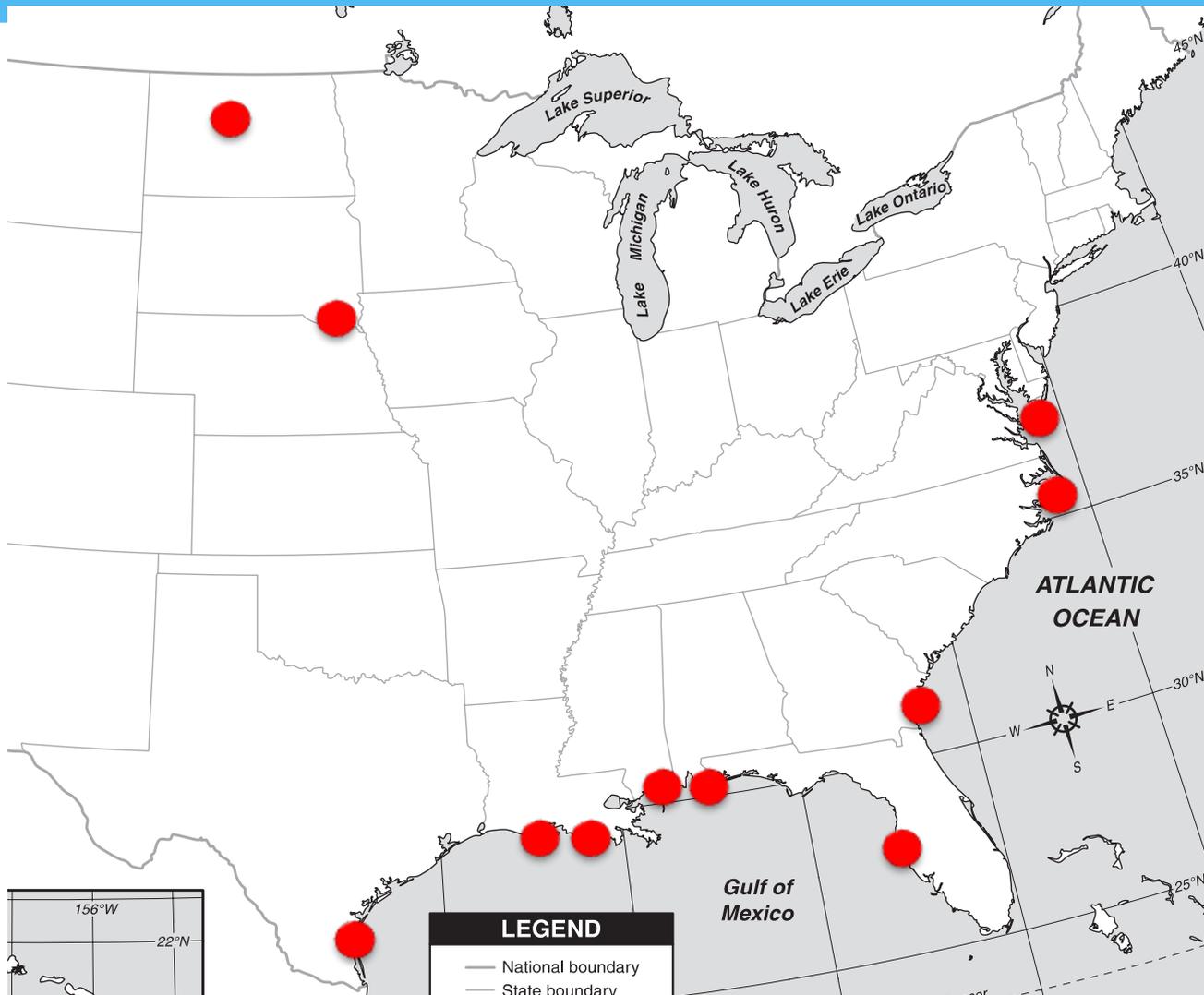


Seven Years of Plover Banding – The Relationship Between Survival and Movement



Dan Catlin, Kelsi Hunt, Joy Felio, Jim Fraser

VT Banding studies in the last 7 years



Methods



Types of movement

- * Local
 - * Within our study areas (or within a management unit for example)
 - * Sandbar to sandbar
- * Regional
 - * Between study areas, reaches, management units, etc.

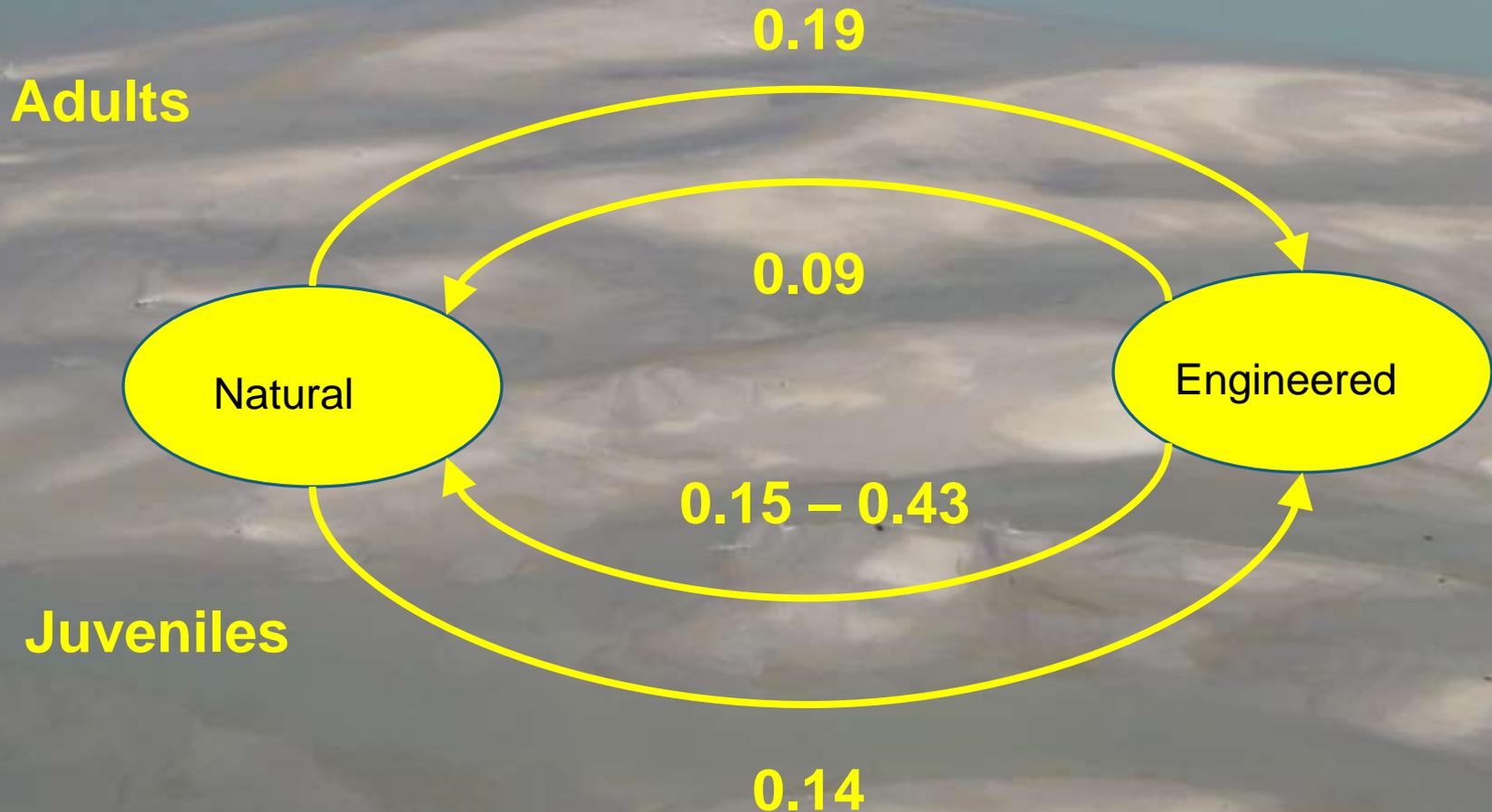
Outline of evidence

- * Local movements (2005 – 2008)
 - * Engineered and natural sandbars
 - * Emigration and immigration on engineered sandbars
- * Regional movements (2005 – 2011)
 - * True survival, fidelity to the study area, and re-immigration
 - * Where are they going?

