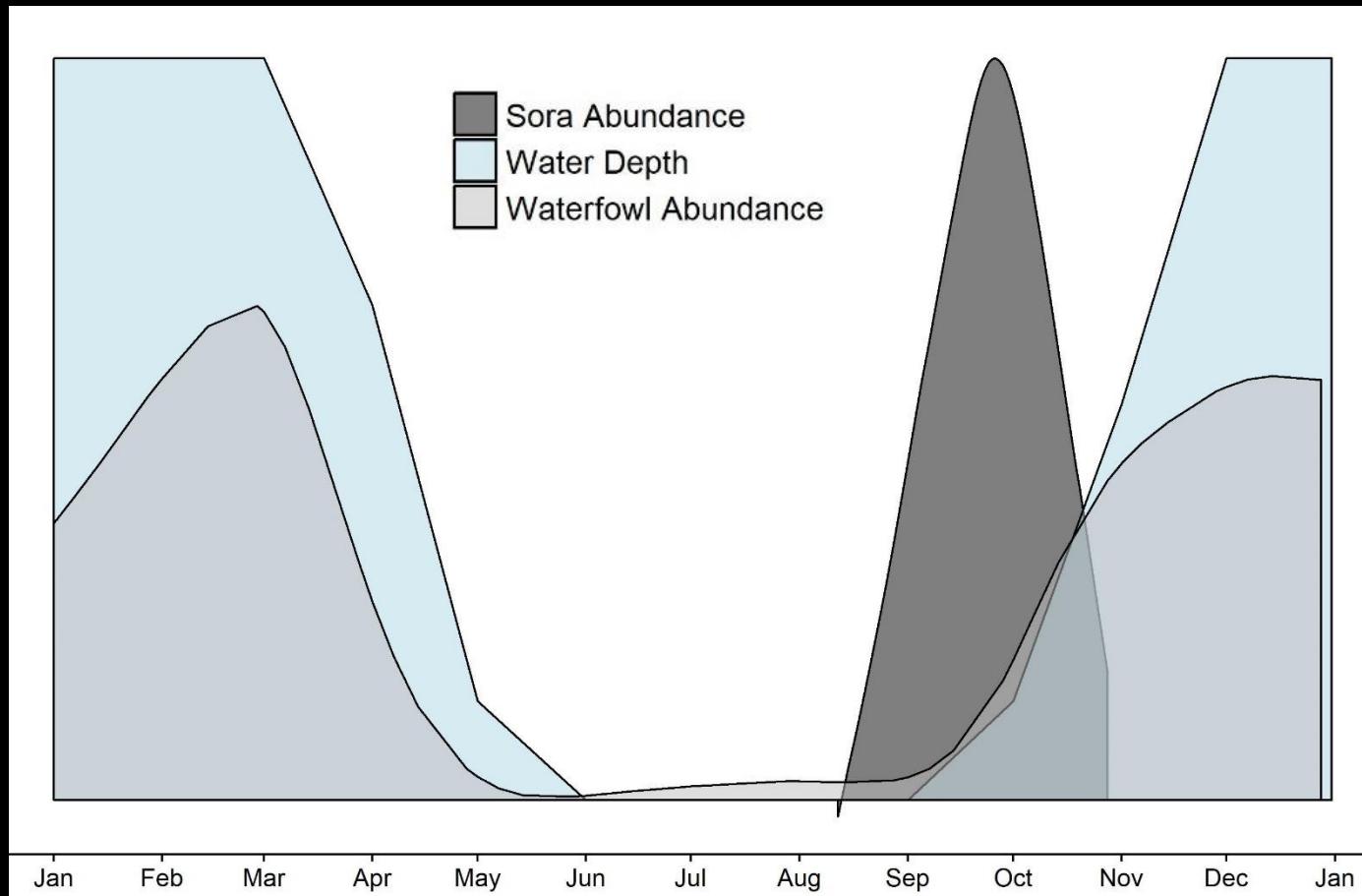


What role does timing play?

- Flooding of habitat is important for many wetland species
- Habitat flooded to early or too late isn't serving those goals
- Manipulative experiment to compare the response of Sora and Waterfowl to flooding treatments



Timing mismatch



Fournier et al. (2017) Wilson Journal of Ornithology
Fournier et al. (2019) Waterbirds

