

By Amanda Vandel

**THE IMPACT OF FEMALE  
PRESENCE ON CAPTIVE  
MALE NORTHERN FUR  
SEALS,  
*CALLORHINUS URSINUS***

# *Callorhinus ursinus*

## Northern Fur Seal



- Member of the family Otariidae, meaning eared seals.
- Despite their name they are more closely related to Sea Lions.
- Different from “true” seals in ability to rotate flippers under to walk and external ear flaps.
- Named for their thick fur coat, which has ~300,000 hairs per square inch.
- Adult *Callorhinus ursinus* display a huge size difference, indicative of polygynous species

# Males & Harem Breeding

Around May males make the migration to breeding sites, well before the arrival of females.

They establish territories or “rookeries”, Which they defend up to 3 months.

Males who can't hold territories stay in the periphery.



Males are sexually mature around 5 years, but not socially mature until 8-9 years. Maximum wild age is 17.

# Northern Fur Seals in Aquariums

- ◆ There are 11 individuals in American aquariums.
- ◆ Currently housed in 4 Institutions.
- ◆ Are managed as one population, moving individuals between facilities in order to create most fit offspring.

Two fur seals at New York Aquarium.





# Meet our Male Fur Seals

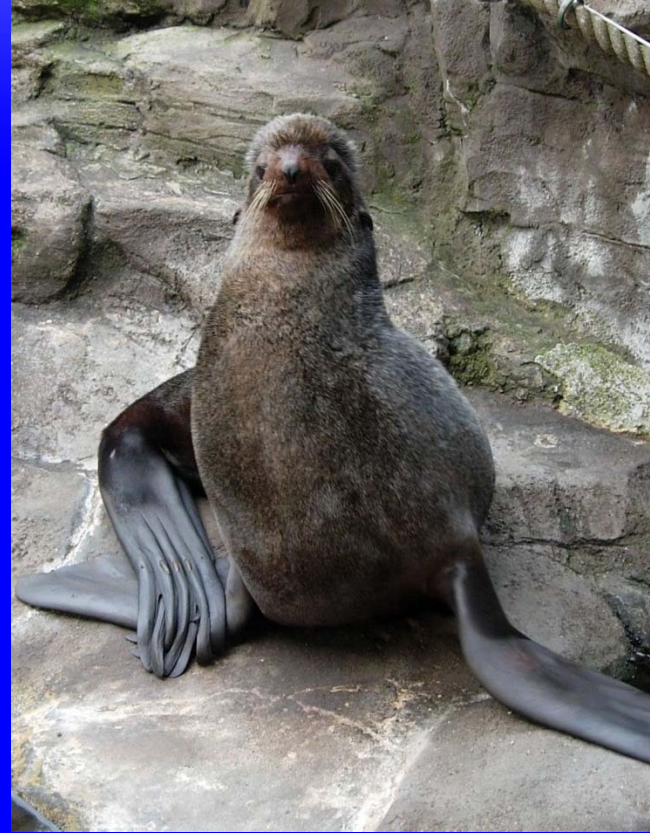
AI



Age: 18

Born: Rescued and rehabilitated.  
Has lived at Seattle Aquarium whole life.

