Seabird Habitat Restoration

A Case Study in Predator Reduction

Dan Roby
USGS Cooperative Unit
Oregon State University

Sam Stark
Oregon State University

David B. Irons
Migratory Bird Management
USFWS

Outline

Background
- Pigeon Guillemots
- Previous Research
- Mink Removal

Objective 1
Was Mink Removal Effective?
- Population growth
- Nest habitat use
- Nest Success

Objective 2
Artificial Social Information

Background

Pigeon Guillemots

- Alcids
- “Not Recovering” from EVOS

Background

Pigeon Guillemots

- Alcids
- Piscivorous

Background

Pigeon Guillemots

- Alcids
- Piscivorous (mostly)

Background

Pigeon Guillemots

- Alcids
- Piscivorous
- Burrow/ Crevice Nesters

Background

Pigeon Guillemots

- Alcids
- Piscivorous
- Burrow/ Crevice Nesters

Background

Guillemot colonies

- Semi-colonial
- Use of conspecifics

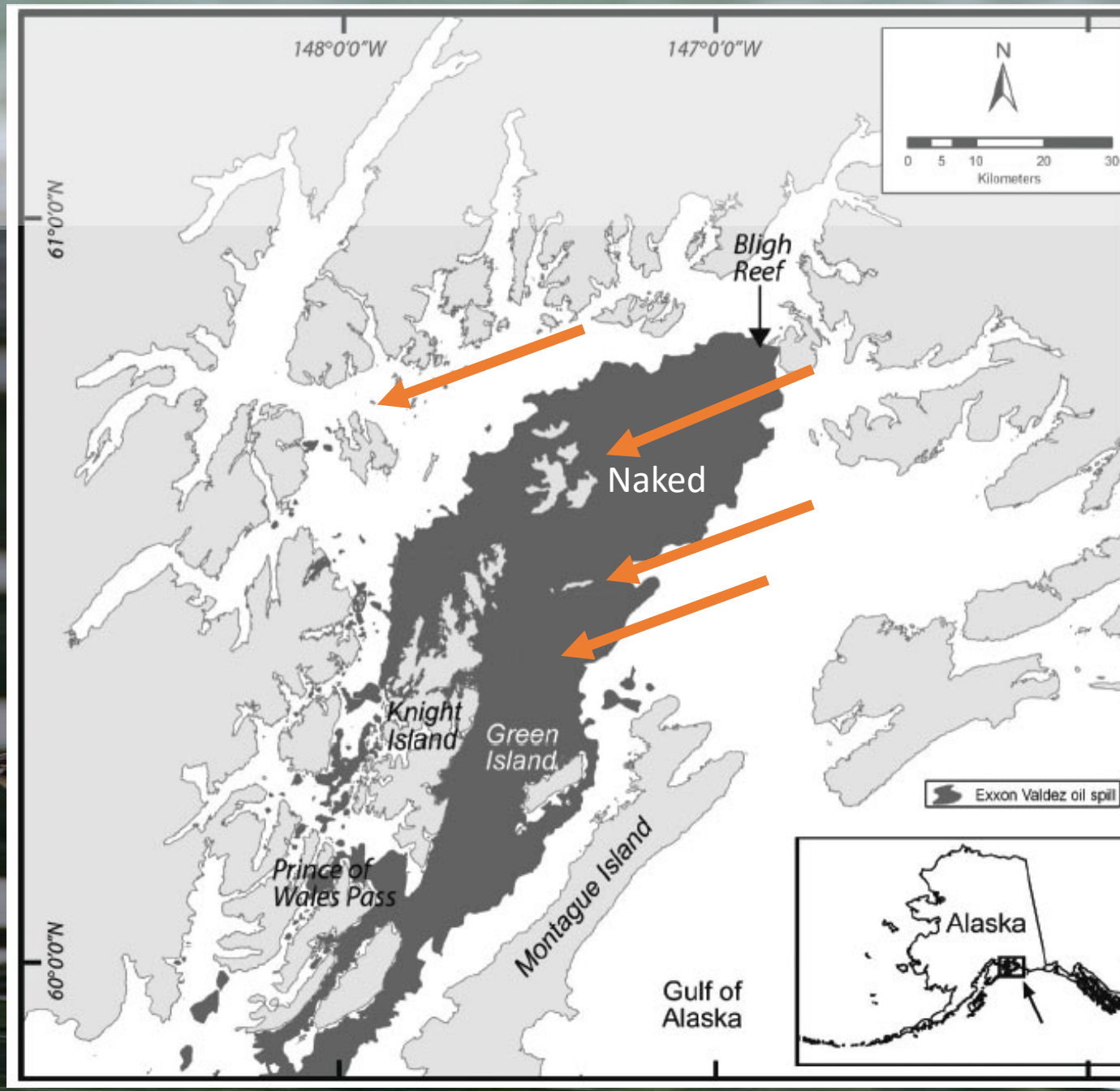
Study Area

Naked Island Group

- High nesting density
- Well studied population
- Greatest population decline

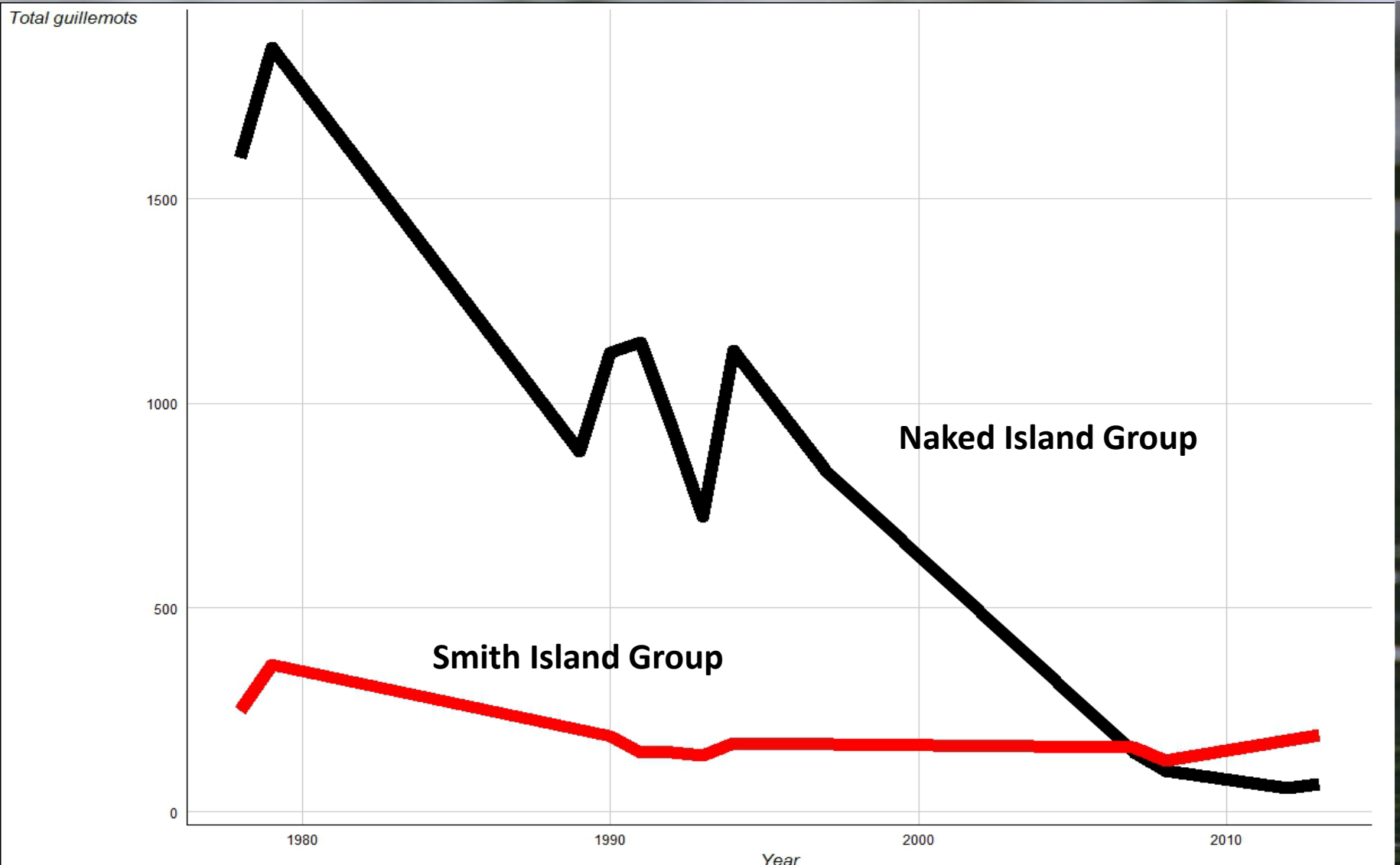
Control Sites

- Similar density pre-spill
- Oiled and unoiled sites



USGS Open-File Report 2014–1030.

Background

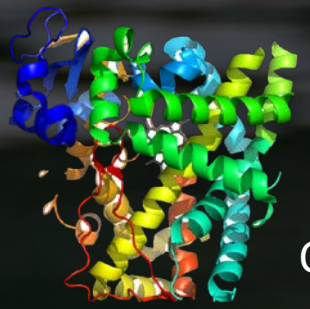


- Naked Island Group experience greater decline

Background

Drivers of Population Size and Distribution in Pigeon Guillemots

Residual Oil



Cytochrome p420

Kultez (1983) Oakley and Kuletz (1996)

Golet (2002) Hayes (1996)

Vs.

Prey availability

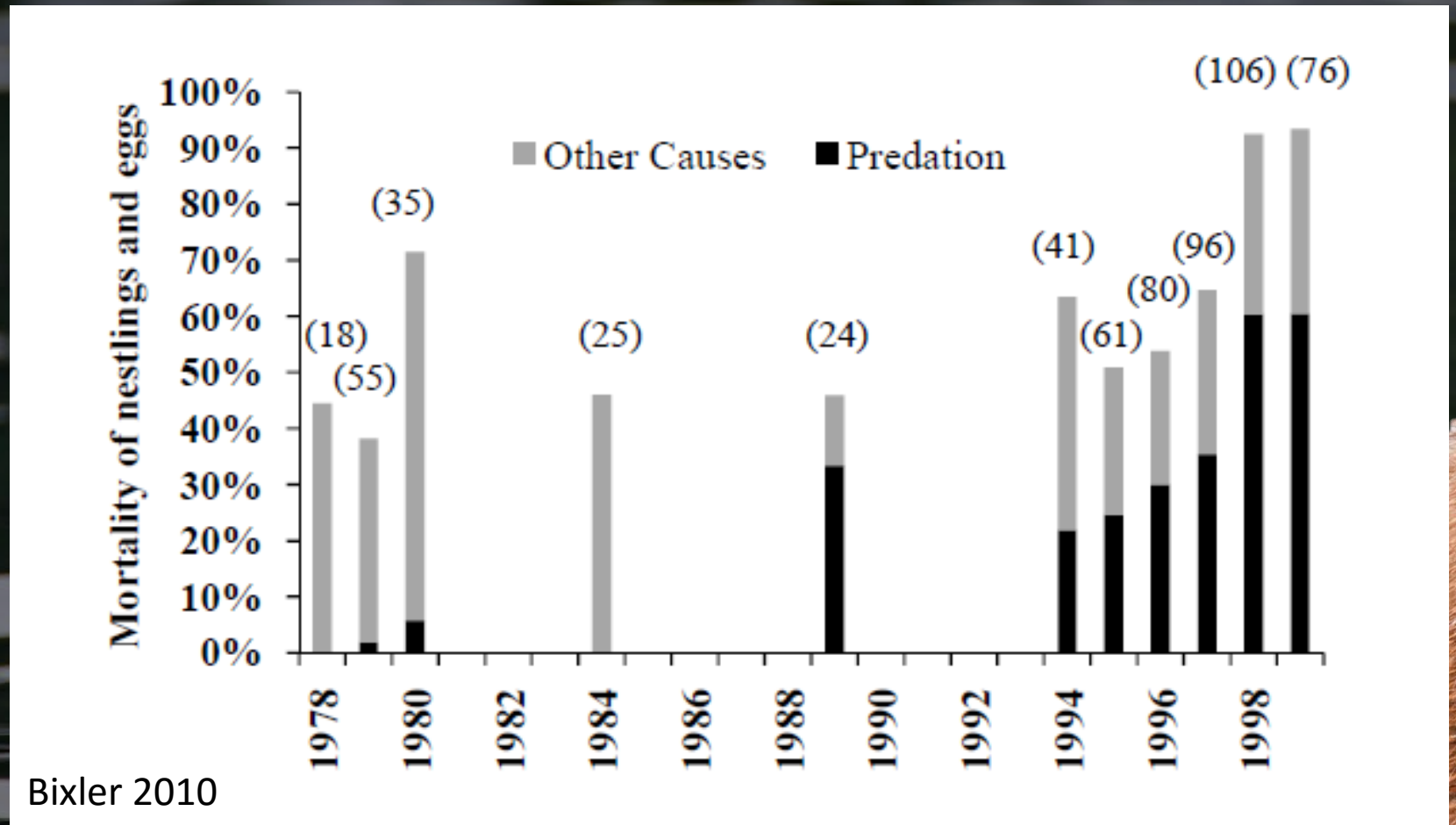
Bixler (2010)

Vs.

