# Assessing drivers of oystercatcher reproductive success on Metompkin Island, VA using cellular tracking technologies

American Oystercatcher Working Group 2020(ish) Meeting

February 4th: Predator Management

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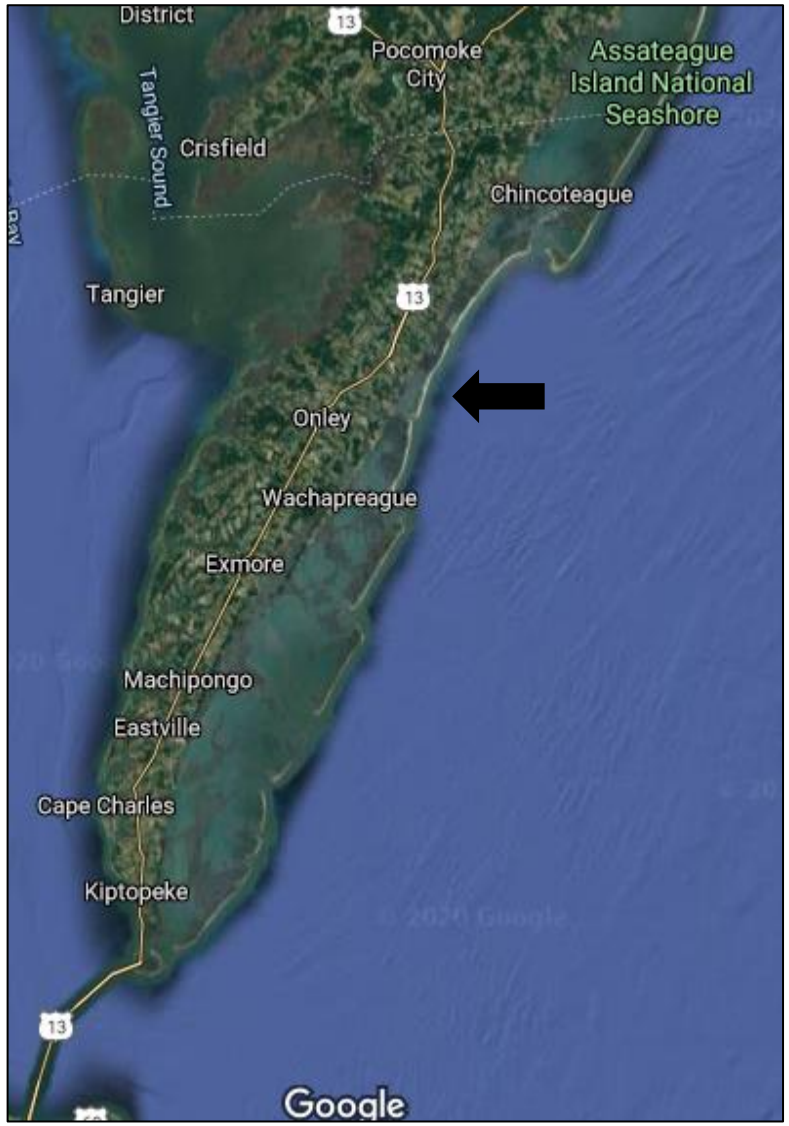
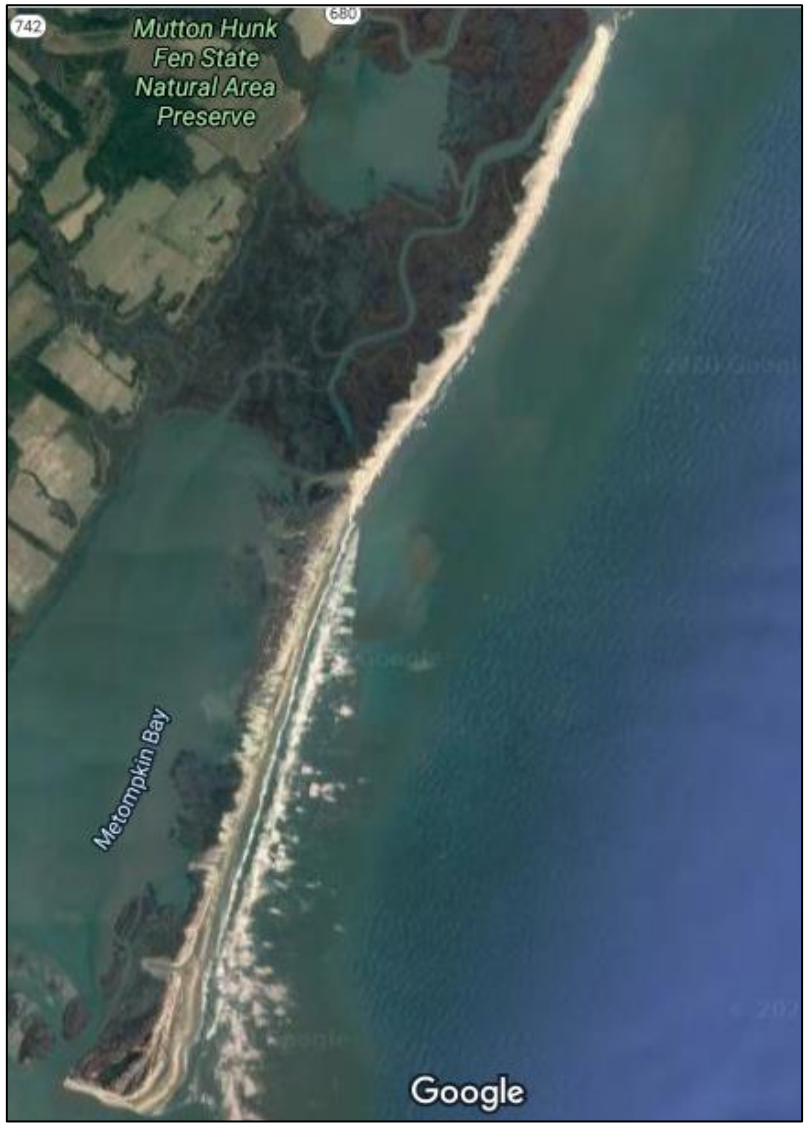
Virginia Tech Shorebird Program

