

Colony growth, productivity, post-breeding roosting and movements of colour-banded Great Egrets from the Great Lakes.



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*The Greater New York / New Jersey Harbor
Colonial Waterbirds Working Group*

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Outline

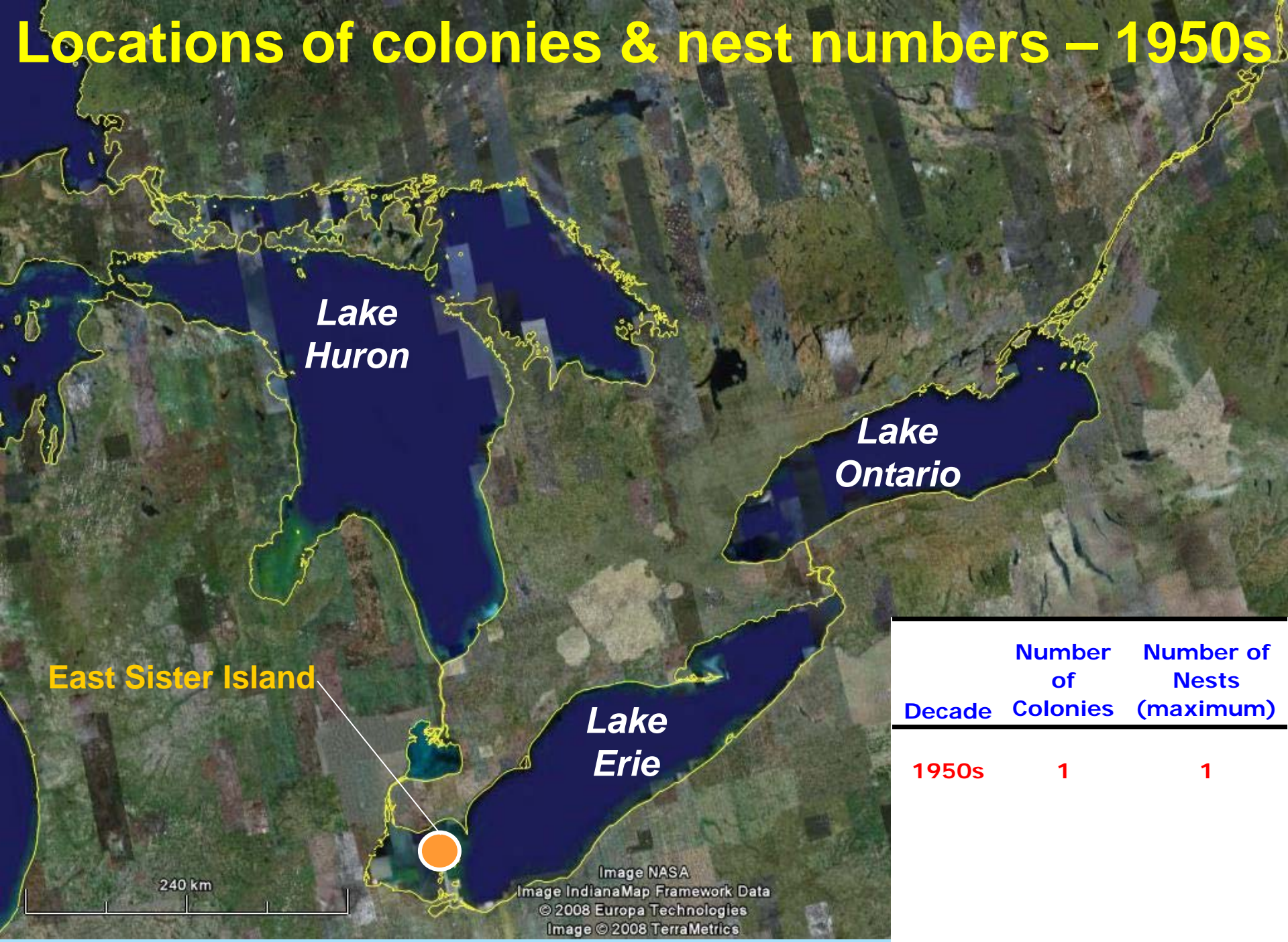


- 1) Range expansion and population growth in the eastern Great Lakes**
- 1) Productivity**
- 3) Post-breeding movements (July – March)**
- 4) Post-breeding nocturnal roosts**
- 5) Fidelity to the natal colony**
- 6) Foraging range/sites on the Niagara River (Sept.-Oct.)**

