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Great Salt Lake Selenium Project

Project 1A: Shorebird Studies

John Cavitt
Weber State University

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- 4 study sites monitored since 2003
- Dataset includes 3500 nest records (2003 – 2005) of 16 species
- Dataset from 2006 +3000 nest records

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- Semi-colonial nesting
- Tends to select sites with sparse vegetation surrounding nests
- Less dependent on freshwater

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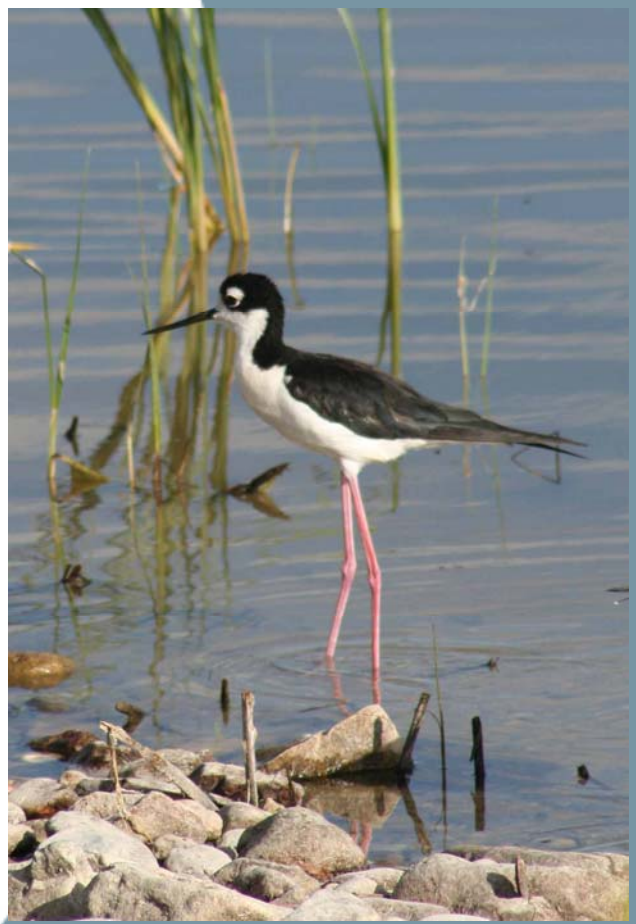
- More solitary in nesting than AMAV
- Tends to select sites with more vegetation surrounding nests
- More dependent on freshwater sources



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Tasks identified for selenium project

- Aerial Surveys
- Nest Monitoring
- Collections
- Sample Processing

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Aerial transects of GSL flown – 4/23