The Nature Conservancy

Virginia Tech Shorebird Program

# Metompkin Island is an important location for oystercatchers

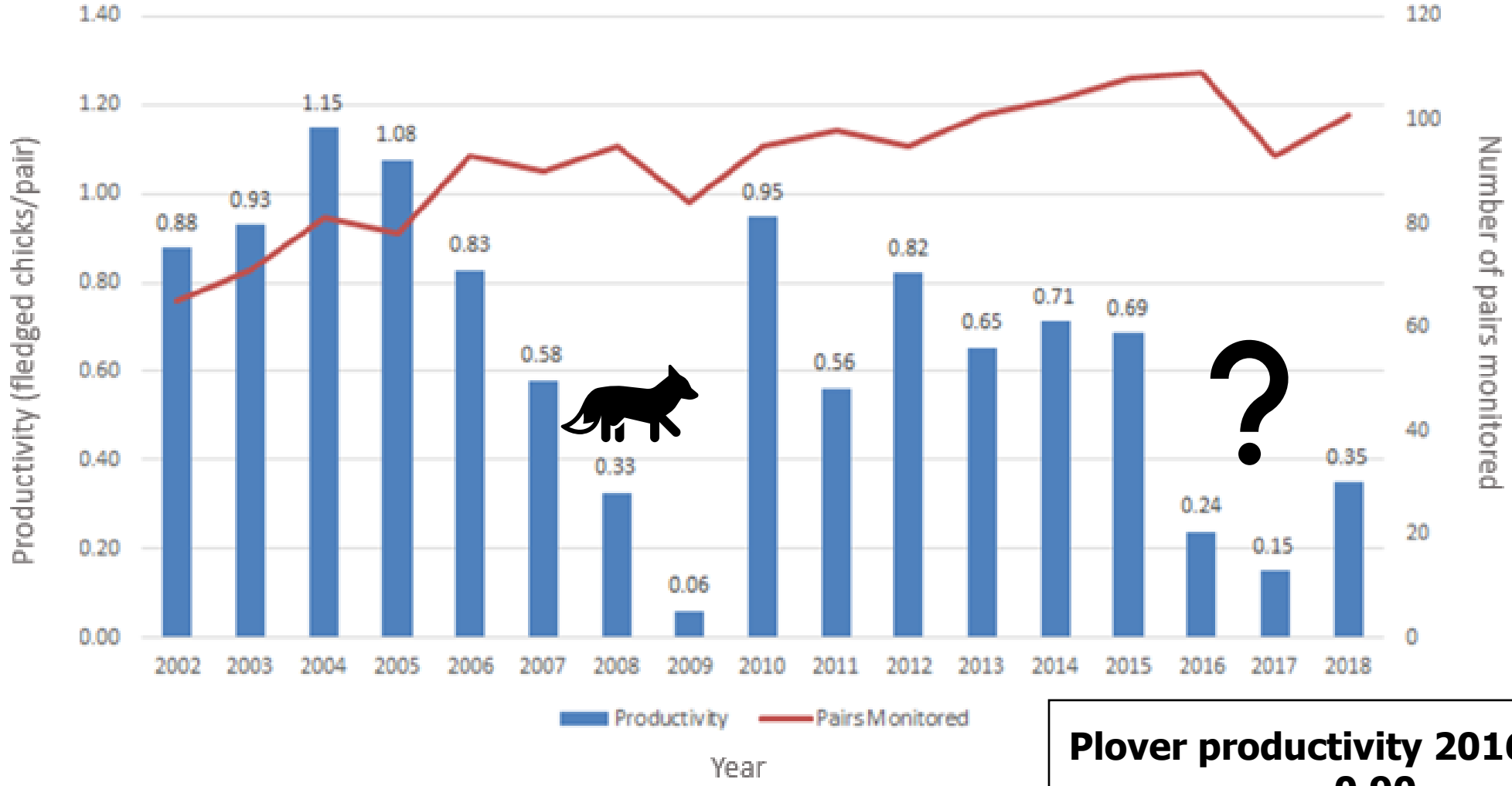




# Oystercatcher productivity (fledged chicks/pair) has declined on Metompkin Island

**2002–2015: 0.73 ± 0.08** **2016–2018: 0.25 ± 0.06**




