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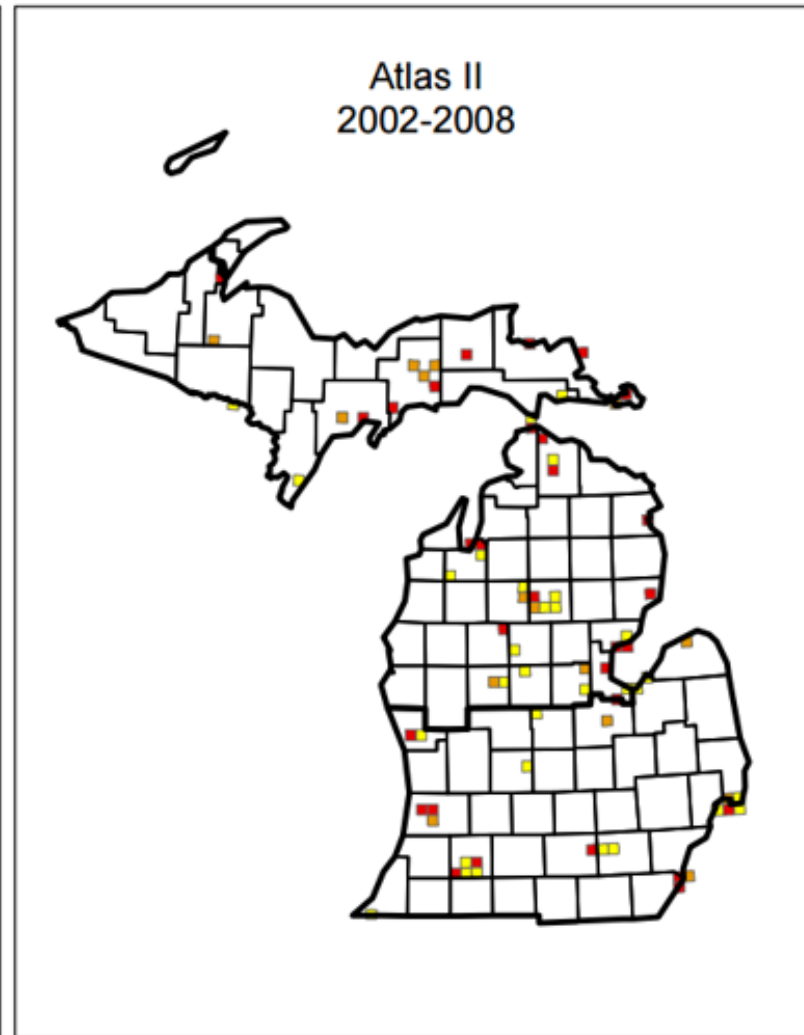
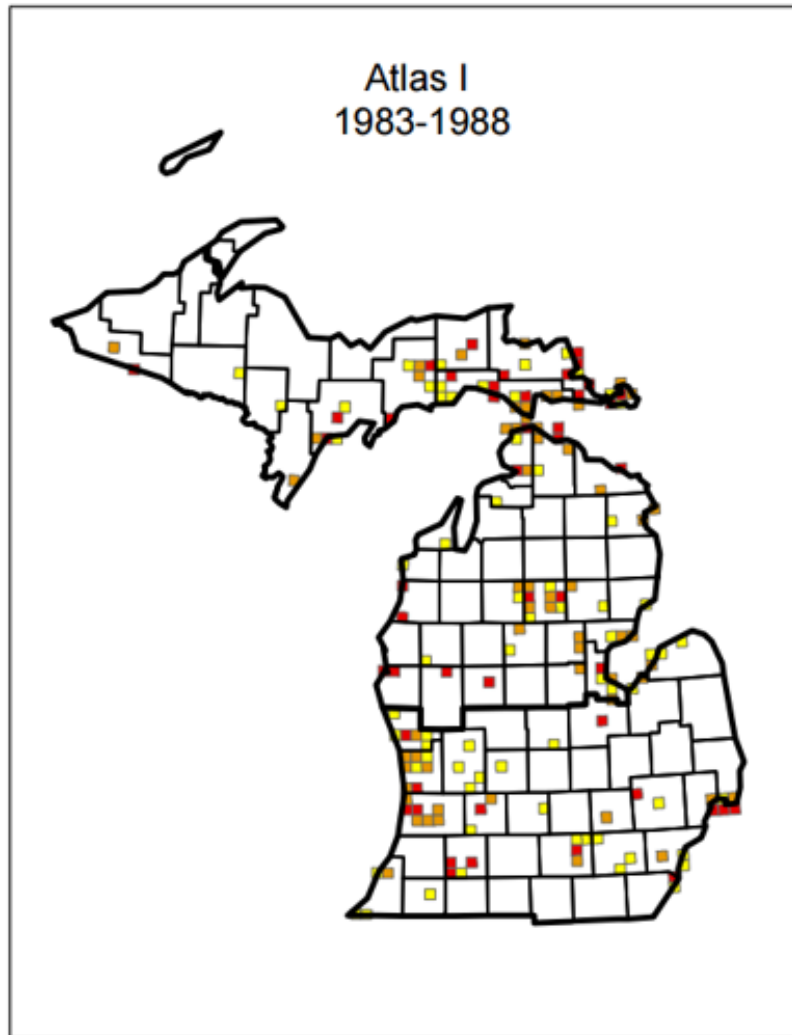
Black Tern Conservation & Management in Michigan