Impound 1

Impound 2

2014

August 1

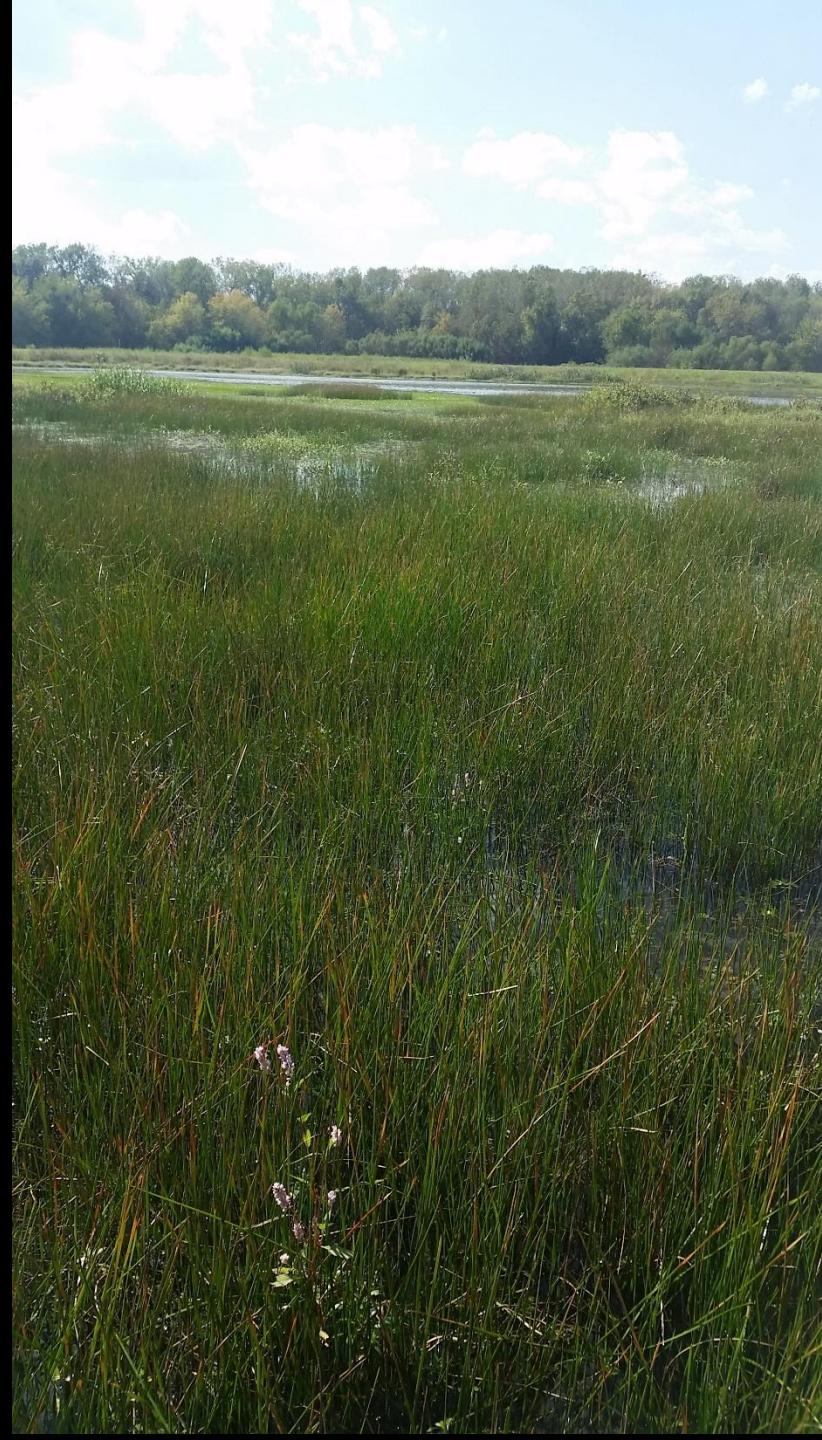
2015

Sept 15

2016

Sept 15

August 1





Wetland Surrounded
by Forest

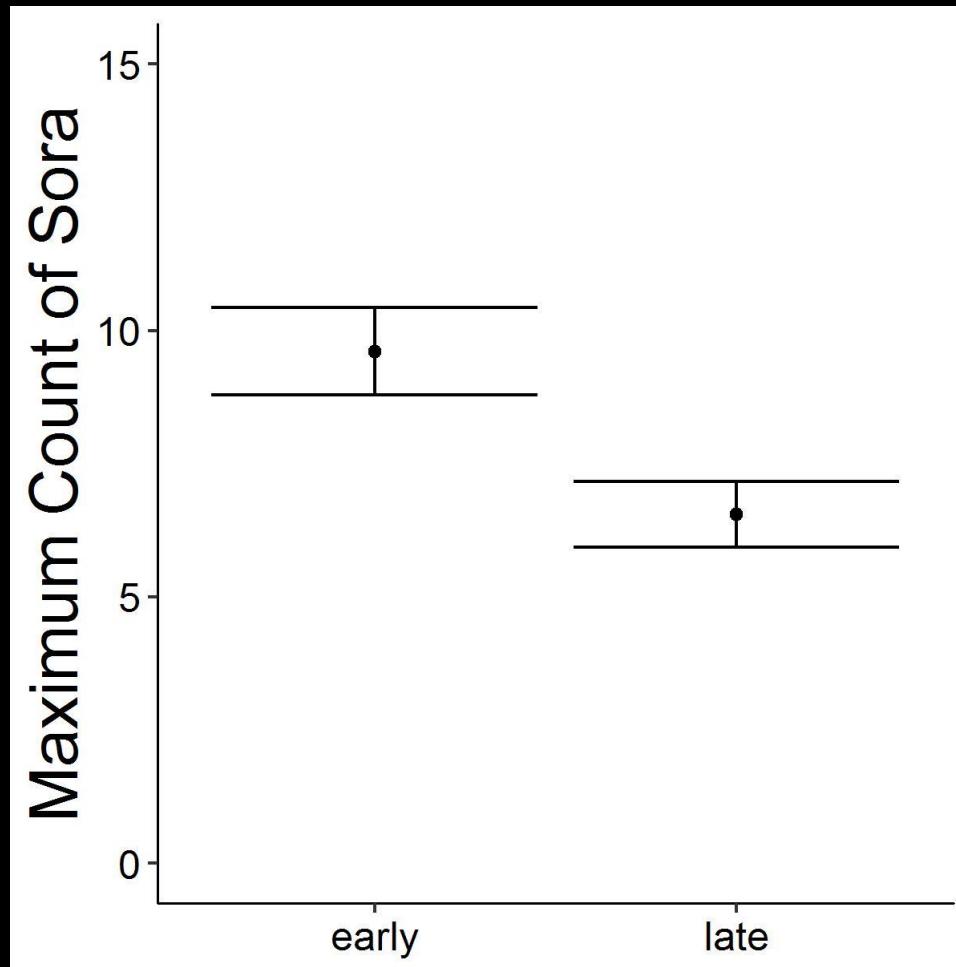
Ten Mile Pond
Conservation
Area

Wetland Surrounded by
Wetland

A photograph of a flooded road. The water is high, covering the entire surface. In the distance, a person is riding a vehicle, possibly a motorcycle or a small boat, through the floodwaters. The surrounding area is a mix of green vegetation and brown, submerged debris. Power lines and poles are visible on the right side of the frame.