**Plover productivity 2016 – 2018: 0.90**

Data from A. Wilke (TNC) and R. Boettcher (Virginia Dept. Wildlife Resources)

# 2019 Camera Study on Metompkin Island

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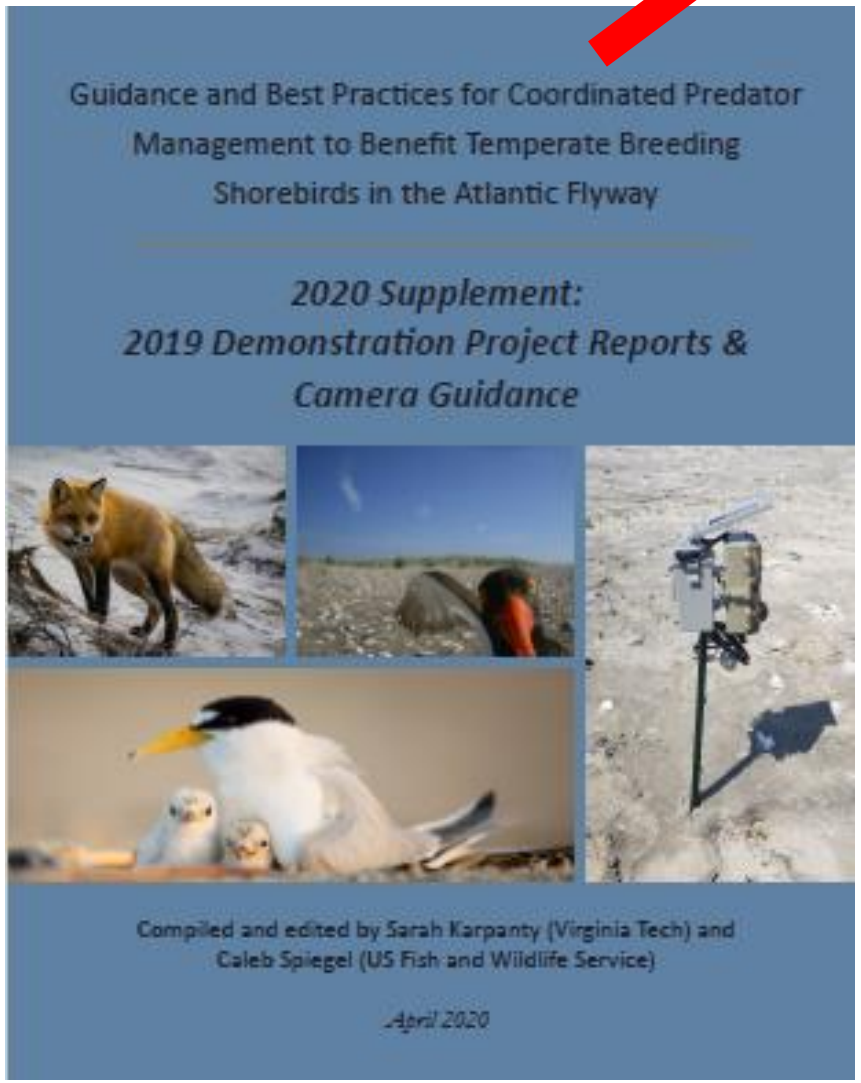
## **Objectives of the Metompkin Island project**:

