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SANDHILL CRANES MOVEMENTS AND AGRICULTURAL CONFLICTS

Multi-region approach towards the assessment and mitigation of agricultural conflicts involving Sandhill Cranes in eastern Canada.

Project Outline for Producers

January 4, 2020

Canada

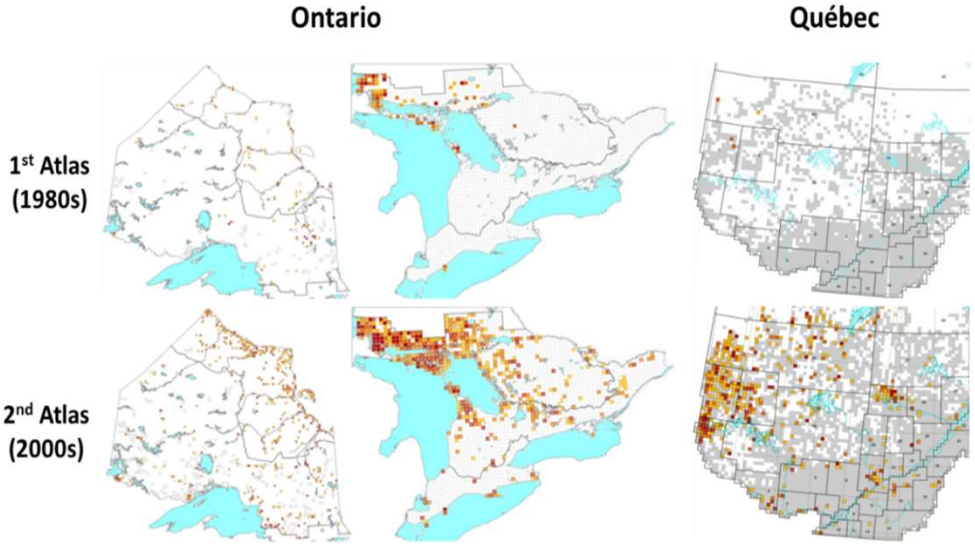
Sandhill Cranes in Eastern Canada

Motivation for focused research in Ontario and Quebec

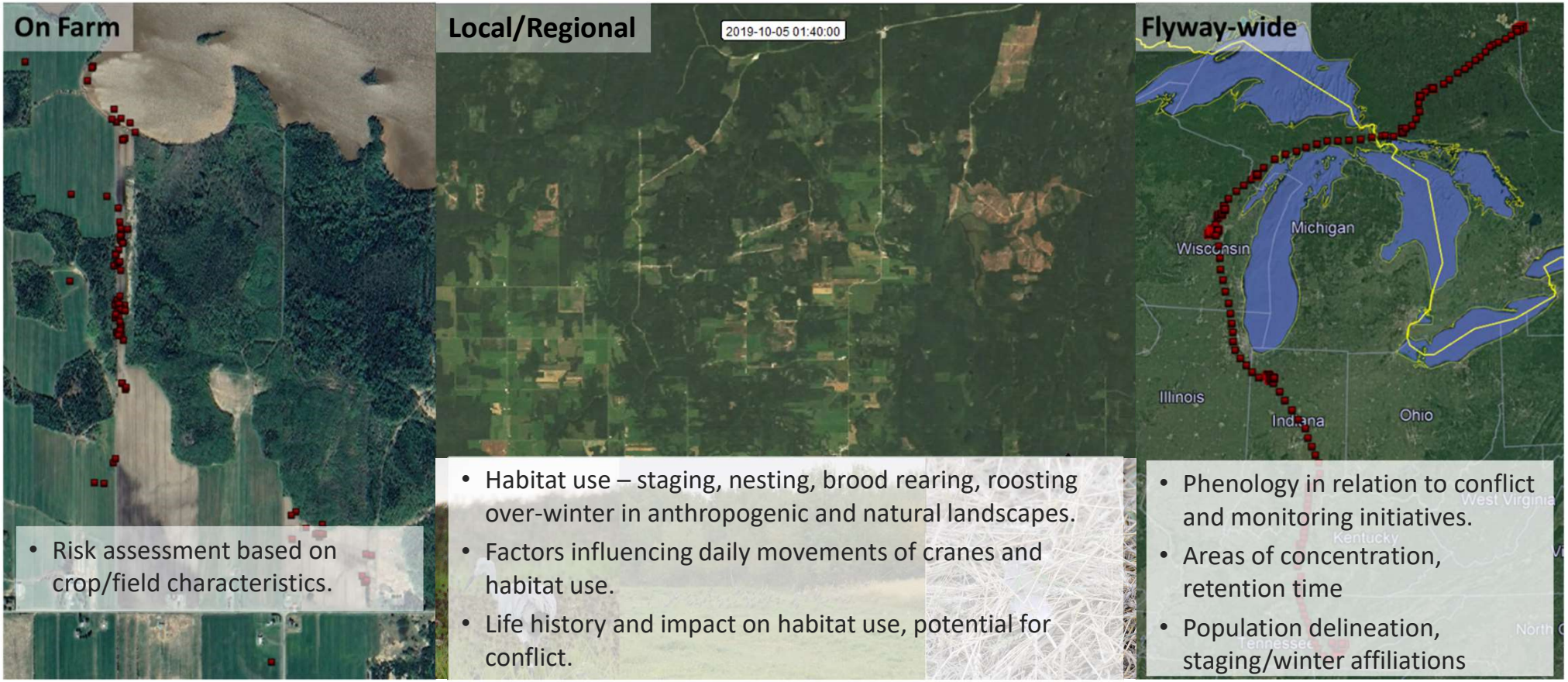
- Range expansion and increasing abundance of Eastern Population Sandhill Cranes (SACR) in Ontario and Quebec have resulted in increased conflicts between agricultural producers and Sandhill Cranes.
- Conflicts have resulted in requests from stakeholders for improved mitigation tools, SACR population reduction, lethal control, hunting seasons, and government damage compensation across various levels of government.
- Requests for hunting season in Ontario to help mitigate conflicts (OFA, OSCIA, OFAH).