One of the least
flooded roads

Early flooding = more Sora
= same Waterfowl





Shifting Mosaic

Ten Mile Pond
Conservation
Area

Pause for Questions

Section 2 – Tracking Rail Migration



Mister Modtomic
@MrModtomic



Follow

What kind of #bird is this and what's it doing
#Downtown #StL #StLouis under a car?



RETWEETS

2

LIKES

6



5:55 PM - 26 Sep 2016



2

6

...



Auriel Fournier

@RallidaeRule

ICYMI a rail delayed a nascar race

#RailsWhereTheyDontBelong



Bird causes delay in Sunday's AAA 400 at Dover International Speedway

Another NASCAR race has been delayed by a wild animal on the track.

foxsports.com



Auriel Fournier

@RallidaeRule

Sora sailing across the Gulf of Mexico

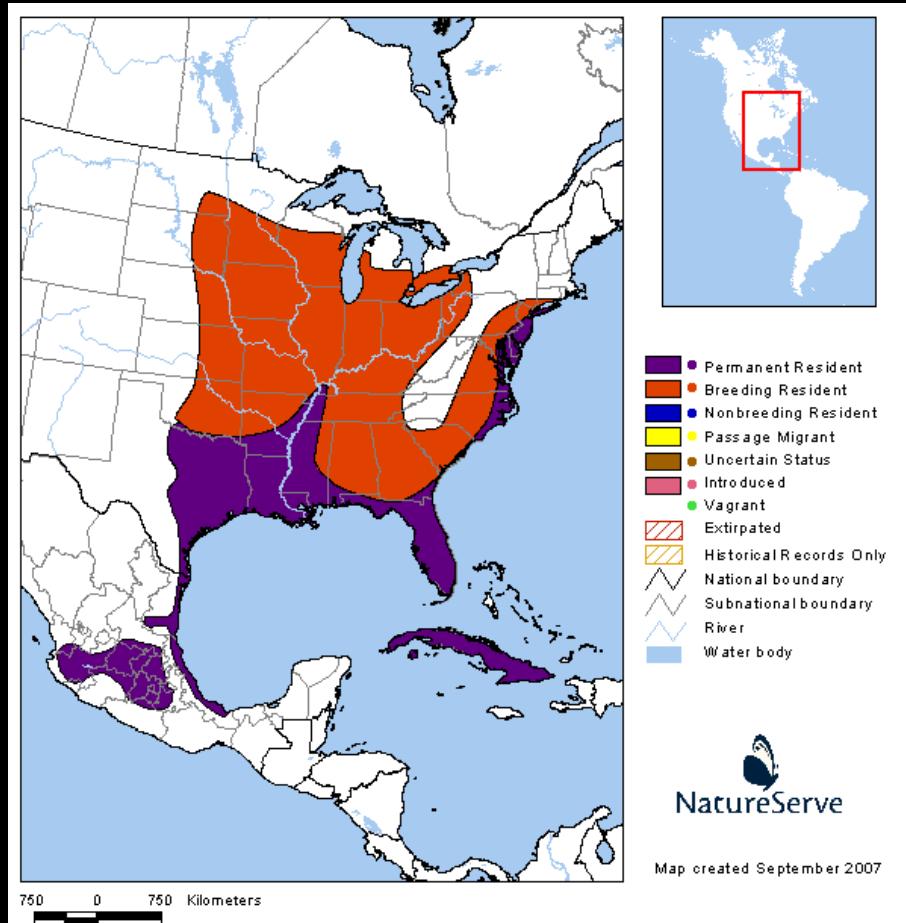
gcbo.org/html/enewsJun1...

#RailsWhereTheyDontBelong



Migration Strategies

- Whole population migrates
 - Virginia Rail, Sora
- Whole population is resident
 - Many Island Endemics
- Part of population migrates, part is resident
 - King Rail, Black Rail, Clapper Rail



