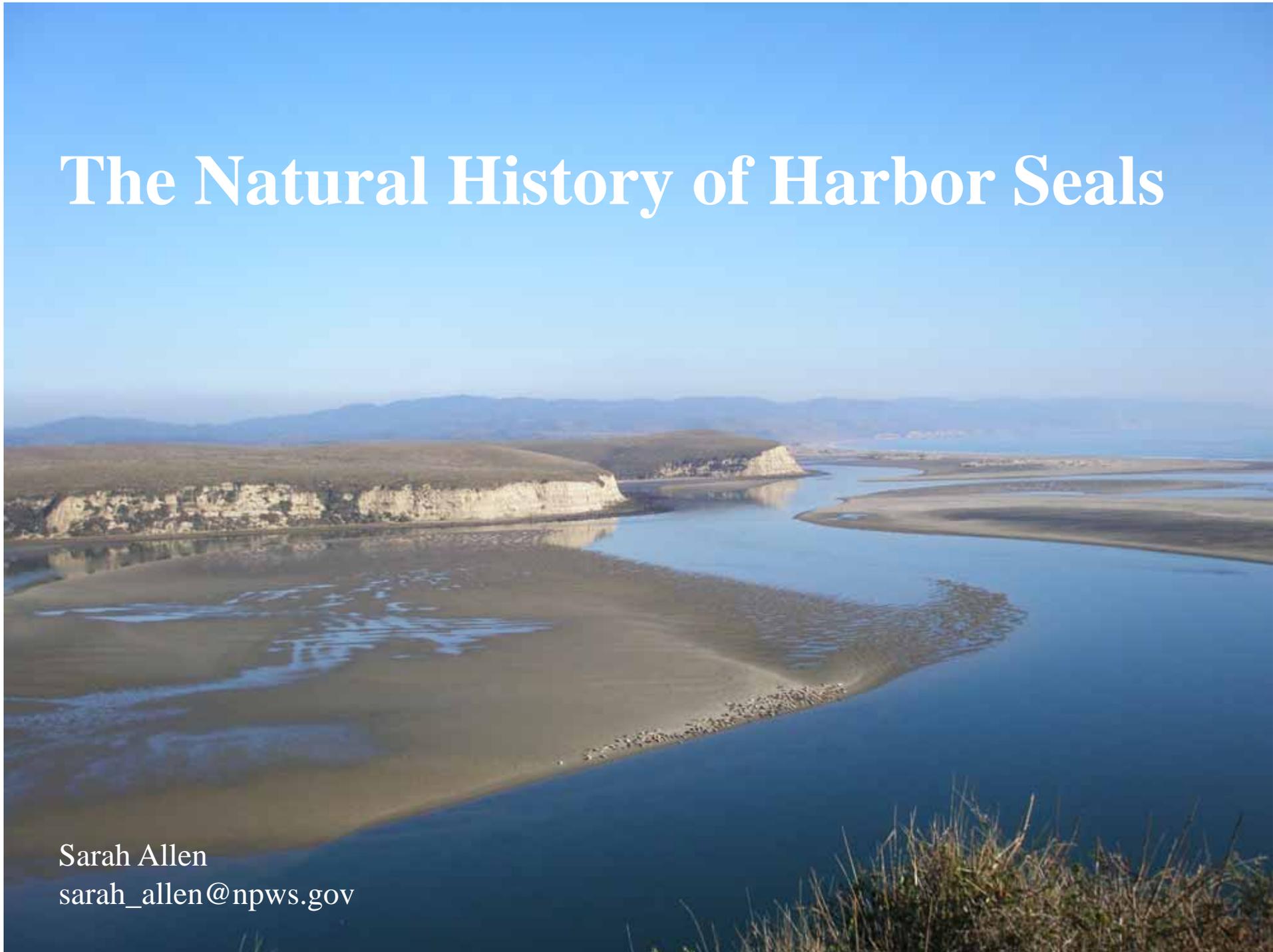


# The Natural History of Harbor Seals

Sarah Allen  
sarah\_allen@npws.gov



- **No sexual dimorphism**
- **Weight 200-250 lbs**
- **Length 4-5 ft**
- **Age - @30 years in captivity**