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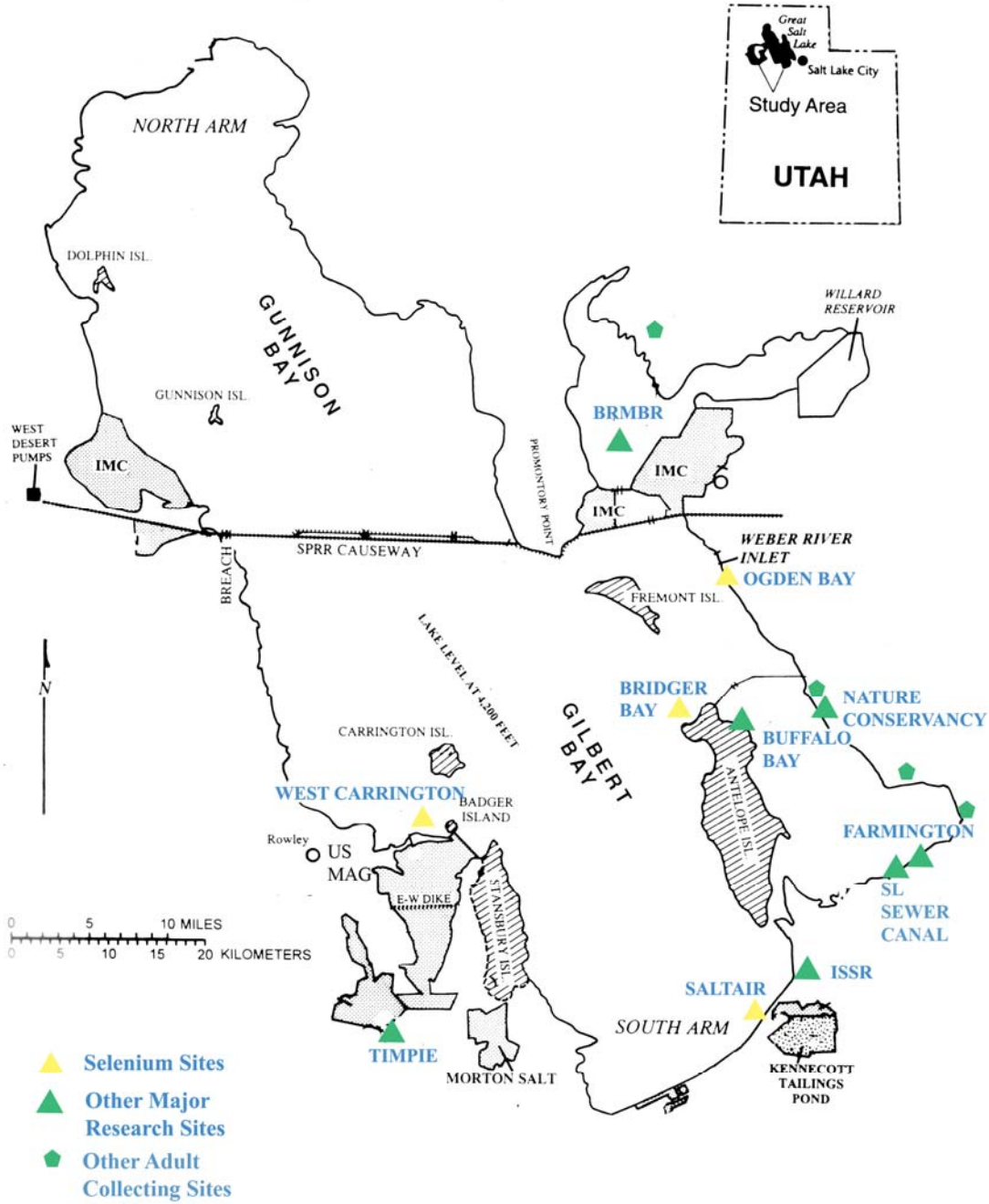