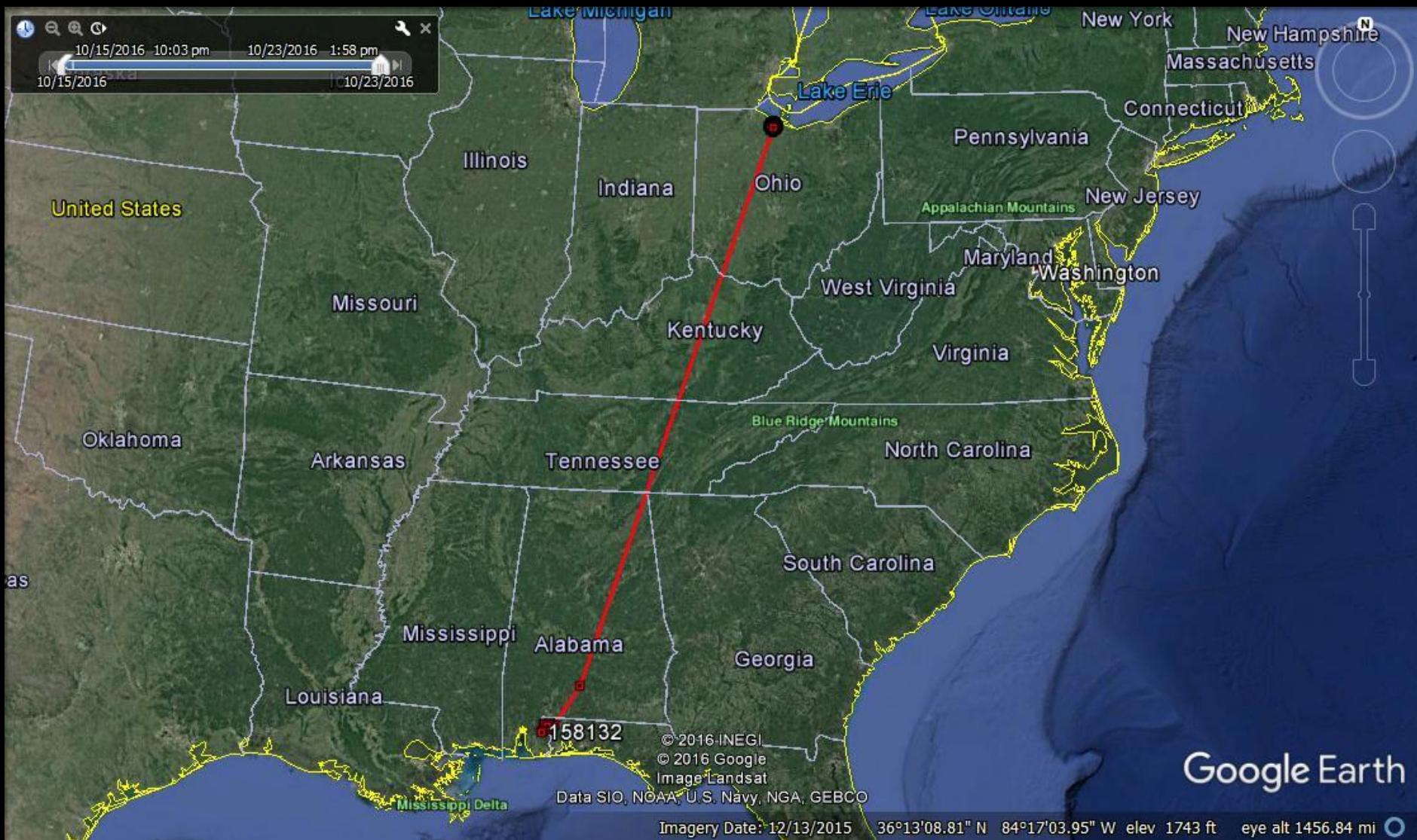
How do we track rail migration?

- Bird Banding
- Transmitters
- Geolocators
- MOTUS Towers
- Stable Isotopes
- Anecdotal Records