1) Characterize the predator community

2) Evaluate the differences between hatch success calculated from field observations vs cameras

3) Document causes of nest failure

4) Test two novel techniques for using cameras to identify causes of chick loss for AMOY.



# 2019 Camera Study on Metompkin Island

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## Nest Cameras

- 27 cameras on AMOY nests
- 28 cameras on PIPL nests
- Motion triggered

## Brood Cameras

- 11 cameras at known brood-rearing sites
- Sites determined from field observations
- Motion triggered

## Transect Cameras

- 7 cameras, 40 m apart on transect
- All facing marsh edge
- Time lapse, 1 sec. intervals, dawn to dusk



# 2019 Camera Study on Metompkin Island

Call, M., Wilke, A., Lipford, A., Poulton, Z., Gardner, E., Boettcher, R., Fraser, J., Catlin, D., Karpanty, S. (*in prep*)

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# 2019 Camera Study on Metompkin Island

Call et al. (*in prep*)

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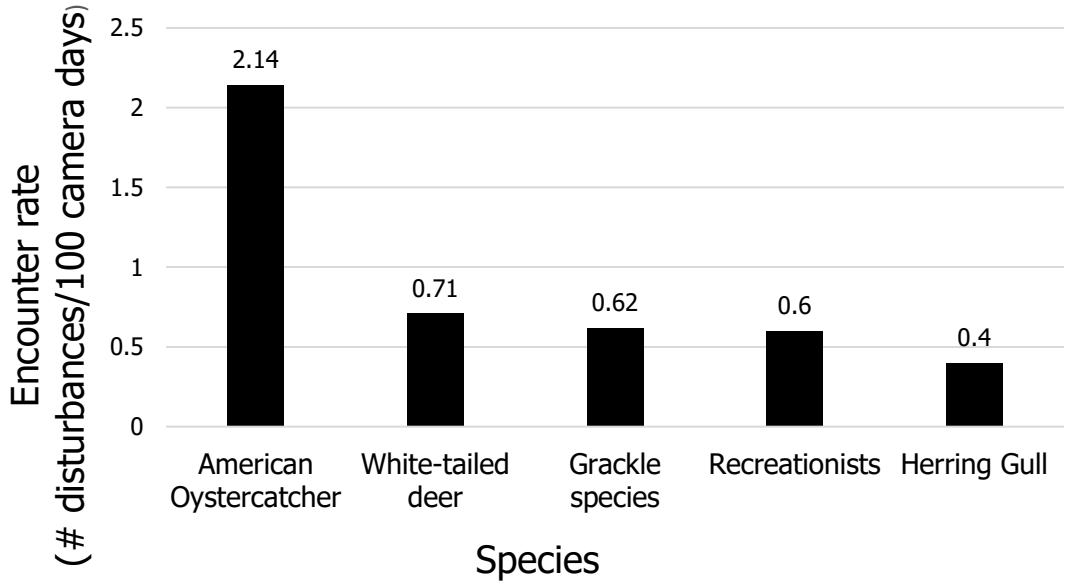
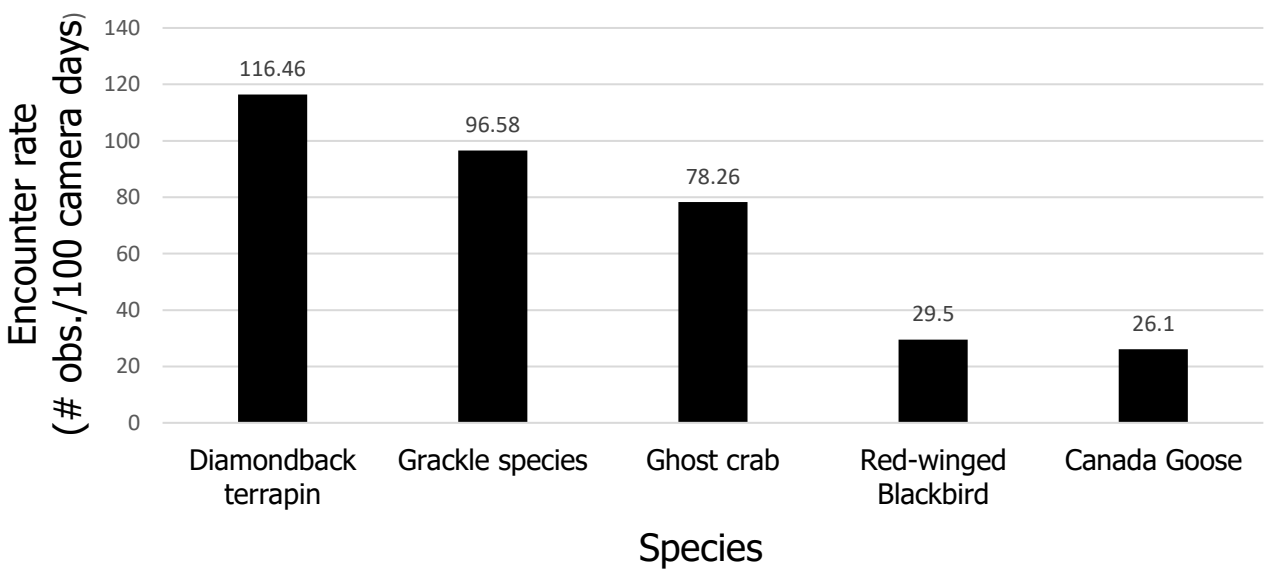
## Most frequent causes of AMOY nest disturbance