**Wide hind flipper**

**No External Ear Flap**

**Cannot Rotate Hind flipper**

**Smaller front flipper**

# Color Phases



© Sophie Webb



© Sophie Webb



NOAA NMFS SWFSC PRD



**Many color phases**



NOAA NMFS SWFSC PRD

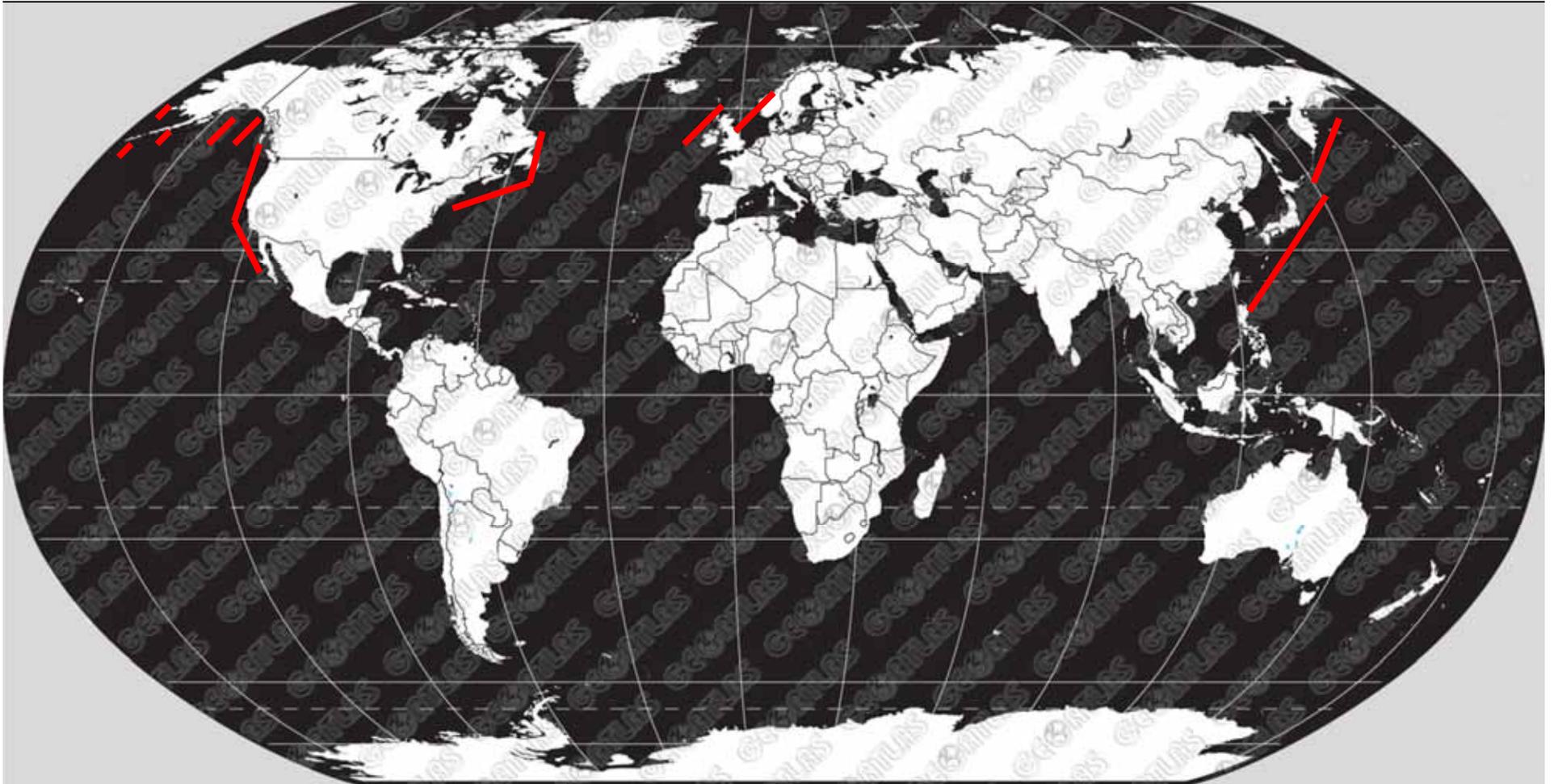
**Red = Iron Oxide attached to fur**



# Algae grows on fur of seals



# Harbor seal world distribution





# Habitat Needs of All Seals

**Terrestrial**  
reproduction  
physiological  
historical

**Marine**  
food  
travel



# Marine life



Photo from web