Predation

Background

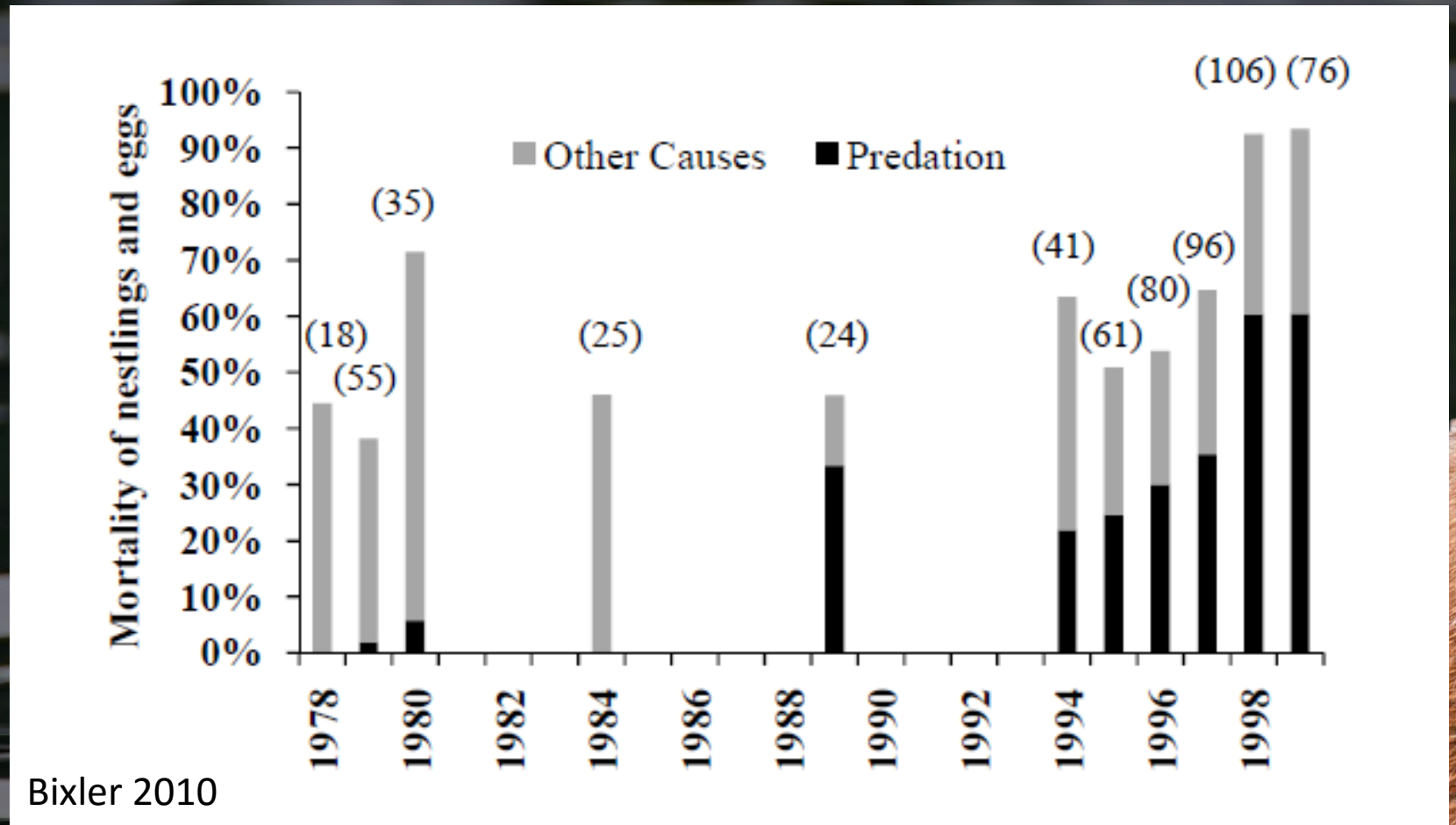
Drivers of Population Size and Distribution in Pigeon Guillemots