Range Expansion and Population Growth by Decade

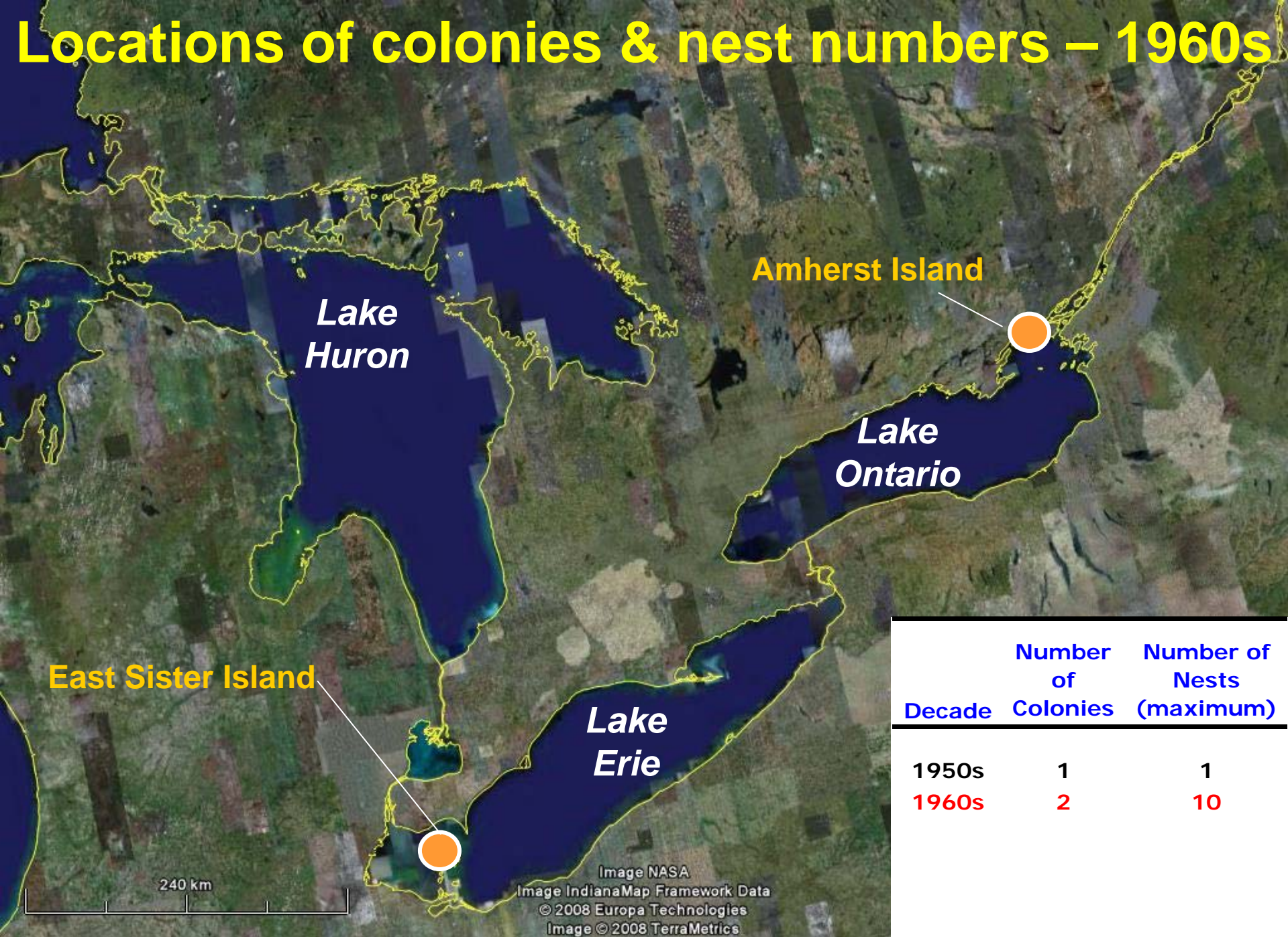


Locations of colonies & nest numbers – 1950s

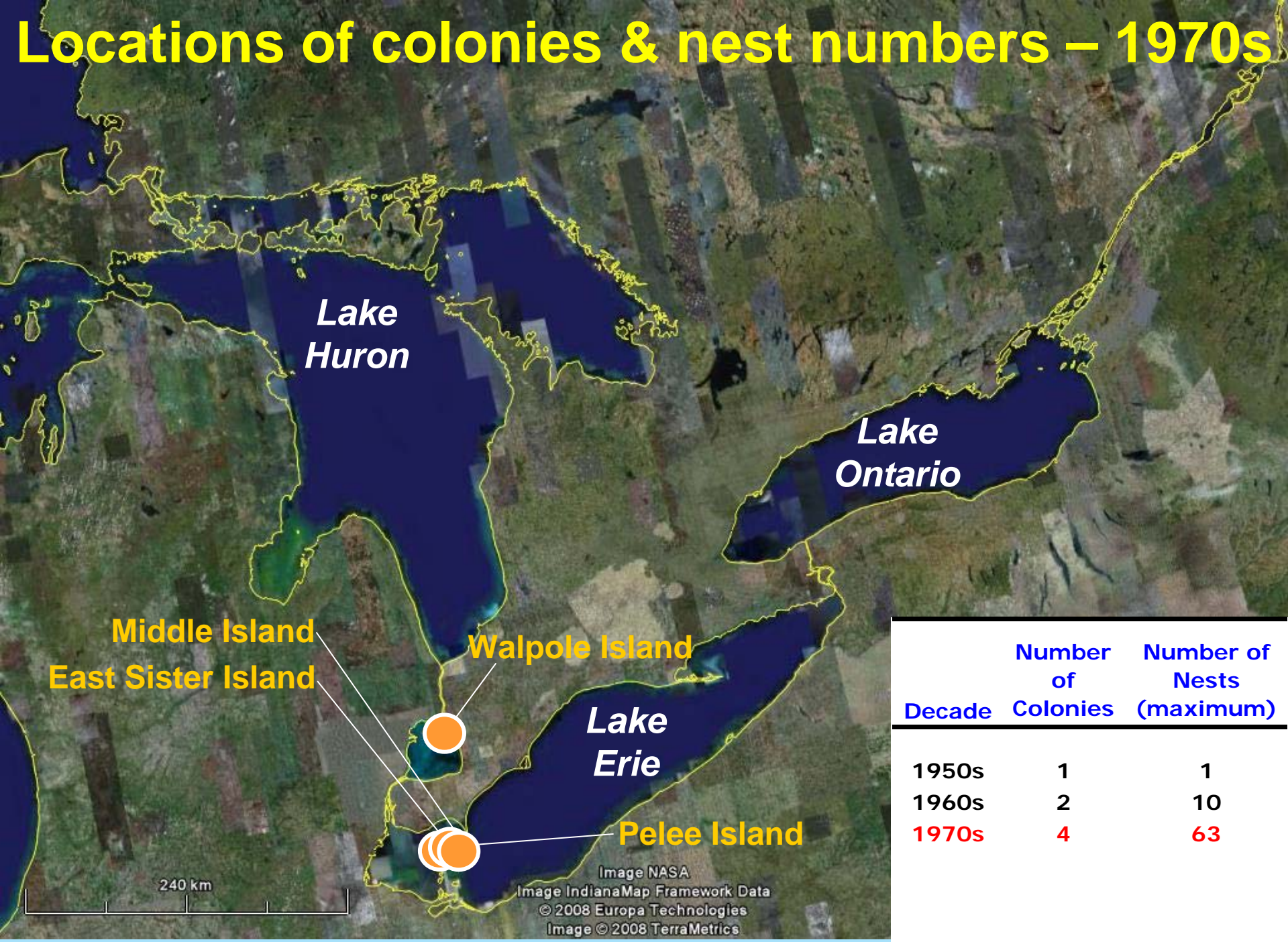


Decade	Number of Colonies	Number of Nests (maximum)
1950s	1	1

Locations of colonies & nest numbers – 1960s



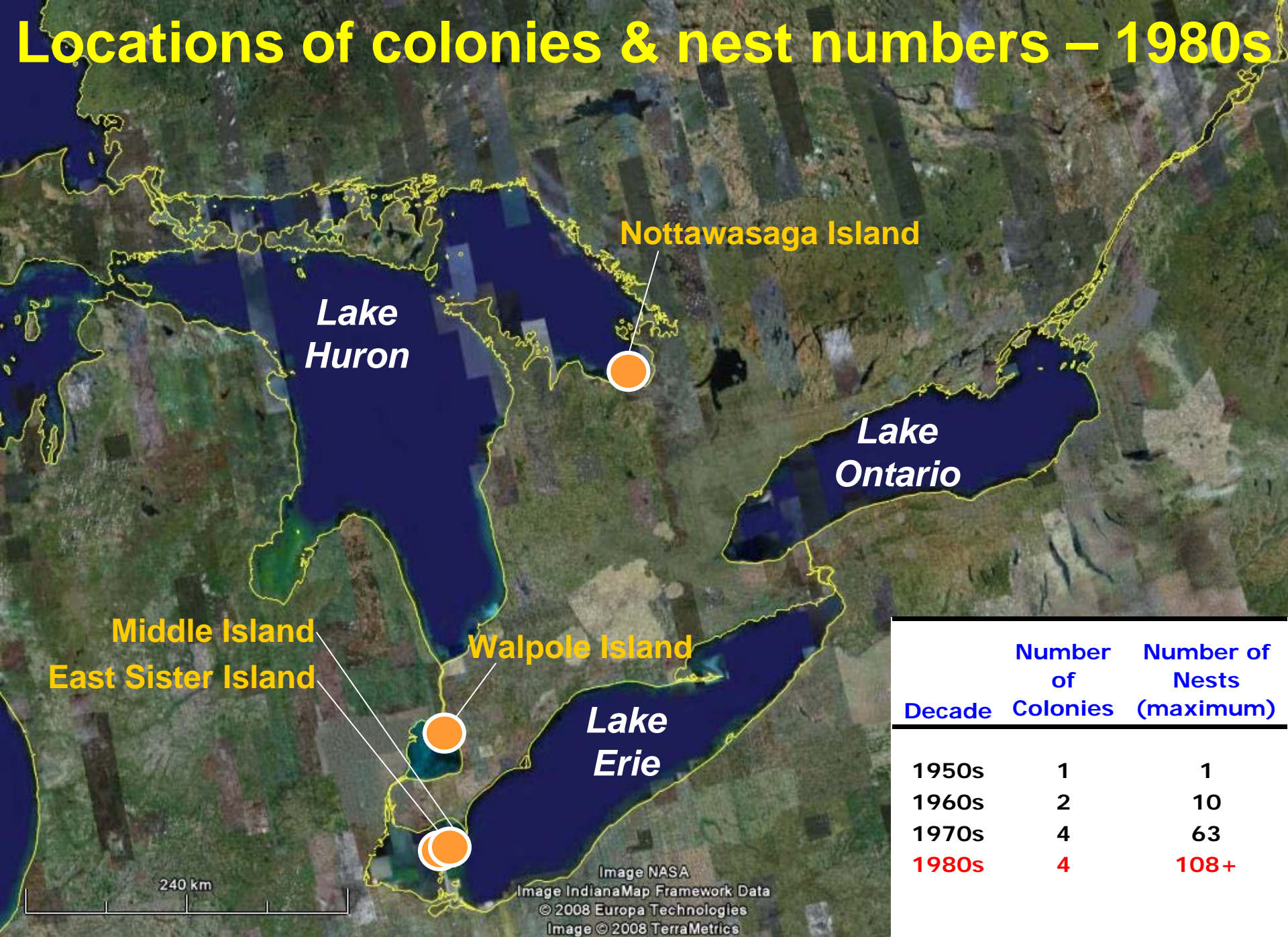
Locations of colonies & nest numbers – 1970s