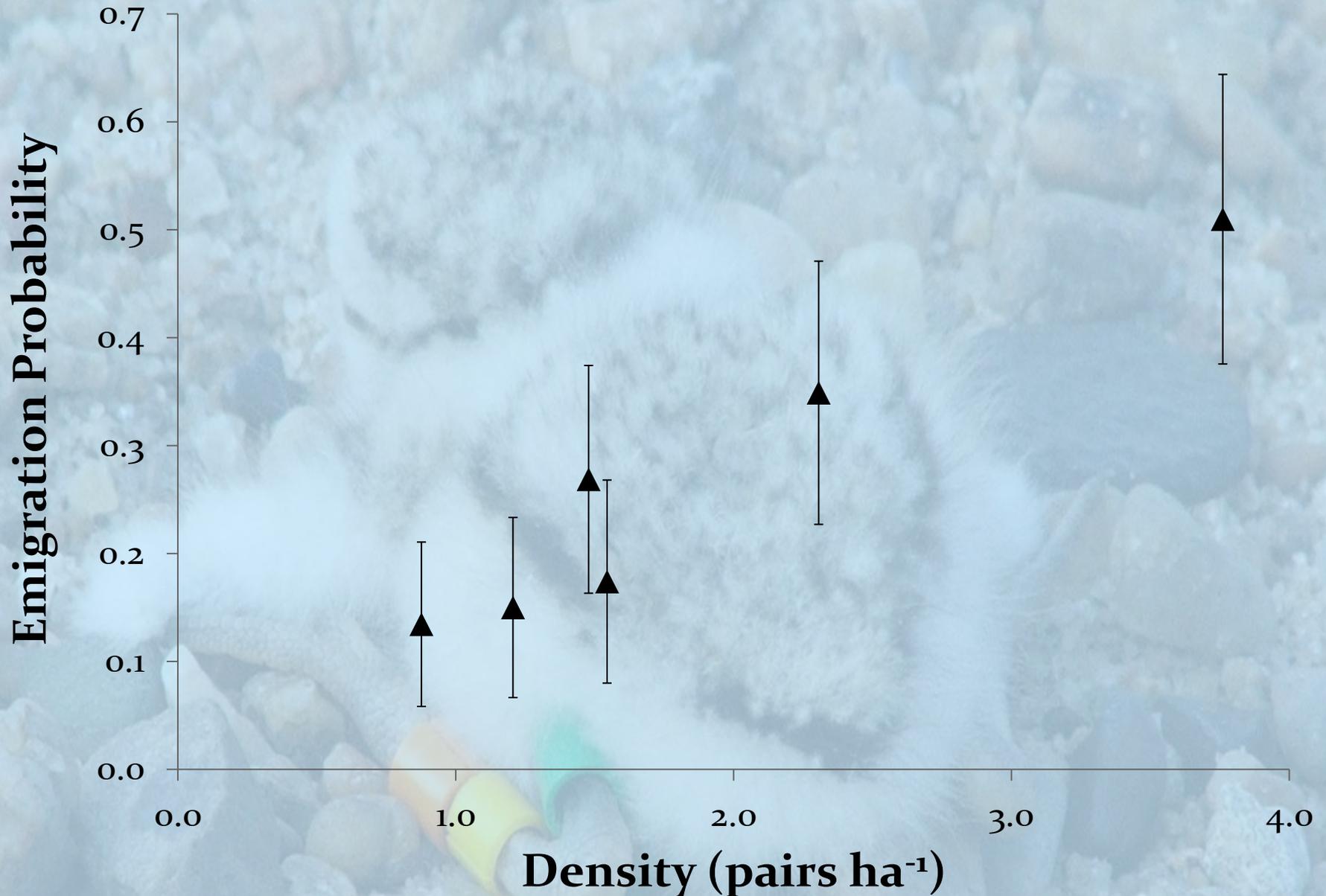
Local



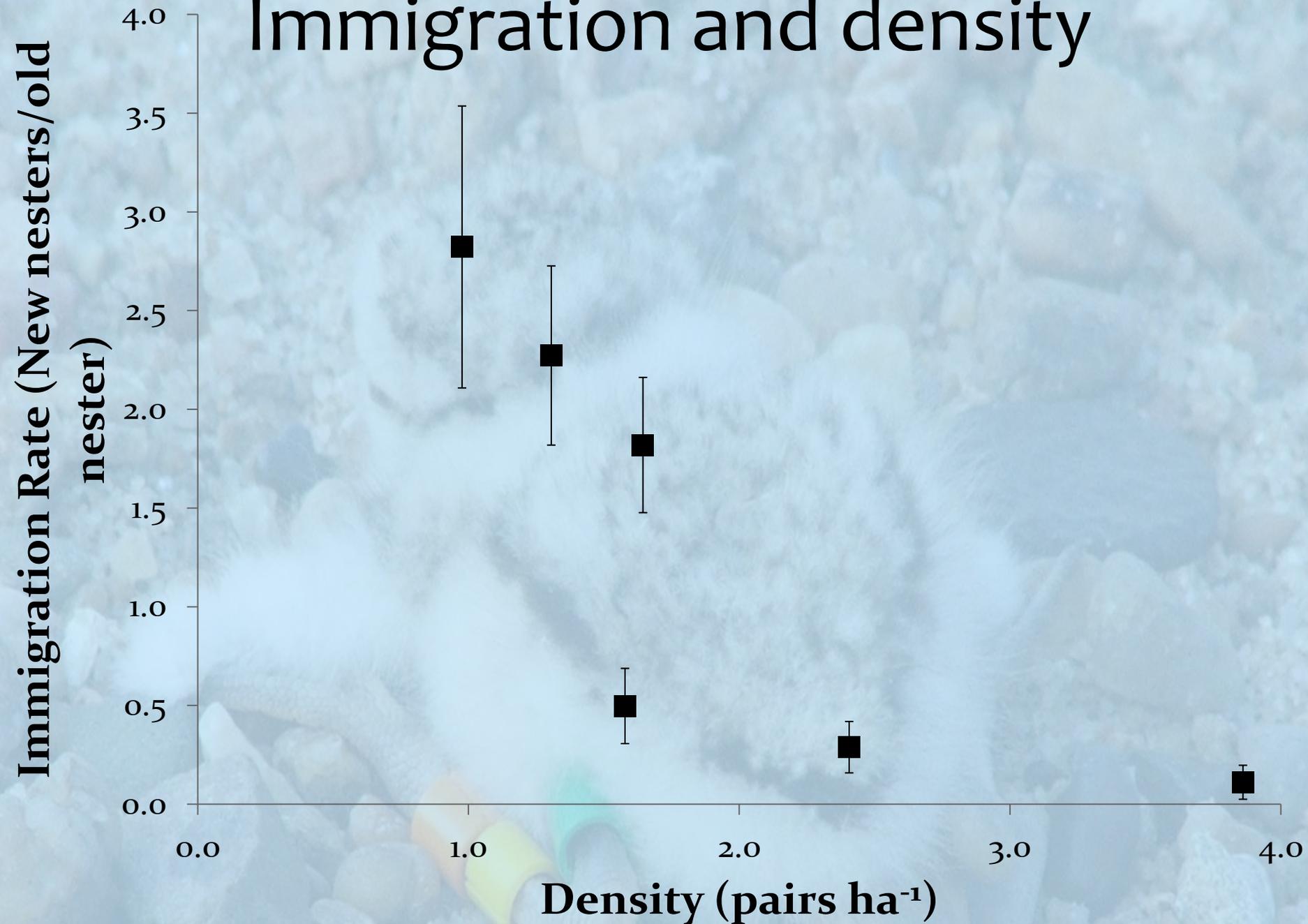
Local movements (annual probability)