Why research is it needed

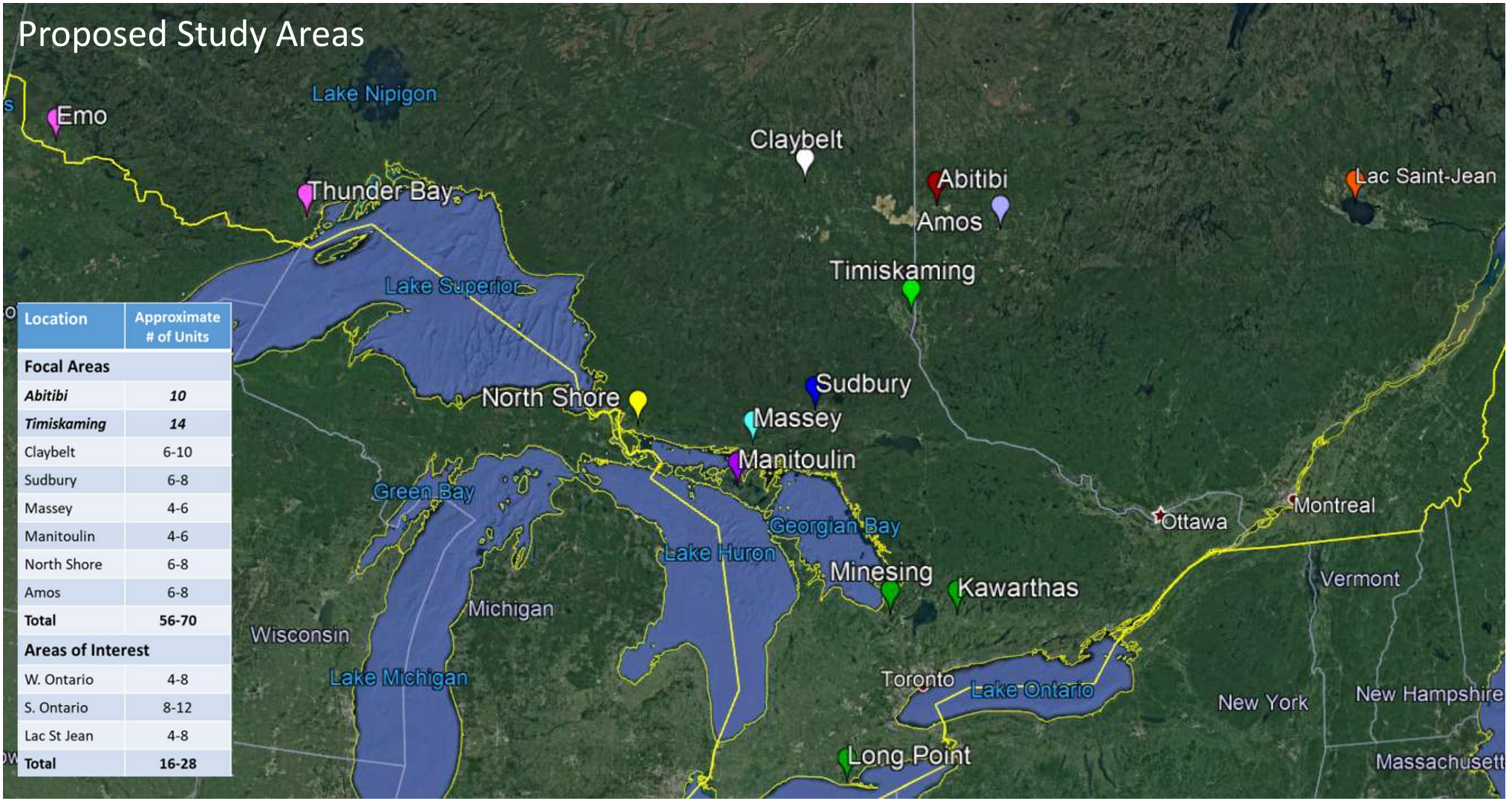
- Inform/enhance mitigation strategies, guidance and policy related to agricultural conflicts with SACR.
- Enhance understanding of SACR in eastern Canada and Mississippi/Atlantic Flyways
- Improve population monitoring efforts to better inform management decisions.
- Address biological/ecological knowledge gaps regarding SACR nesting in the boreal forest.



Many Questions at Many Scales

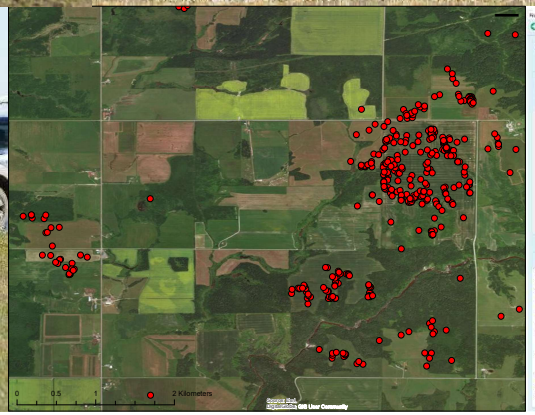


Proposed Study Areas



Location	Approximate # of Units
Focal Areas	
Abitibi	***10***
Timiskaming	***14***
Claybelt	6-10
Sudbury	6-8
Massey	4-6
Manitoulin	4-6
North Shore	6-8
Amos	6-8
Total	**56-70**
Areas of Interest	
W. Ontario	4-8
S. Ontario	8-12
Lac St Jean	4-8
Total	**16-28**

Methods



```
> kde.full <- sp.kde(x=df.kde.test, bw=1, standardize = TRUE,
+                    nr = 1000,
+                    nc = 1000,
+                    scale.factor = 100)
using extent of x to define grid

calculating unweighted kde

> plot(kde.full)
> points(df.kde.test, pch=20, cex=0.25, col="blue")
```

First Year Results

- ≈70 Cranes captured
- 24 transmitters: 10 Abitibi, 14 Timiskaming
- 29 band-only
- Transmitters deployed in same catches appear to be behaving independently of one another.
- All birds migrated and returned successfully
- All units working well before going out of coverage on breeding areas.
- Several units check in sporatically, performing well.

Second Year Results

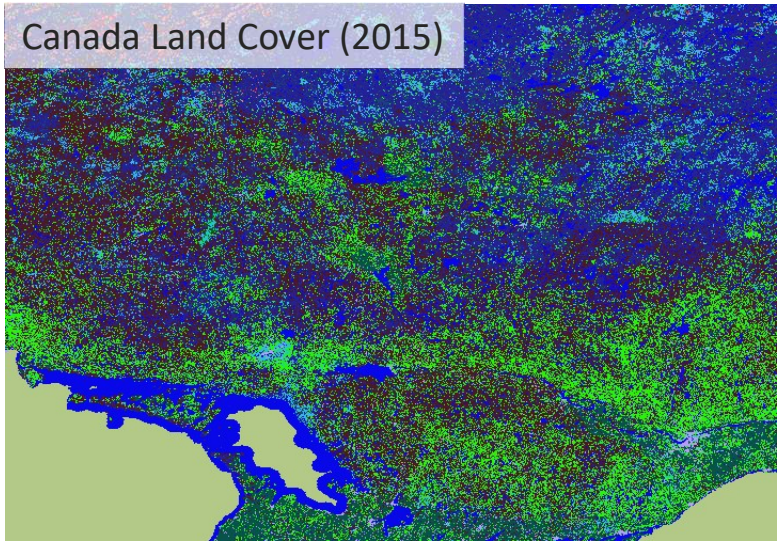
- ≈130 Cranes captured
- 38 transmitters: 34 Ontario, 4 Lac Saint-Jean
- 78 band-only
- Transmitters deployed in same catches appear to be behaving independently of one another.
- 4 units have loss GPS module, 1 unit has lost cell communication, bird alive when communication lost.