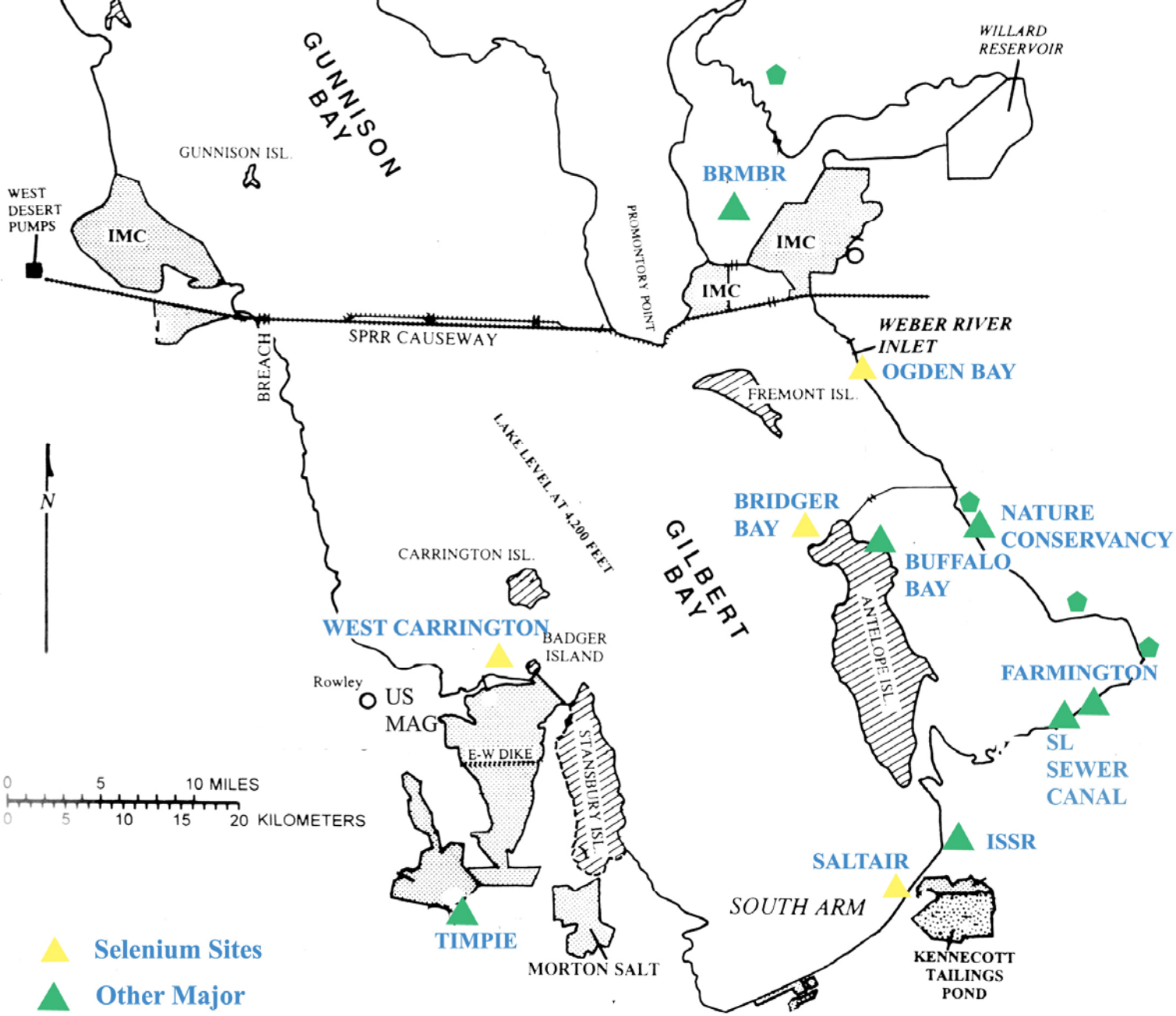
- Aerial surveys followed by land/water surveys