Local emigration and density



Immigration and density



Regional



Nesting and Foraging Habitat (ha)

450
400
350
300
250
200
150
100
50
0

2006

2007

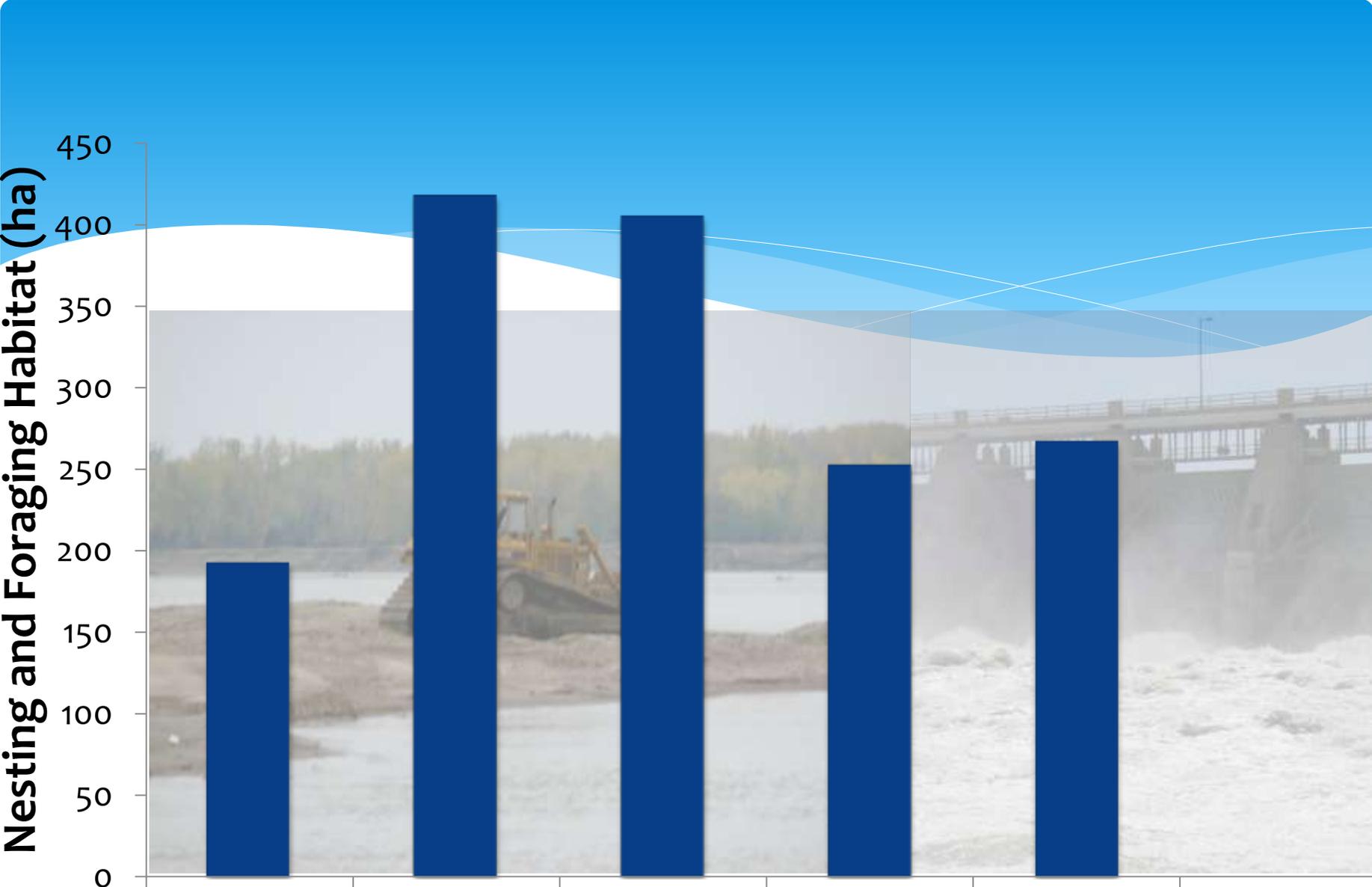
2008

2009

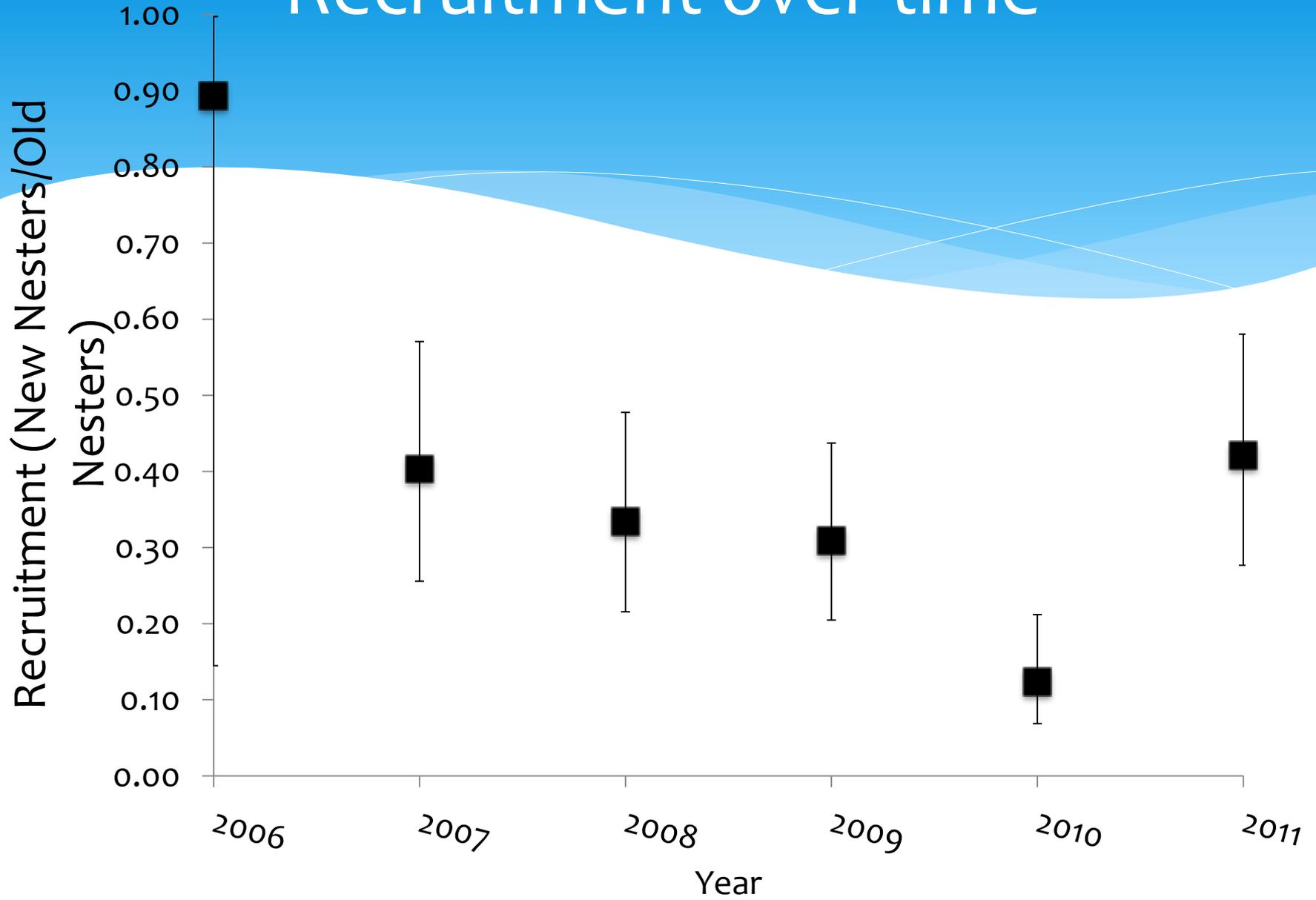
2010

2011

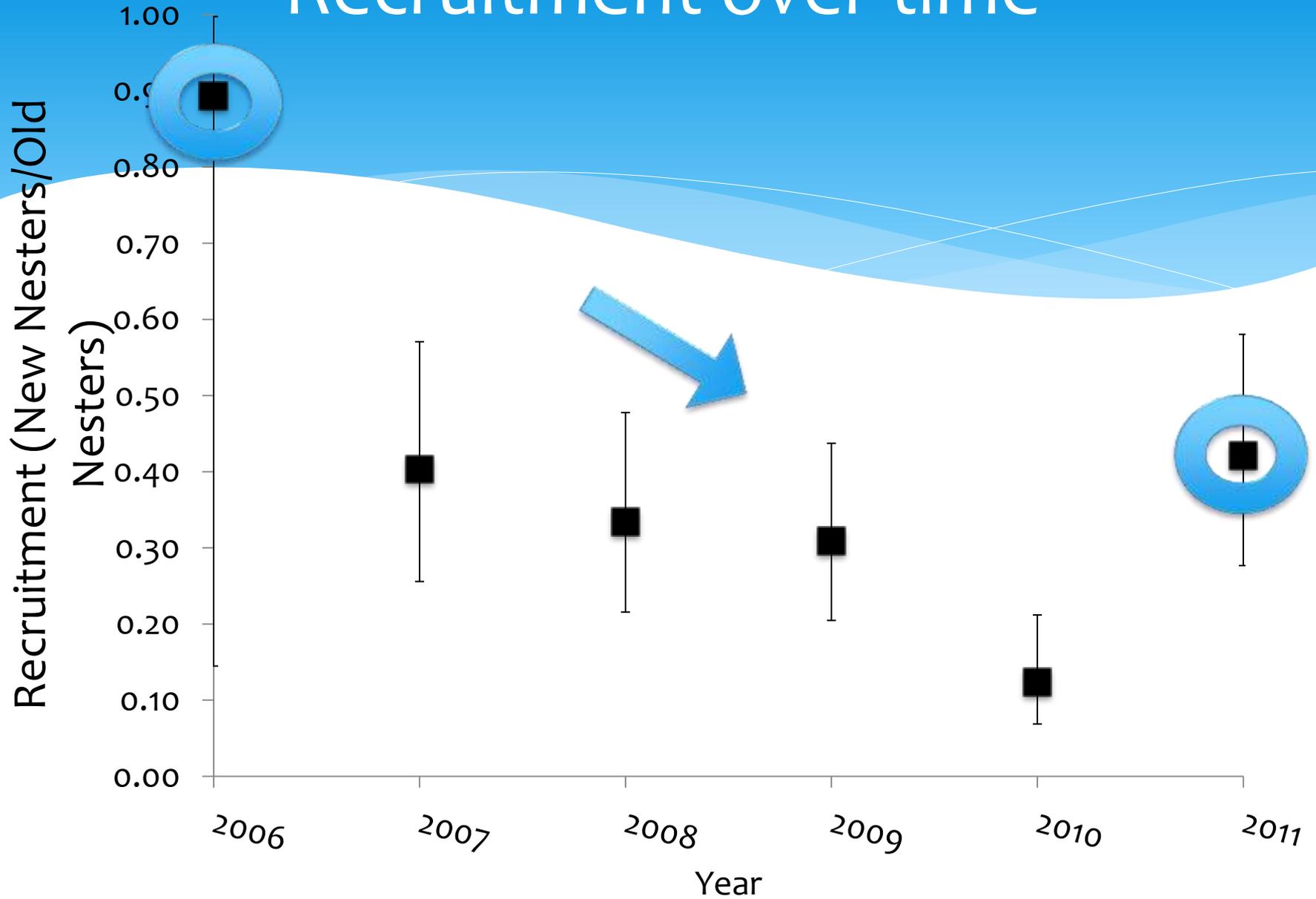
Year



Recruitment over time



Recruitment over time



Nesting and Foraging Habitat (ha)