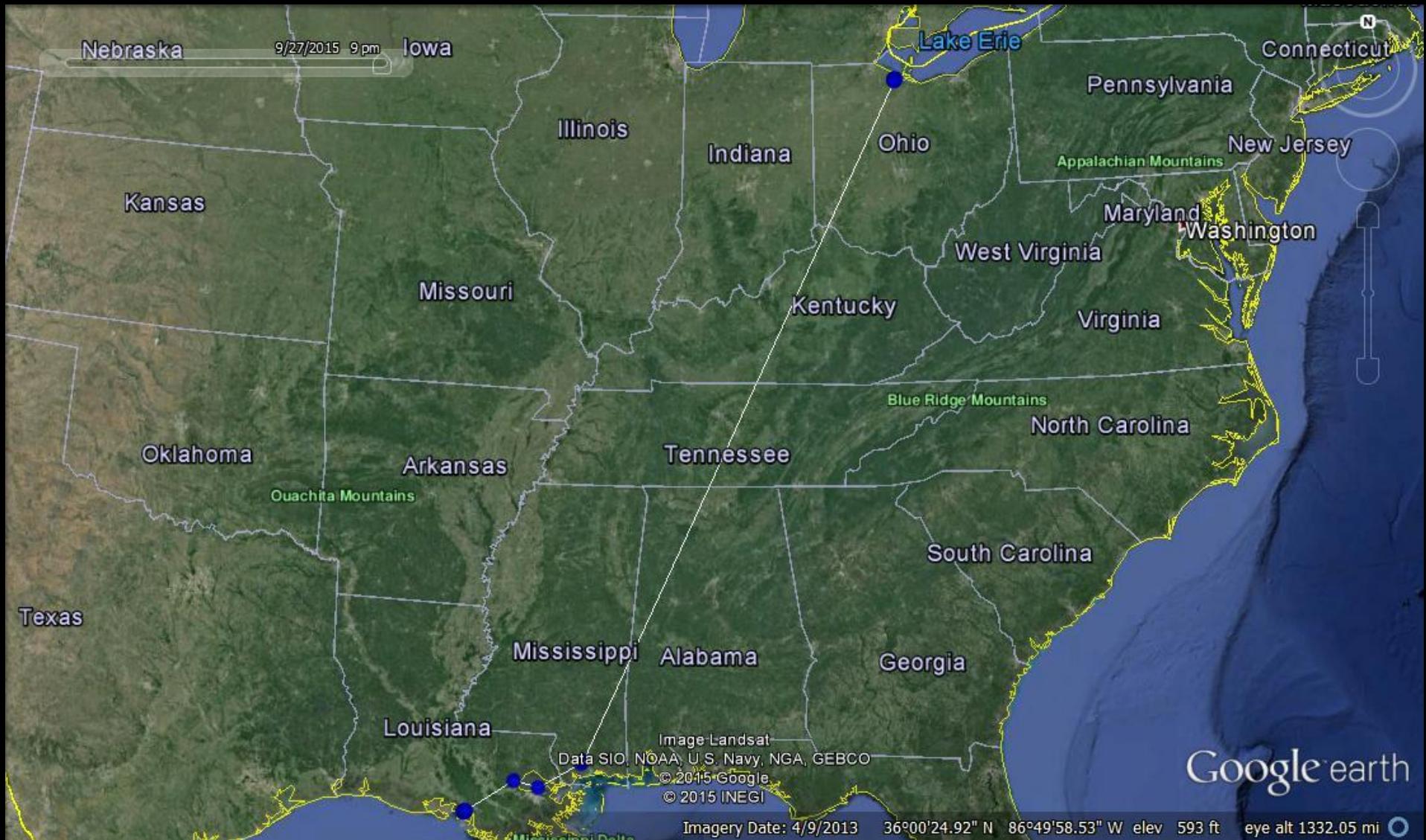


Migratory Connectivity



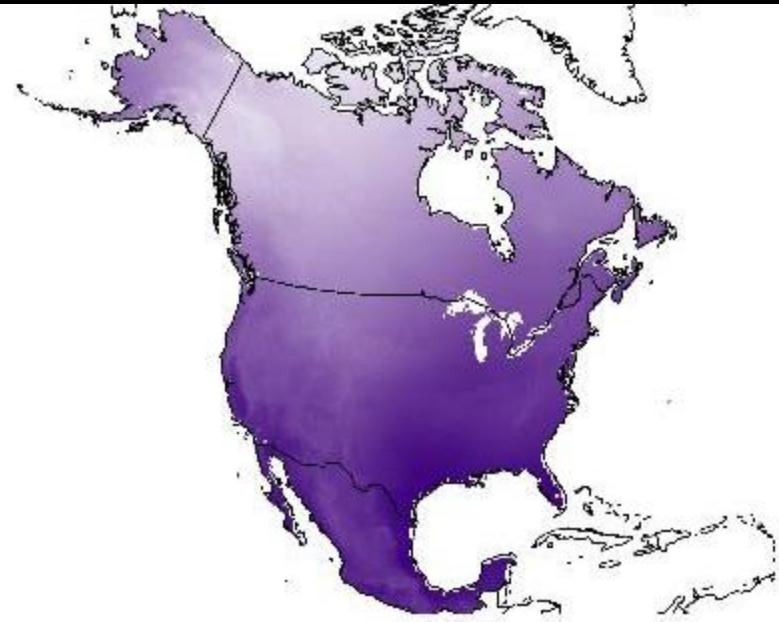


Winous Point Marsh Conservancy



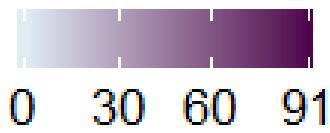
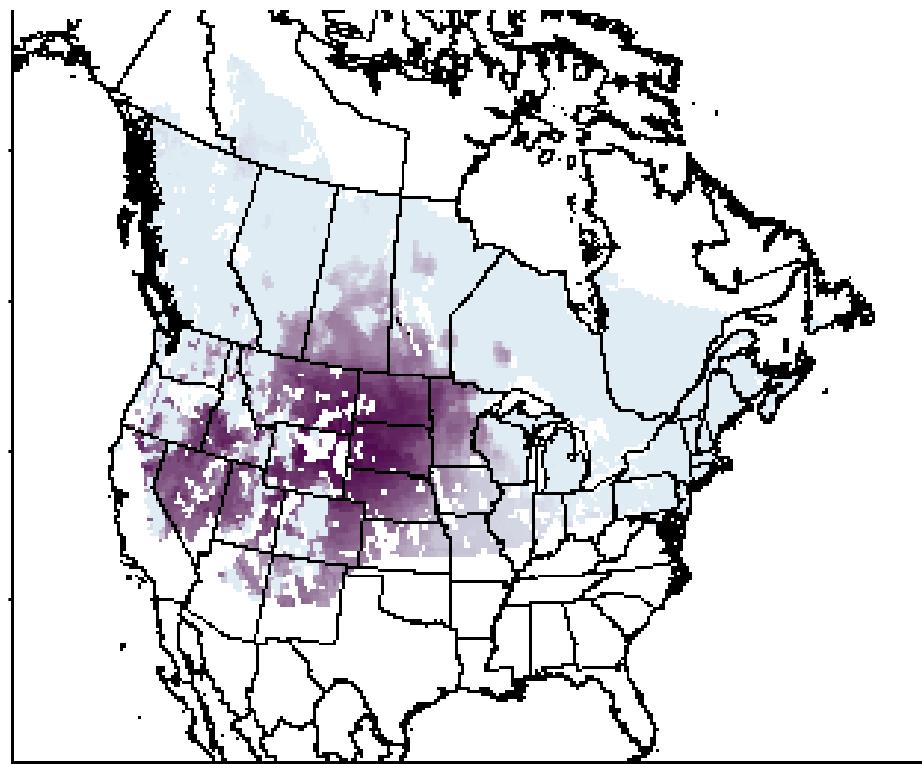
Winous Point Marsh Conservancy

Stable Isotopes



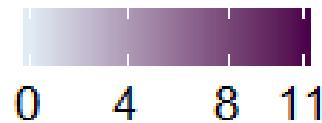
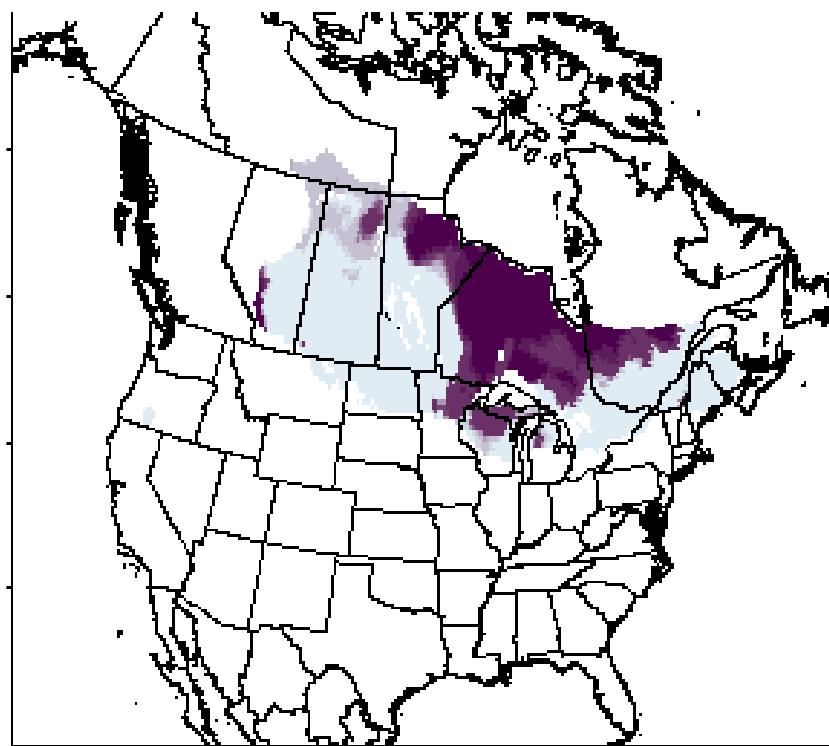