# Haul-outs : locations on land where seals gather to rest, give birth, care for pups, molt.

- **Sandy Beaches**



- **Tidal Mud Flats**



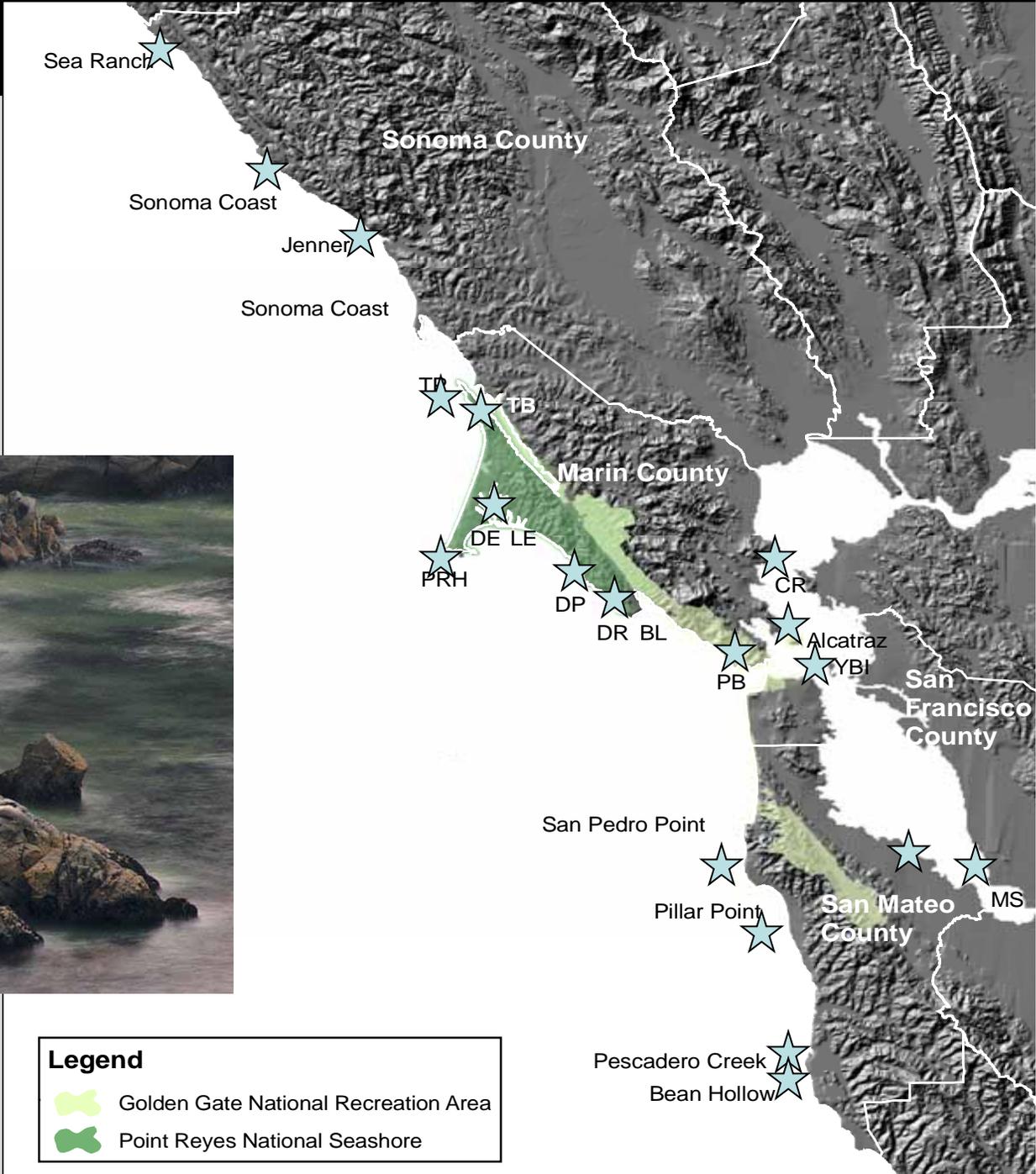
- **Tidal Rocky**



- **Tidal Sandbars**



# Harbor Seal Regional Colonies



**Legend**

- Golden Gate National Recreation Area
- Point Reyes National Seashore

# Haul out site examples























# Man made structures





## Daily Pattern

Time of day

Tide

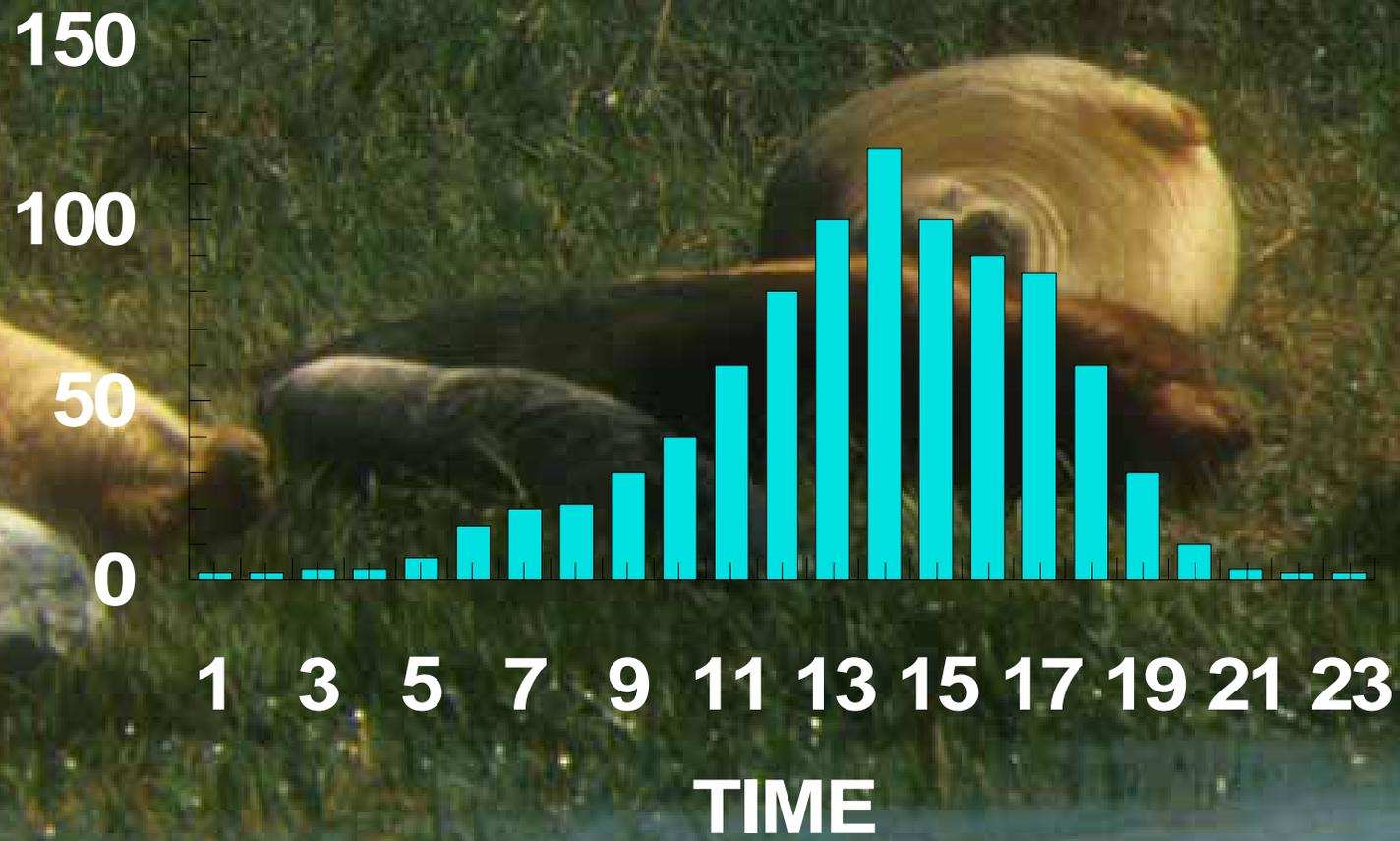
## Seasonal Pattern

Breeding (March-June)