Commander



Age: 8

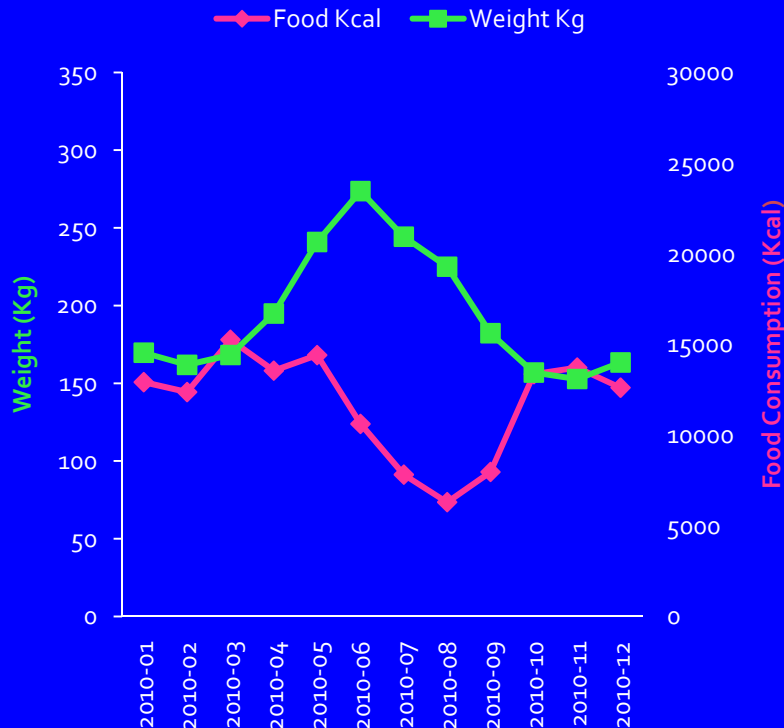
Born: Captive birth at Mystic  
Aquarium. Moved to Seattle in 2009

# Comparison of Weights and Food Intake

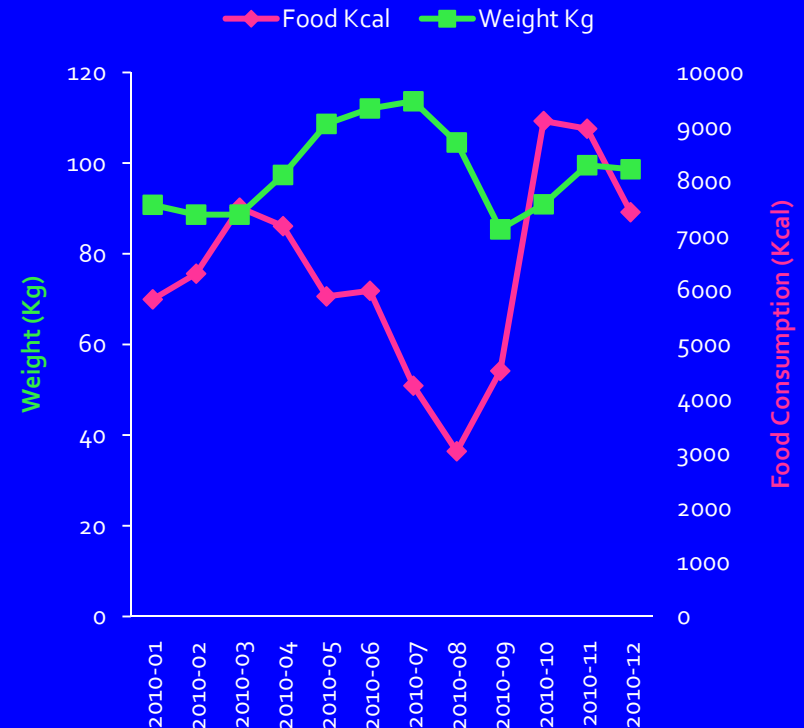
AI has exhibited typical male fur seal eating patterns and weight gain.

This is the first year Commanders weight and food intake exhibit typical male patterns.

### 2010 AI



### 2010 Commander



# What this means for the future

- ◆ Commander is reaching the age where in the wild he'd be attempting to get dominance of a harem.
- ◆ Commanders eating habits and weight fluctuation indicate shifts from adolescence into adulthood.
- ◆ As Commanders hormones increase he will most likely start challenging AI for dominance.
- ◆ This could lead to increased aggressive displays, which is a natural behavior.

# What this means for keepers

- ◆ It is a goal to simulate natural environments.
- ◆ Aggression is natural to male Northern Fur Seals.
- ◆ If left unmonitored animals may cause harm to each other.

*How much aggression is necessary to simulate a natural environment without harming our animals?*



# Woodstock

“Woody”

Resident female

22 years old

Born at Seattle  
Aquarium

Due to maintenance on  
the Sea Otter exhibit  
Woody lived with the  
Harbor Seals during  
construction.