Currently 59 transmitters functioning properly, additional ≈46 units purchased for future deployments.

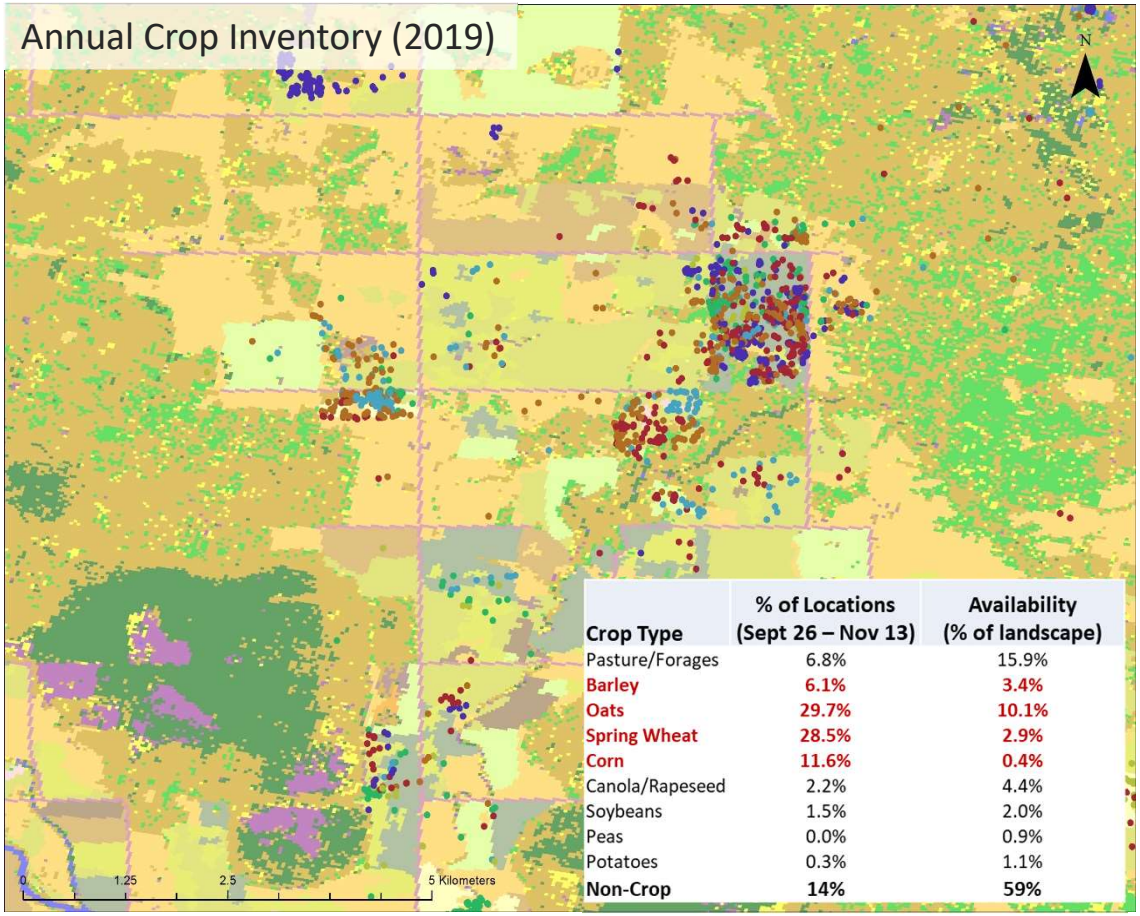
Habitat Selection and Conflict Potential

- Nesting/Brood Rearing/Roosting Habitats in the Boreal Forest and in proximity to agricultural areas.
- Agricultural Use and conflict potential; Allow producers to make informed decisions regarding risk of damage.

Canada Land Cover (2015)

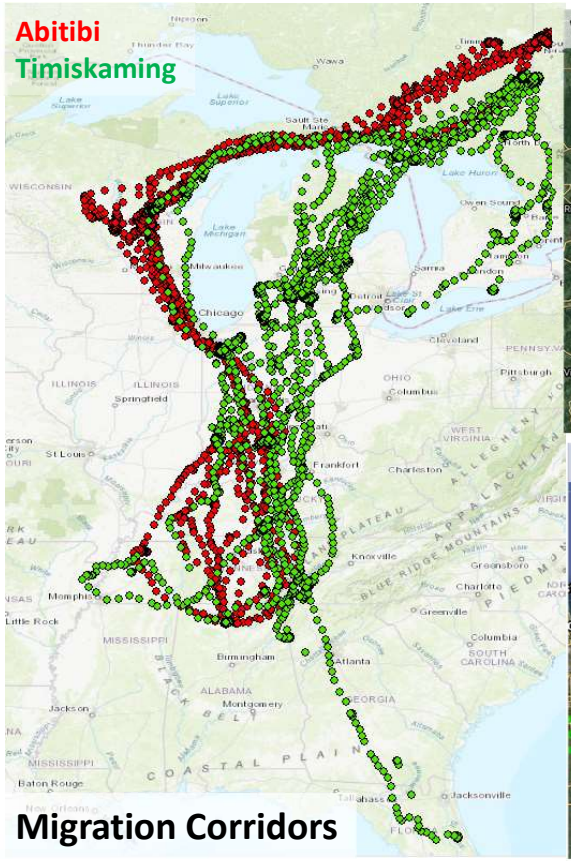


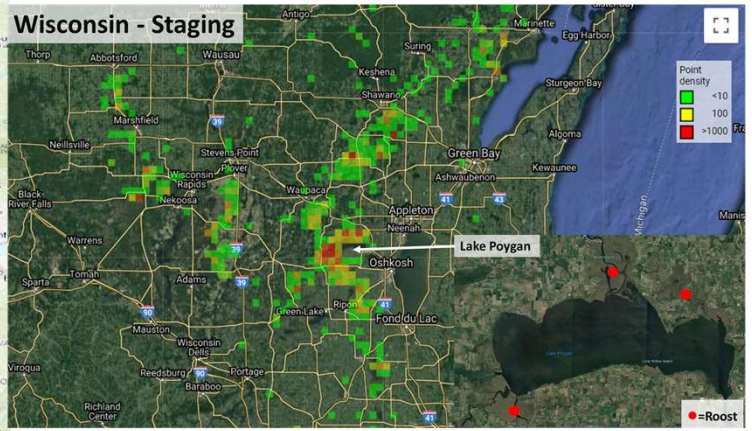
Annual Crop Inventory (2019)