Bixler 2010

Background

Drivers of Population Size and Distribution in Pigeon Guillemots



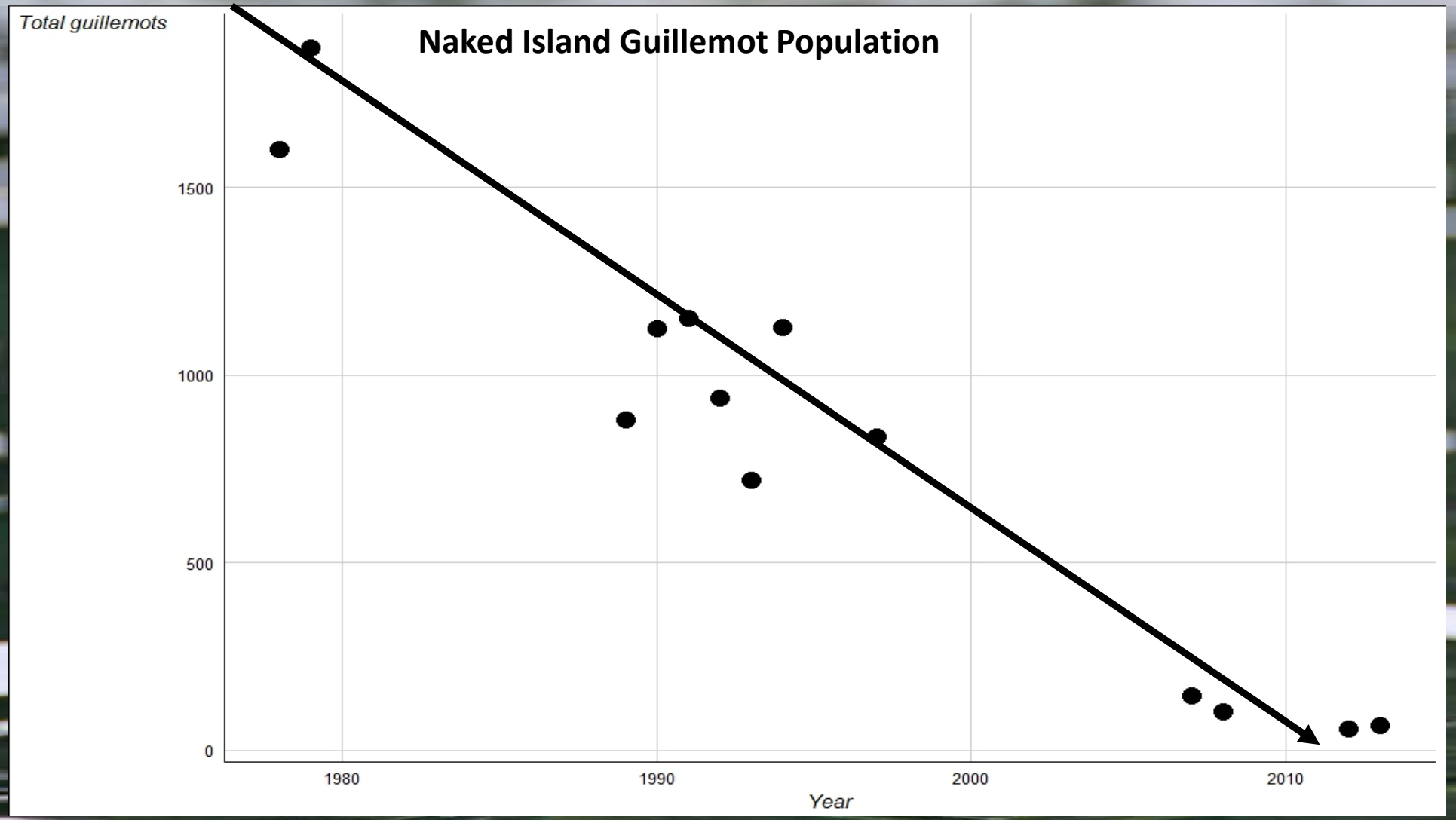
Bixler 2010

Objective 1: Mink Removal

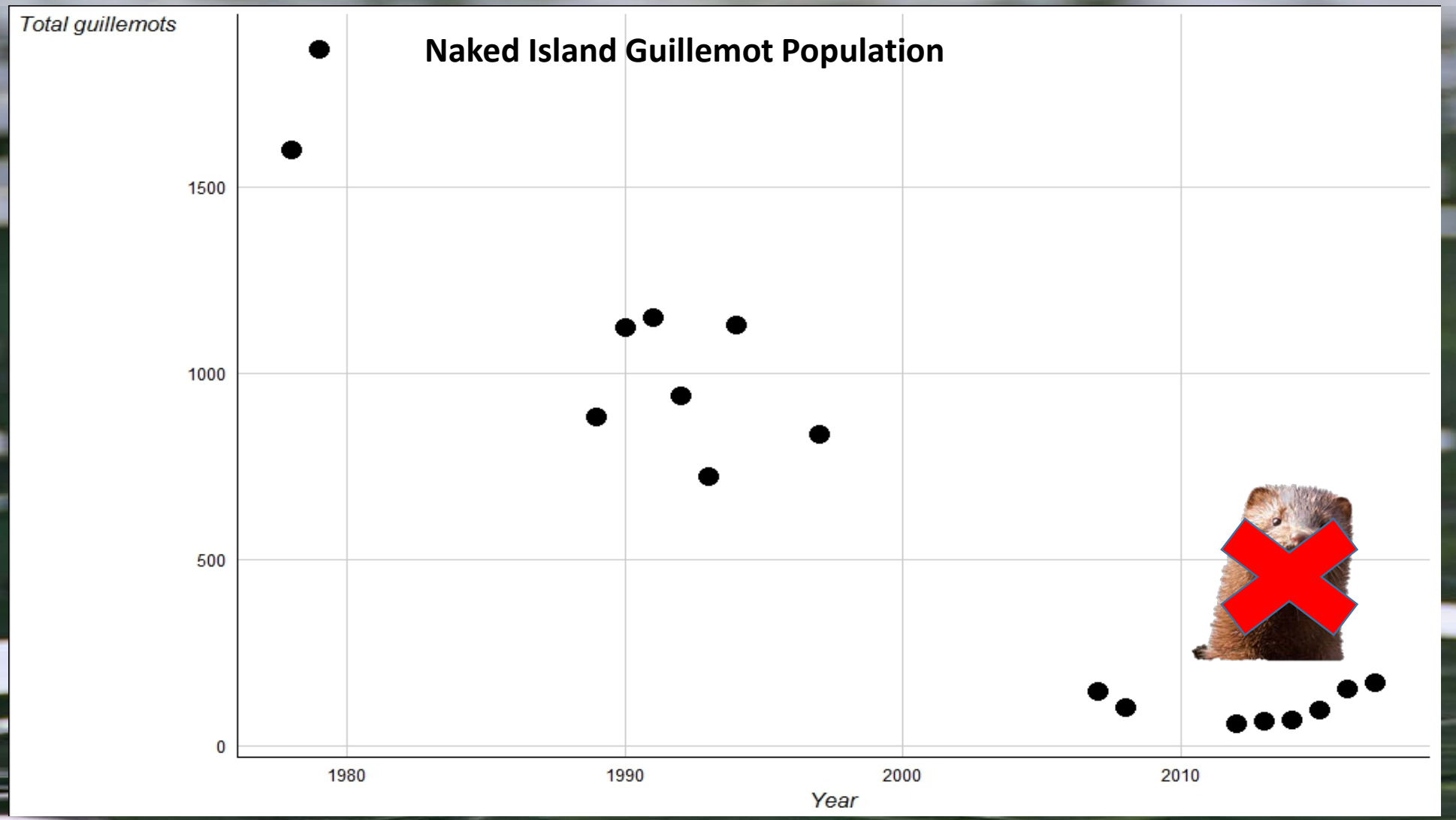
Effect of Mink Removal

- Size of guillemot population
- Nesting Success
- Nesting habitat use
- Diet Composition
- Chick Growth