Utilizing an ethogram, I would observe and note any aggressive displays and who was involved.

Observations were conducted both with the female on exhibit with the males and with her separated from the males.



# Hypothesis

- ◆ Since fighting is used to determine breeding rights when the female is removed from the tank with the two males, the rate of aggressive displays between the males will decrease.



# Experimental Design

- ◆ Periods of observation would be for a five minute window, with “snapshots” of observations at the start of each minute.
- ◆ All aggressive behaviors occurring outside the “snapshot” time frame were excluded.
- ◆ Occurred once an hour, at least twice a day, four days a week. Times were selected using a randomizer.
- ◆ Aggressive Displays: Charging, Chasing, Open mouth Displays, Growling, Displacing, and Hoarding.
- ◆  $n = 451$

# What constitutes an aggressive behavior?

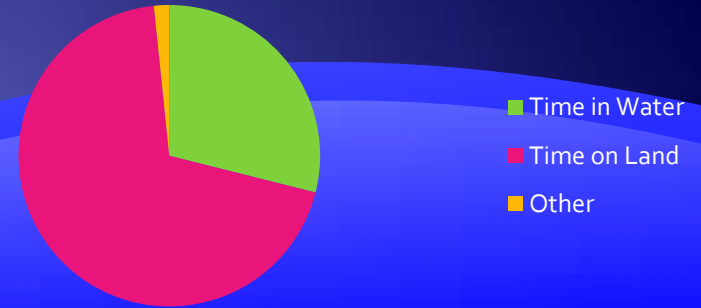
- ◆ Growling: Vocalizations, either One to the other or both at each other.
- ◆ Charging: One running towards the other. Second remains stationary.
- ◆ Chasing: One pursuing as the other retreats. Can occur on land or in water.
- ◆ Open mouth: An open mouth threat display towards the other.
- ◆ Displacing: One takes the "established" territory of the other, such as feeding station.
- ◆ Hoarding: Hiding/ herding toys, food or Woody from the other.

# Results

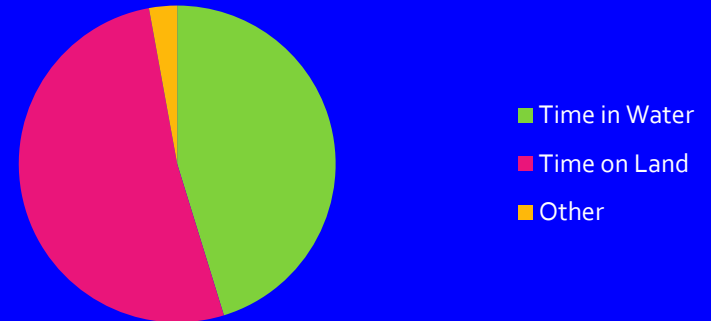
As the months progressed Commander spent steadily more and more time in the water.

This was regardless of whether Woody was with the males or not.