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Black Tern



An Increasing Conservation Focus

Michigan Special Concern
Audubon Watchlist
Audubon Climate Threatened
US Fish & Wildlife Service

- Surrogate species

Michigan Wildlife Action Plan

- Great Lakes Marsh and Inland Emergent Wetland Focal Species



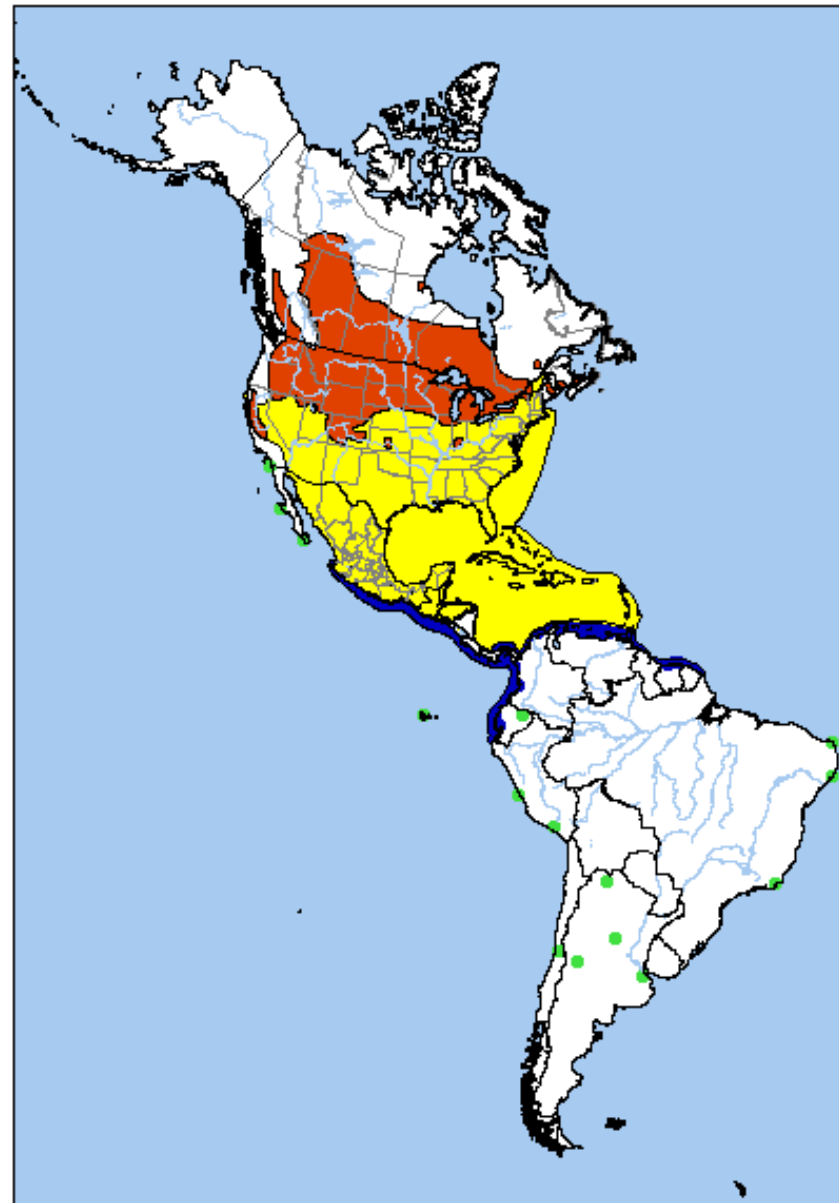



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Black Tern range map



-  Permanent Resident
-  Breeding Resident
-  Nonbreeding Resident
-  Passage Migrant
-  Uncertain Status
-  Introduced
-  Vagrant
-  Extirpated
-  Historical Records Only
-  National boundary
-  Subnational boundary
-  River
-  Water body