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2006

2007

2008

2009

2010

2011

Year



Chicks



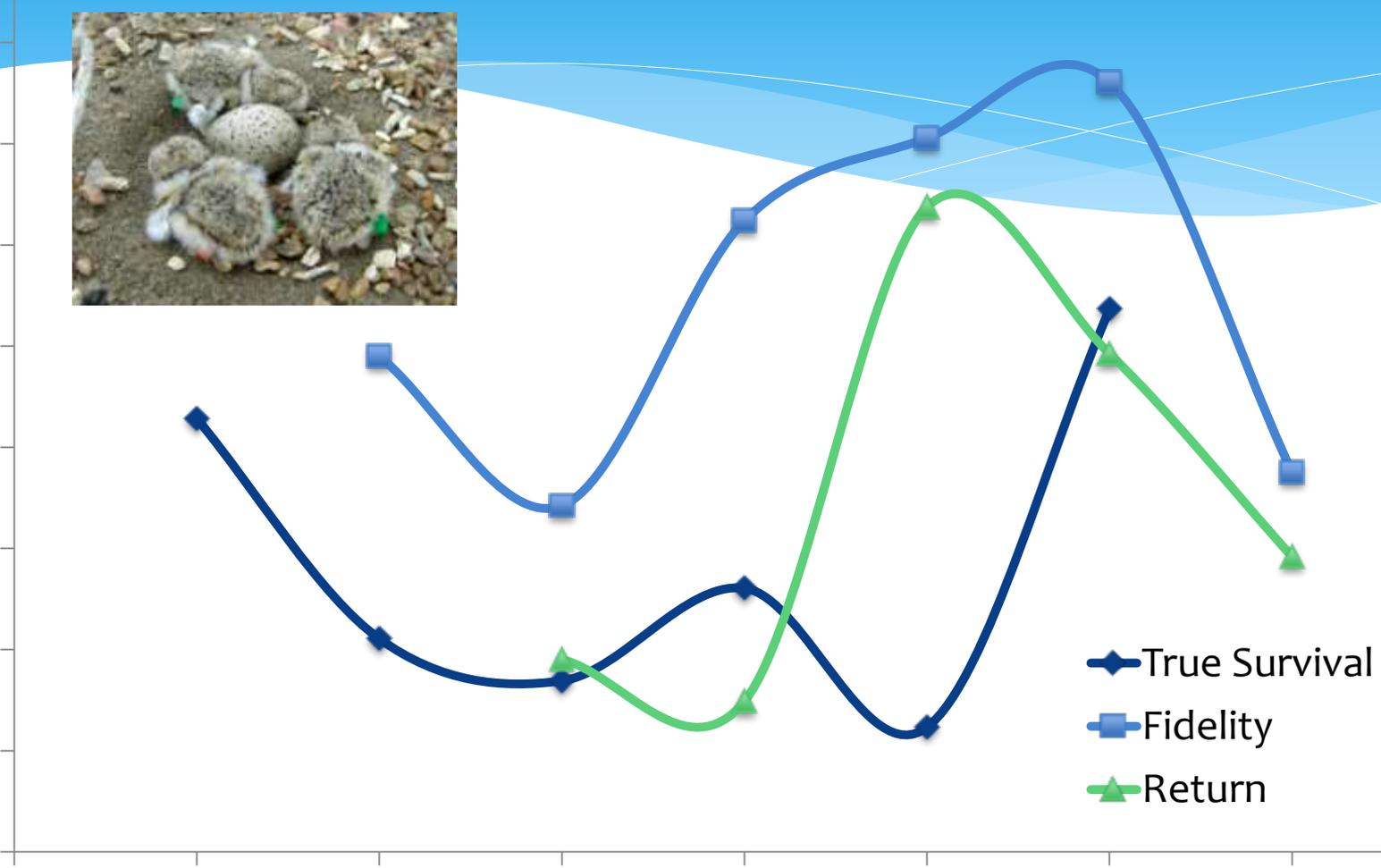
Rate

1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0

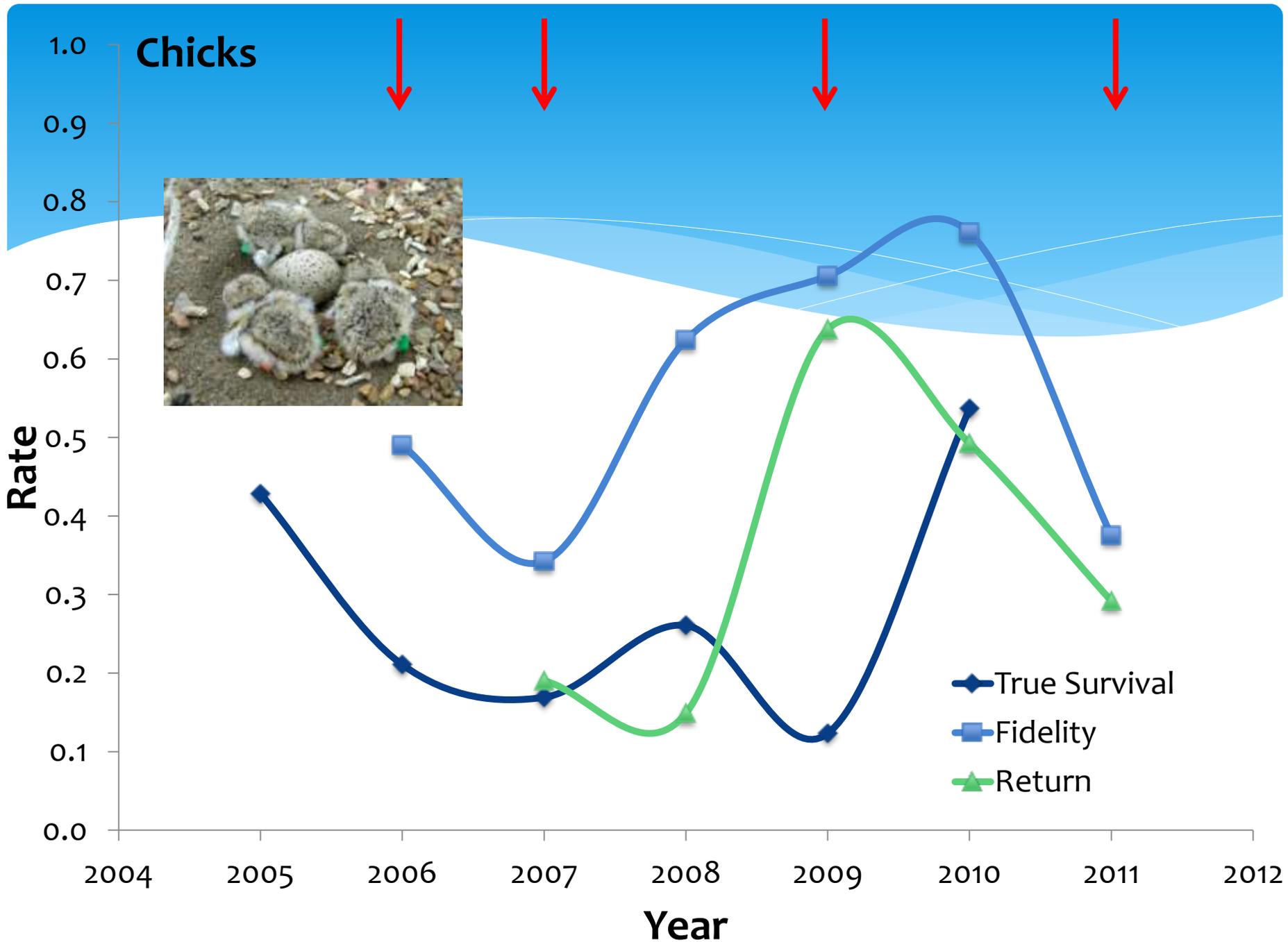
