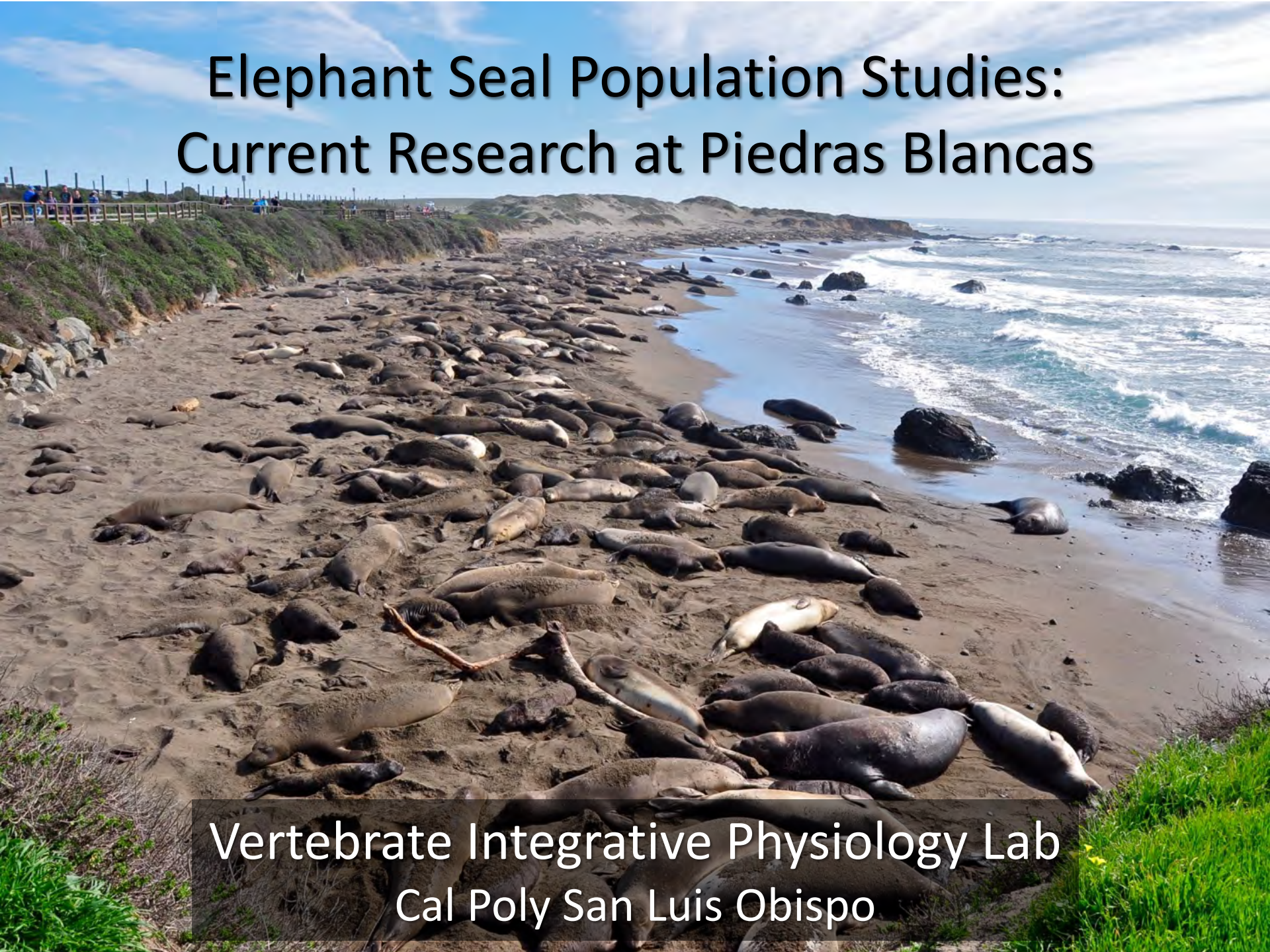
# Elephant Seal Population Studies: Current Research at Piedras Blancas



Vertebrate Integrative Physiology Lab
Cal Poly San Luis Obispo

# Why study Piedras Blancas seals?

- Largest mainland rookery
- Central location
- Previous data not published
- Comparison to other rookeries

# Current research objectives

1. Mark, tag, and weigh weanlings
2. Establish a known population
3. Contribute to the national database
4. Develop student-led studies


# What can we learn?

1. Timing of arrivals/departures by age class
2. Harem sizes at different beaches
3. Weaning dates and weights

# How does this help?

- Understanding beach use and timing
- Validating age classifications
- Breeding dynamics
- Animal movements within and between rookeries
- Help CA State Parks to plan for protection

# Methods

1. Marking
2. Resights
3. Flipper tags
4. “Weaner” weighing



# Marking

NMFS 19108

# Resights

- Marks are easy to see
- Match animals to flipper tags
- Docents contribute to data
- Understand animal movement