Molt (July-August)

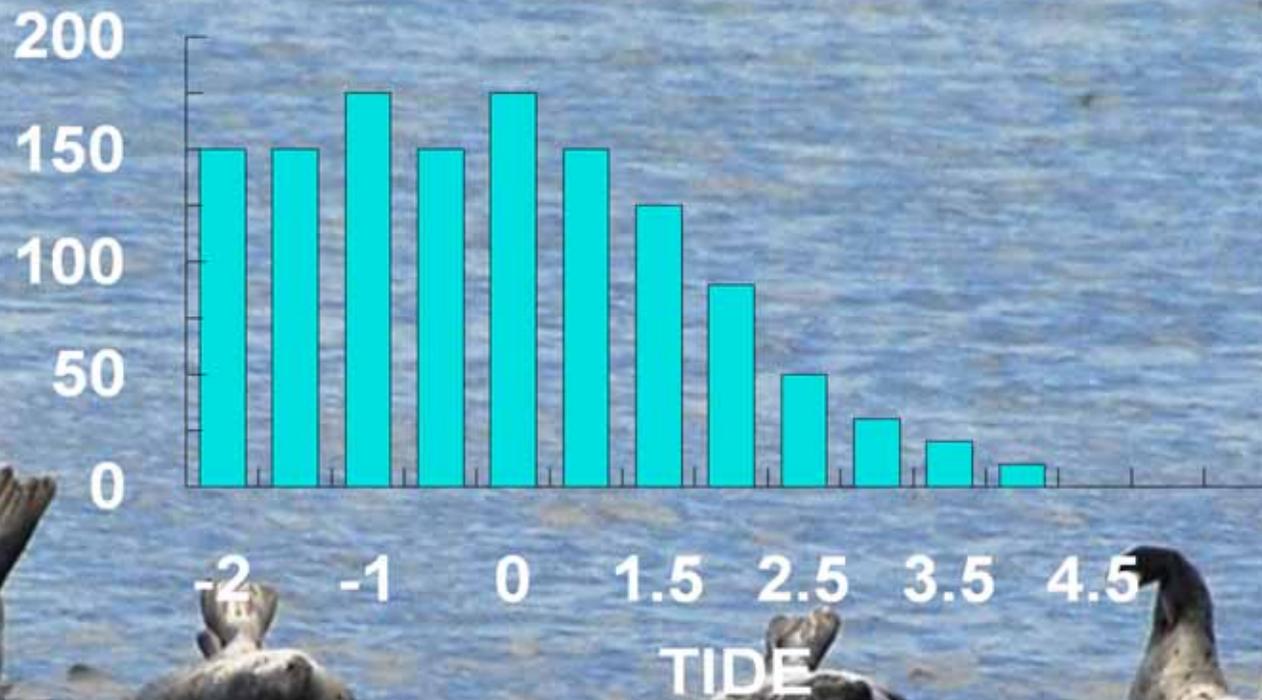
Non-breeding (Sept-Feb)