Great Salt Lake
Salt Lake City
Study Area
UTAH
NORTH ARM
DOLPHIN ISL.
GUNNISON BAY
GUNNISON ISL.
WEST DESERT PUMPS
IMC
SPRR CAUSEWAY
BREACH
PROMONTORY POINT
WILLARD RESERVOIR
BRMBR
IMC
IMC
WEBER RIVER INLET
OGDEN BAY
FREMONT ISL.
LAKE LEVEL AT 4,200 FEET
BRIDGER BAY
NATURE CONSERVANCY
BUFFALO BAY
ANTELOPE ISL.
FARMINGTON
SL SEWER CANAL
GILBERT BAY
CARRINGTON ISL.
WEST CARRINGTON
BADGER ISLAND
Rowley
US MAG
E-W DIKE
STANSBURY ISL.
ISSR
SALTAIR
SOUTH ARM
TIMPIE
MORTON SALT
KENNECOTT TAILINGS POND
N
0 5 10 MILES
0 5 10 15 20 KILOMETERS
Selenium Sites
Other Major Research Sites
Other Adult Collecting Sites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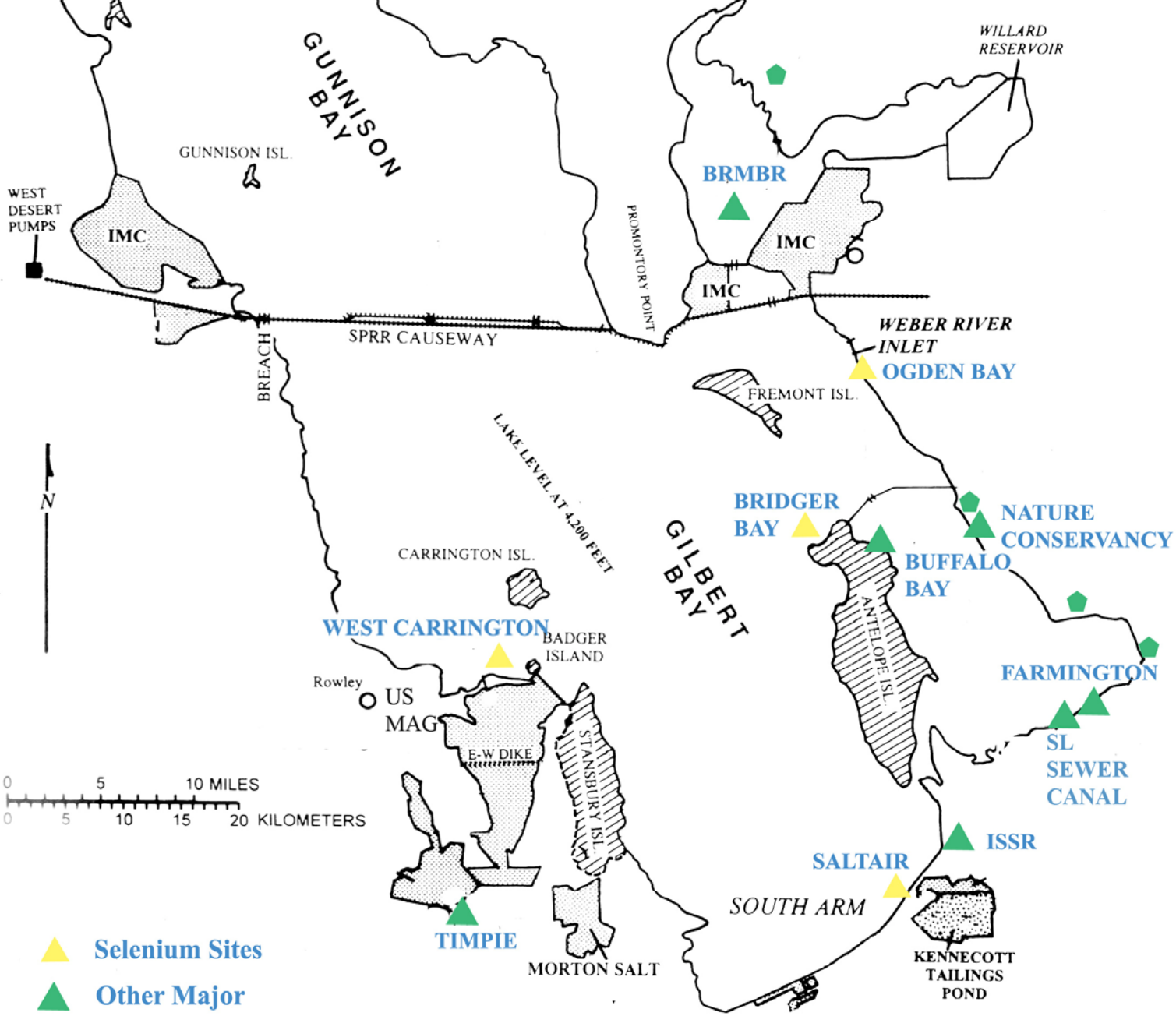
Selenium and Other Sites