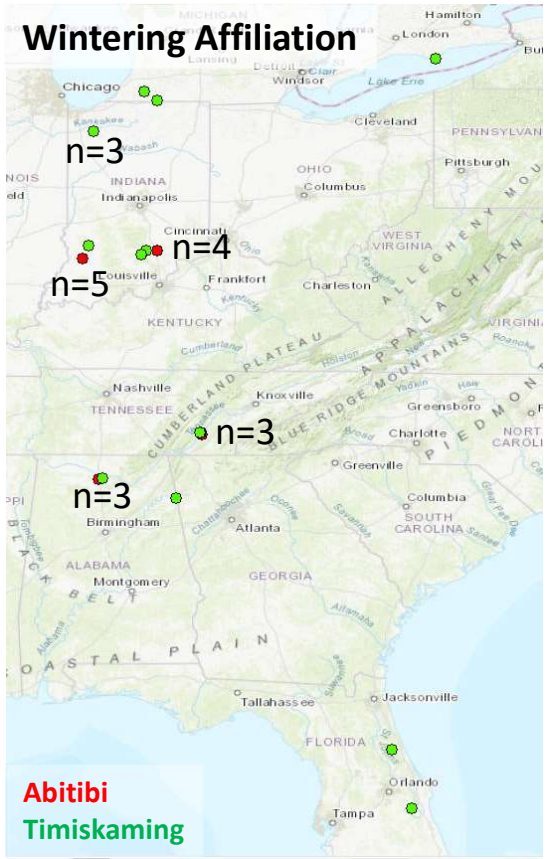


Crop Type	% of Locations (Sept 26 – Nov 13)	Availability (% of landscape)
Pasture/Forages	6.8%	15.9%
Barley	**6.1%**	**3.4%**
Oats	**29.7%**	**10.1%**
Spring Wheat	**28.5%**	**2.9%**
Corn	**11.6%**	**0.4%**
Canola/Rapeseed	2.2%	4.4%
Soybeans	1.5%	2.0%
Peas	0.0%	0.9%
Potatoes	0.3%	1.1%
Non-Crop	**14%**	**59%**

Migration and Wintering Affiliation Information

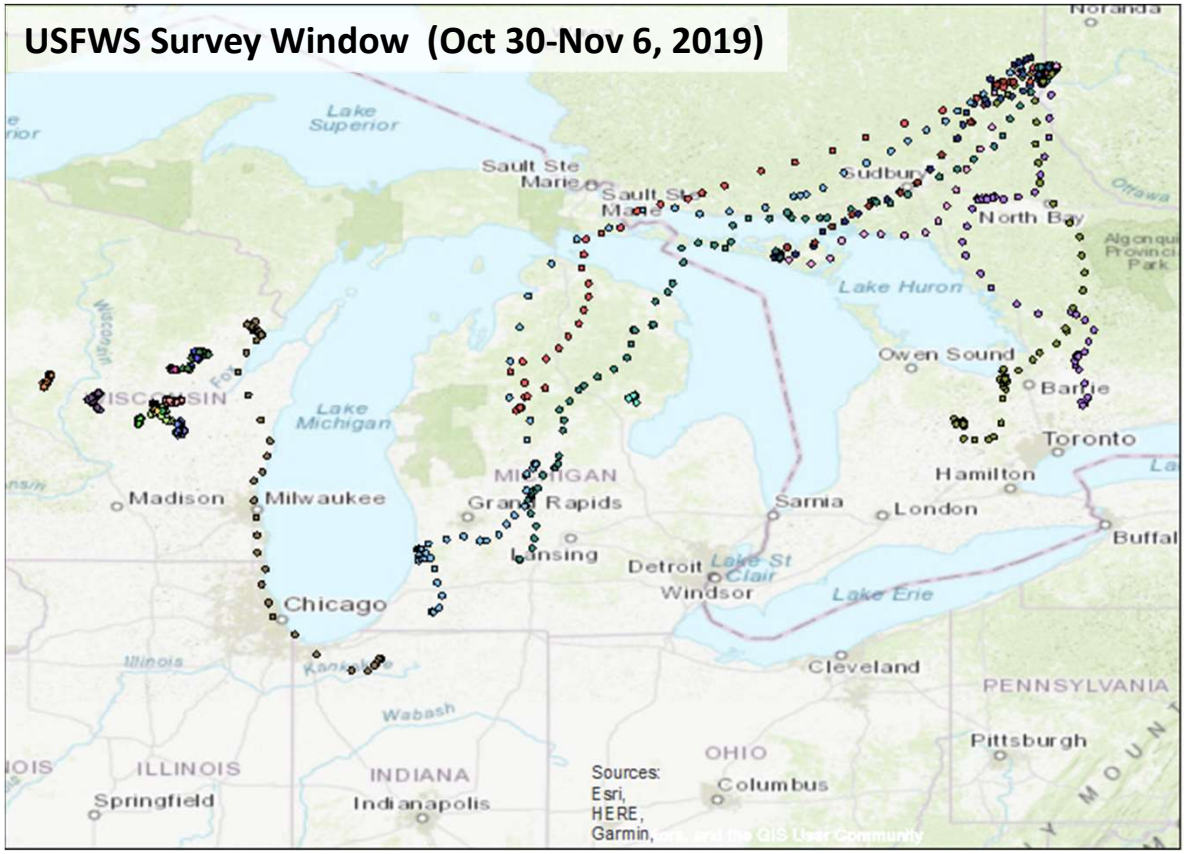






All transmitters from 2019 utilized "Eastern Population" corridors and wintering areas