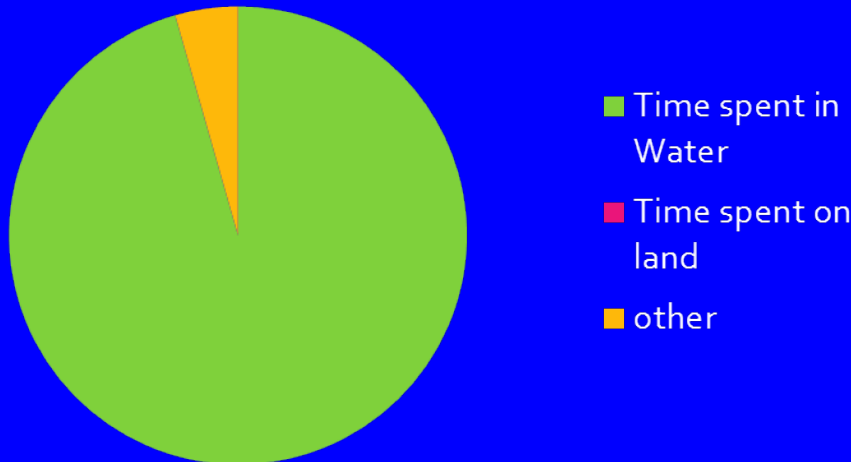
### Commander time usage- 1st half



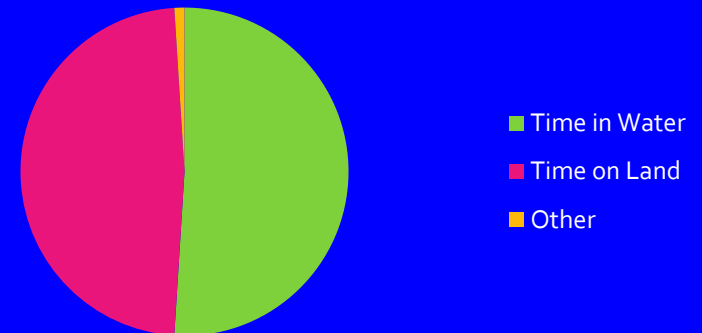
### Commander time usage w/o Woody- 2nd half