NMFS 19108

NMFS 19108

# Flipper tags

Green

Pink

White

Violet

Red

Yellow

Orange


**Vandenberg AFB is Blue**

# “Weaner” weighing

- Sex and weight
- Morphometrics
- Second flipper tag


NMFS 19108

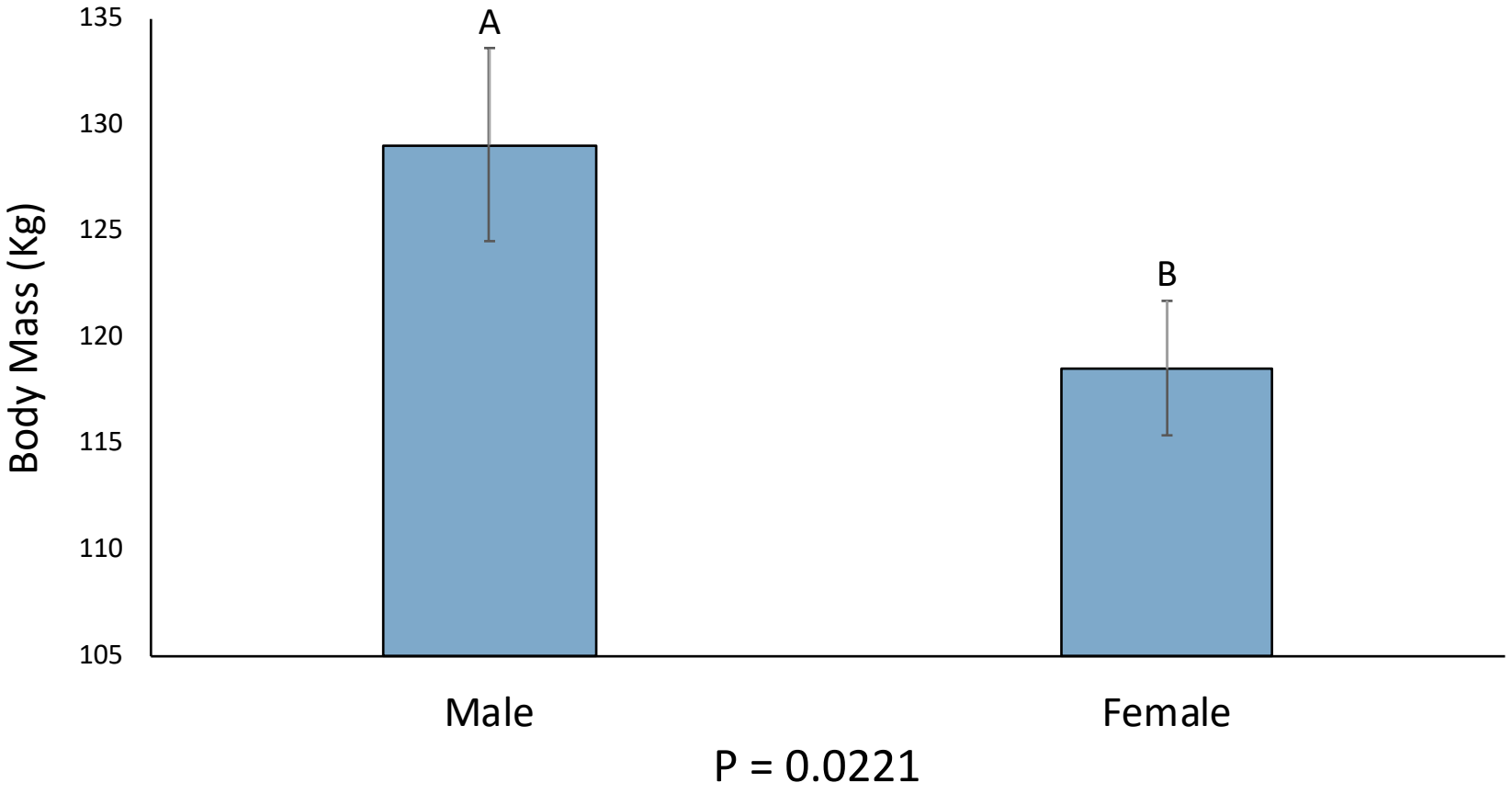
NMFS 19108

# Pilot years

| Procedure | 2018 Breeding Season | 2019 Breeding Season |
|---|---|---|
| Marking | 167 animals | 225 animals |
| Flipper tags | 270 weanlings | 230 weanlings @ PB<br>25 weanlings @ VAFB |
| Weaner weighing | 50 weanlings | 50 weanlings |
| Surveys | Weekly | Weekly + harem counts |