- Nesting Success (% of nests surviving)
- Hatching Success (% of eggs hatching)
- Adults Collected
- Eggs Collected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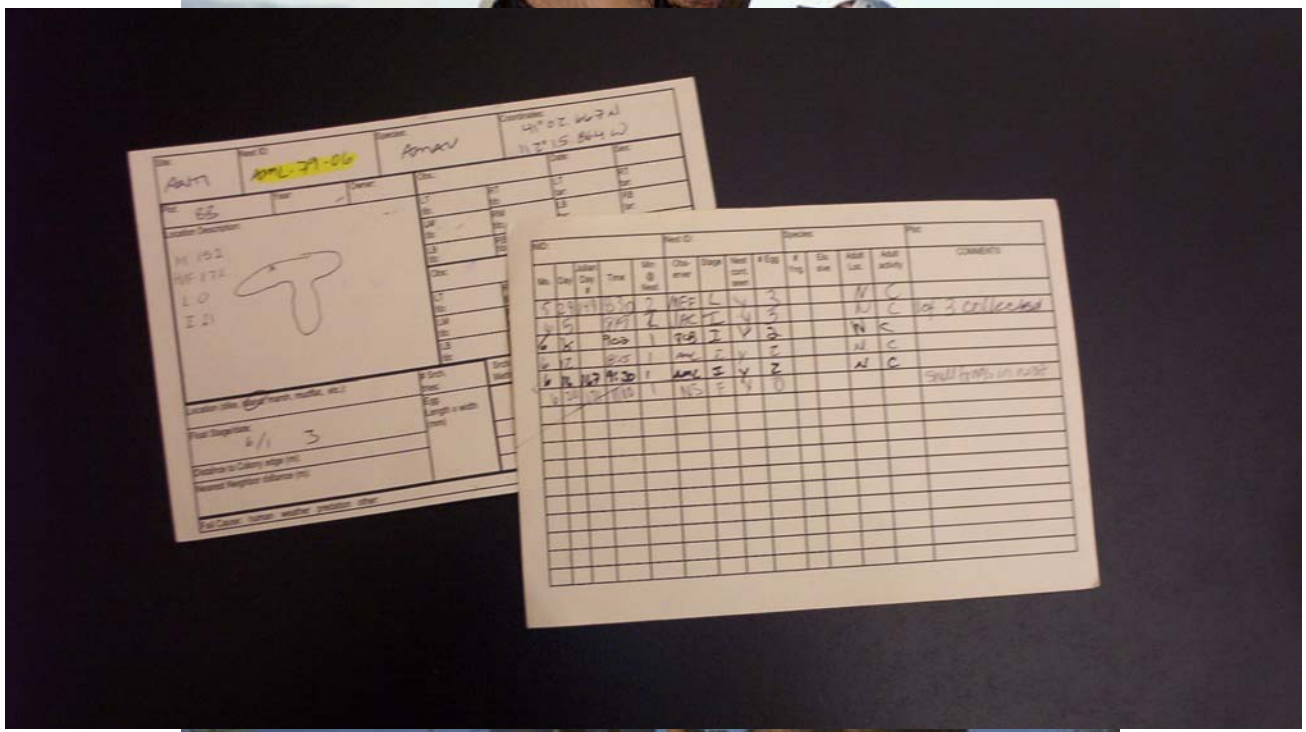
- Nests located and monitored every 3-4 days
  - Nesting Success
  - Hatching Success