A - Sora



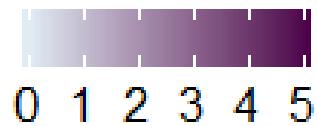
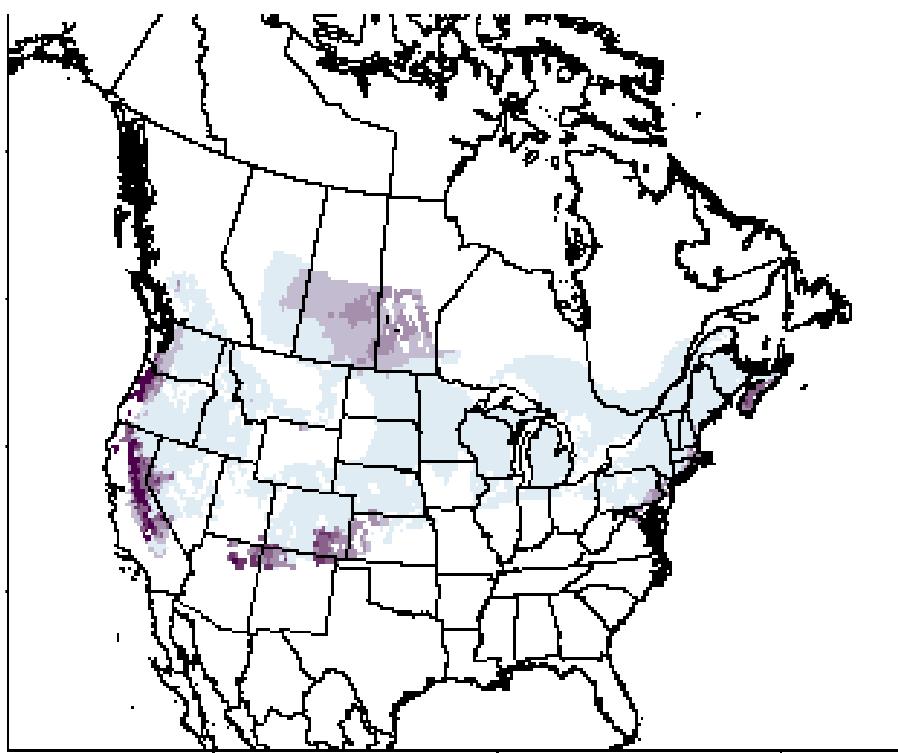
Fournier
et al.
2017
Journal
of Avian
biology

C - Yellow Rail



Fournier
et al.
2017
Journal
of Avian
biology

B - Virginia Rail



Fournier
et al.
2017
Journal
of Avian
biology

Looking for the
unexpected



Fournier and Krementz 2018
Wilson Journal of Ornithology



Fournier and Krementz 2018
Wilson Journal of Ornithology

Juvenile King Rail in stomach of American Bullfrog



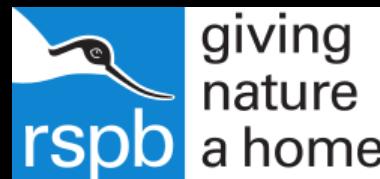
Fournier et al. 2019 Herpetological Review