# Preliminary results

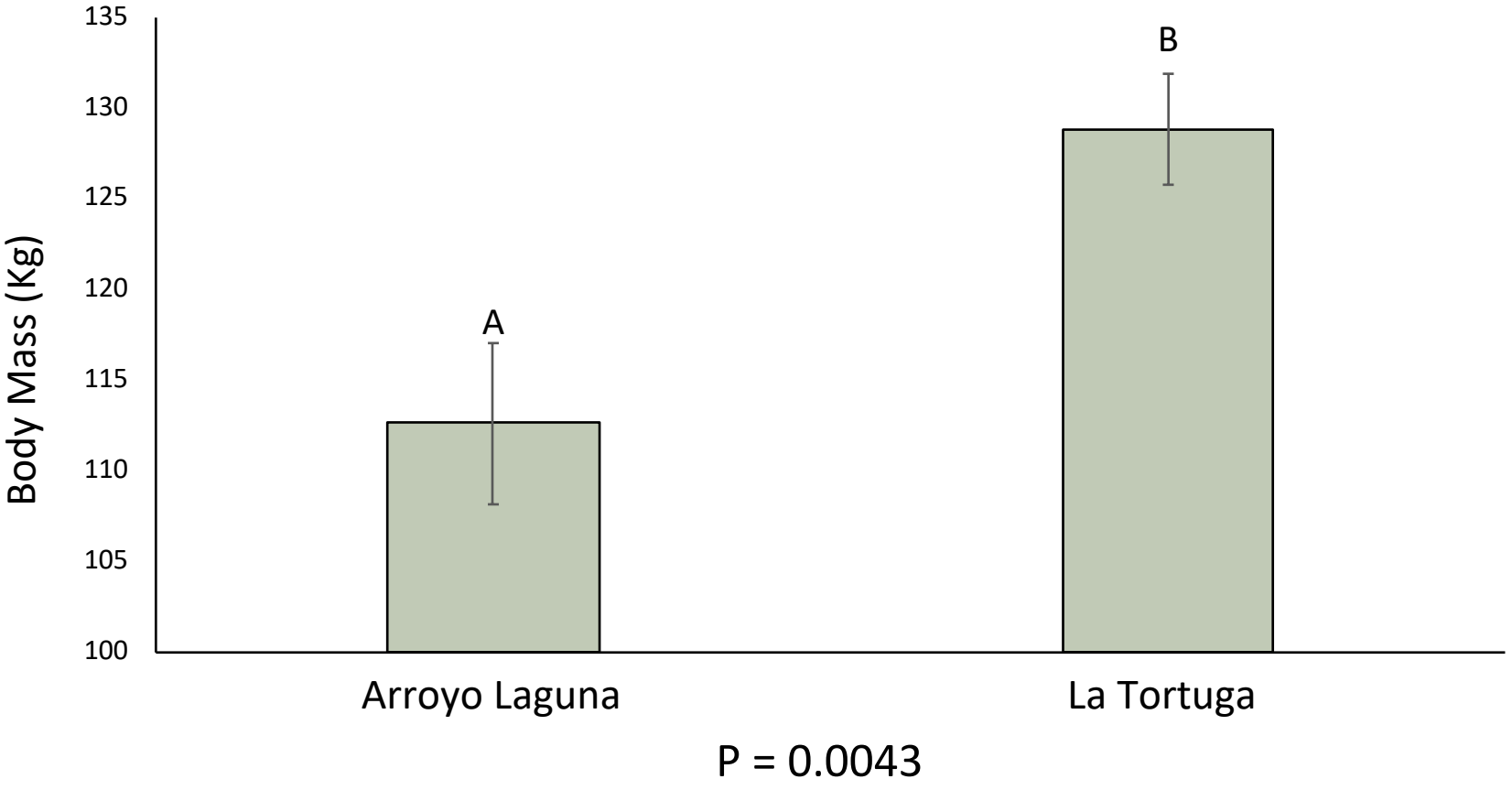
Male weanlings significantly heavier than females.




Sexual dimorphism evident at weaning?

# Preliminary results

Weanlings weigh significantly more at La Tortuga.




Weanlings larger at sheltered beach.

# Preliminary results

- Harem sizes

| | Dead Center | La Tortuga |
|---|---|---|
| Mean | 32 ♀ | 33 ♀ |
| Max | 114 ♀ | 130 ♀ |


Similar harem sizes at different beaches.

# Future work

- Increased effort
- Cal Poly database
- Drone surveys


# Team Ellie at Cal Poly

* Principal Investigator: Dr. Heather E.M. Liwanag

Cameron Cooper

M.S. Candidate

Pinniped vibrissal system

Melissa Voisinet

M.S. Candidate

Elephant seal proteomics

Emma Weitzner

M.S. Candidate

Weddell seal dive development

Gabriel Santos

Undergraduate

Efficacy of UAVs for surveys

* 20 undergraduate volunteers in 2018 and 2019!