2004 2005 2006 2007 2008 2009 2010 2011 2012

Year

- ◆ True Survival
- Fidelity
- ▲ Return



Chicks



Chicks



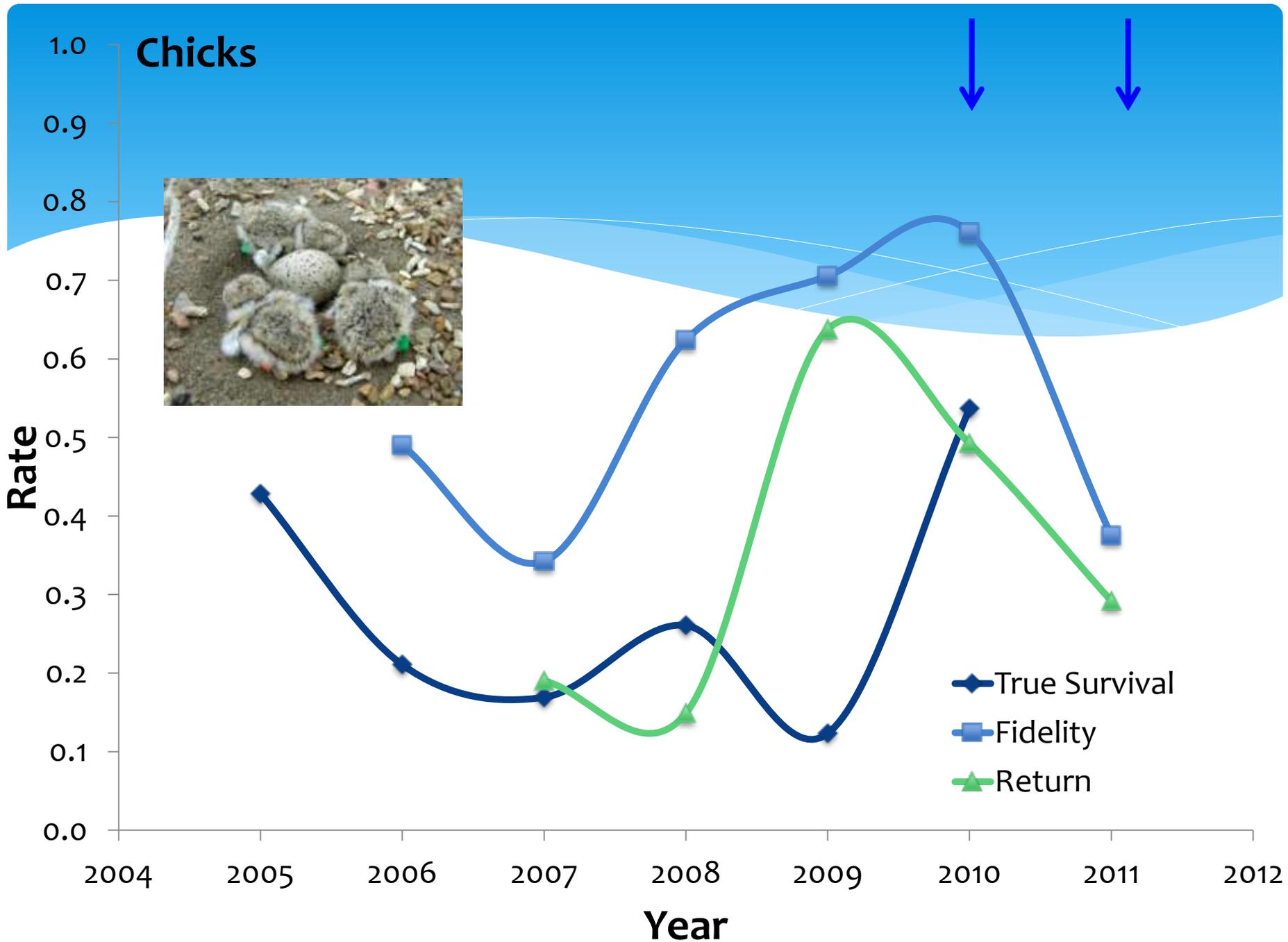
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Nesting and Foraging Habitat (ha)