NatureServe

Map created September 2007

7500750 Kilometers



St. Clair Flats Black Tern working group

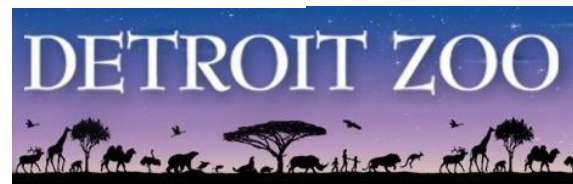


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-Randy Kling

St. Clair Flats project objectives

- Estimate breeding success
- Determine colony locations & overall tern numbers between years
- Identify all sources of nest/chick losses, and determine how to mitigate threats
- Identify sources of population losses (survivorship vs. productivity)
- Identify possible habitat management needs at colonies
- Begin to understand colony abandonment





MC 0508 RG

15















2013 nests

Baltimore colony

Doty colony

Goose Bay

Strawberry colony



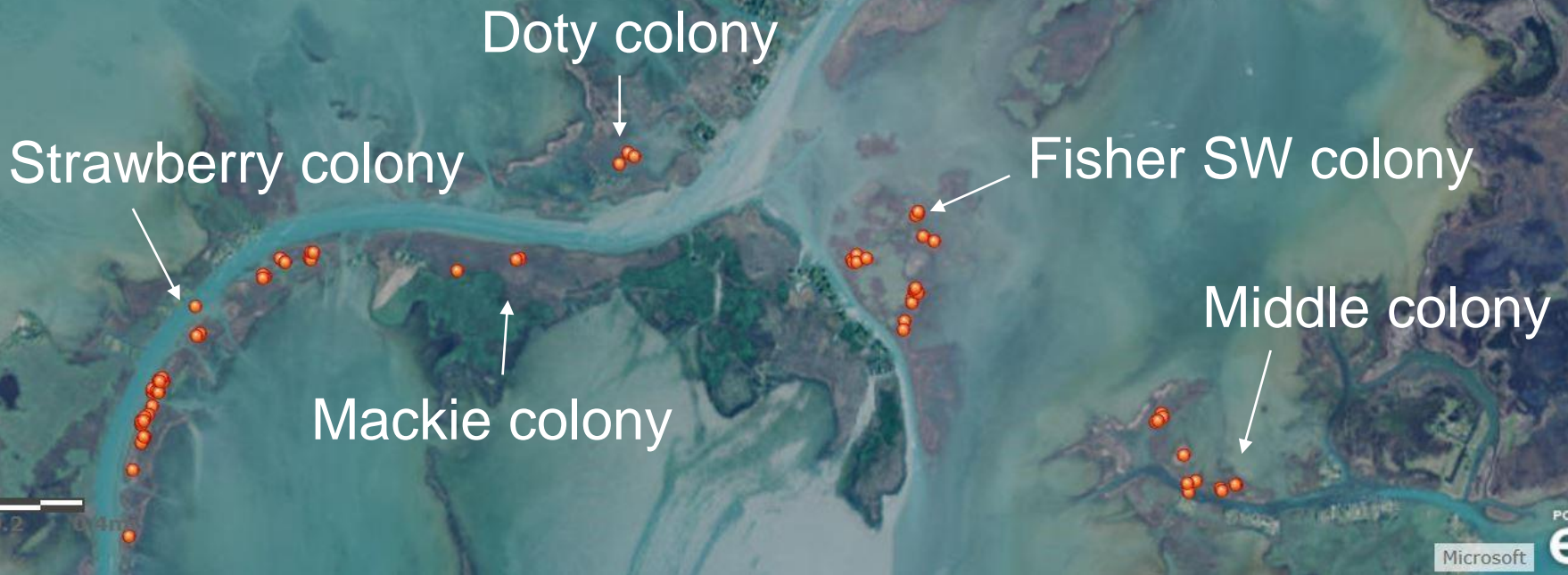
2014 nests



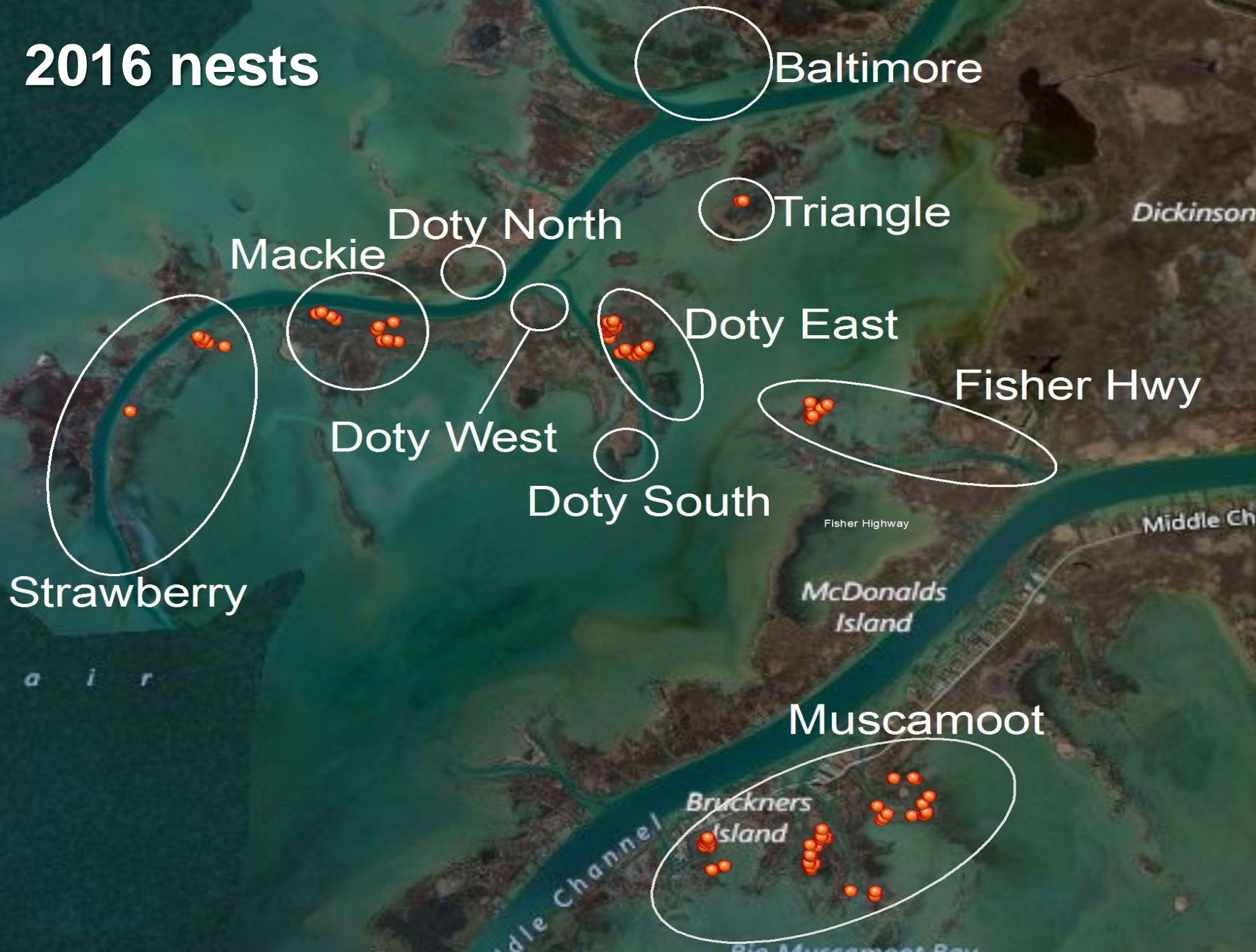
Mackie colony

Middle colony

2015 nests



2016 nests



2017 nests



St. Clair Flats results

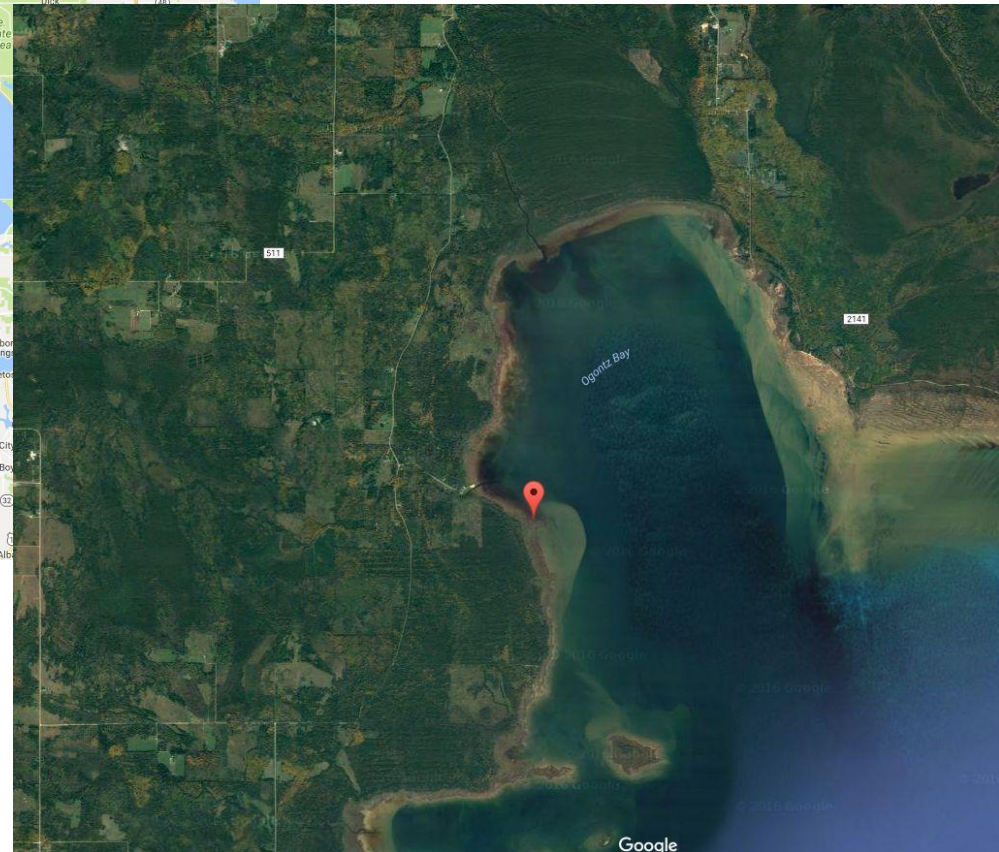
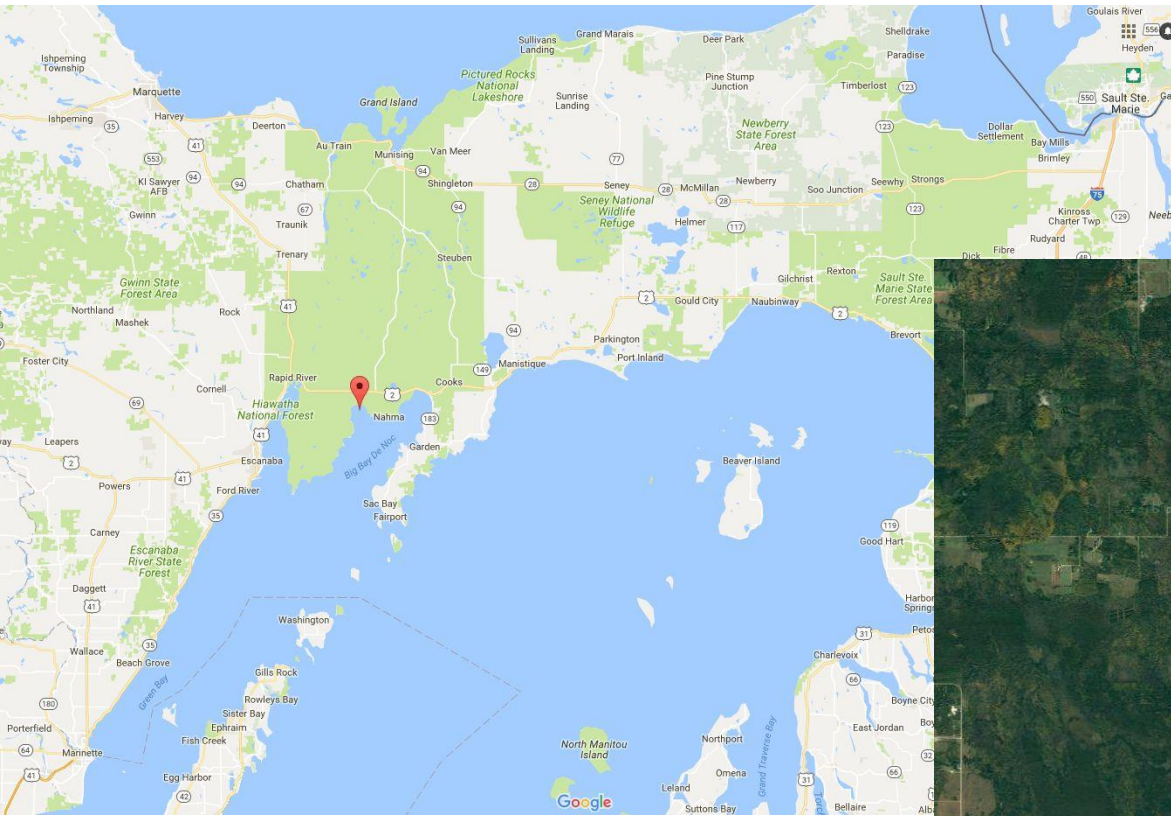