Decade	Number of Colonies	Number of Nests (maximum)
1950s	1	1
1960s	2	10
1970s	4	63

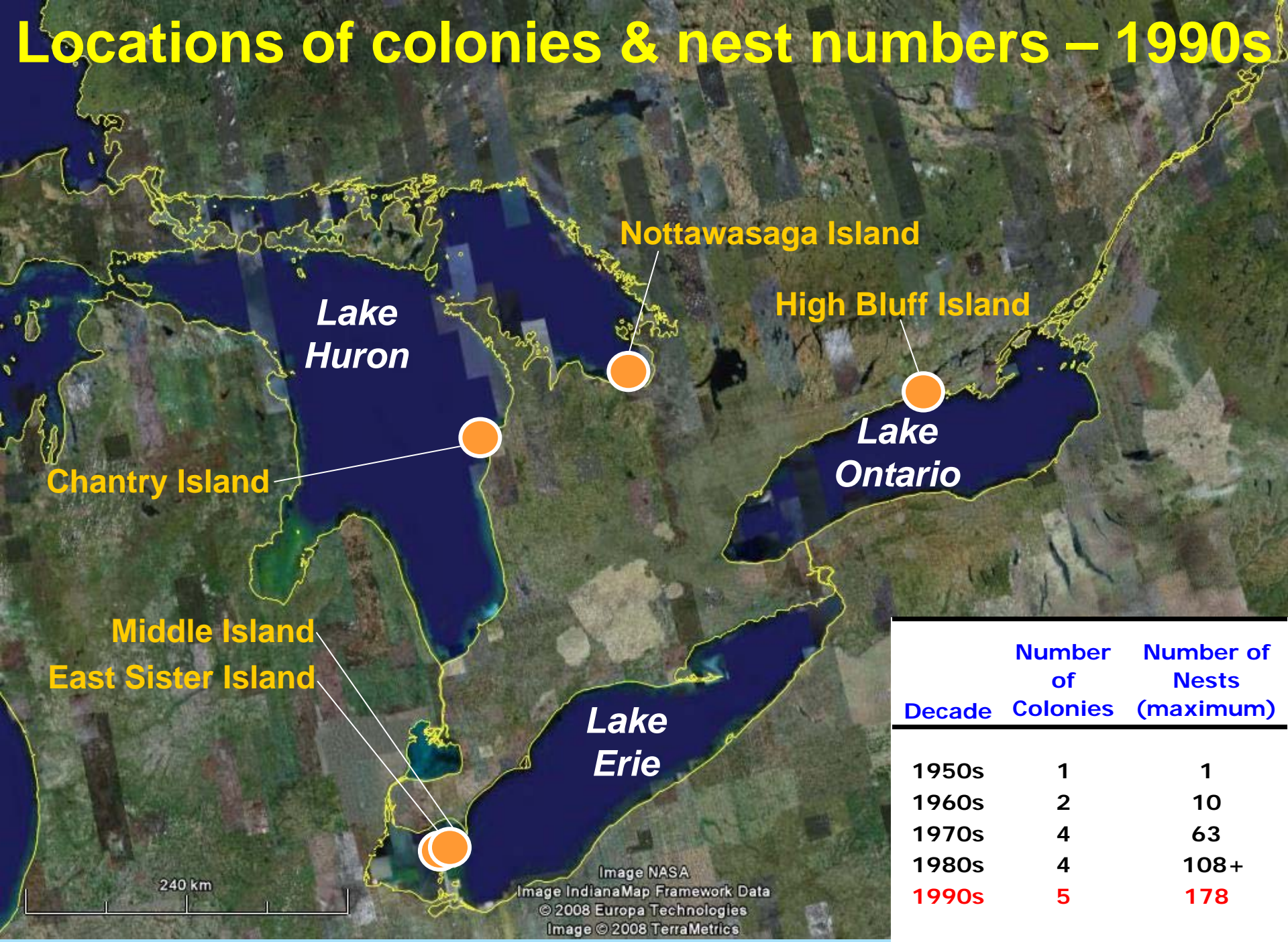
Image NASA
Image IndianaMap Framework Data
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Locations of colonies & nest numbers – 1980s



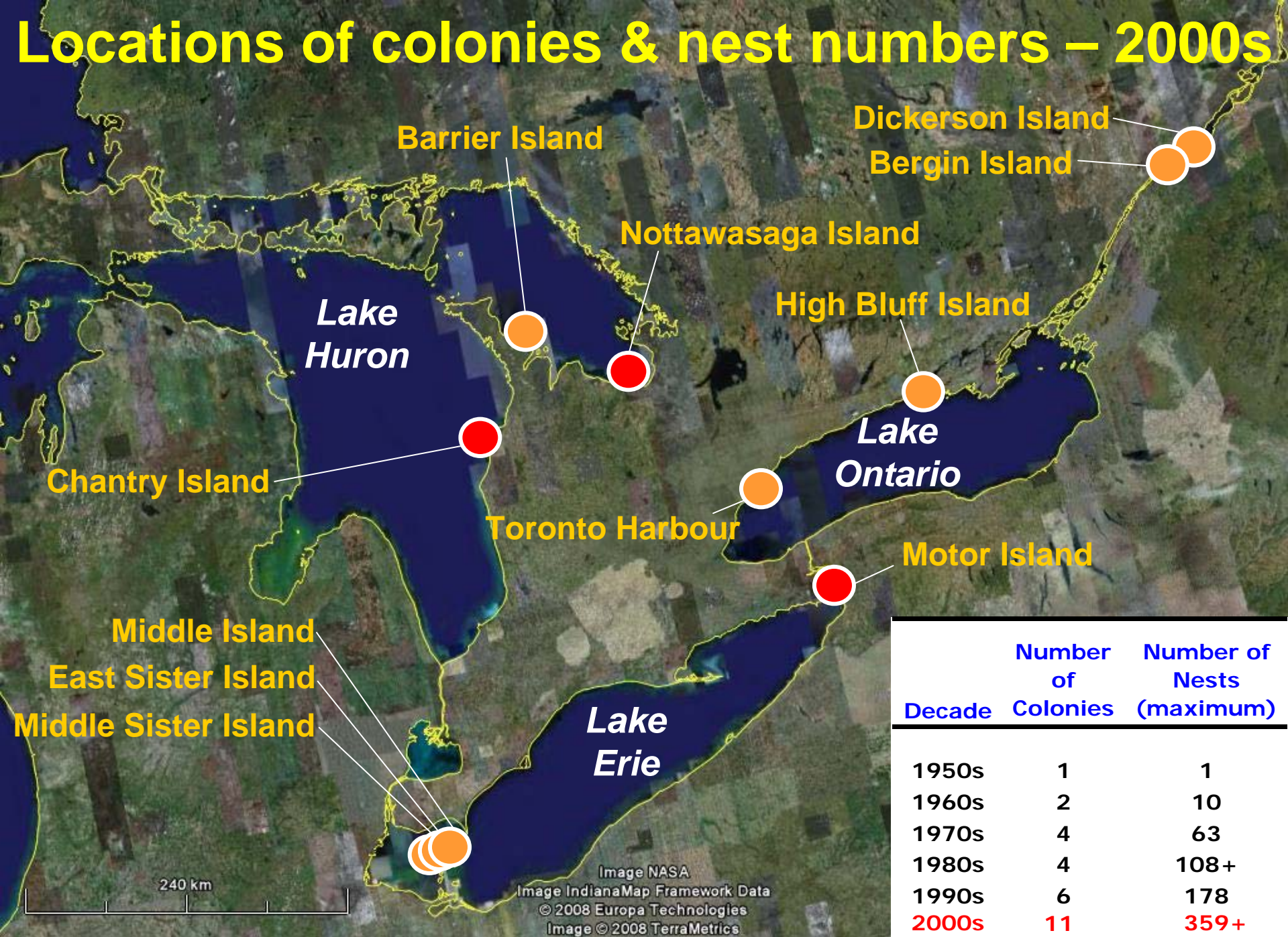
Decade	Number of Colonies	Number of Nests (maximum)
1950s	1	1
1960s	2	10
1970s	4	63
1980s	4	108+