# Daily haul out pattern





# Tidal haul out pattern







# Seasonal variation in number

**Pupping**

Mar-Jun

**Molt**

Jul-Aug

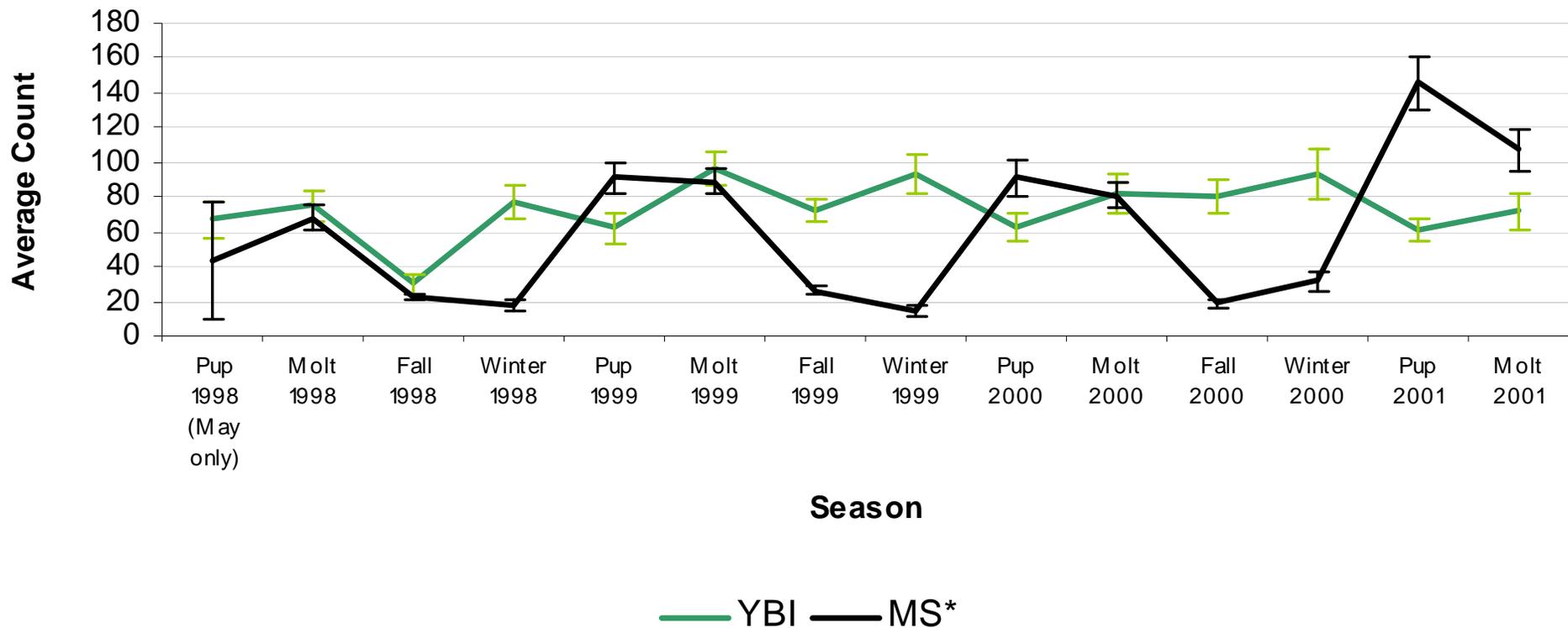
**Fall/Winter**

Sept-Feb

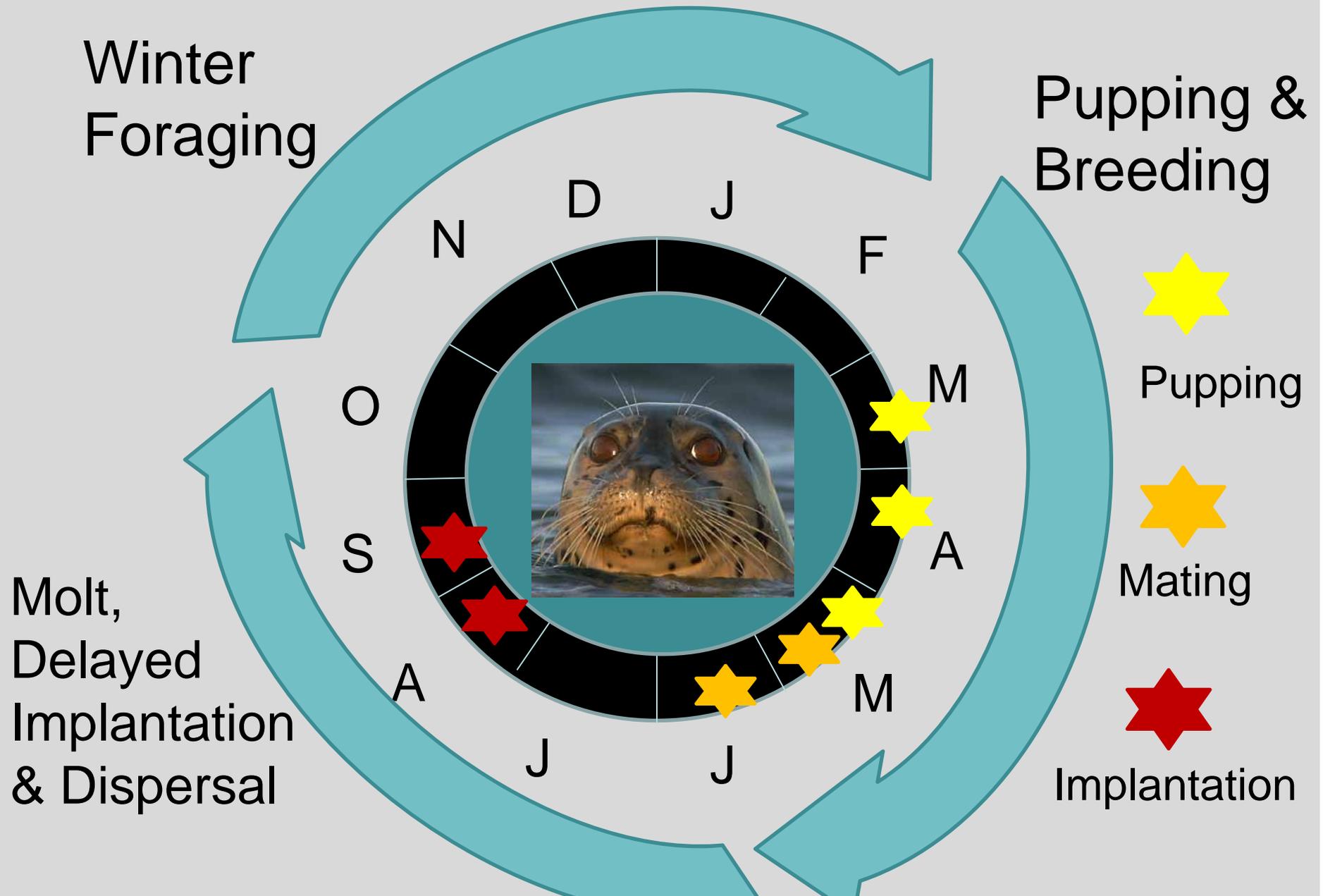




# Seasonal and annual variation



# Annual cycle



# Pupping



- ❖ Females give birth to one pup/year

- ❖ Females wean pups at 30 days

- ❖ Pups swim at birth

# Birth sequence



Drakes Estero 2007  
Photos by volunteer  
Judy Bourke



# Birthing



- ❖ Mothers recognize pups by sight, sound and smell



# Newborn pups



**Lanugo pup**



**Pup without lanugo**

Photos from Sue Van Der Wal



- ❖ Pups weigh 24 lbs at birth
- ❖ Pups weigh 50 lbs at weaning
- ❖ Pups weaned at 30 days