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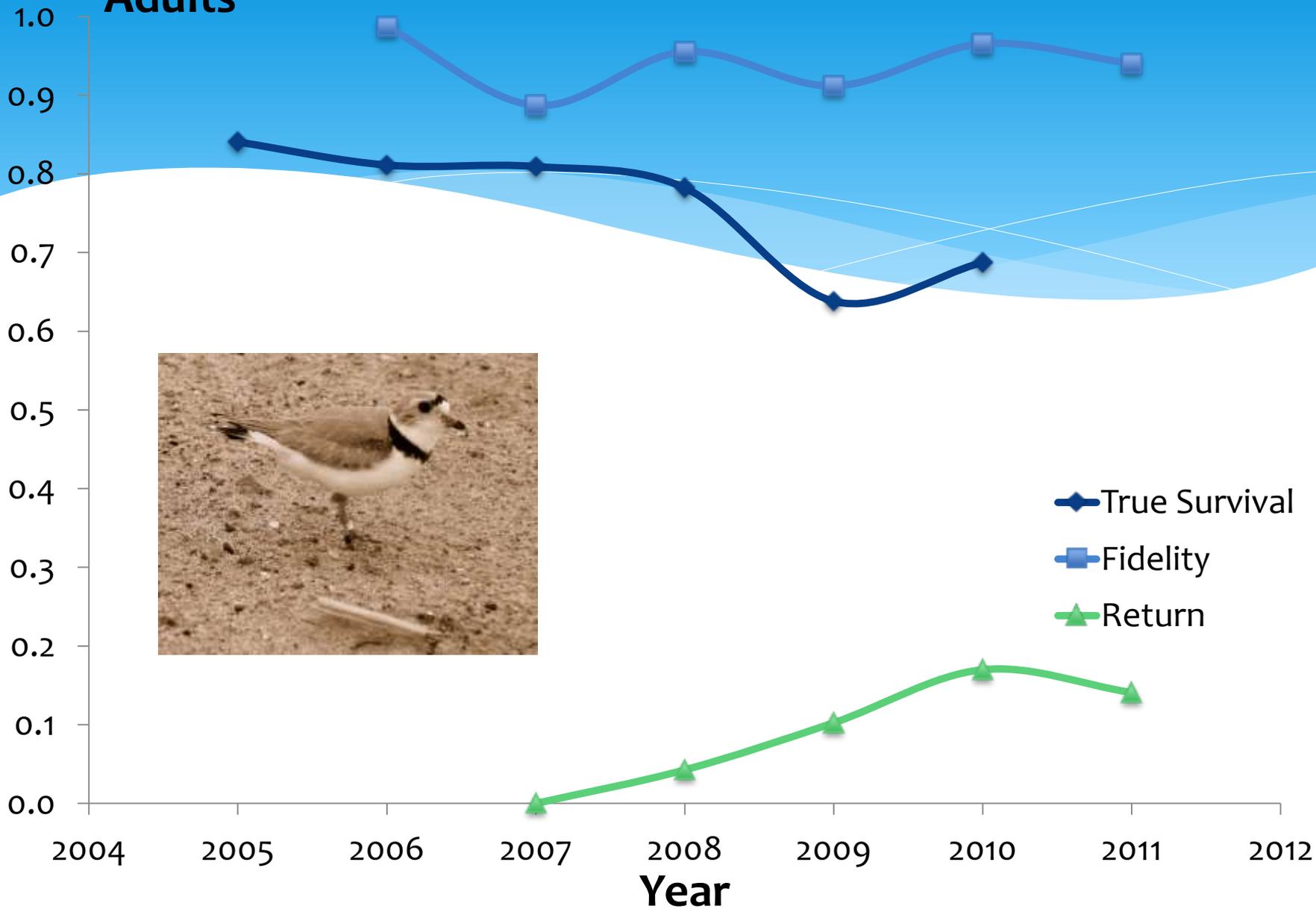
2010