Locations of colonies & nest numbers – 1990s



Decade	Number of Colonies	Number of Nests (maximum)
1950s	1	1
1960s	2	10
1970s	4	63
1980s	4	108+
1990s	5	178

Locations of colonies & nest numbers – 2000s



Barrier Island

Dickerson Island

Bergin Island

Nottawasaga Island

Lake Huron

High Bluff Island

Chantry Island

Lake Ontario

Toronto Harbour

Motor Island

Middle Island

East Sister Island

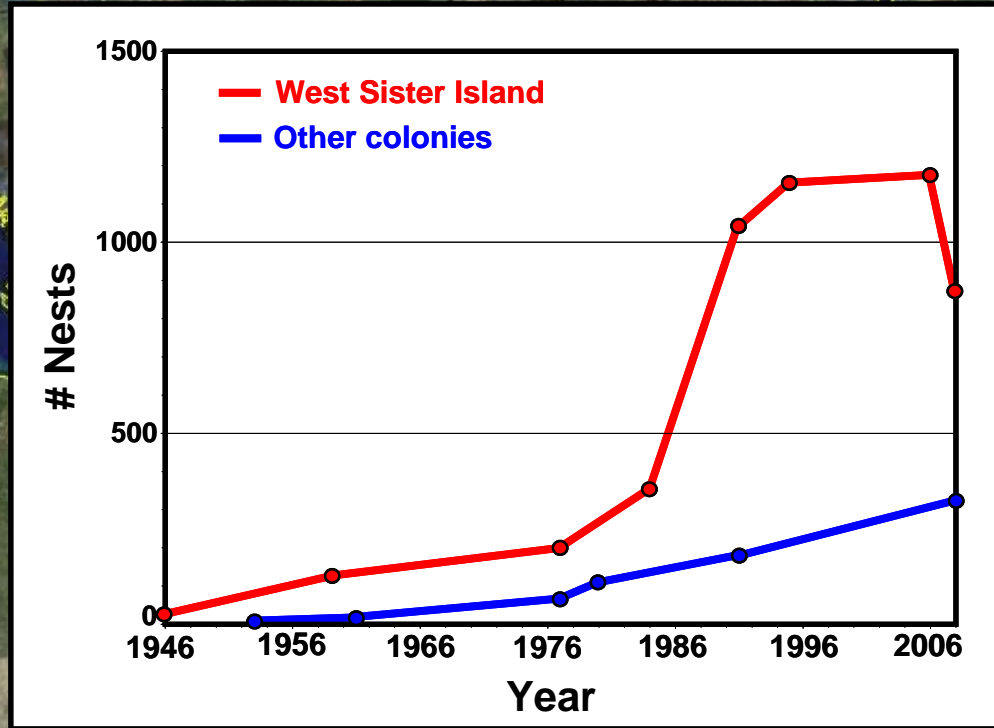
Middle Sister Island

Lake Erie

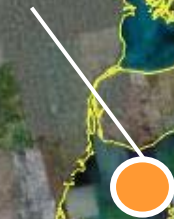
240 km

Image NASA
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West Sister Island



West Sister Island



240 km

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Breeding Biology & Productivity



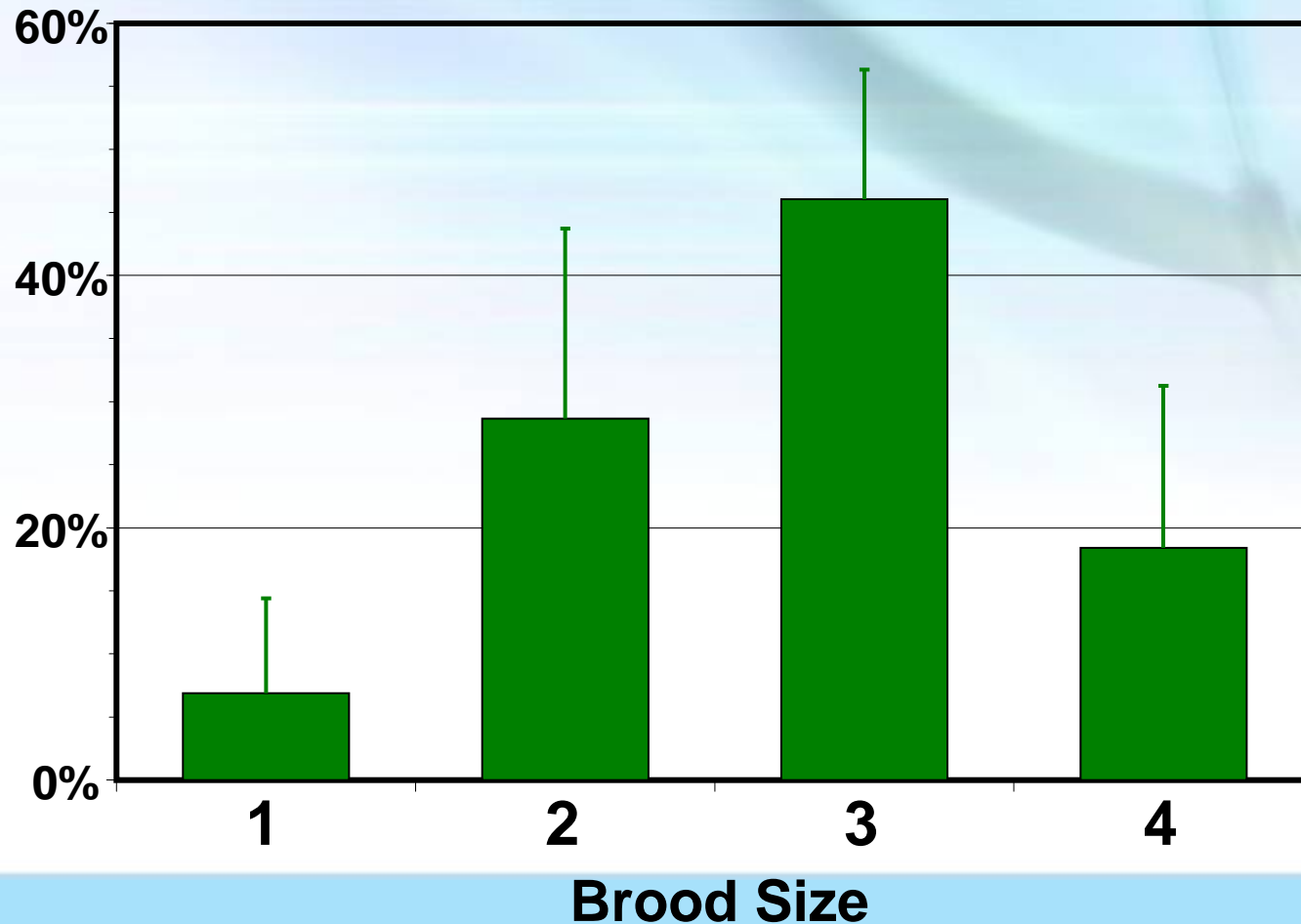
Breeding Biology & Productivity

Data from BNA Account (McCrimmon *et al.*):

Reproductive Parameter		Value
Mean Clutch Size	Overall	2.9 eggs/nest
	Ontario (pre-2000)	3.1 eggs/nest
Incubation Period		23-27 d, mean = 26 d
Hatching Success		3-87%
Fledging Success	Successful Nests	1.5 - 2.0 yg/nest
	Overall	0.5-1.5 yg/nest

Brood size of nests with young (≥ 28 days old)

Mean = 2.76 ± 0.83 chicks/nest



Based on 234 nests, from 8 site*year combinations (5 colonies, 1986 & 2005-2008)