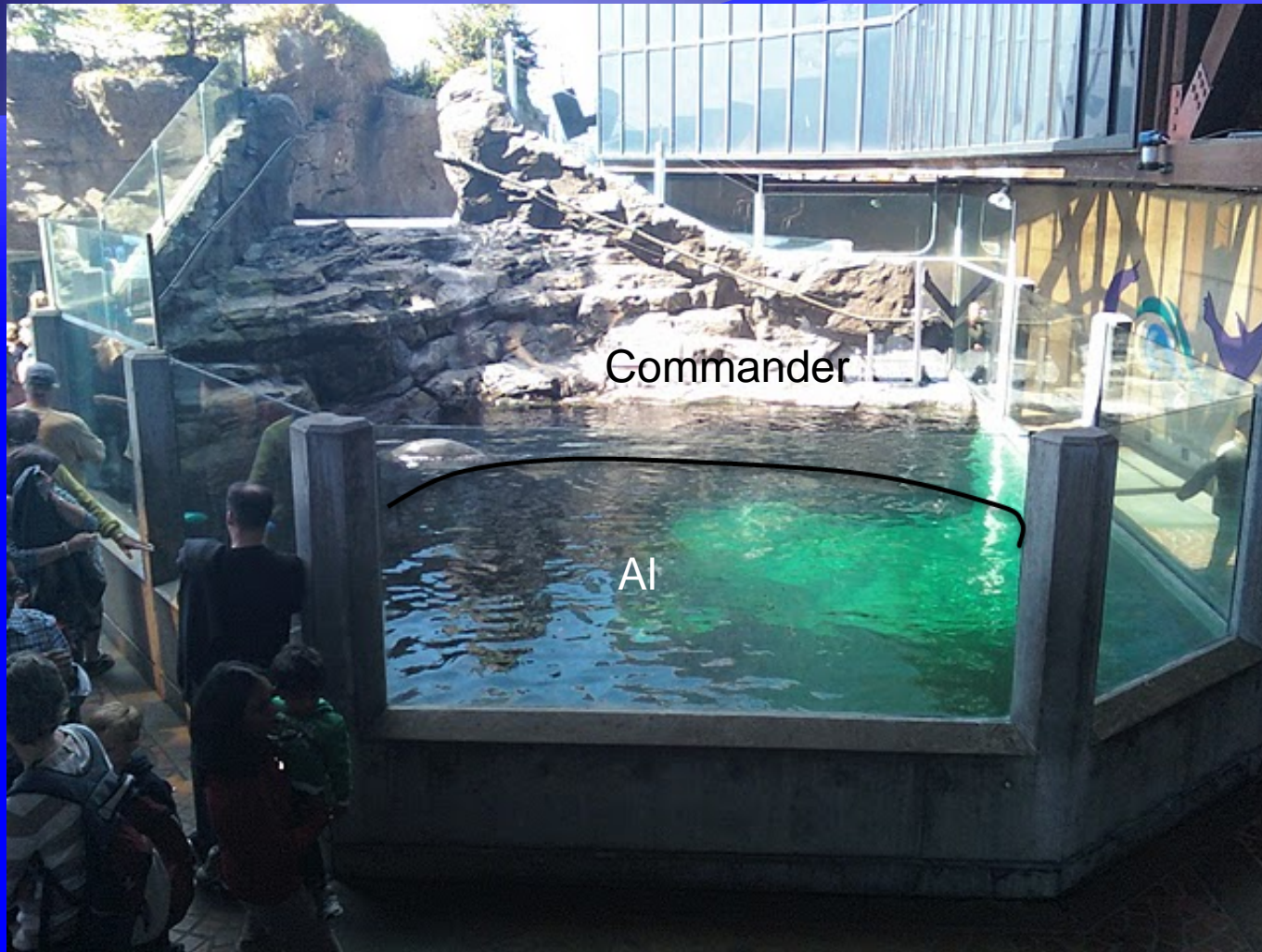
### Al's Time Usage- Entire Time



### Commander time usage- 3rd half





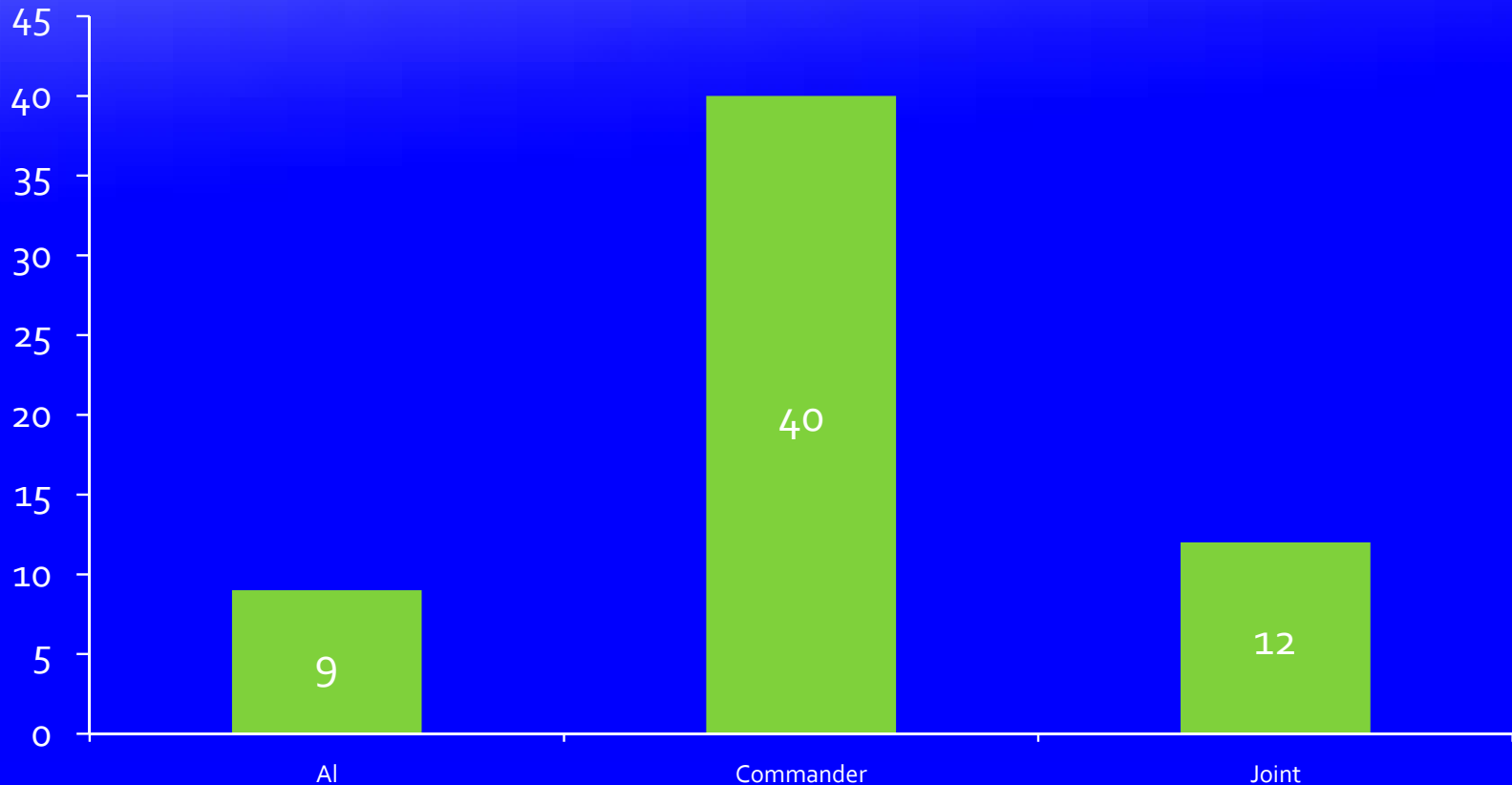


Commander has the upper hand on land given his younger age and lighter build.

AI has the advantage in the water due to sheer size.