Informing Monitoring Initiatives

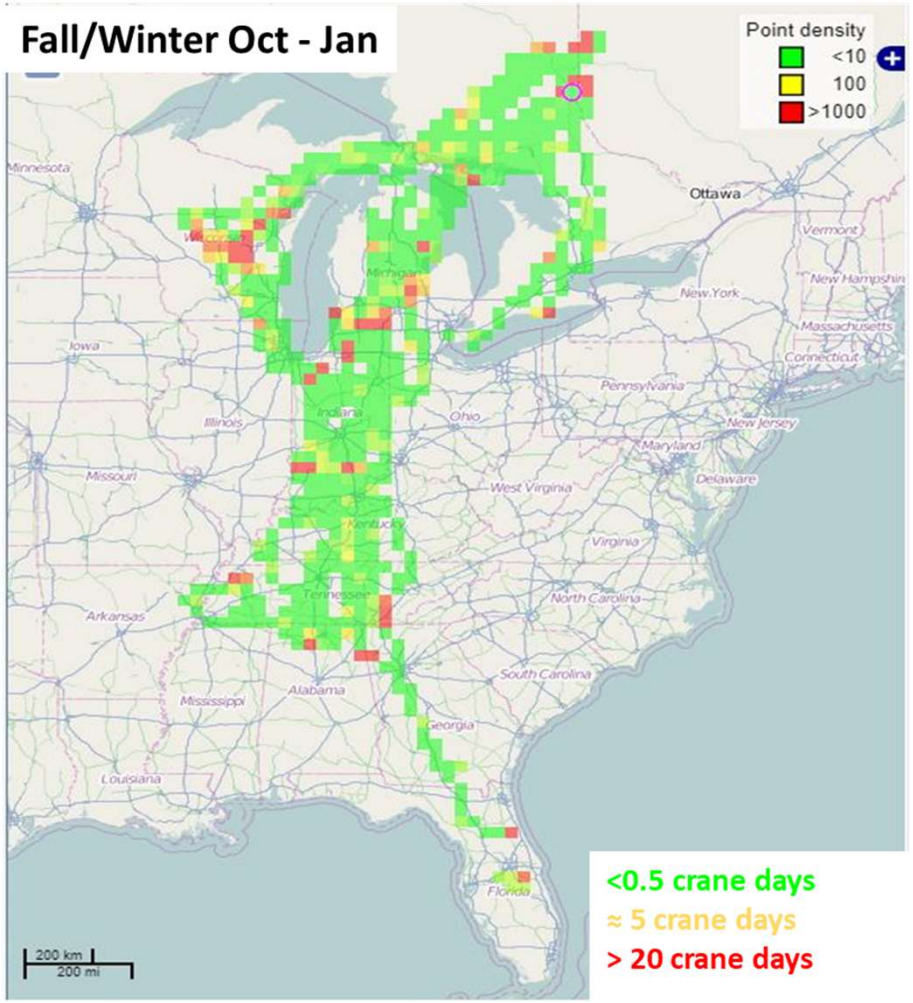


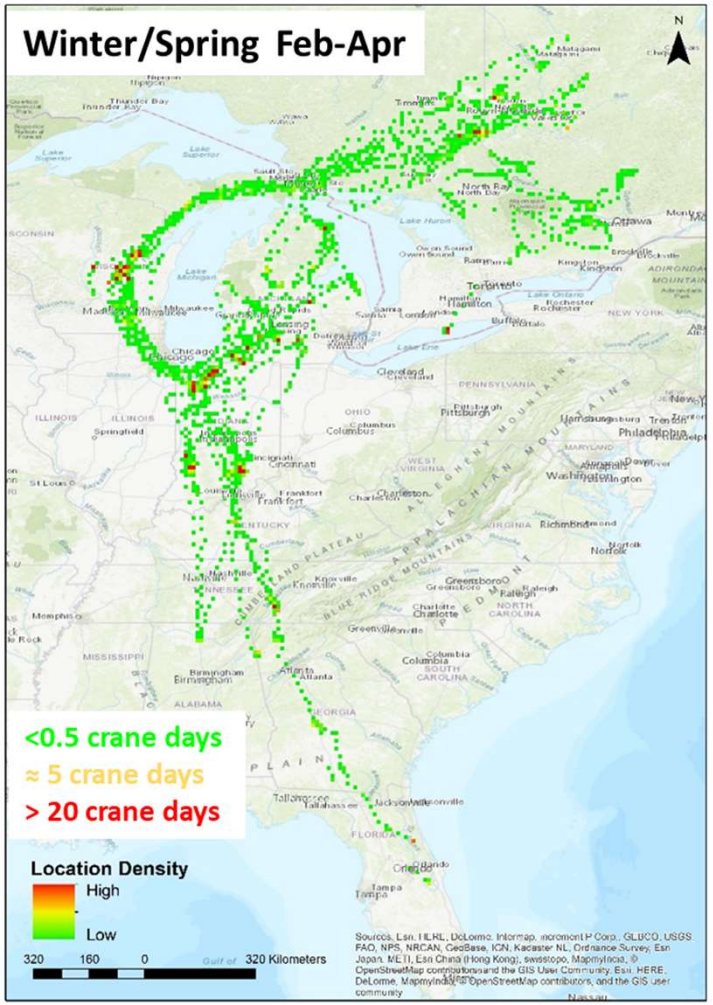
Previously assumed all SACR had left Canada during the survey window.