# Acknowledgements


- Dr. Dan Costa, Rachel Holser, Dr. Patrick Robinson
- Vince Cicero & Mike Walgren
- Brian Hatfield (USGS)

CAL POLY SAN LUIS OBISPO

CENTRAL COAST FRIENDS OF THE ELEPHANT SEAL

CALIFORNIA STATE PARKS SINCE 1864

THE UNIVERSITY OF CALIFORNIA LET THERE BE LIGHT 1868

CAL POLY Center for Coastal Marine Sciences

NMFS permits #19108 and #22187

CA State Parks permit

Cal Poly IACUC #1711

# Acknowledgements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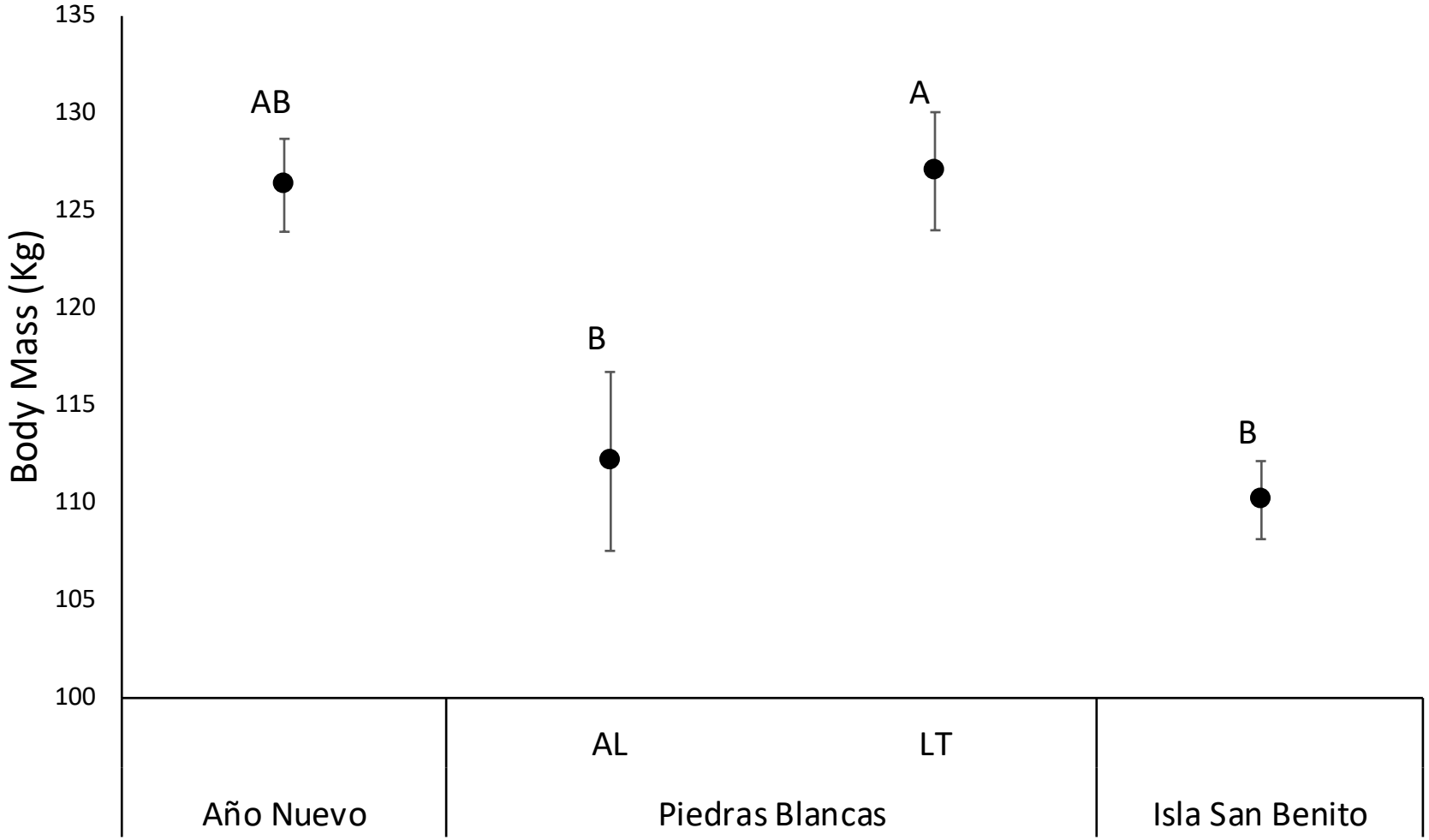
# Questions?

# Comparison among rookeries

Weanling mass not influenced by research *per se*.



# Northern elephant seal rookeries