Banding



..... & re-sighting

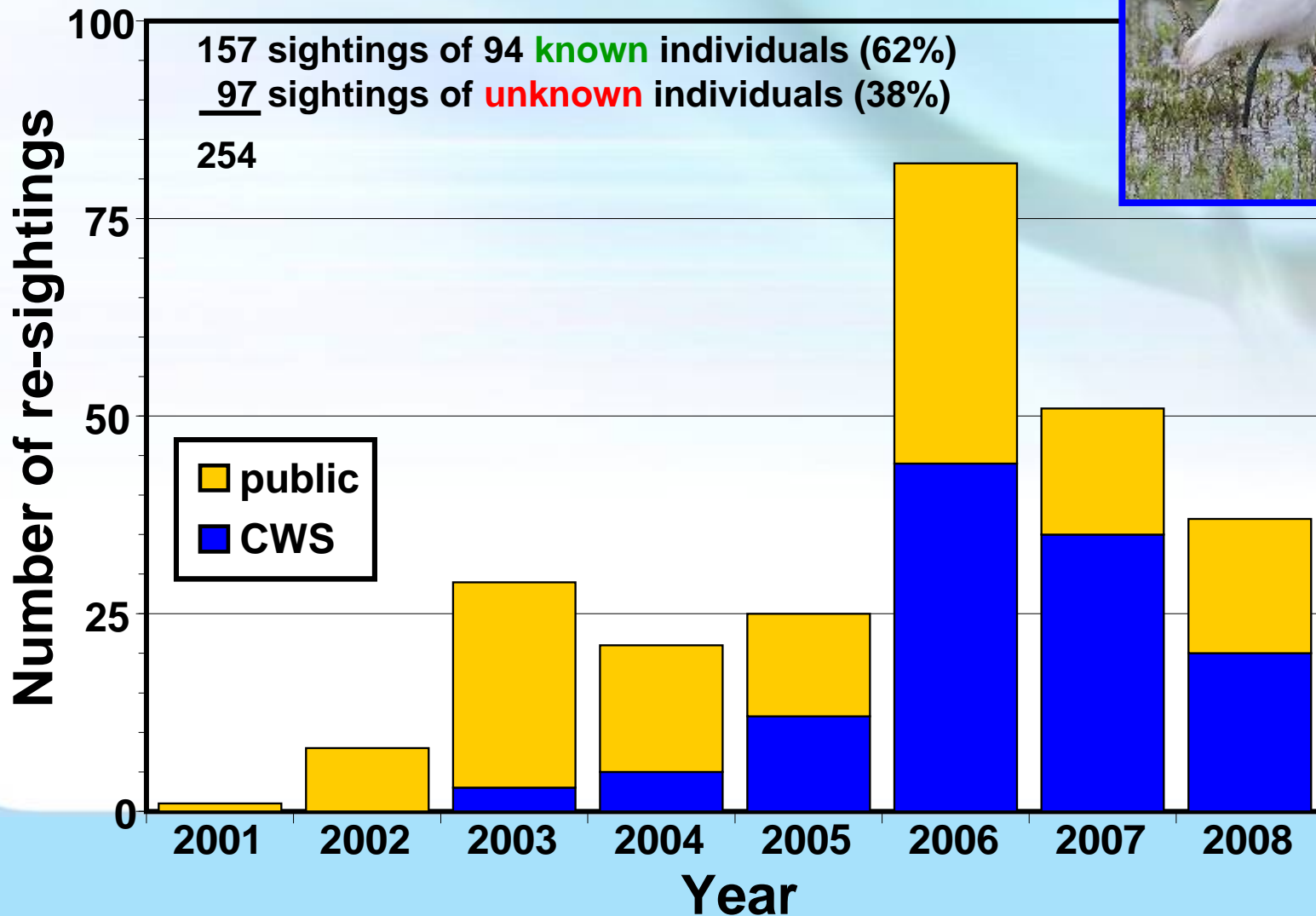


Banding effort for nestling GREGs at 3 colony sites on the Great Lakes (2001-08)

LOCATION	YEAR								TOTAL
	2001	2002	2003	2004	2005	2006	2007	2008	
Motor I., NR		20	21			24	25	22	112 (12.4%)
Nottawasaga I., LH	36	45	52	114	143	150	125	111	776 (85.9%)
Chantry I., LH		9		6					15 (1.7%)
TOTAL	36	74	73	120	143	174	150	133	903



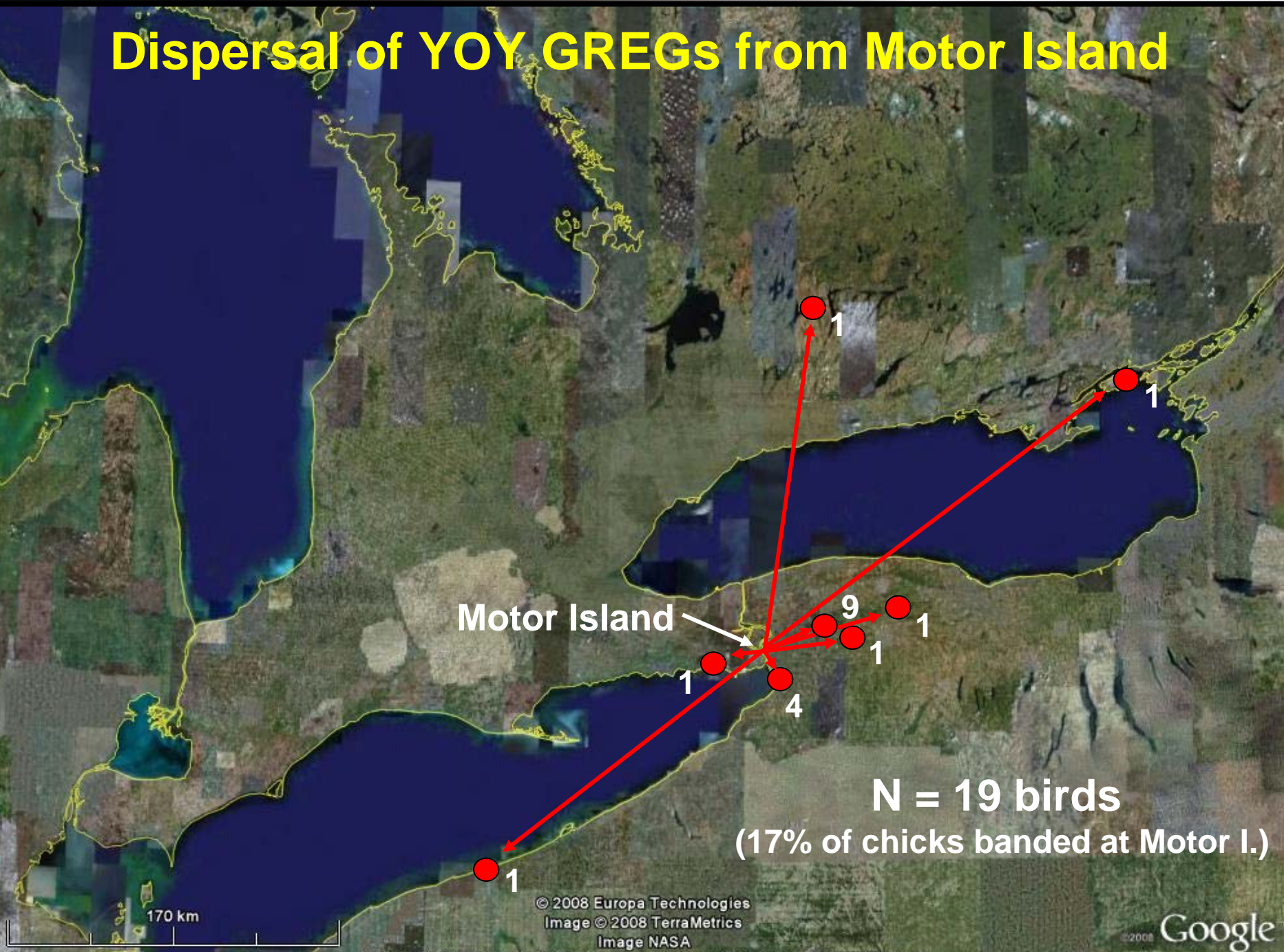
Re-sighting success (CWS staff + public)



Post-breeding movement patterns



Dispersal of YOY GREGs from Motor Island



Motor Island

N = 19 birds
(17% of chicks banded at Motor I.)