Year	# pairs	Nests	Hatch success	Banded adults	Banded chicks
2013	200	50	51-90%	9	32
2014	145	68	51-83%	12	78
2015	150	81	51-78%	37	76
2016	150	101	28-99%	35	66
2017	156	154	tbd	63	132
TOTALS	801	454	-	156	384

St. Clair Flats results

- Approximately 100-200 pairs annually
- Nesting in 5-9 subcolonies
- Breeding success appears to be high
- Few predators but moderately high losses to storms
- No use of artificial platforms
- At least some site fidelity of adults (13 recaptures in 156 banded) and chicks (2 natal recruits recaptured out of 384 banded)
- *Phragmites australis* infringing on some nesting areas

Ogontz Bay Black Tern monitoring 2016-2017



Ogontz Bay Black Tern monitoring 2016-2017

USFWS Coastal Program Grant

Partners

- Christie Deloria-Sheffield (USFWS)
- Sherry MacKinnon (MDNR)
- Steve Sjogren (USFS)
- Janet Ekstrum (USFS)
- Darcy Rutkowski (UPRCDC)
- Jason Schnorr (UPRCDC)
- Lindsey Goss (USFS)
- Jim Ozenberger (USFS)
- Dawn Marsh



Ogontz Bay results

- Peak of 36 adult terns on 31 May 2016
- 15 nests, 1 fledgling
- 11-12 chicks observed
- Artificial platforms useful
- Common Raven egg predation
- Site abandoned in 2017
- Terns will nest on native *Phragmites*
- As long as *Phragmites* is minor part of marsh, not a deterrent to terns



Wigwam Bay



Engagement

Project	# volunteers engaged	Project Partners
Ogontz	27	8
St. Clair Flats	20	8
Wigwam	n/a	4
	50	19

Number of people reached at Public Programs and talks on Black Tern Conservation and Management in MI: **569**

Annual Discovery Cruise



New Technology: MOTUS Wildlife Tracking System

Photo by Caleb Putnam



Affordable Tracking

Collaborative research network

Uses coordinated automated radio telemetry arrays and nanotags

- Some nanotags are small enough to put on Monarch butterflies!