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- Eggs collected from each of four sites

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- Eggs dissected
  - Determined position and status of embryo
  - Sent for Se analysis

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- Adults collected & dissected in the field
  - Mouth rinsed
  - Esophagus, proventriculus, ventriculus preserved
  - Liver collected

Ogden Bay

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- First nests initiated 5/26
- Flooding on 6/21 resulted in substantial nest loss
- Renesting occurred

Saltair

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- First nests initiated 5/26
- Flooding event resulted in colony failure.
- Renesting occurred

Bridger Bay

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- First nests initiated 5/29
- Colony kept attracting more birds throughout breeding season
- Limited in timing for adult collections

West Carrington

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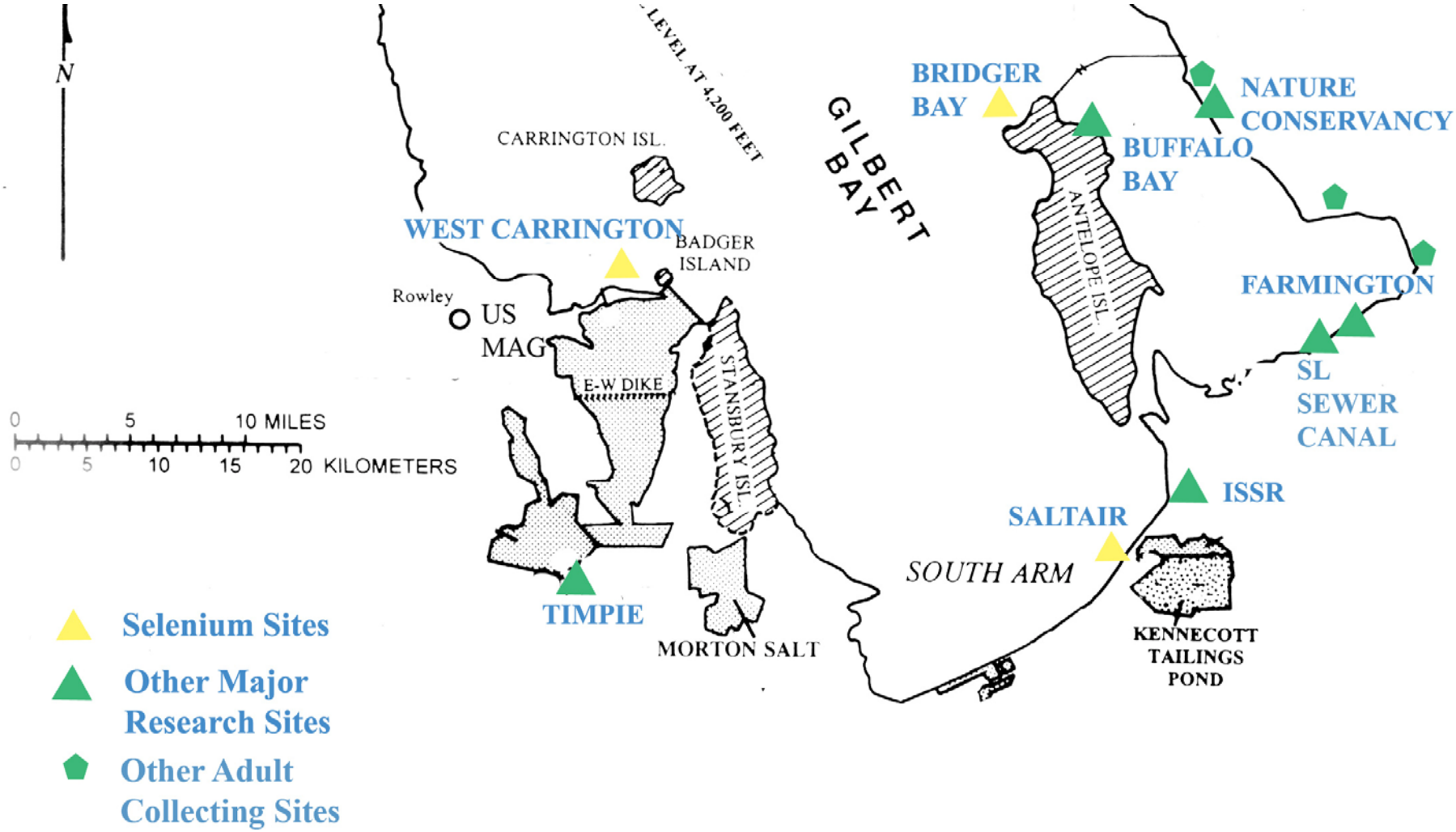
- First nest initiated 5/24 (1 egg collected)
- By 5/27 colony had 12 pairs (checked from a distance)
- Entire colony depredated by 5/30
- No renesting


N
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LEVEL AT 4,200 FEET
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- Adults collected