## Most frequent non-shorebird species encountered at marsh-edge




# 2019 Camera Study on Metompkin Island

Call et al. (*in prep*)

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# Determining drivers of chick survival using tracking technology

**Motivation** | Objectives | Methods | Expected results

- AMOY productivity appears to be lost during chick-rearing
  - AMOY hatch success high
  - One AMOY nest on camera with partial clutch loss (herring gull)

**<u>Table 1.</u> Hatch success of nests monitored by cameras. Hatch estimates do not include nests with unknown fate due to camera failure. ***

| | HATCH | FAIL | UNKNOWN | TOTAL | HATCH ESTIMATE |
|---|---|---|---|---|---|
| **AMOY** | 20 | 2 | 5 | 27 | 0.91 |
| **PIPL** | 15 | 7 | 6 | 28 | 0.68 |

* Data from A. Wilke (TNC) and R. Boettcher (Virginia Dept. Wildlife Resources)

# Determining drivers of chick survival using tracking technology

**Motivation** | Objectives | Methods | Expected results

- AMOY productivity appears to be lost during chick-rearing
  - AMOY hatch success high
  - One AMOY nest on camera with partial clutch loss

**<u>Table 2.</u> Hatch success for all nest attempts on the island. Hatch estimates do not include attempts with unknown fate. ***

| | HATCH | FAIL | UNKNOWN | TOTAL ATTEMPTS | HATCH ESTIMATE (LOWER LIMIT) | HATCH ESTIMATE (UPPER LIMIT) |
|---|---|---|---|---|---|---|
| **AMOY** | 73 | 31 | 16 | 120 | 0.61 | 0.74 |
| **PIPL** | 36 | 32 | 2 | 68 | 0.53 | 0.56 |

**2019 oystercatcher productivity estimate: 0.60**

**2019 plover productivity estimate: 0.82**

* Data from A. Wilke (TNC) and R. Boettcher (Virginia Dept. Wildlife Resources)

# Determining drivers of chick survival using tracking technology

**Motivation** | Objectives | Methods | Expected results

- Re-locating chicks is challenging
  - Highly mobile
  - Cryptically colored
- Broods frequently observed on camera
  - Problem: no chick mortality on camera