Photo from internet

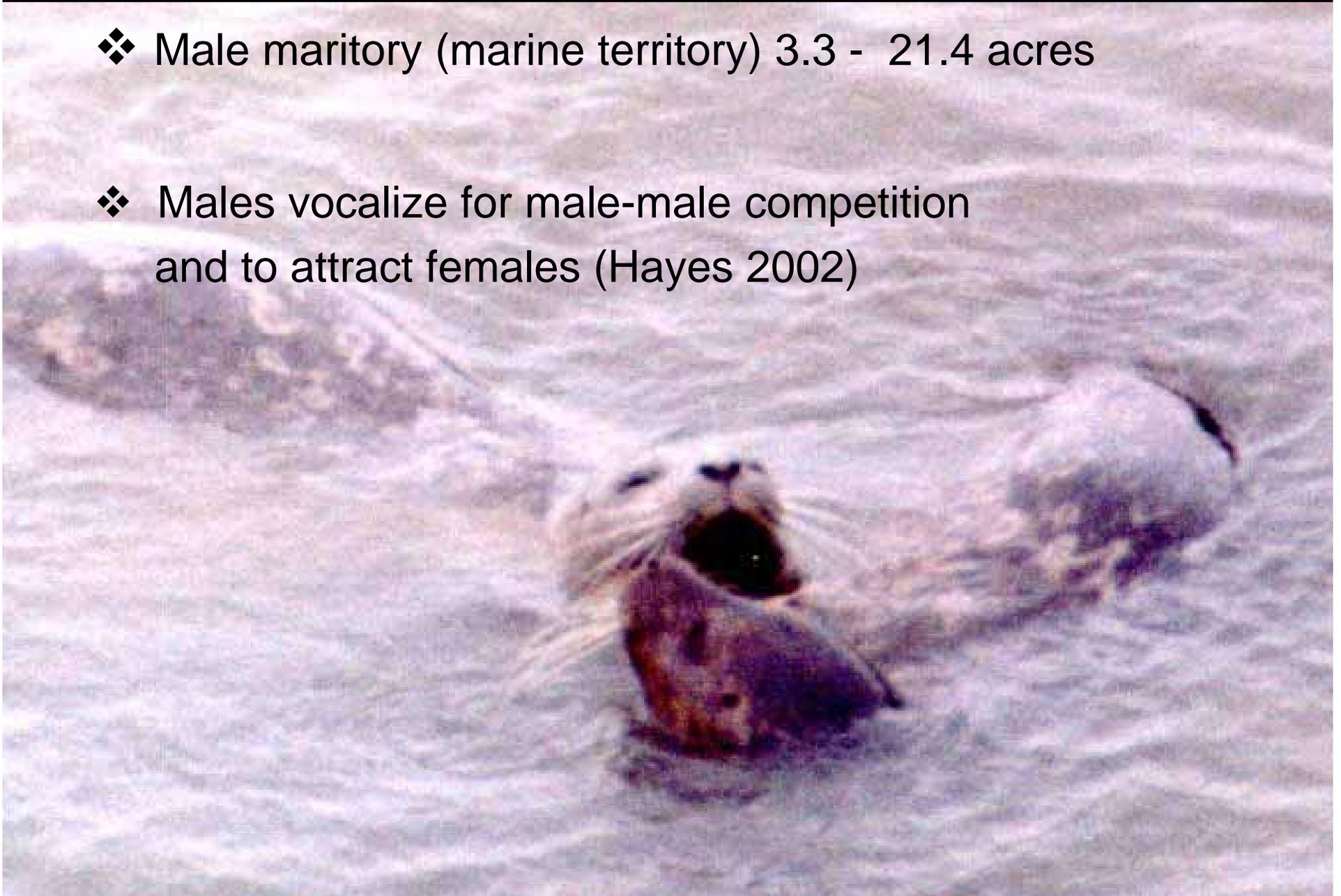
# Pups all ages





# Mating

- ❖ Male maritory (marine territory) 3.3 - 21.4 acres
- ❖ Males vocalize for male-male competition and to attract females (Hayes 2002)