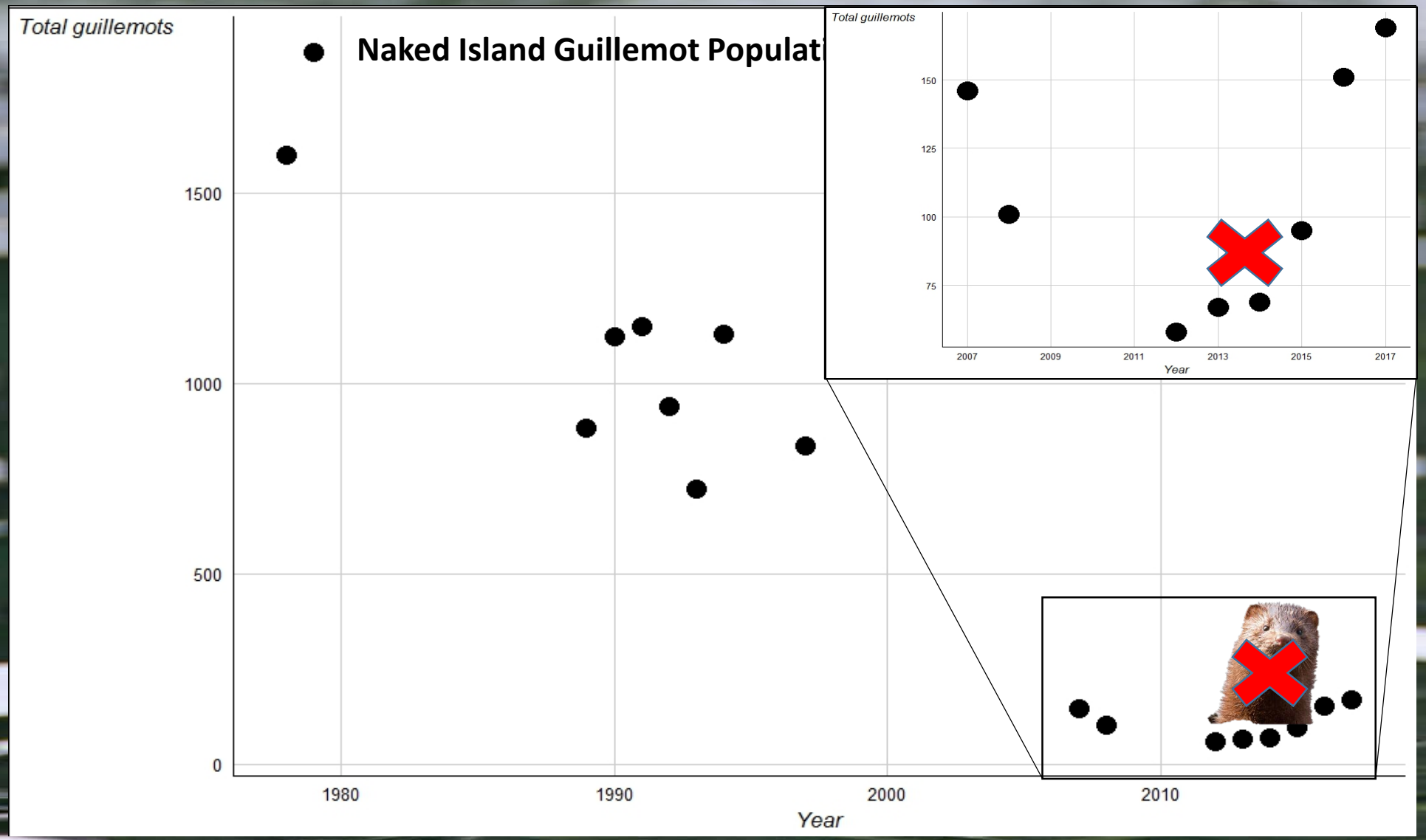
Guillemot Population Size



Guillemot Population Size



Guillemot Population Size



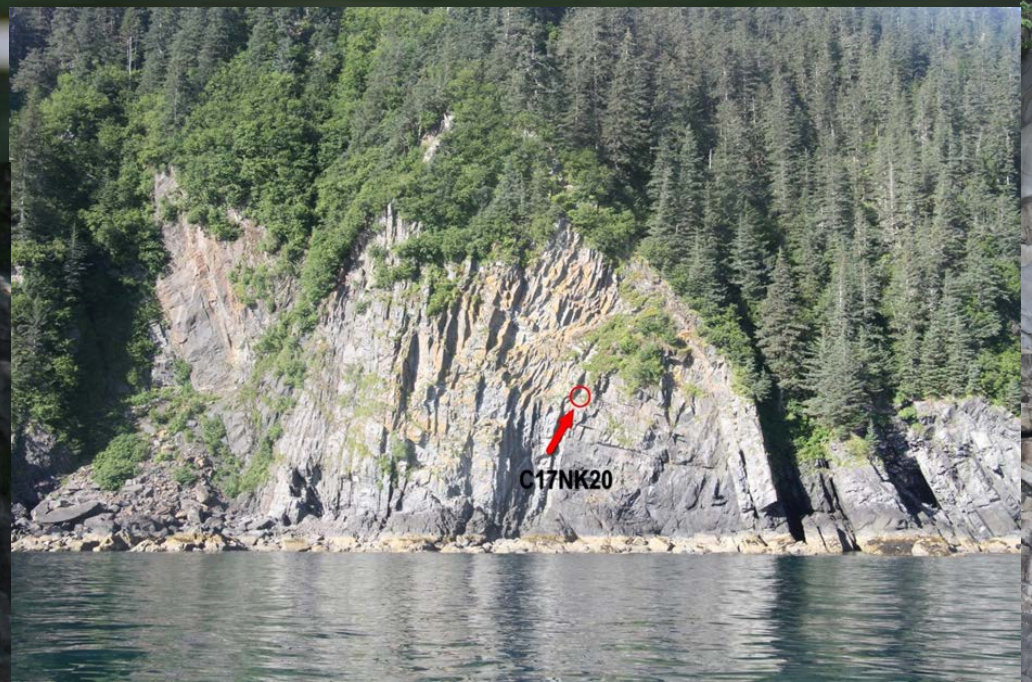
Guillemot Population Size

Nesting Habitat Use

- Three Major Types

Talus

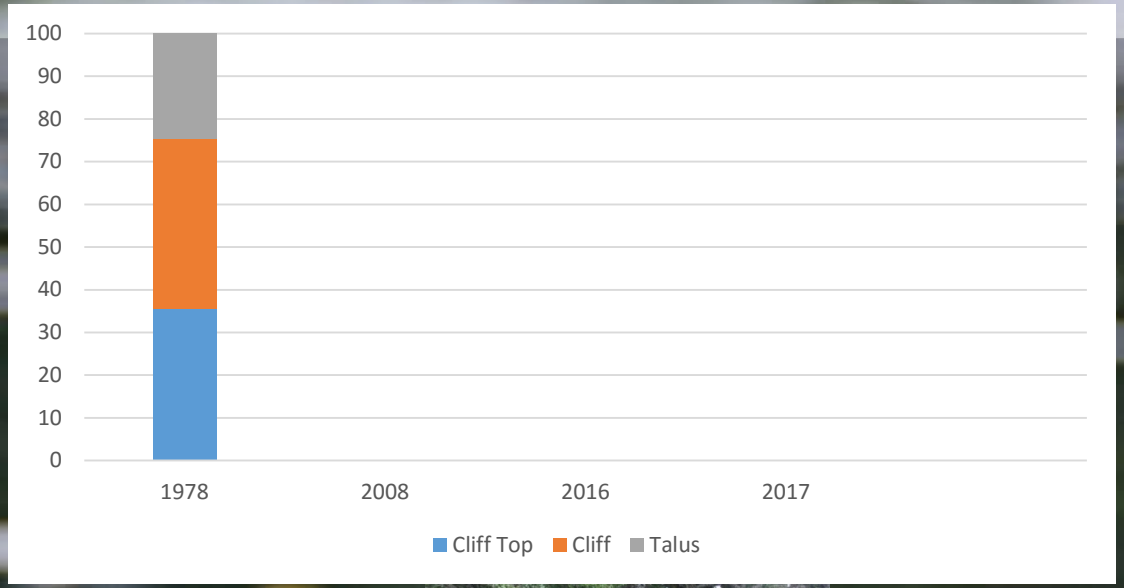
Cliff