# Determining drivers of chick survival using tracking technology

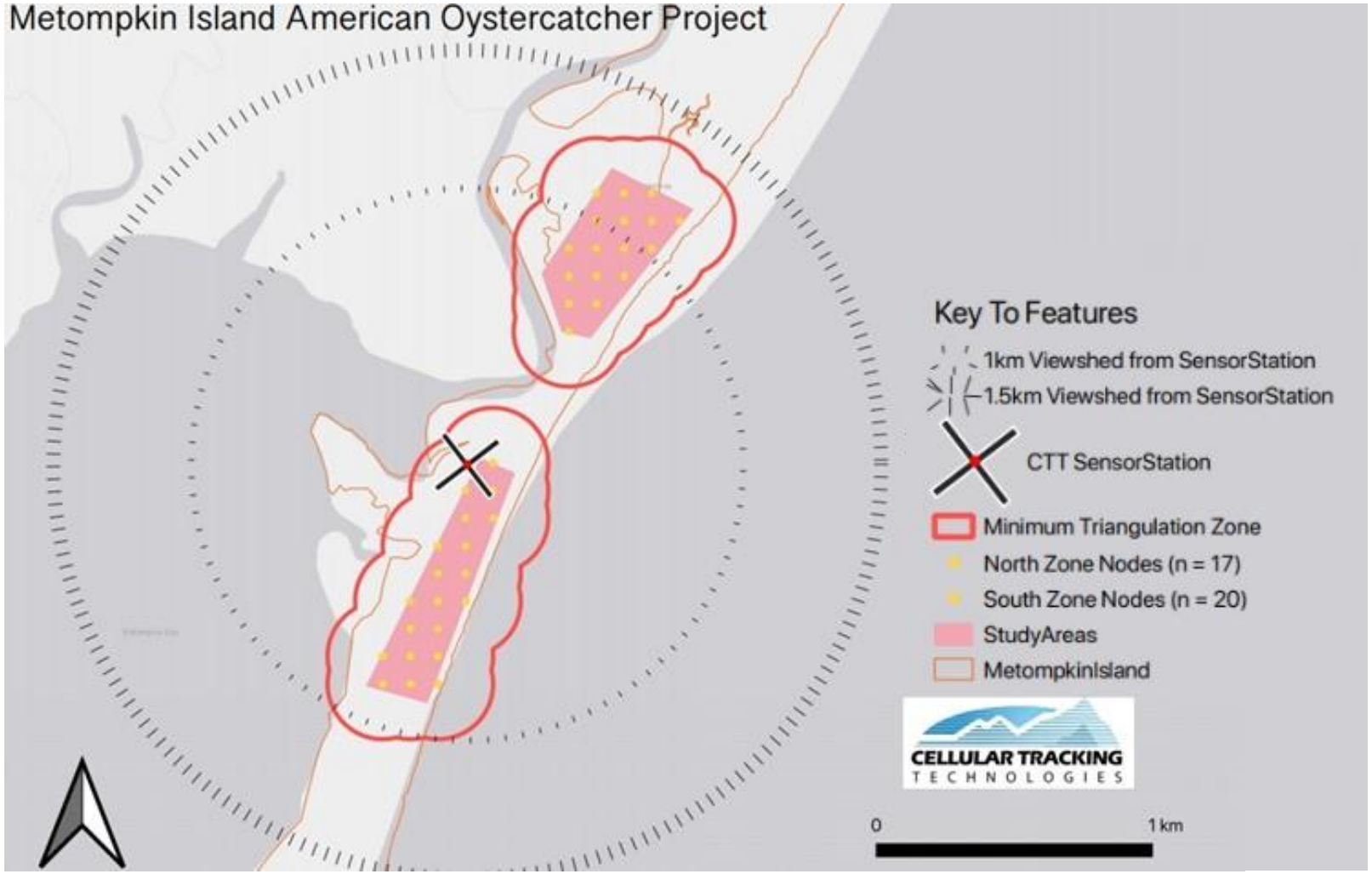
Motivation | **Objectives** | Methods | Expected results

Quantify and compare nest survival and causes of nest failure in northern and southern study areas.