# Aquatic mating



# Molt

June-Aug



# Daily and seasonal movements



Radio, satellite and flipper tags



Point Reyes

Farallon  
Islands

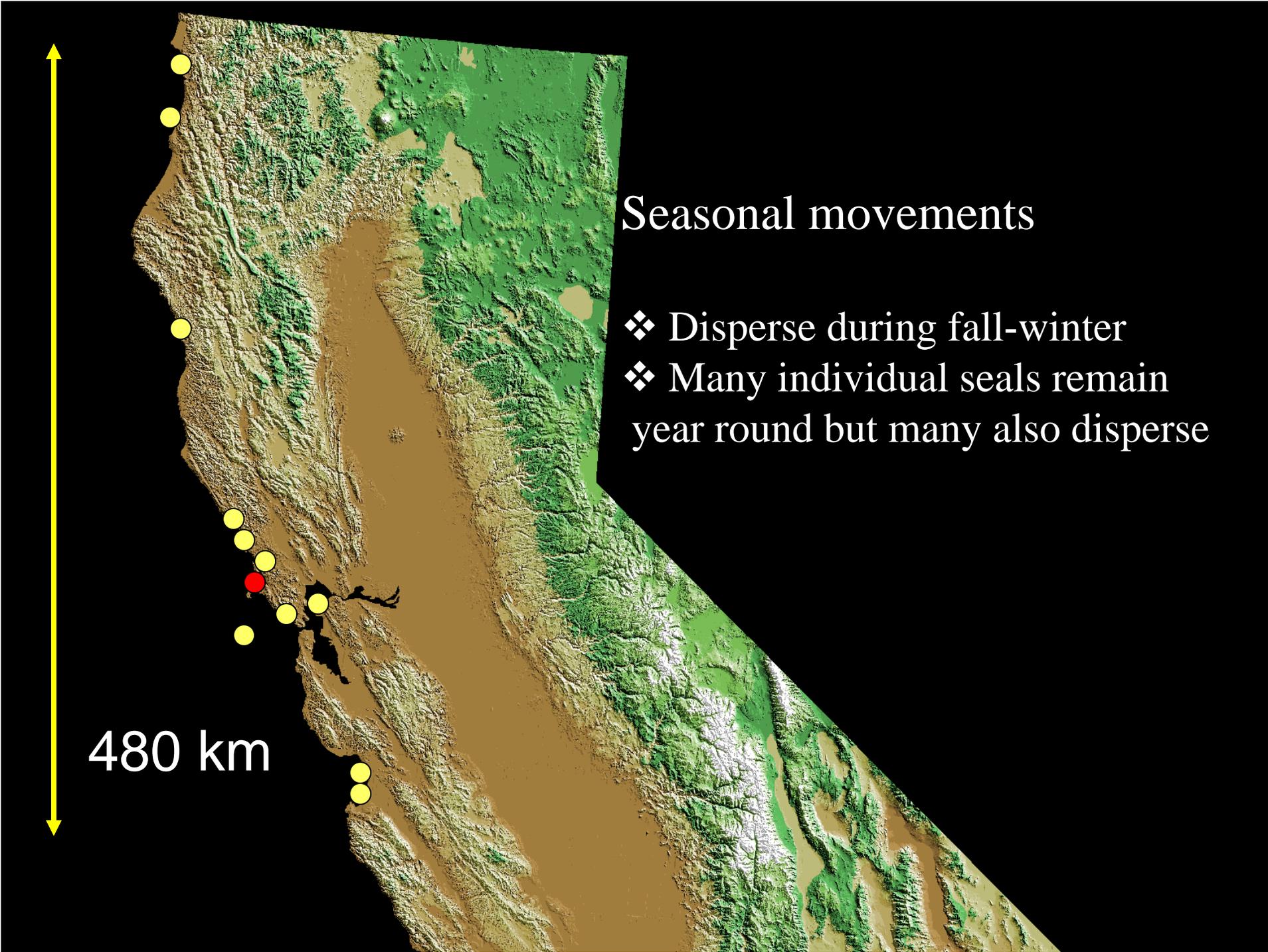
Bodega Head

## Daily movements at Point Reyes

- Forage on continental shelf
- Forage within 10-20 km of haul out and within <5 miles of shore
- Forage mostly at night

Cordell Bank



A topographic map of the Pacific Northwest coast of the United States, showing the coastline from the northern border to the southern tip of the state. The map is color-coded by elevation, with green representing lower elevations and brown representing higher elevations. A yellow double-headed arrow on the left side of the map indicates a distance of 480 km. Along the coast, there are several yellow dots and one red dot, likely representing seal locations or study sites. The dots are distributed from the northern coast down to the southern coast, with a higher concentration in the central region.