Cliff Top

Nesting Habitat Use

- Three Major Types
  1. Talus
  2. Cliff
  3. Cliff Top



Nesting Habitat Use

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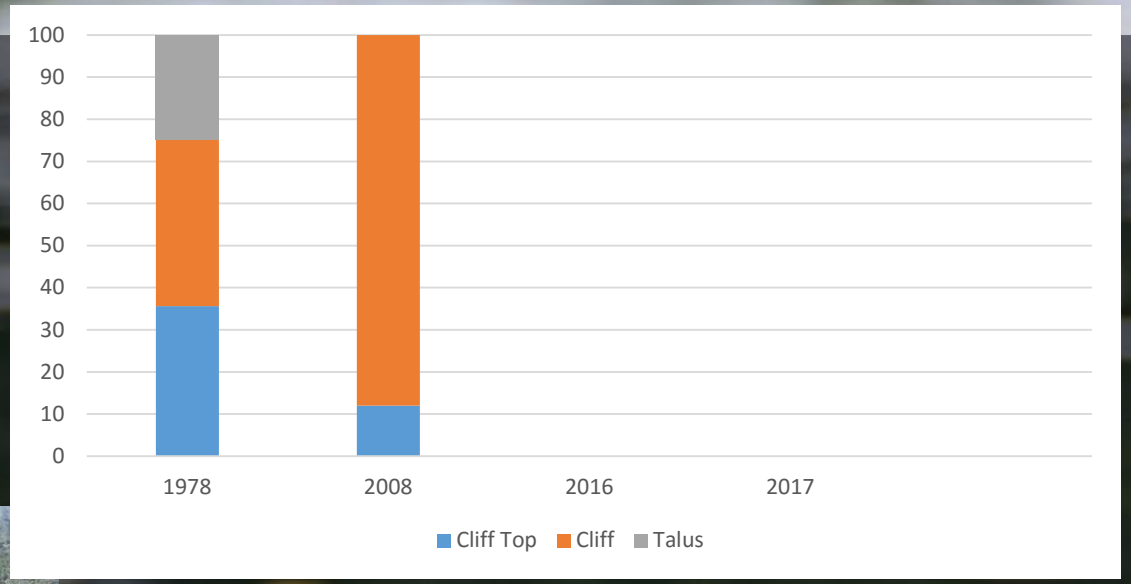
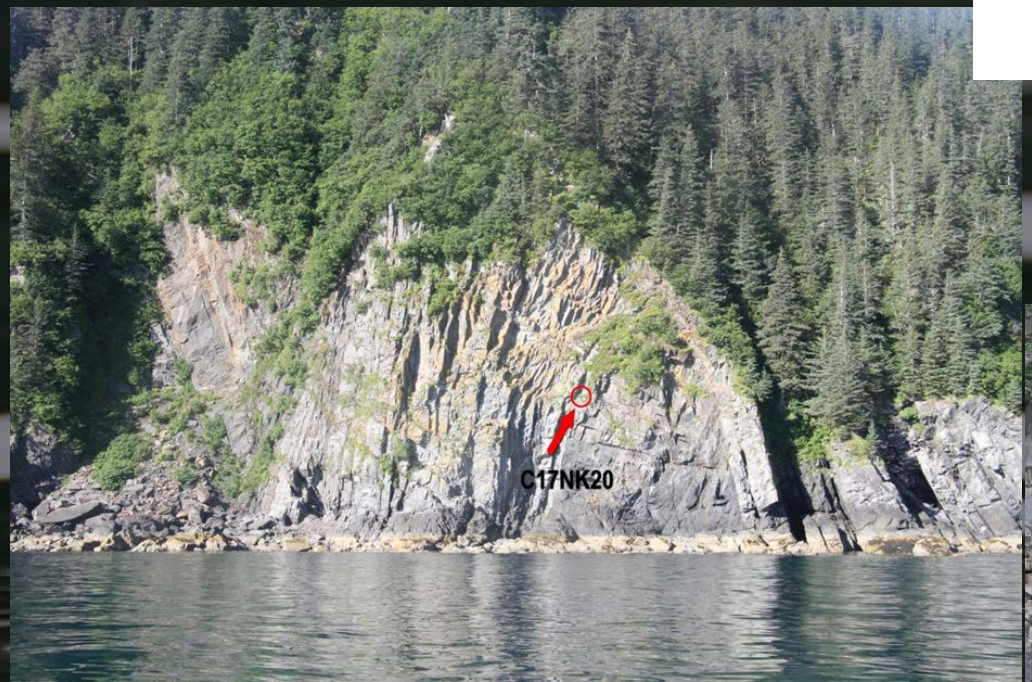
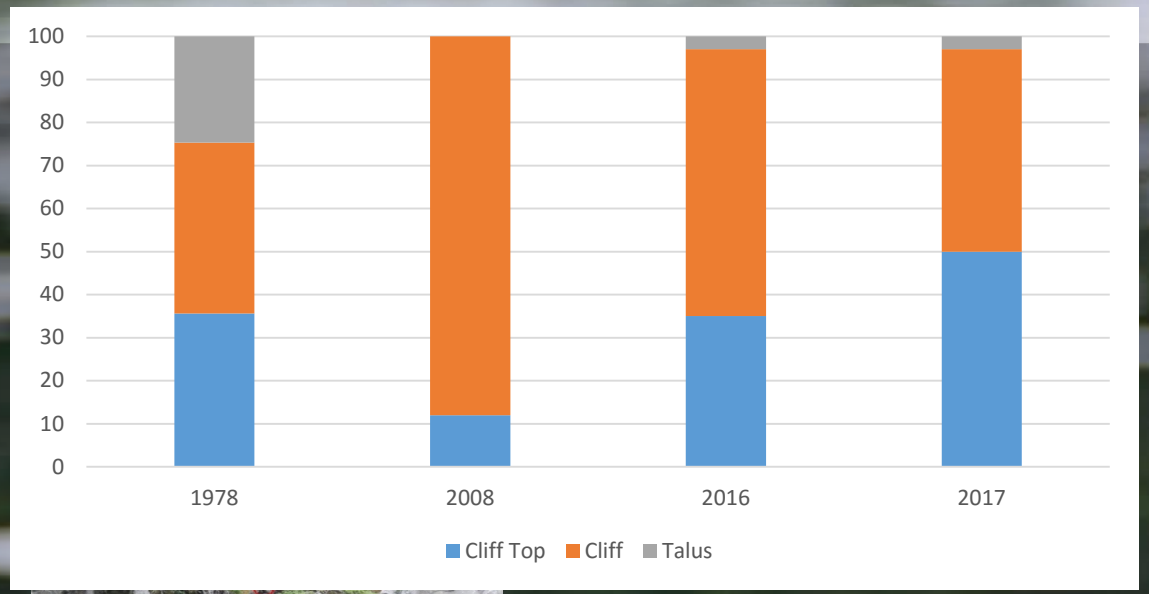