Pause for Questions

Section 3 – Other Rail Tales

Rodent eradication on islands and their effect on rails

Simon Ward, Auriel M.V. Fournier, Alexander L. Bond



Introduced Species on Islands



Island Rodents



Bushnell

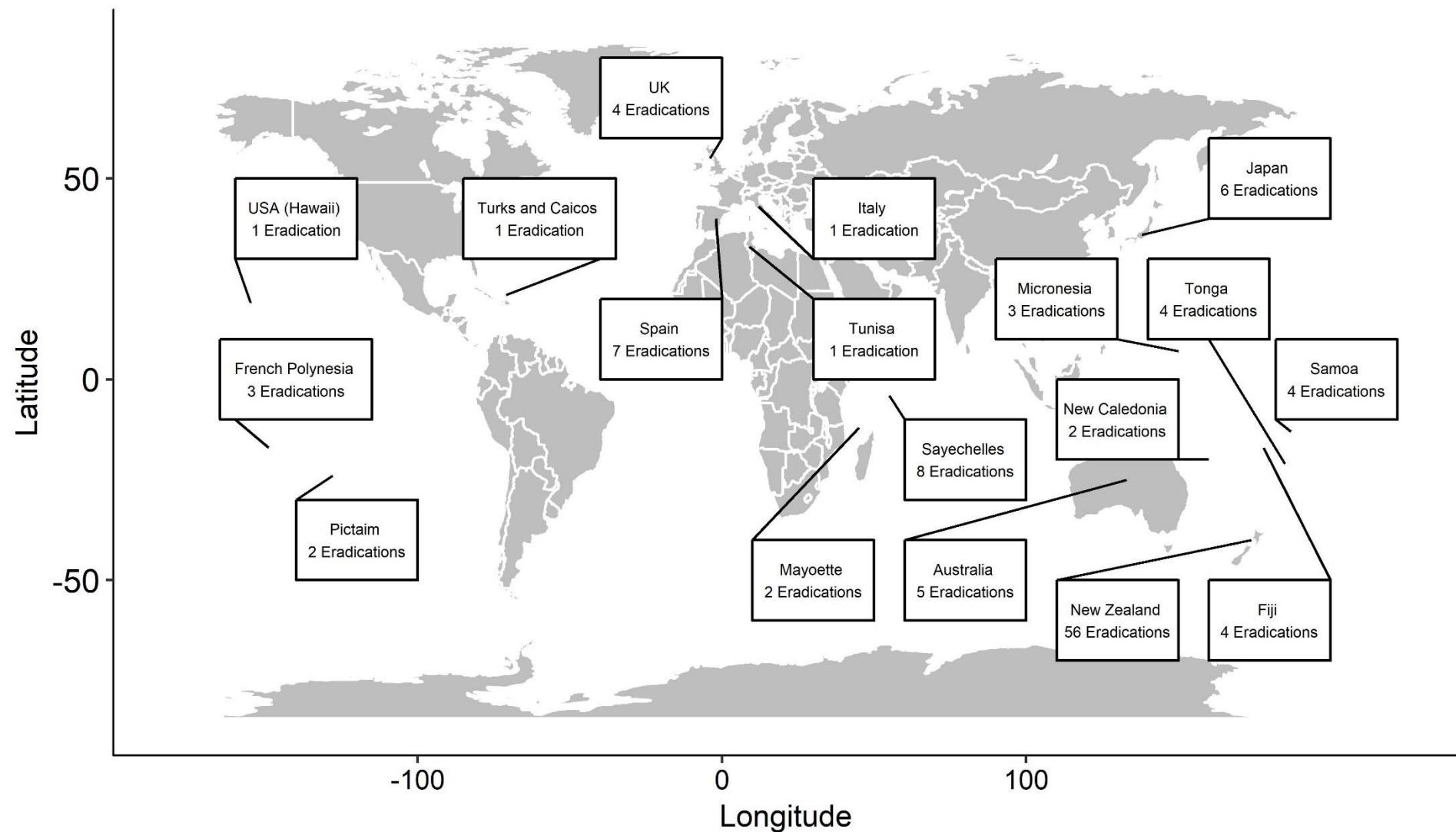
06-05-2014 13:47:23

Rails



Rodent Eradication





Results



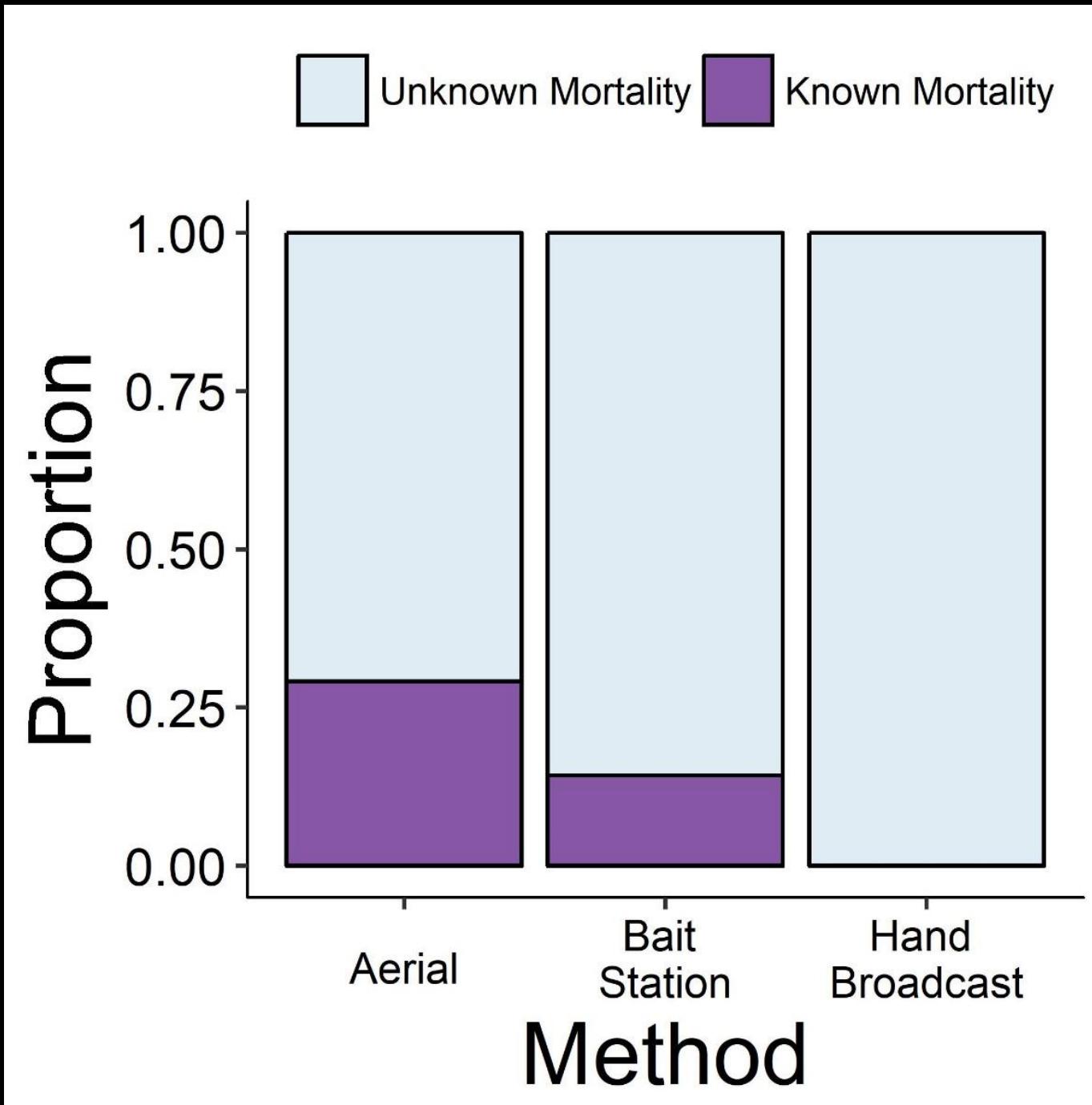
122 eradications
81 islands
18 territories
1983-2015