# Rates of Aggression

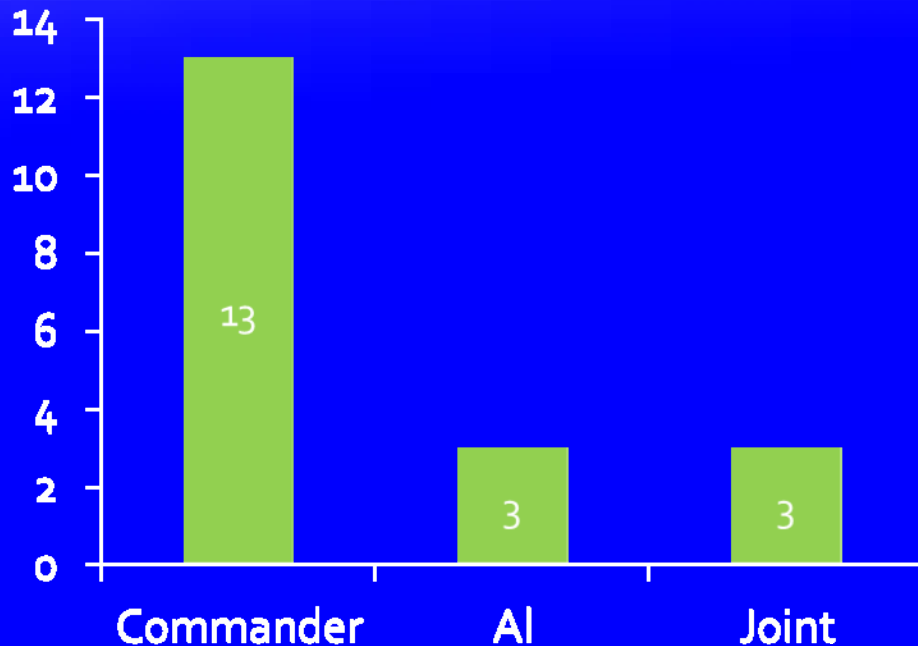
Overall Rates of aggressive displays



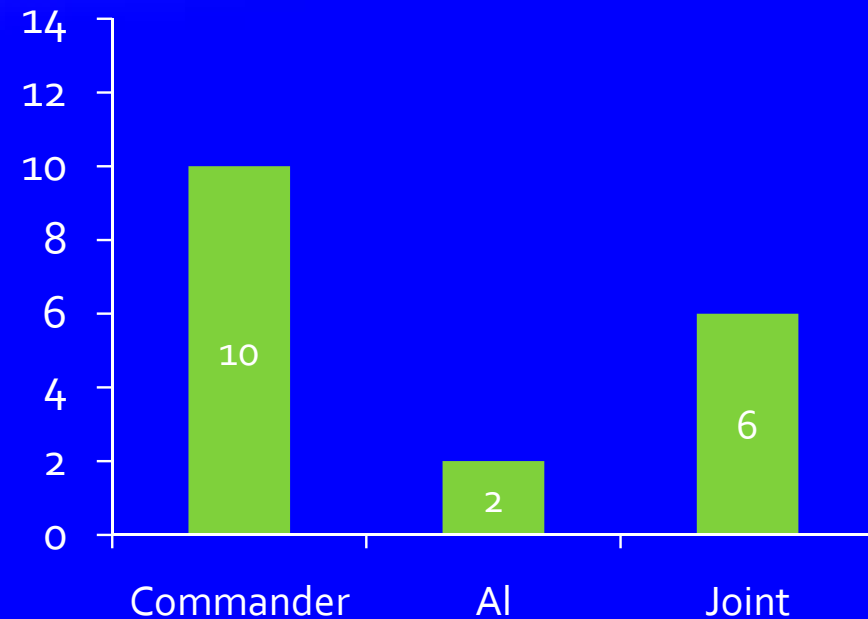
Commander is exhibiting more aggressive displays overall, but are there less when female Woodstock is removed from the exhibit?

# Does having Woody present affect these rates?

## Rates of Aggressive Displays with Woody



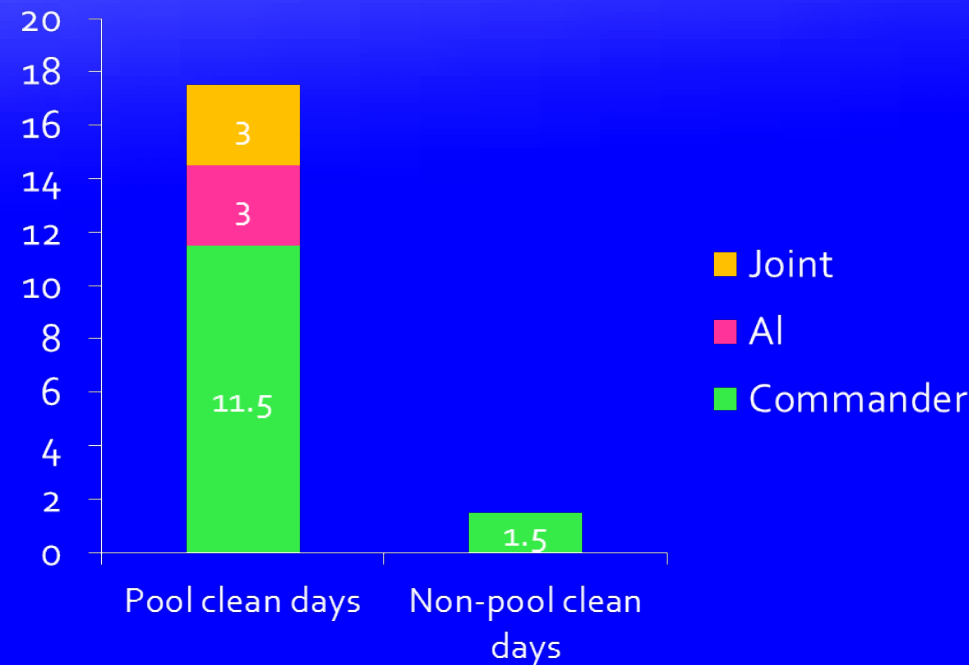
## Rates of Aggressive Displays after Removing Woody