Inform monitoring initiatives

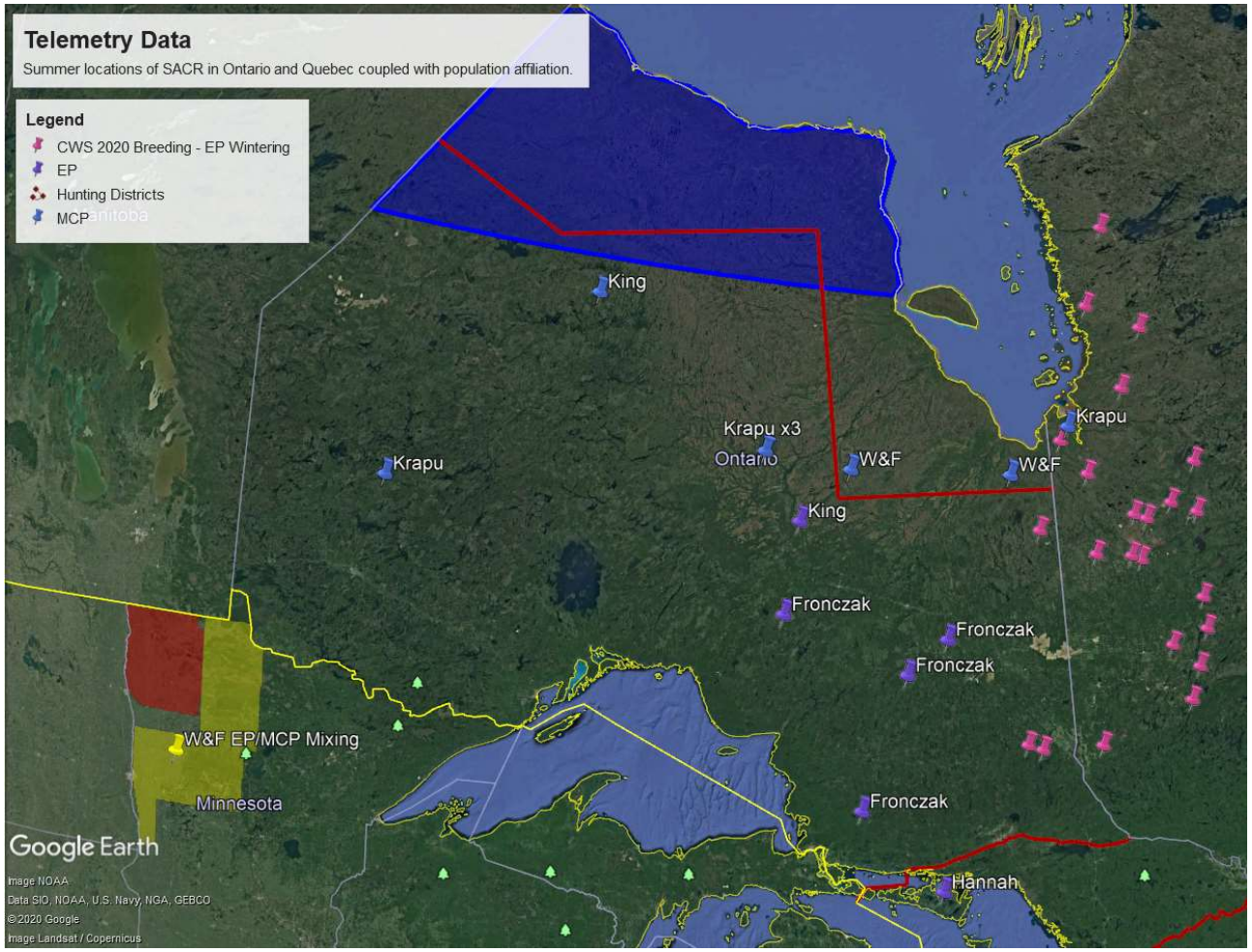
- Timing and phenology of staging – improved survey windows
- Areas of concentrations - gaps in survey effort.
- Retention time – potential to improve population estimates