1-3 rail species
per site
18 rail species
total

78% contained
no information
of non target
mortality

Bait Method

Ward et al. 2019
Biological
Invasions



Better Evaluation and Reporting

Rodent eradication is vital to conserving biodiversity on many island environments

Evaluating non-target mortalities is a vital part of this equation as well



Tiger Sharks Eating Migratory Landbirds

AND A
COOT

(Drymon et al.
2019 Ecology)

SMARTNEWS *Keeping you current*

Baby Sharks Do (Do, Do, Do, Do, Do) Eat Songbirds

A survey of 105 tiger sharks' stomach contents revealed the remains of 11 land-based bird species



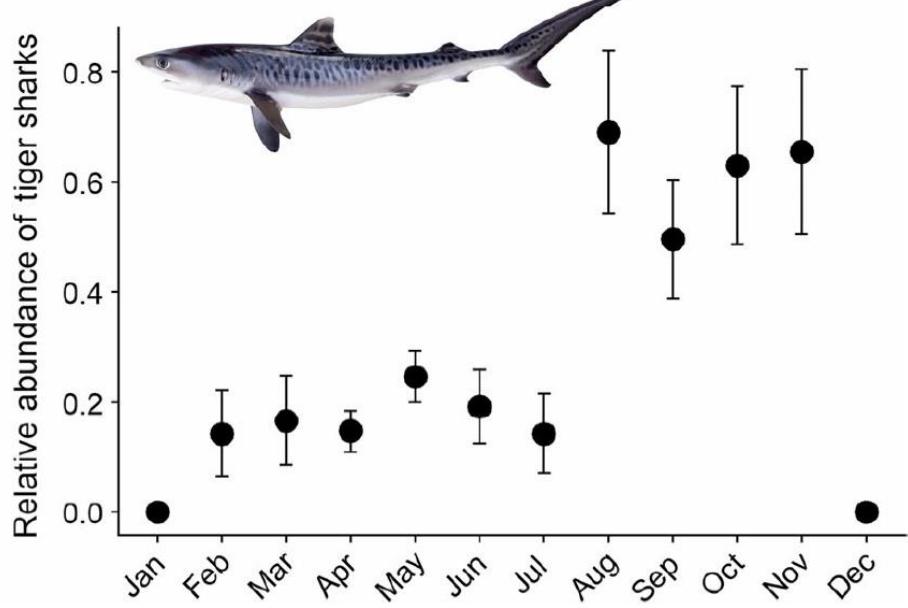
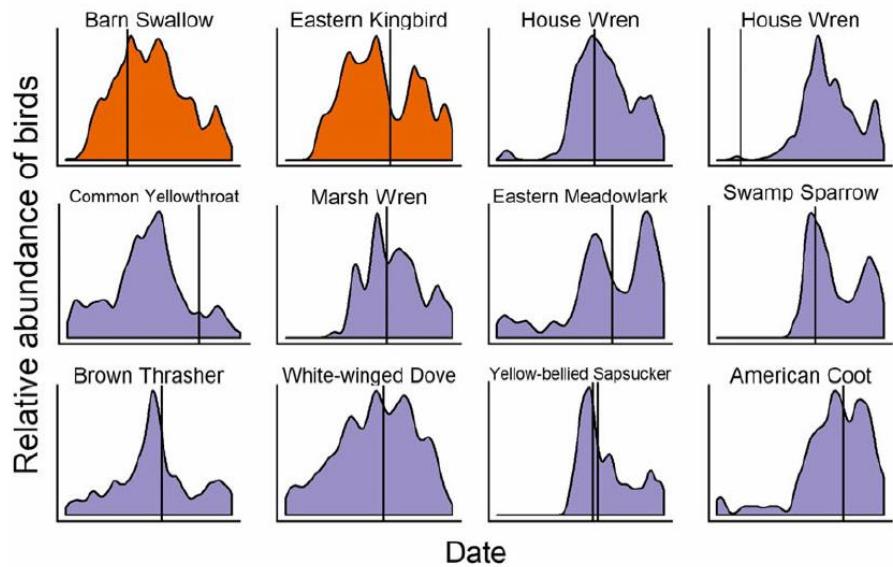
Tiger sharks appear to prey on migrating songbirds that fall into the ocean during autumnal storms (Marcus Drymon)

By [Meilan Solly](#)

SMITHSONIAN.COM

MAY 22, 2019





(Drymon et al. 2019 Ecology)

Summary

- We've lost most of our wetlands, those which remain
- Rails are a diverse and highly adapted group of birds that are hard to see
- Rail migration is still largely a mystery
- Much natural history is left to explore
- Our management needs to consider secondary impacts
- Museums can help us understand the past
- Sharks eat birds



Thank You for making this a Rail-ality!

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Questions?

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Papers from today's talk :
[Aurielfournier.github.io/publications](https://aurielfournier.github.io/publications)