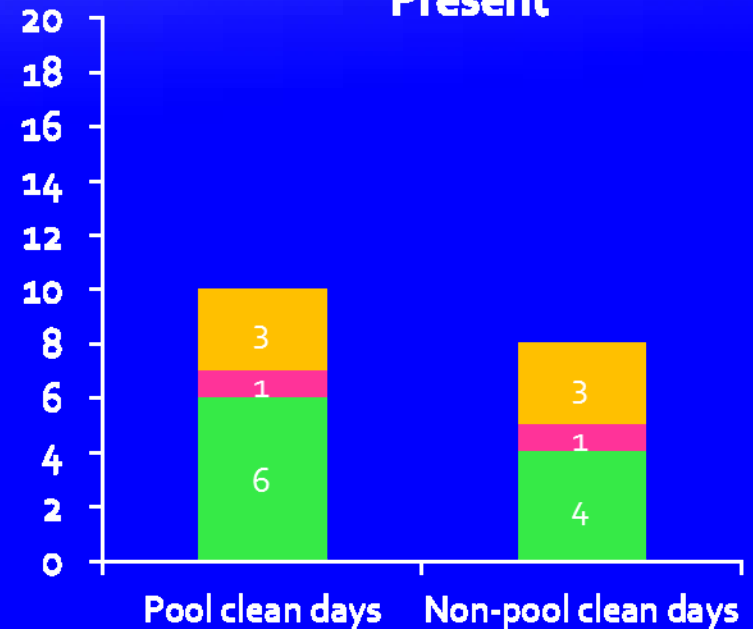
Overall it would appear that individual aggressive incidents seem to decrease with Woody being removed from the exhibit, but joint displays increase. This could be due to “breaks” provided on pool clean days when Woody is present.

# Do pool clean days really have an impact?

Comparison of Aggressive Displays with Female Present



Comparison of Aggressive Displays without Female Present

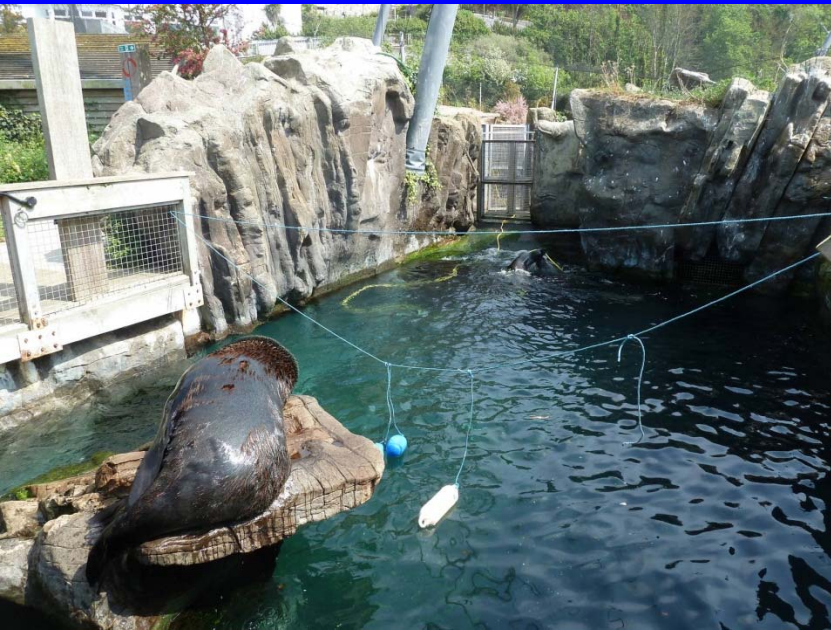


When Woody is on exhibit with the males aggression is seen almost exclusively on pool days.

Without her, displays are almost evenly divided between the days.

# What does it all mean?

- ◆ Given Al's age and fluctuating weight Commander is dominating on land with the potential to gain dominance in water.
- ◆ With Woody on exhibit and regular "breaks" aggressive displays were more condensed and predictable.



- ◆ Knowing this we are able to incorporate more stimulating activities to divert Commanders attention.
  - ◆ Provide increased enrichment items.
  - ◆ Save largest portion of diet for after reintroduction.
  - ◆ Add environmental stimuli.



# I'd like to thank...

- ◆ Julie Carpenter for being a supportive intern coordinator.
- ◆ Traci Belting and the entire Bird and Mammal team at the Seattle Aquarium for allowing me to spend 455 minutes of my internship watching fur seals.
- ◆ John "Buck" Banks and Jim Gawel for letting me use this project for school in the first place.



Any questions?