Program of Bird Studies

Canada, Acadia University and other collaborating researchers and organizations

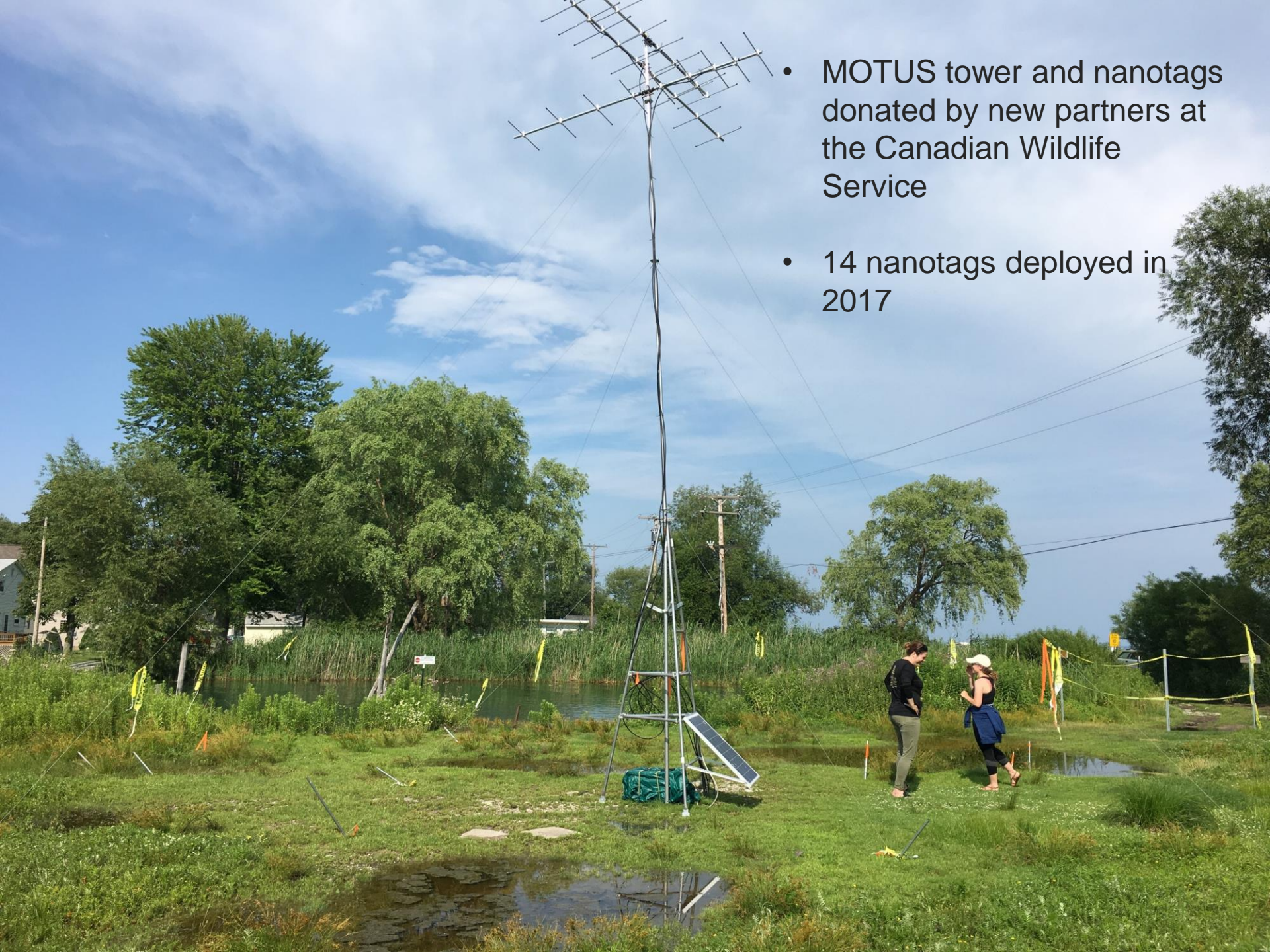
MOTUS Tower Locations



Google



Map data ©2017 Imagery ©2017 NAS



- MOTUS tower and nanotags donated by new partners at the Canadian Wildlife Service
- 14 nanotags deployed in 2017

Regional Next Steps

Monitor more sites for productivity and basic nesting biology

Develop more precise population index

Identify limiting demographic factors

Continue to inform occupancy/ abandonment models

Develop robust demographic models

- Must band more individuals to build mark-recapture models
- Replicate survivorship results from WI
- Continue use of MOTUS nanotags and erect new MOTUS towers at study sites
- Continue use of trail cams to determine predatory threats

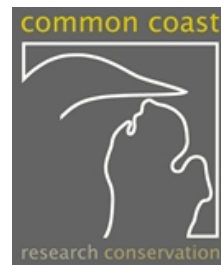
Inform future wetland management

- **Increase recruitment**
- **Decrease colony abandonment**
- **Maximize productivity**

Michigan Black Tern Conservation Initiative



Environment and Climate
Change Canada



UPPER MISSISSIPPI RIVER & GREAT LAKES REGION
JOINT VENTURE



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