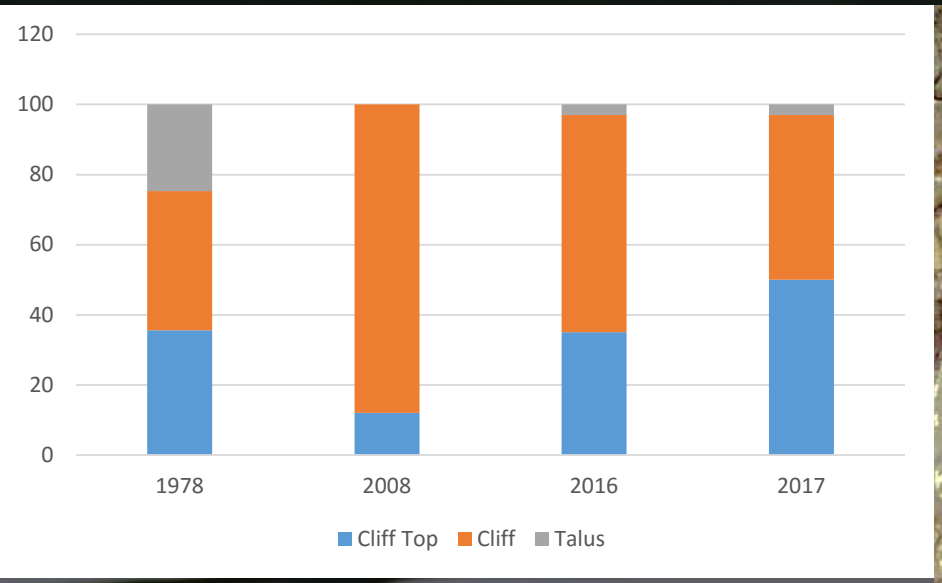
Nesting Habitat Use

- Three Major Types
  1. Talus
  2. Cliff
  3. Cliff Top



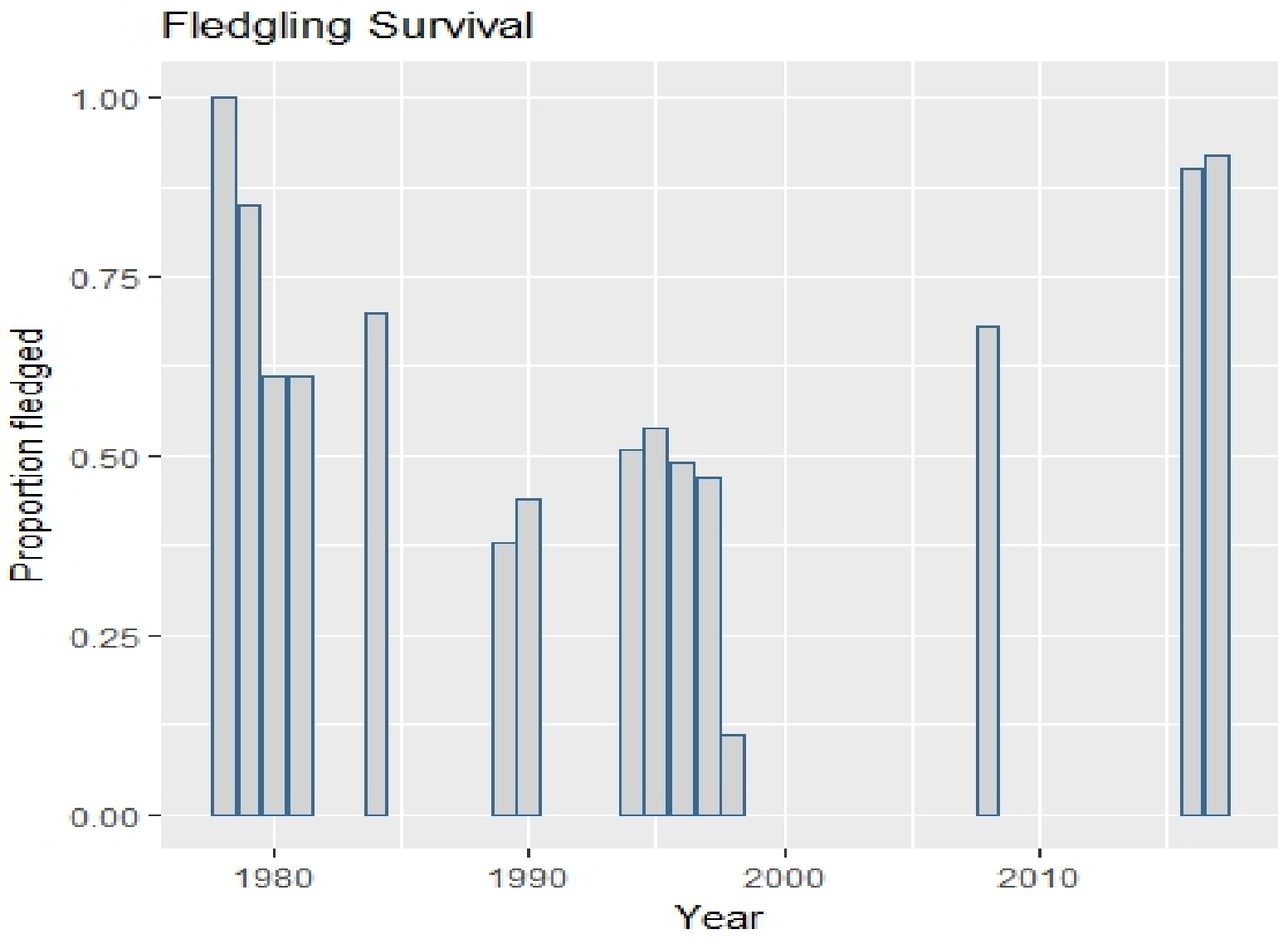
Changing Pressure

- Selection based on predator type
- Abundance and location



Nesting Success

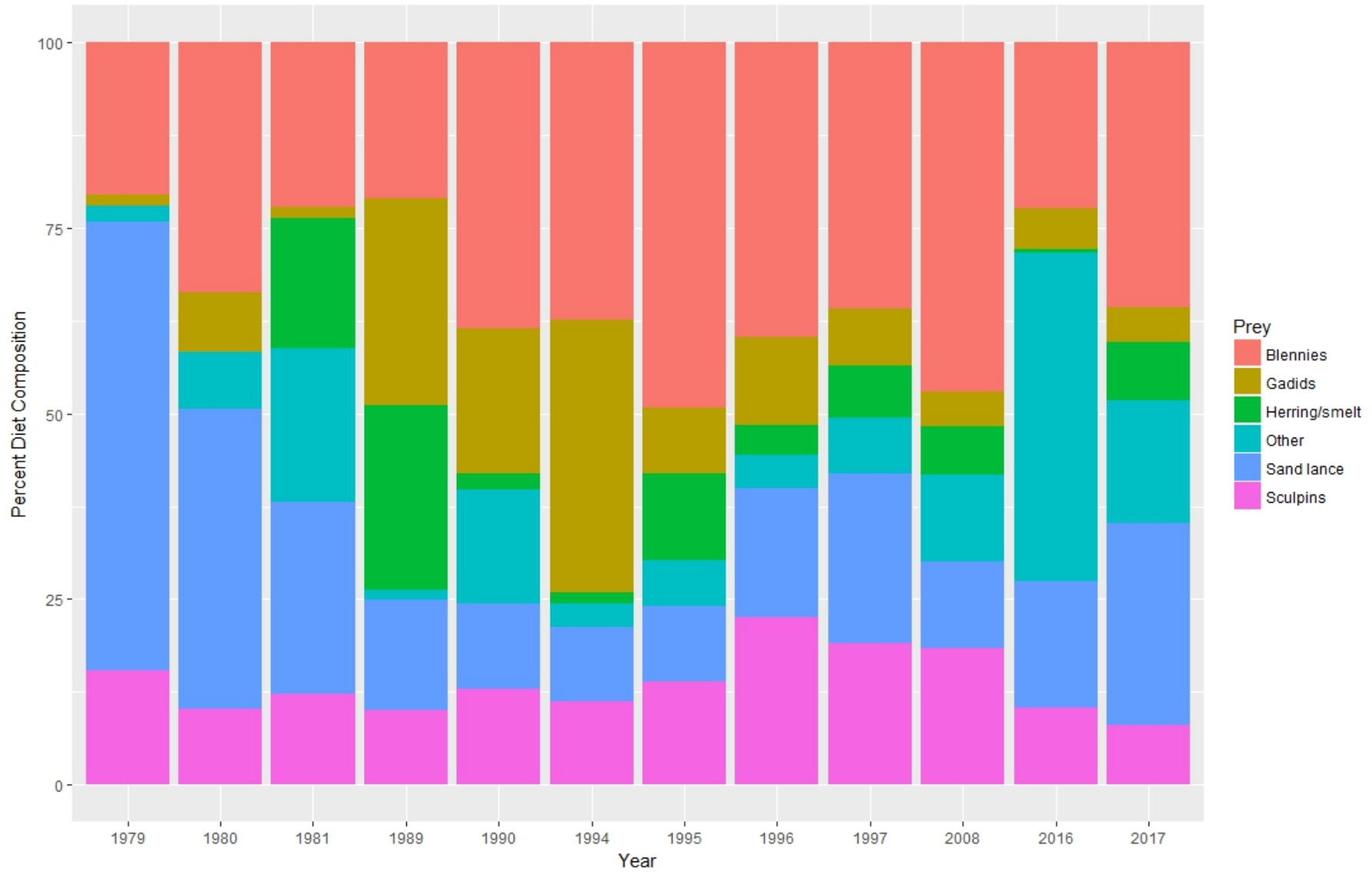
- Lowest when population high and predation high
- Increased post mink removal



Diet Composition & Chick Growth

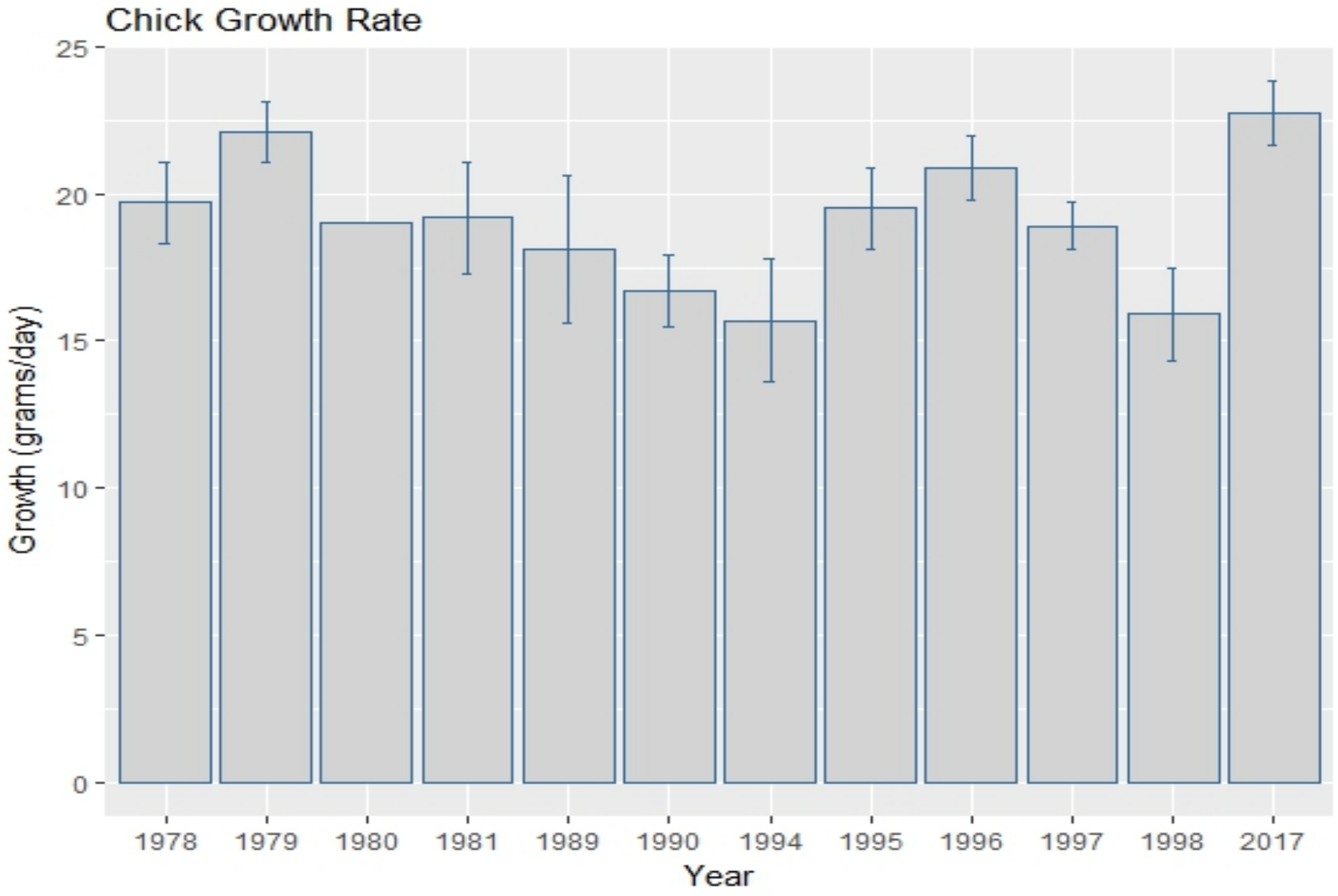
- Changes in abundance of prey
- Exxon Valdez Oil Spill
- Demersal vs. School prey

Chick Diet Composition



Decrease in Sandlance

Chick Growth



No Change in Growth Rate

Effect of Mink Removal

- Increase in population size
- Diversification of nest sites
- Increased nesting success

Objective 2: Artificial Social Attraction

- Simulate Bird Presence
- Attempt to change distribution
- Reoccupation of historic habitat

Social Attraction

Social Attraction

Social Attraction

Summary

Objective 1

Was Mink Removal Effective?

- Population growth
- Nest habitat use
- Nest Success

Objective 2

Artificial Social Information

Acknowledgments

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Questions?