2011

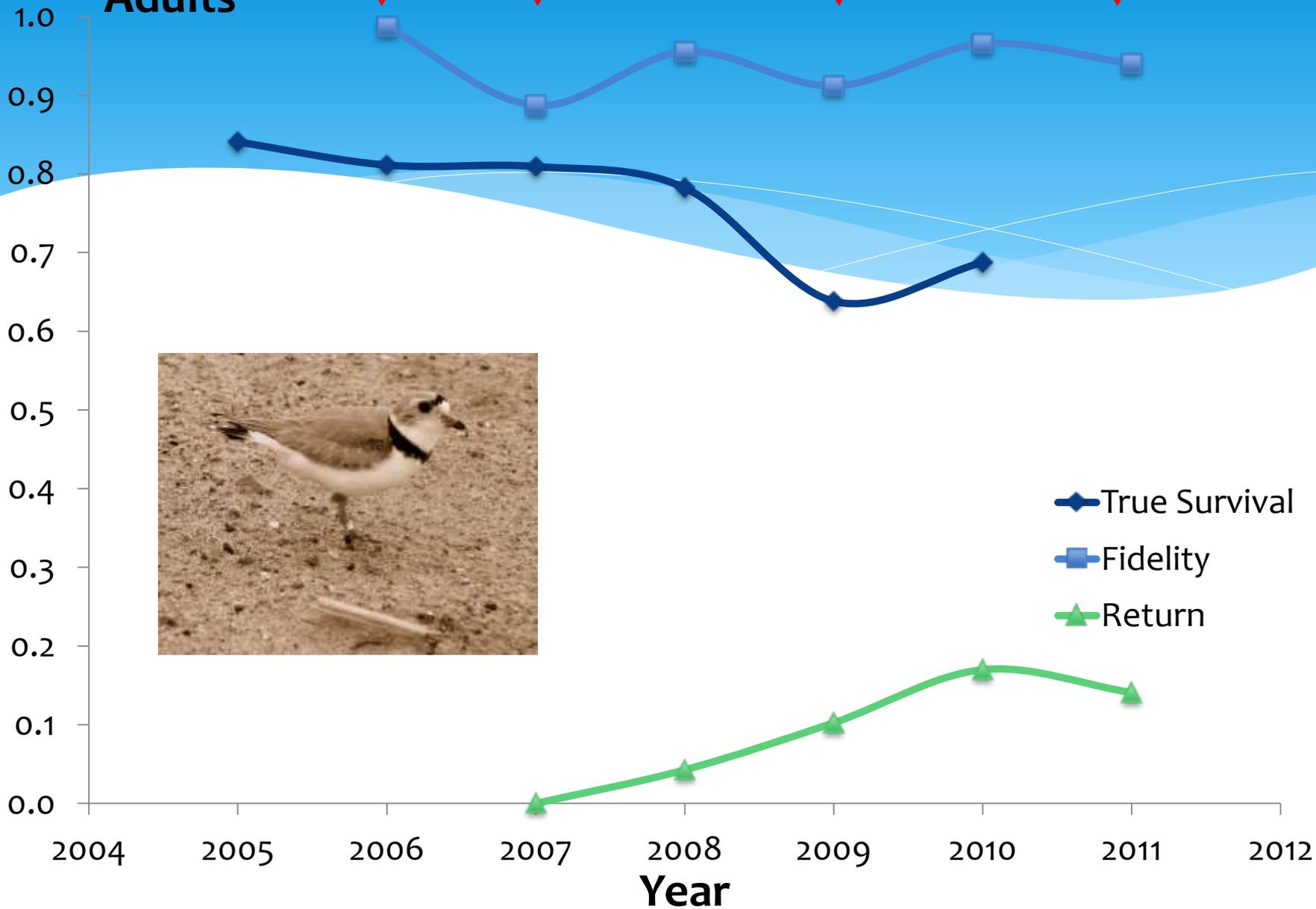
Year



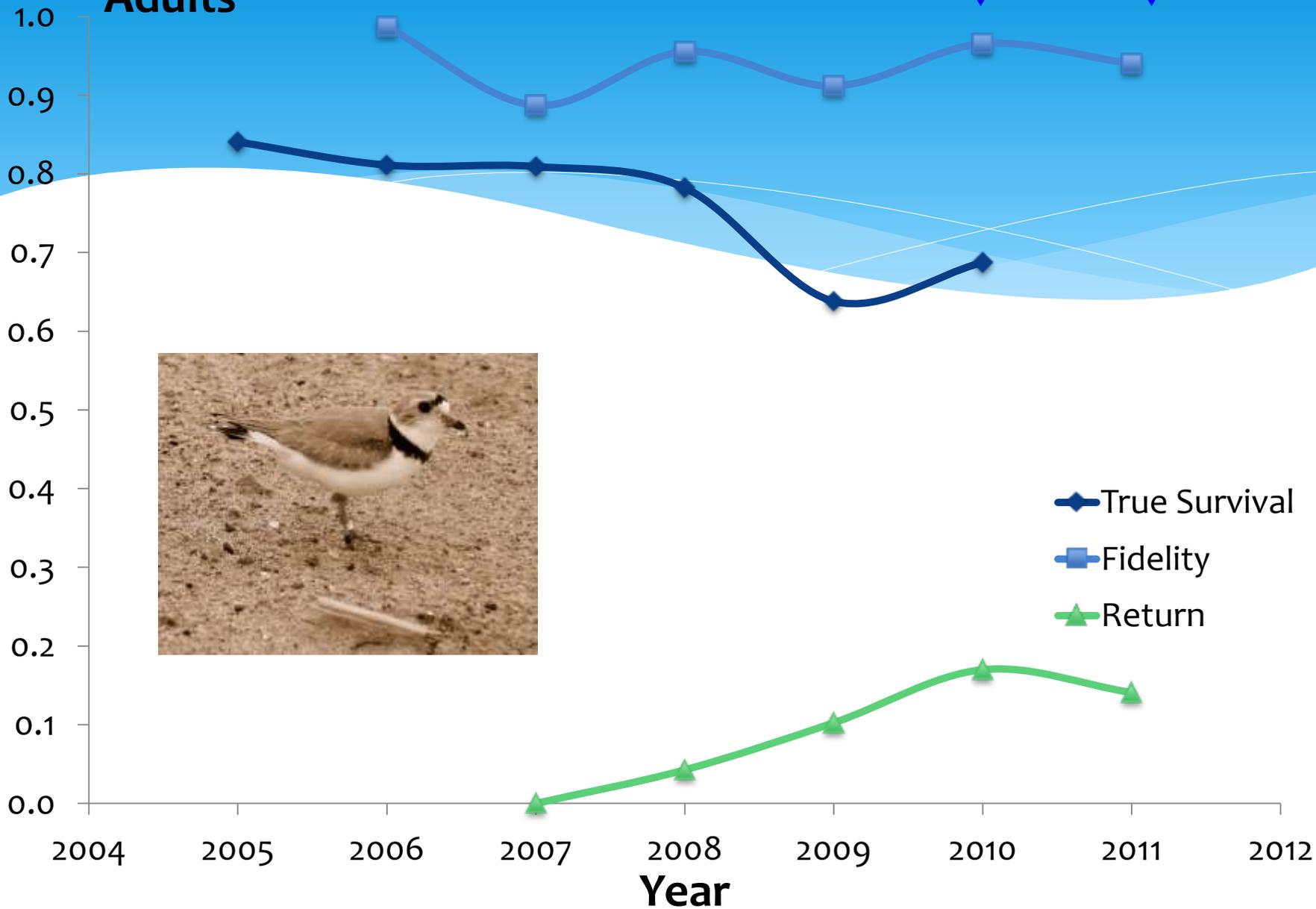
Adults



Adults

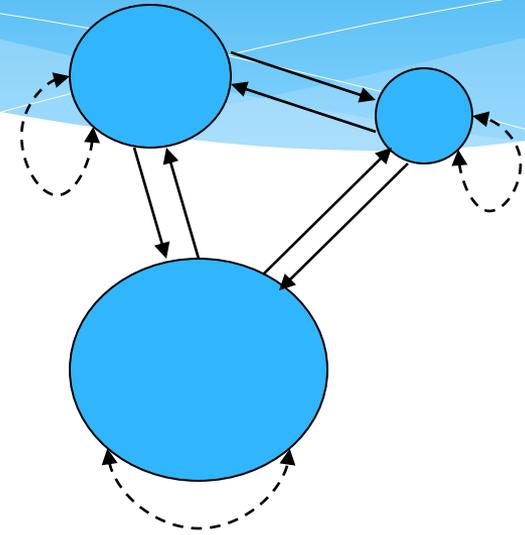


Adults



Meta-population dynamics

- * Within sub-populations
 - * Survival
 - * Productivity
 - * Dispersal
- * Among sub-populations
 - * Immigration and Emigration
 - * Effects on other pop. parameters