Areas of Concentration

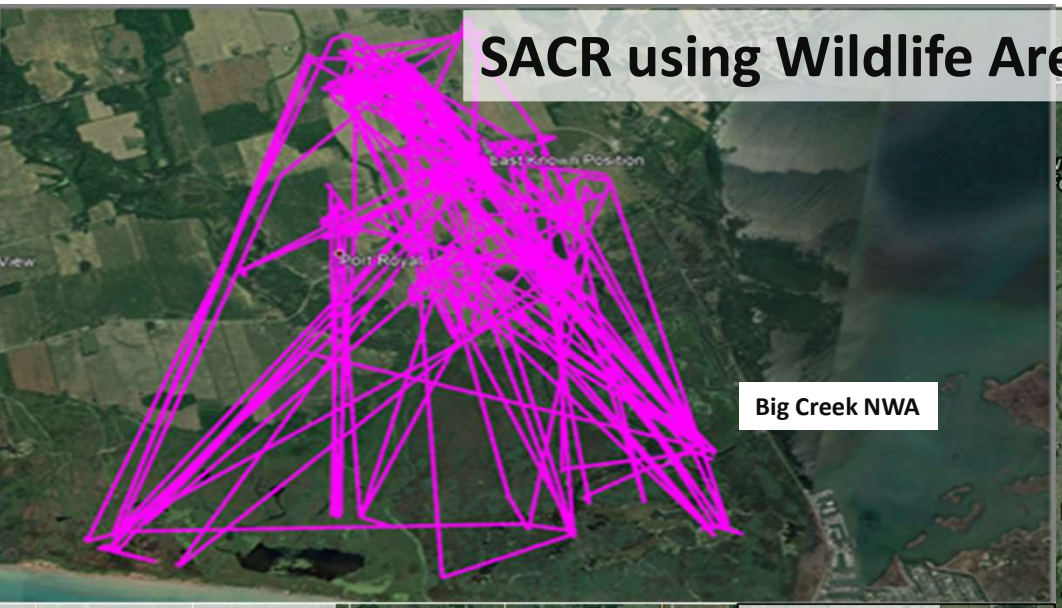


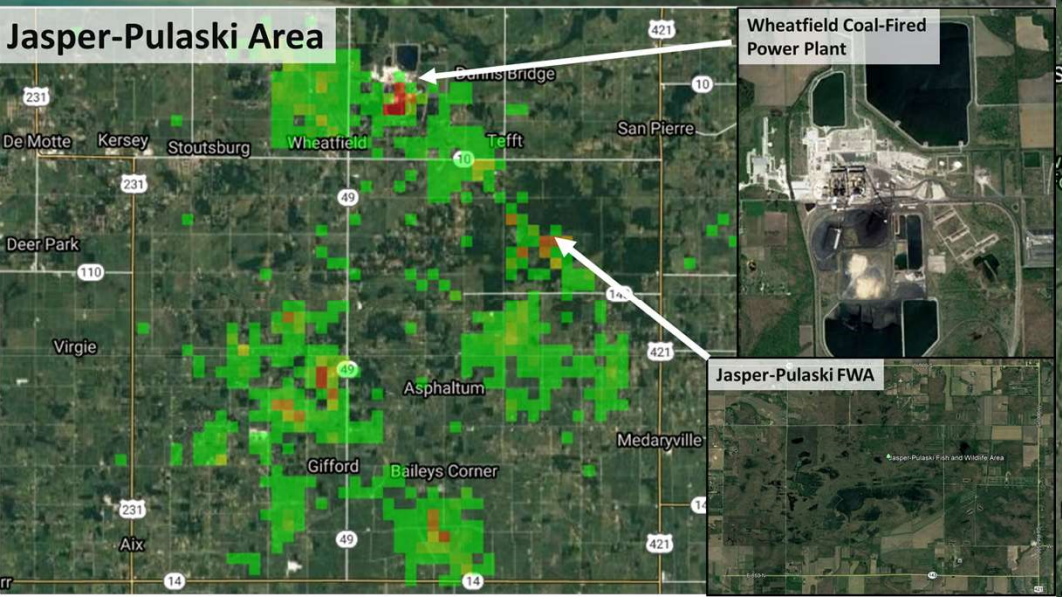


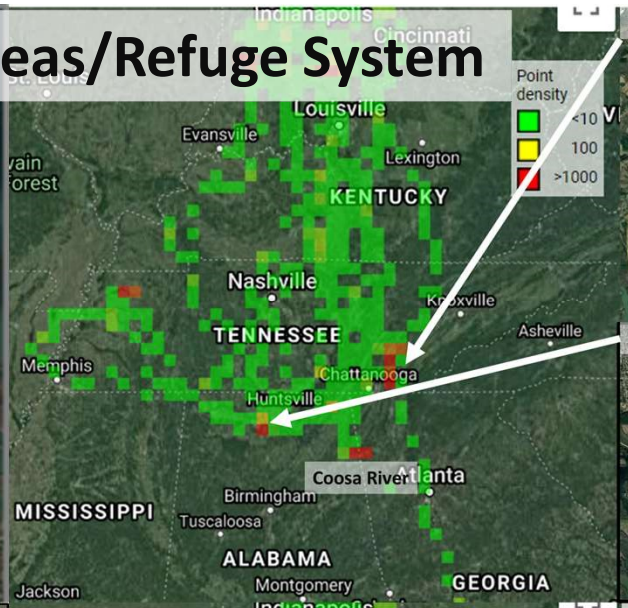
Population Delineation

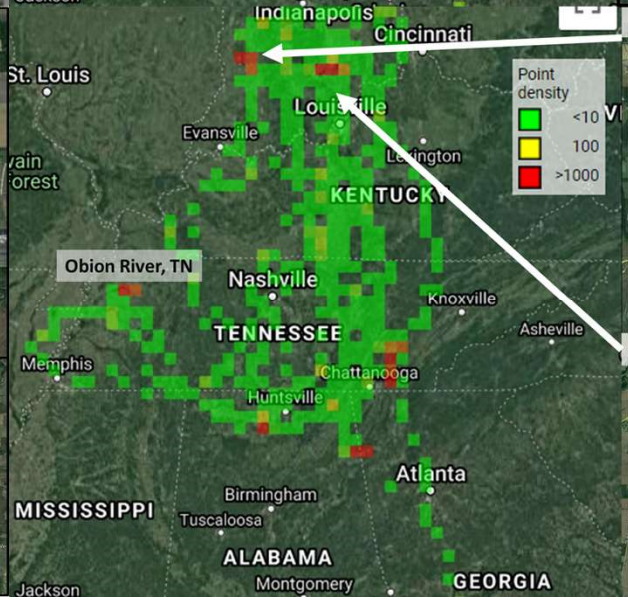


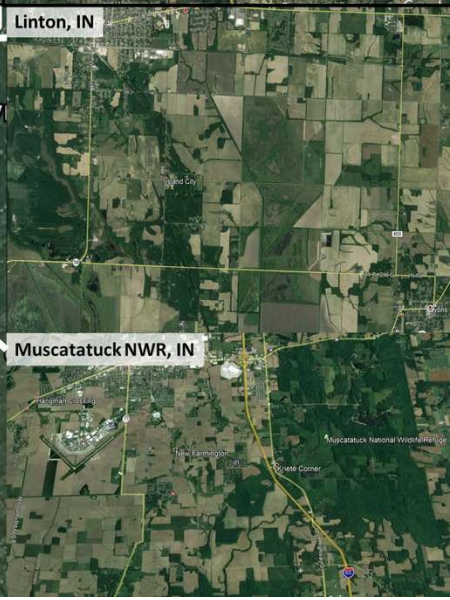
SACR using Wildlife Areas/Refuge System



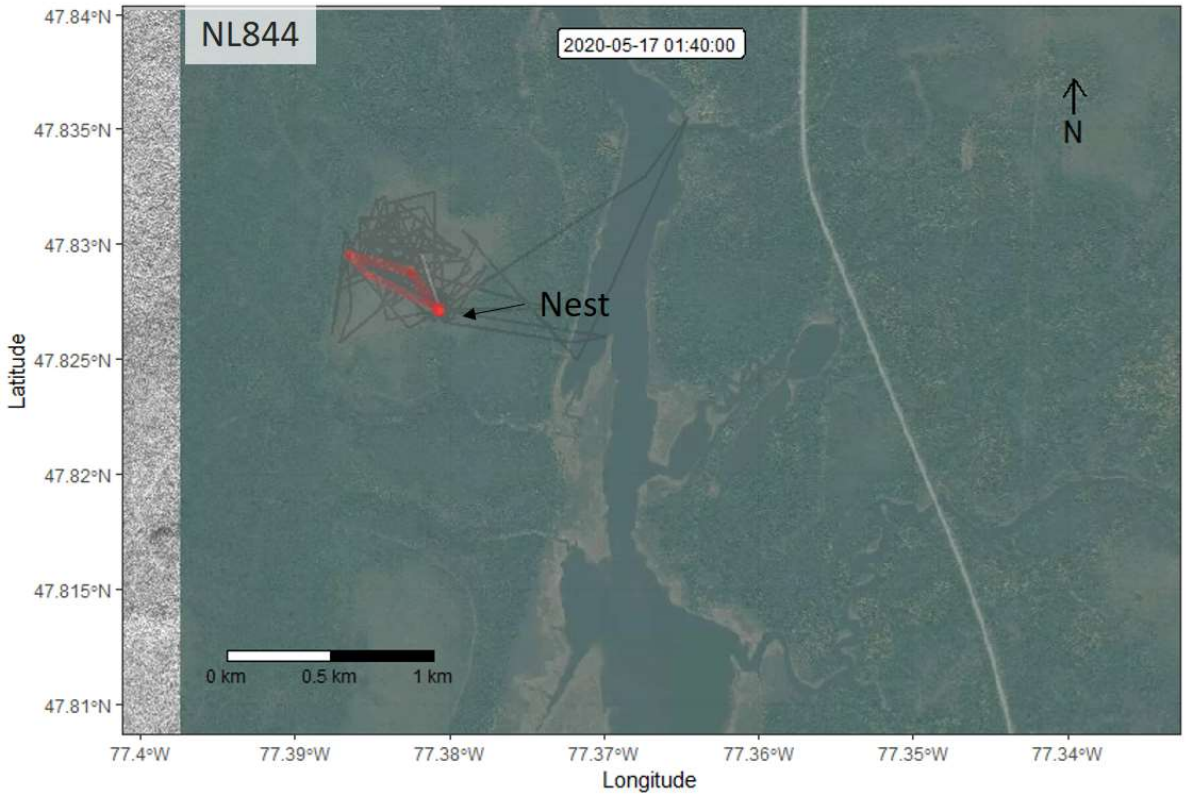








Movement Behaviour
On Territory, Incubation, Brood Rearing

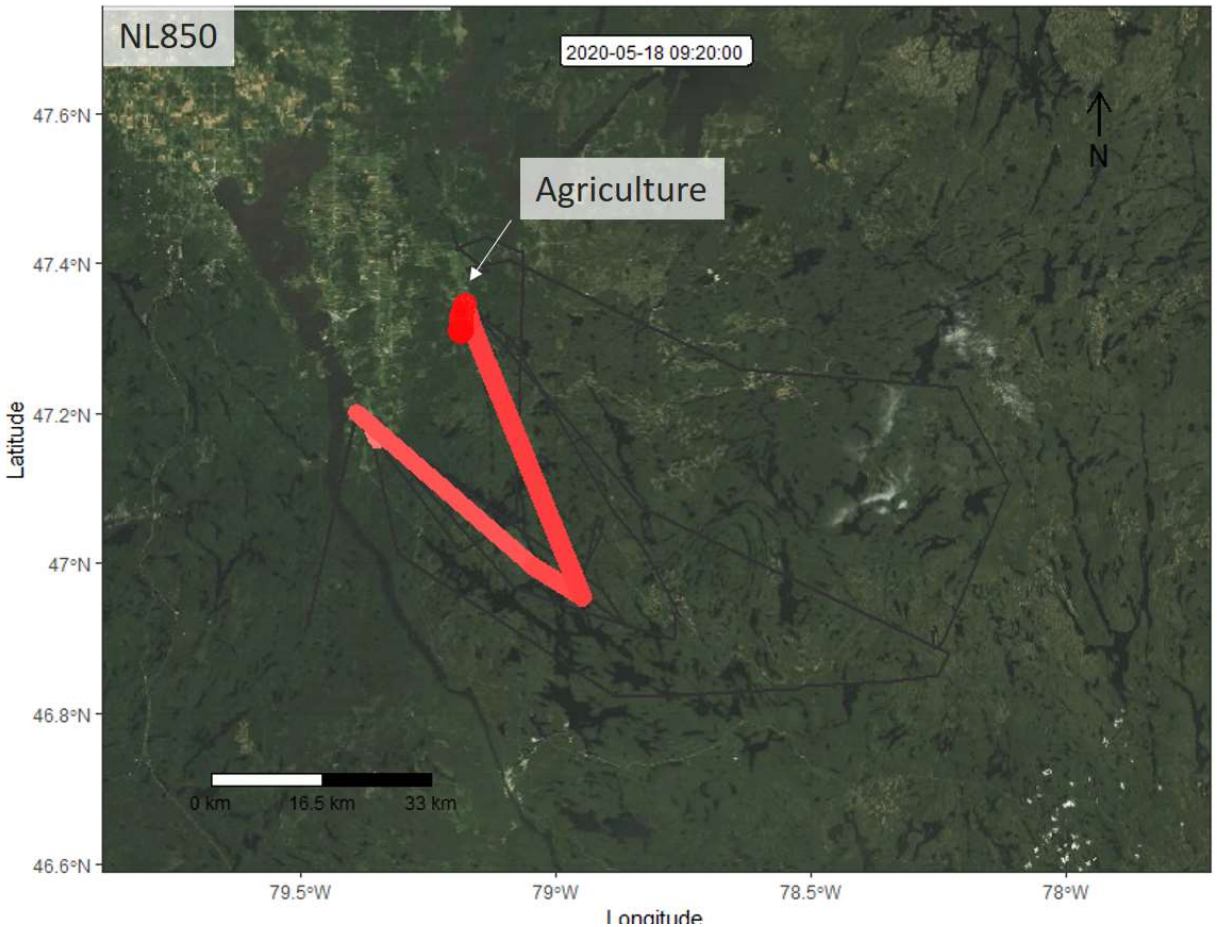


Assumed by movements:

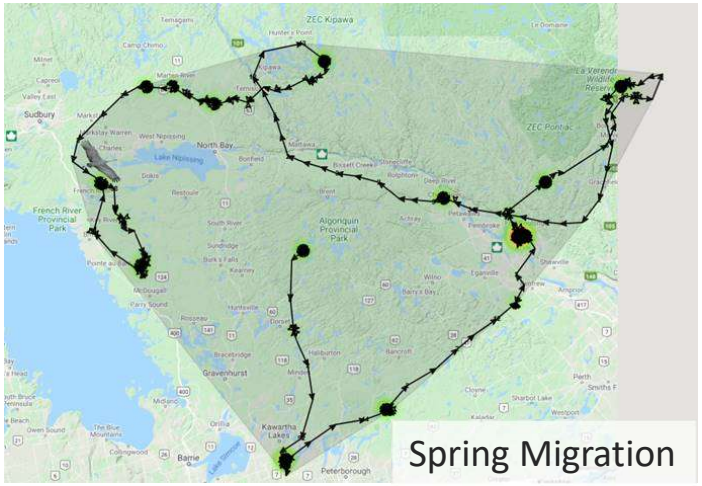
- Incubation begins ≈ May 04, 2020
- Hatch ≈ May 30, 2020
  (27 days < typical 30 days)
- Brood rearing/remains on territory – May 31 – June 20.
- Expected fledging to occur 7 weeks after hatch.

Sex of marked birds not yet confirmed

Movement Behaviour – Sub-adult?



- Frequent, long distance movements (>30km).
- Never appears to settle in any suitable “breeding habitat” for longer than a day or two.
- Frequently returning to agriculture and roosting habitat.
- NL850 also had “wandering” spring migration path



Acknowledgements

- CWS – Christine Lepage, Christian Roy, Brigitte Collins, François Bolduc.
- U of Waterloo - Kelly McLean & Dr. Brad Fedy
- USFWS - Dave Fronczak
- OVC - Jolene Giacinti
- 2019 Crane Crews
- 2020 Crane Crews
- OSCIA - Andy Graham
- Julie Poirier Mensinga – OMAFRA
- David Thompson - RAIN

- Numerous producers in ON & QC that have provided access and insight.

Abitibi 2019

Timiskaming 2019