Ogden Bay – 5 AMAV; 5 BNST

Saltair – 5 AMAV

Bridger Bay – 5 AMAV

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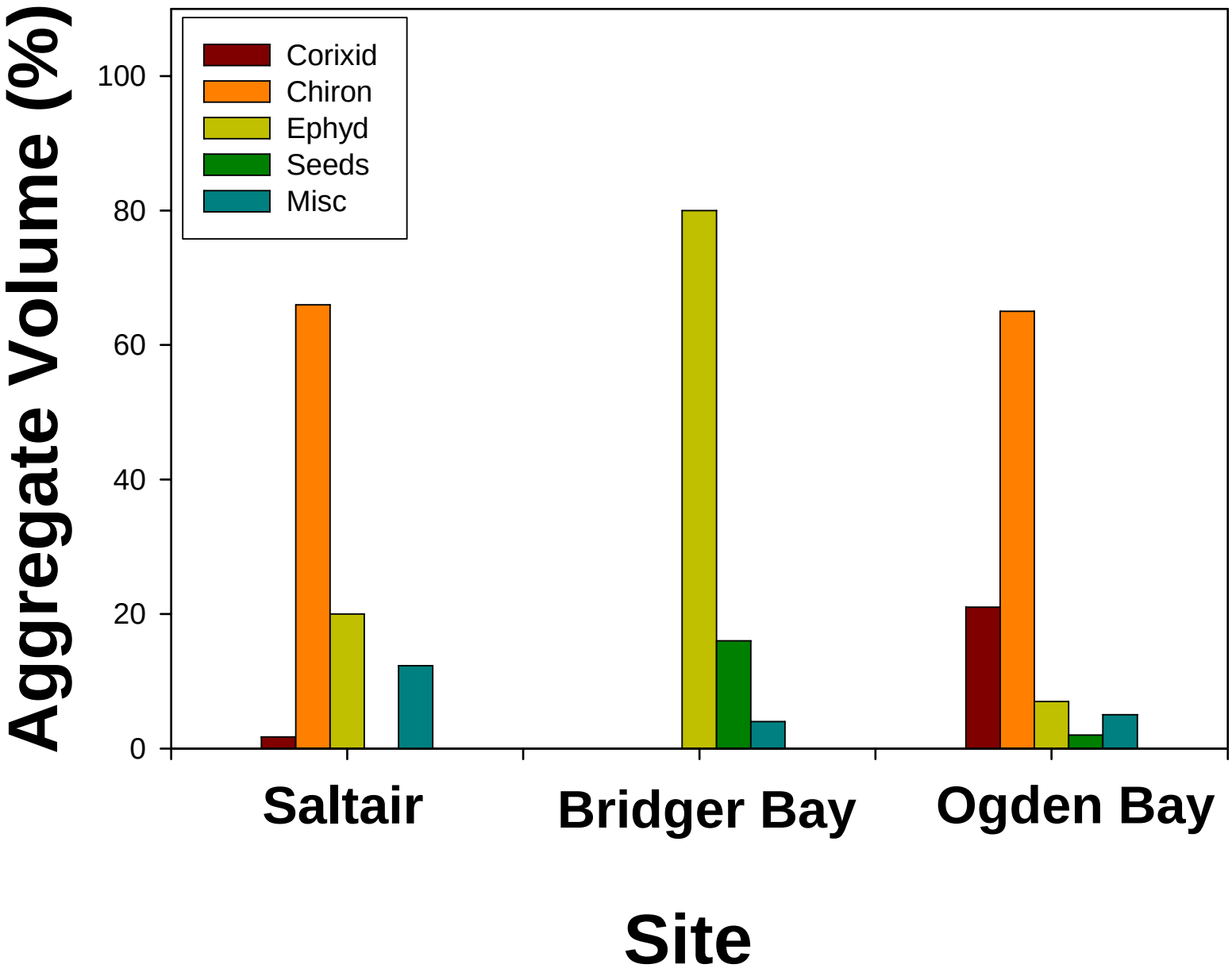
Aggregate Volume (%)
100
80
60
40
20
0
Corixid
Chiron
Ephyd
Seeds
Misc
Saltair
Bridger Bay
Ogden Bay
Site

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Eggs Not Viable

- Bridger Bay – AMAV 0.25
- Ogden Bay – AMAV 0.1; BNST 0.11
- Saltair – AMAV 0.14
- West Carrington – AMAV 0

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Eggs Collected

- Bridger Bay – 19 AMAV
- Ogden Bay – 20 AMAV; 18 BNST
- Saltair – 7 AMAV
- West Carrington – 1 AMAV

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1200 total nests entered to date

- Bridger Bay – 171 AMAV
- Ogden Bay – 26 AMAV; 12 BNST
- Saltair – 5 AMAV
- West Carrington – 1 AMAV

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