2011

Canada

Lake of the Woods

Sak

ND Prairie

Garrison

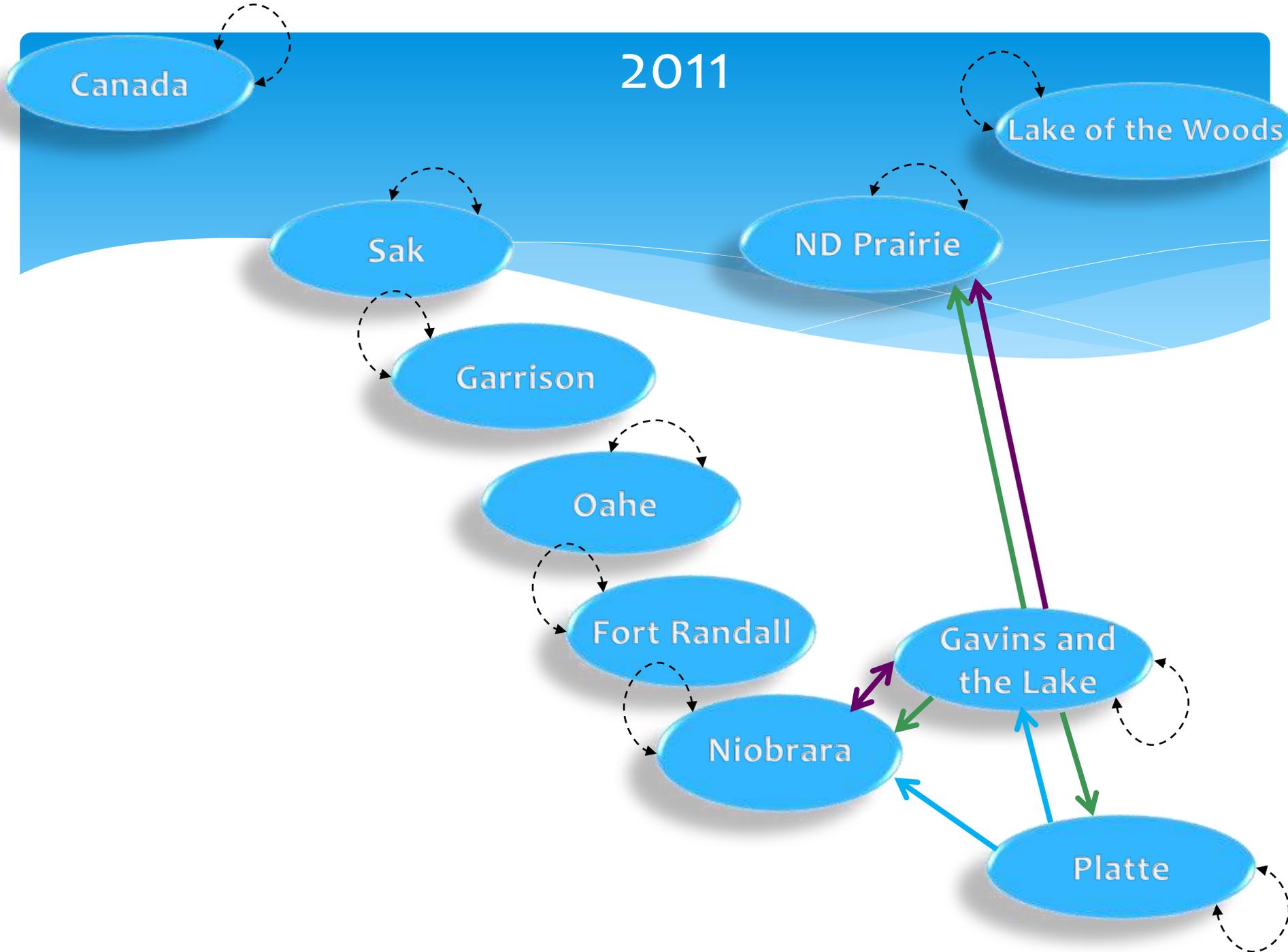
Oahe

Fort Randall

Niobrara

Gavins and the Lake

Platte



2006-2010

Canada

Lake of the Woods

Sak

ND Prairie

Garrison

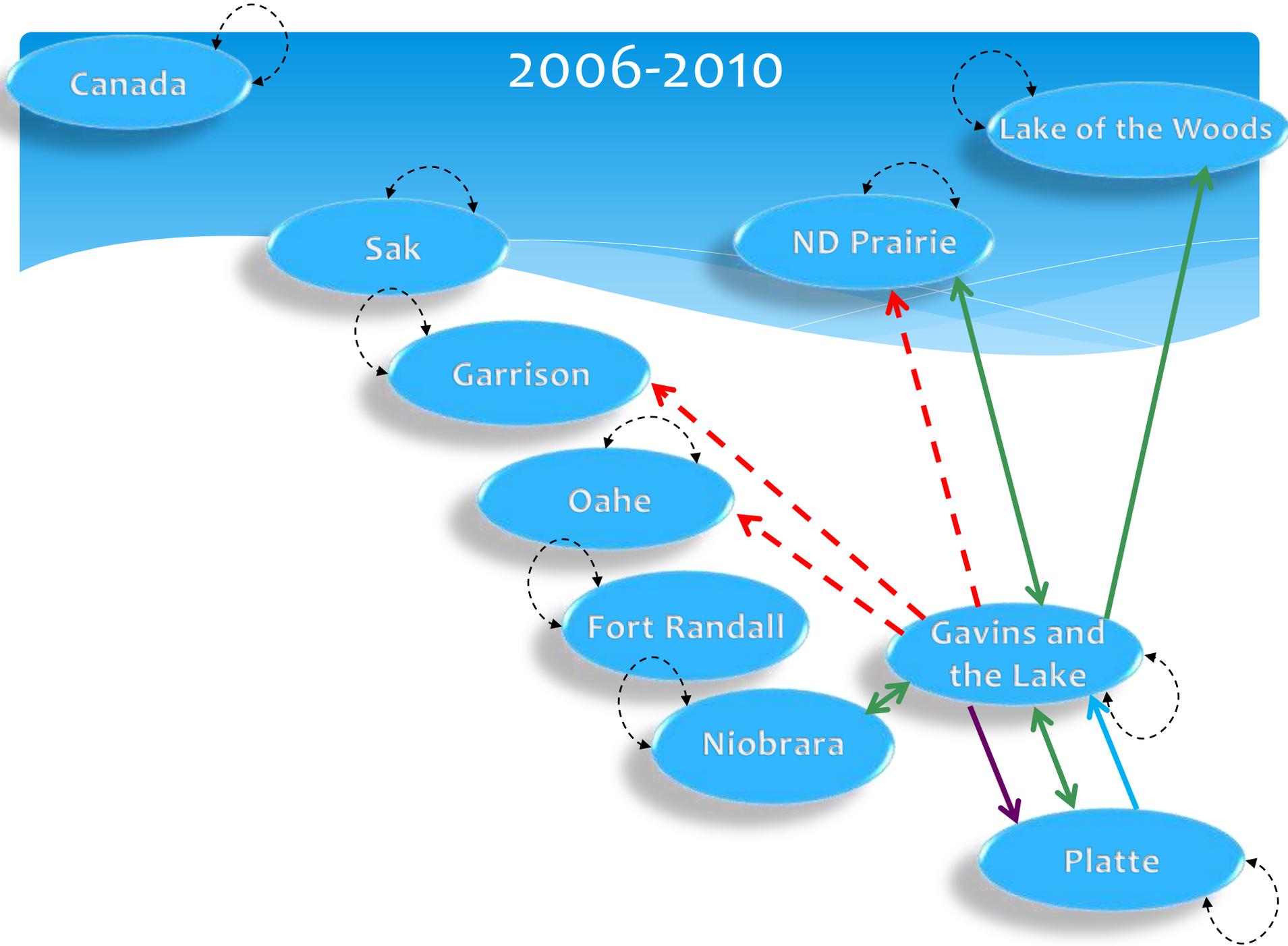
Oahe

Fort Randall

Niobrara

Gavins and the Lake

Platte



Meta-populations

- * IF we move forward,
 - * A coordinated effort
 - * Data quality
 - * The bet...

Meta-populations

- * IF we move forward,
 - * A coordinated effort
 - * Data quality
 - * The bet...



Meta-populations

More appropriately...



So, what do we know?

- * Actually, quite a bit...
- * Differences by age and sex (more from Joy tomorrow)
- * Density and ultimately habitat availability a driving force
- * Regional divisions – north, south, Canada
- * Multiple scales of meta-population dynamics (Fraser's talk)

Acknowledgements

- * Funding was provided by the USACE, VT Department of Fish and Wildlife Conservation, and the USFWS.
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