170 km

Age-specific re-sighting rates of colour-banded GREGs (all locations; N = 112)

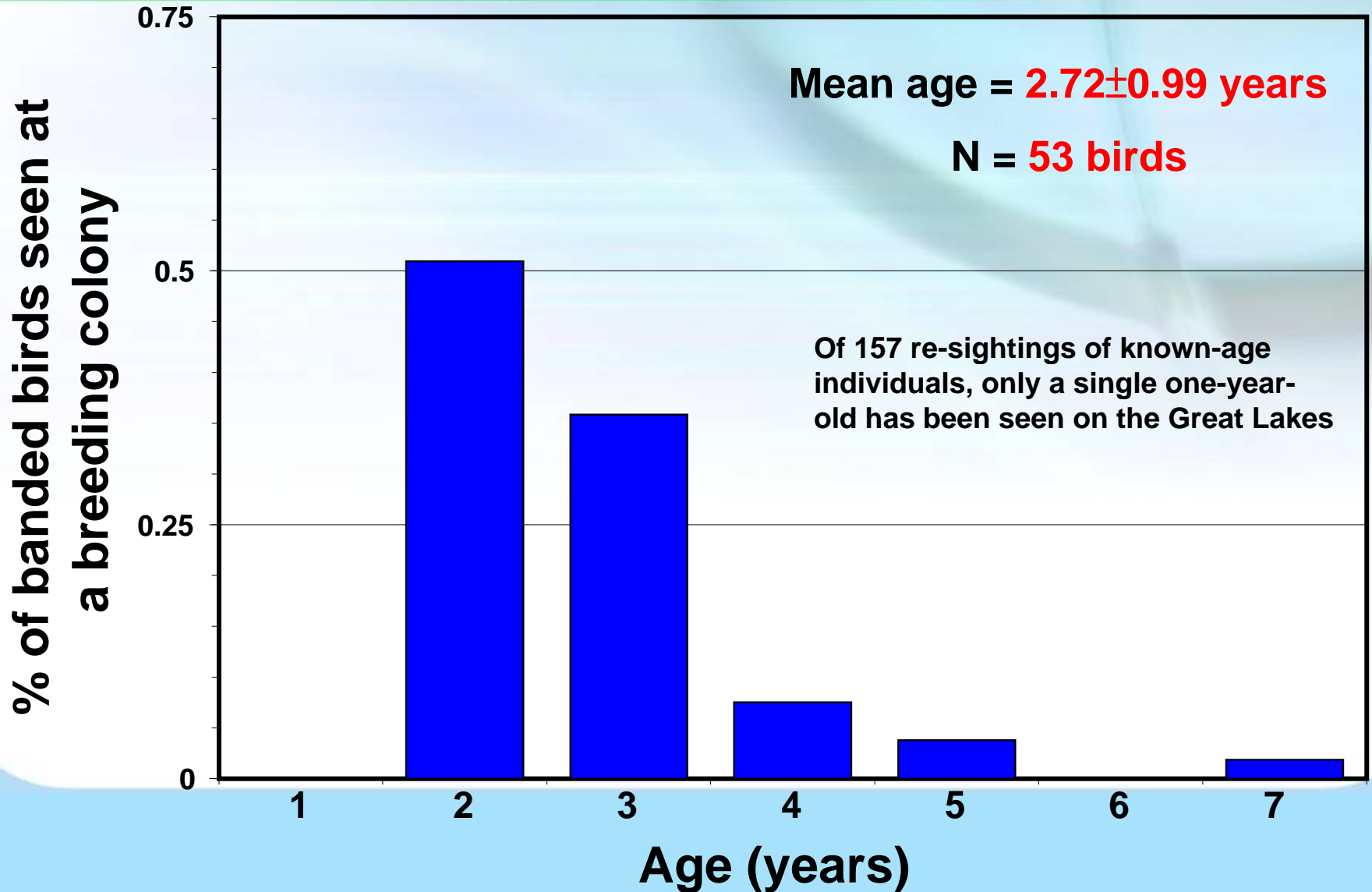
Age structure:

Year Banded	Number Banded	Age							
		0	1	2	3	4	5	6	7
2001	36	2.8%	0%	0%	11.1%	2.8%	11.1%	2.8%	2.8%
2002	74	1.4%	0%	0%	1.4%	4.1%	1.4%	0%	
2003	73	13.7%	0%	5.5%	11.0%	4.1%	2.7%		
2004	120	0%	0%	5.8%	3.3%	0.8%			
2005	143	2.8%	0%	9.8%	7.0%				
2006	174	4.6%	0.6%	1.7%					
2007	150	4.7%	0%						
2008	133	6.0%							
	<u>903</u>								
mean		4.3%	0.1%	4.5%	6.1%	2.6%	3.8%	0.9%	2.8%

min

max

Age of 1st re-sighting at a breeding colony for AHY birds



Re-sightings away from a breeding colony

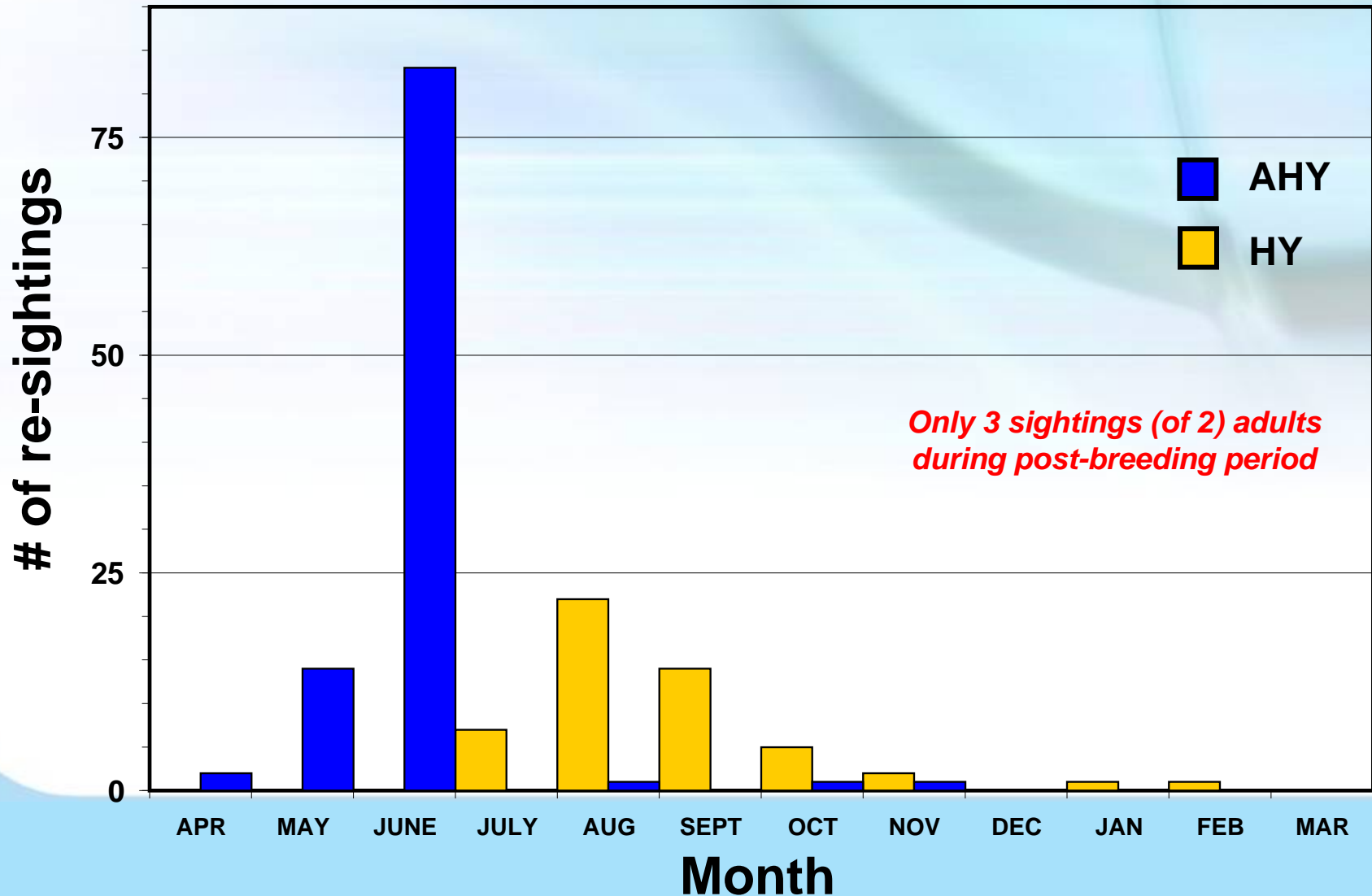
- Adults were rarely re-sighted away from colony sites**
- Only three adults were seen away from colony sites; all 3 were also observed at a colony during that year**
- No “non-breeding” adults were observed**