Quantify and compare chick survival, and causes of chick mortality in northern and southern study areas

# Determining drivers of chick survival using tracking technology

Motivation | Objectives | **Methods** | Expected results



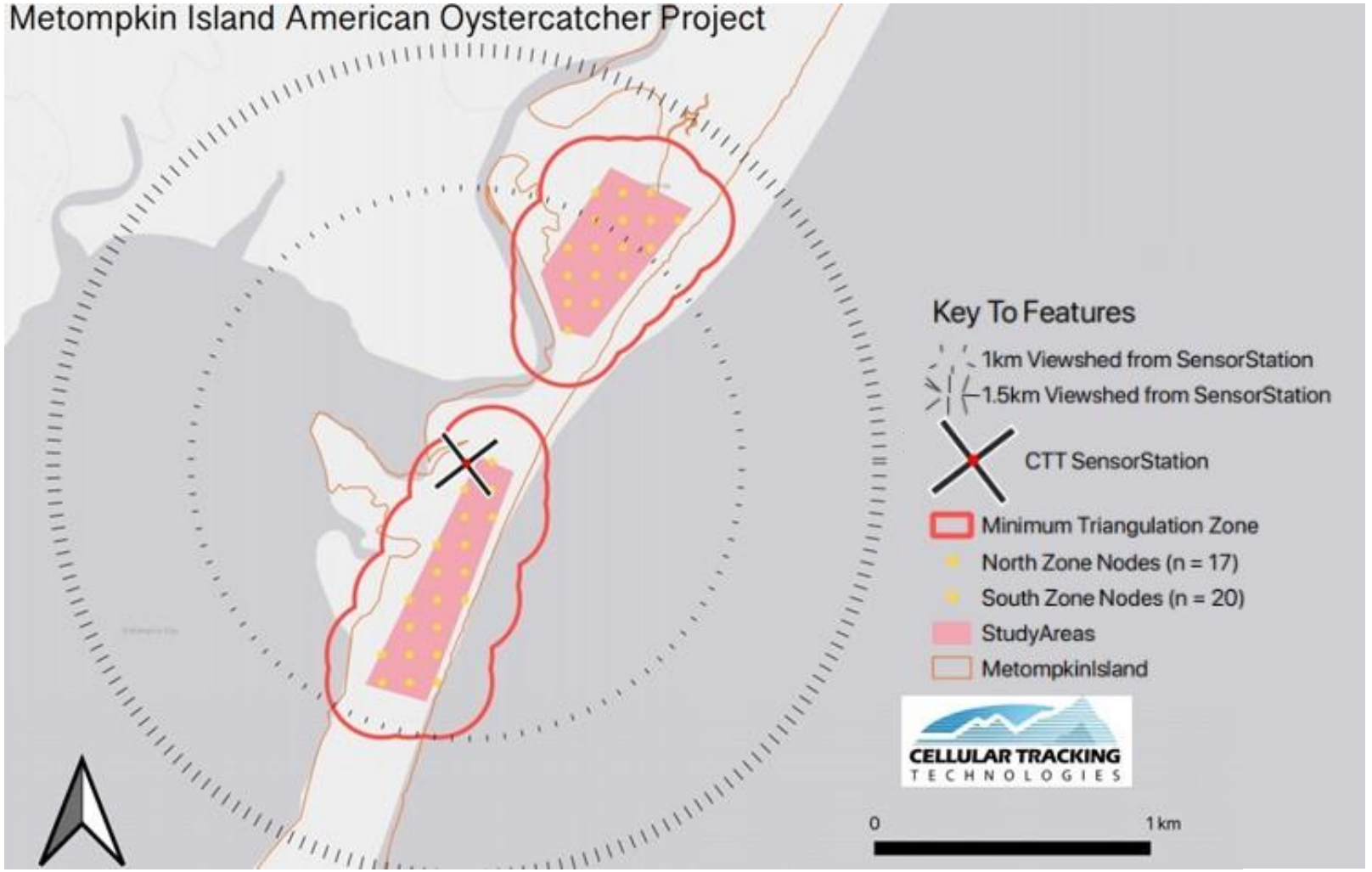

**We will track 60 chicks total**

- 30 in 2021, 2022
- PowerTags from Cellular Tracking Technologies
- Long-range and fine-scale tracking