Natal philopatry and site fidelity

Banded at:	Breeding colony first sighted at:	
	Nottawasaga Island	Motor Island
Nottawasaga Island	50	1
Motor Island	0	2

- 52 of 53 birds were 1st re-sighted as adults (2 years +) at their natal colony
- for birds seen during subsequent breeding seasons, 13 of 14 remained at the same colony

Timing of migration: temporal patterns of re-sightings





Re-sightings of GREGs in over-wintering areas (Nov.-Mar.)



N = 7; all HY birds

Question:
Where do the adults go?

	live
	dead

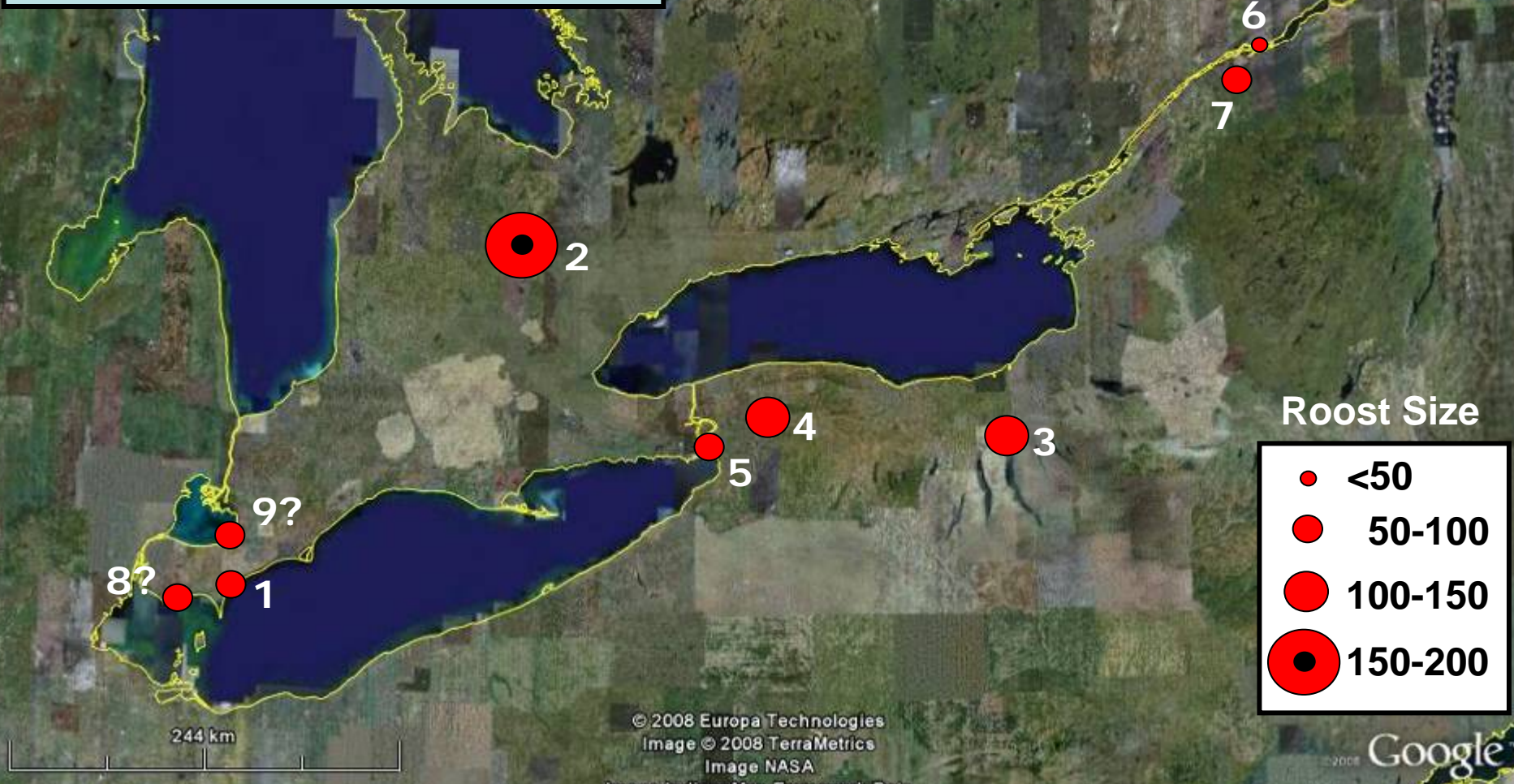
Post-breeding roosting sites



Luther Marsh

Post-breeding roosting sites

1. Muddy Creek
2. Luther Marsh
3. Montezuma NWR
4. Tonawanda WMA / Iroquois NWR
5. Strawberry Island
6. Cornwall, ON
7. Winthrop, NY
8. Big Creek
9. St. Clair NWA



244 km

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Image NASA

Image IndianaMap Framework Data

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The Migration of Great Egrets