**<u>Goal:</u>** Locate chick remains for mortality investigations

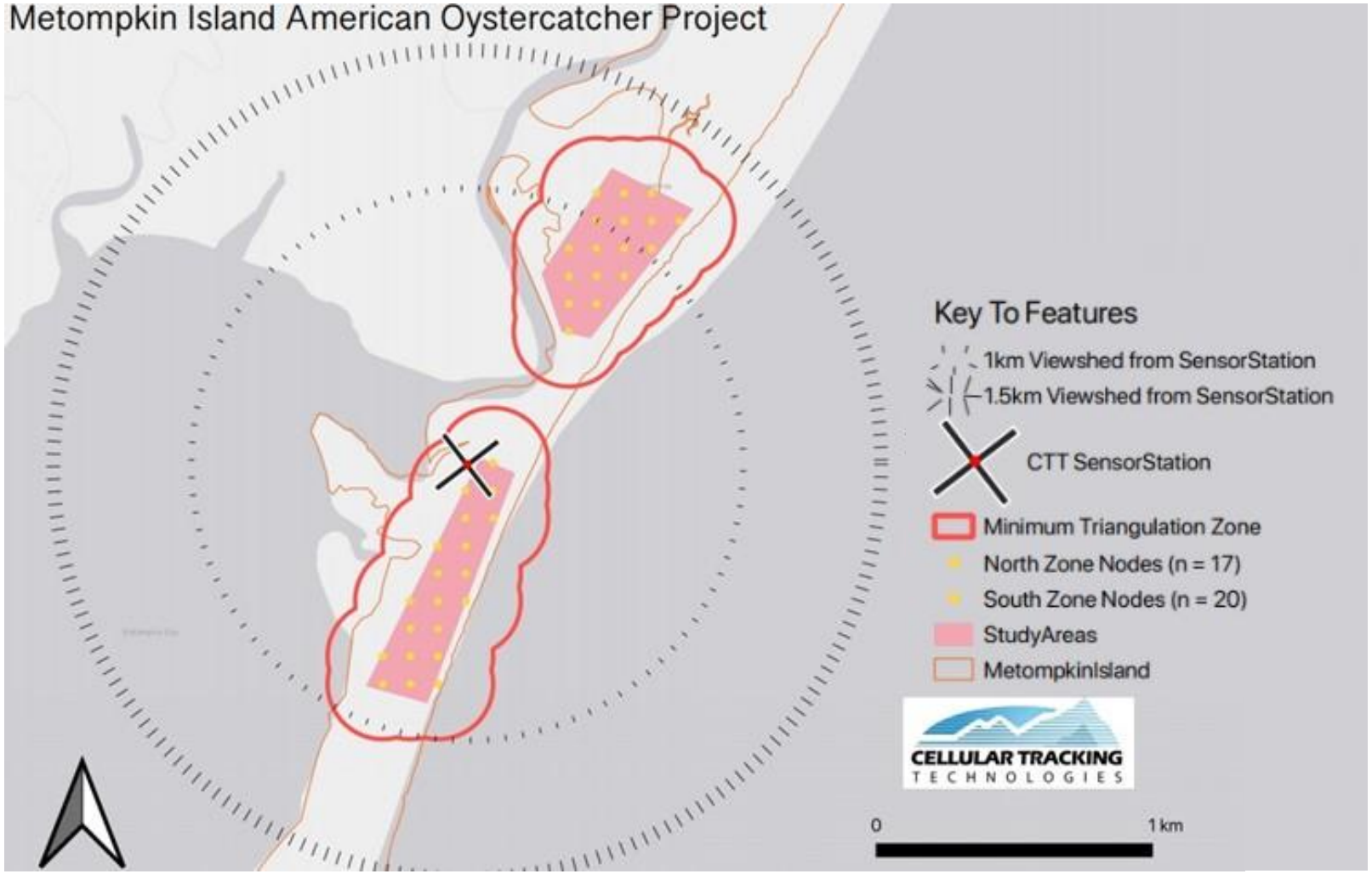
# Determining drivers of chick survival using tracking technology

Motivation | Objectives | **Methods** | Expected results




# Determining drivers of chick survival using tracking technology

Motivation | Objectives | **Methods** | Expected results




# Determining drivers of chick survival using tracking technology

Motivation | Objectives | Methods | **Expected results**

Avian predators

Ghost crabs (predating young chicks)

Starvation

# Determining drivers of chick survival using tracking technology

Motivation | Objectives | Methods | **Expected results**

## Changing habitat?



# Acknowledgements and Thank You!


## My Committee

Dr. Sarah Karpanty (advisor), Dr. Jim Fraser, Dr. Daniel Catlin, Alex Wilke

## And others who have helped…

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The Nature Conservancy

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# Questions?