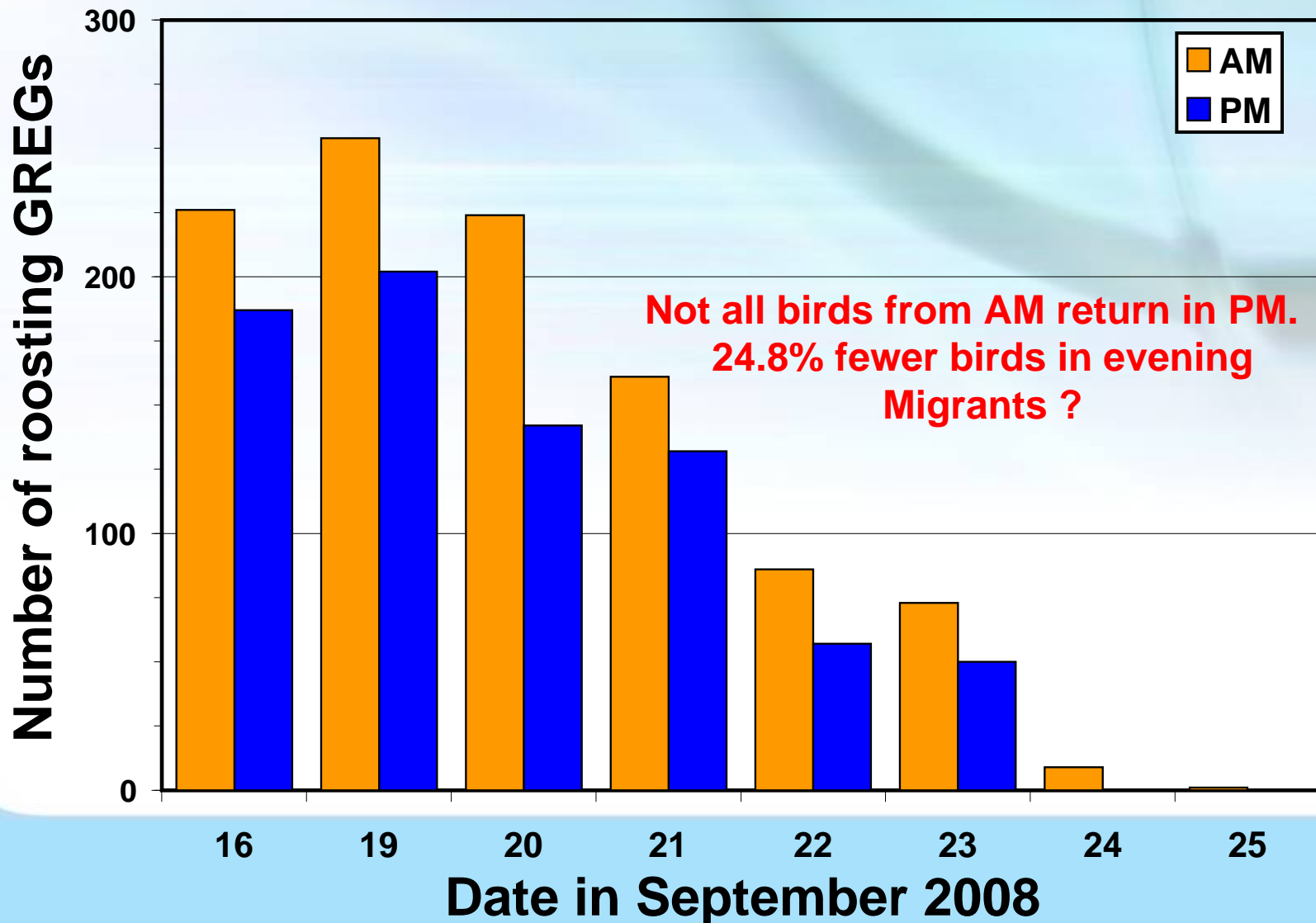
Are they diurnal or nocturnal migrants?

BNA Acct. (McCrimmon *et al.*): “Apparently a diurnal migrant, although published reports of migrating birds are scarce.”

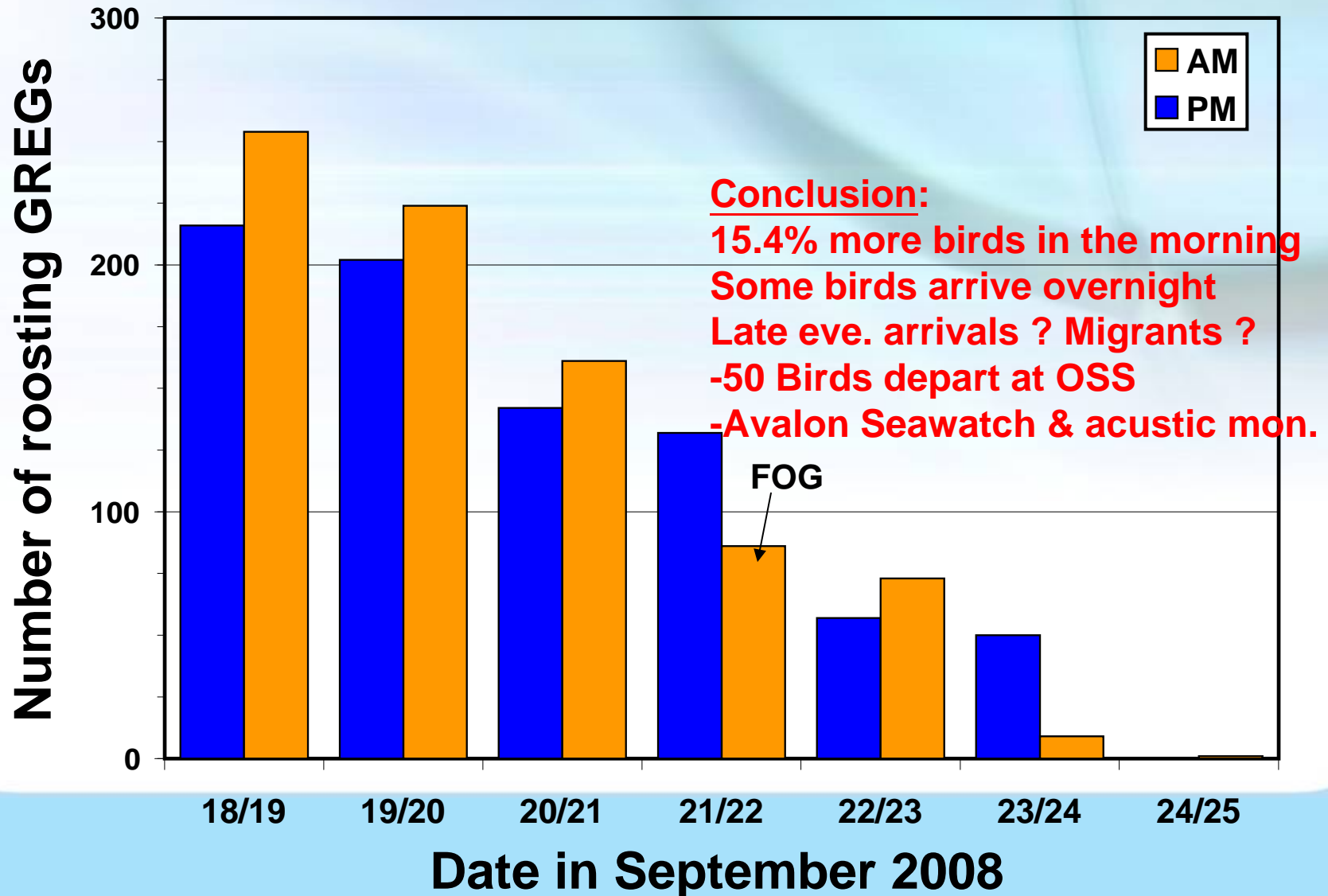
Observations – 16, 18-26 September 2008 – Luther Marsh Roost:

- 1. From 1 hour before official sunset to 30- 40 minutes after official sunset**
- 2. From 30+ minutes before official sunrise until all birds had left roost**
- 3. Recorded bird numbers in 10 minute periods**
- 4. What is the roost?**

GREGs departing the roost site in the morning vs. returning that evening



GREGs arriving at roost site in the evening vs. departing in the morning



Great Egret distribution & habitat use on the Niagara River – Sept-Oct. 2008

Lake Ontario

U.S.A.

Canada

Niagara River

Motor Island

Strawberry Island

Lake Erie

22.6 km

Image NASA
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Great Egret surveys – upper Niagara River



92 GREGs seen during 3 surveys
(mean = 31 ± 6 /day):

20 Sept 2008
23 Sept 2008
02 Oct 2008

11% of recorded GREGs were observed in this area

Motor Island
Strawberry Island

89% of recorded GREGs were observed in this area





Summary



- The GREG population in Ontario has shown a steady increase in numbers and colonies since 1953.
- Clutch size and productivity on Ontario colonies, where measured, appears to be normal
- Banding efforts have resulted in over 900 yg GREGs colour-banded at 3 sites
- The public is contributing many re-sightings of banded birds
- Main colony dispersal routes are to the south; very little to the north
- At least 9 roost sites have been located or are suspected in southern Ontario/western New York
- Evidence of both diurnal and nocturnal migration by GREGs
- Very few AHY birds reported after June; no 1 year olds seen at colony
- In autumn, most egrets observed feeding within 5 km of roost site.

Acknowledgements



The following individuals/groups have assisted with population surveys, banding & re-sighting, logistics or have provided data over the years. We are grateful for their assistance.

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- Ontario Field Ornithologists
- New York State Ornithological Association
- birders from across Ontario, Quebec, New York, Ohio, Pennsylvania, the Azores archipelago & Cuba, for reporting their sightings of colour-marked birds



Thank you!