## Seasonal movements

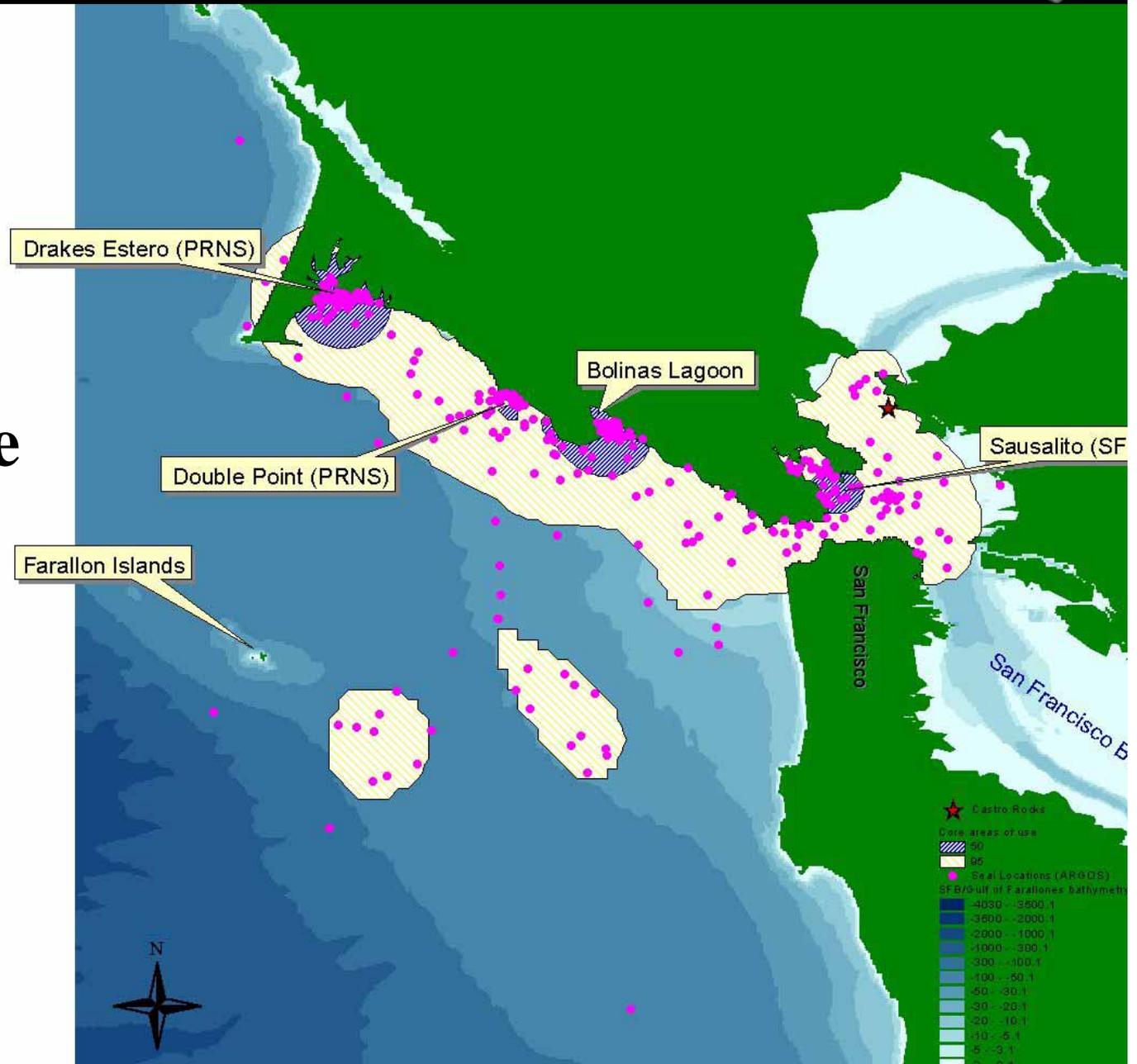
- ❖ Disperse during fall-winter
- ❖ Many individual seals remain year round but many also disperse

480 km

# Regional movements



Movements  
of one satellite  
tagged seal



# Regional movements



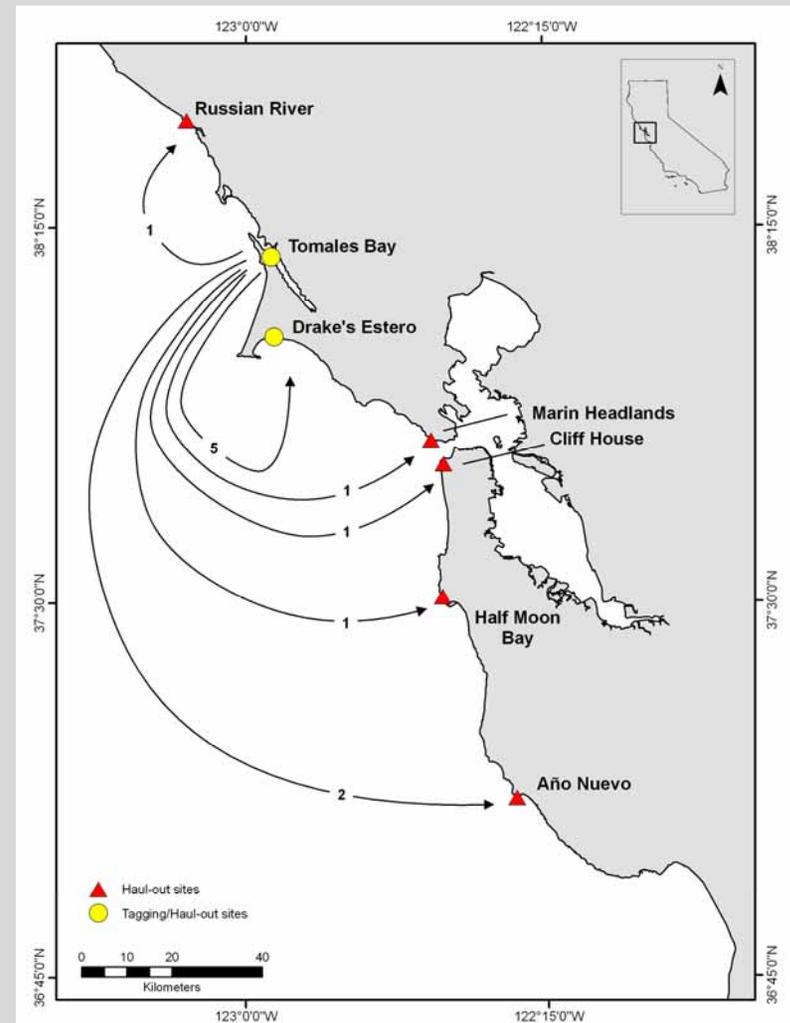
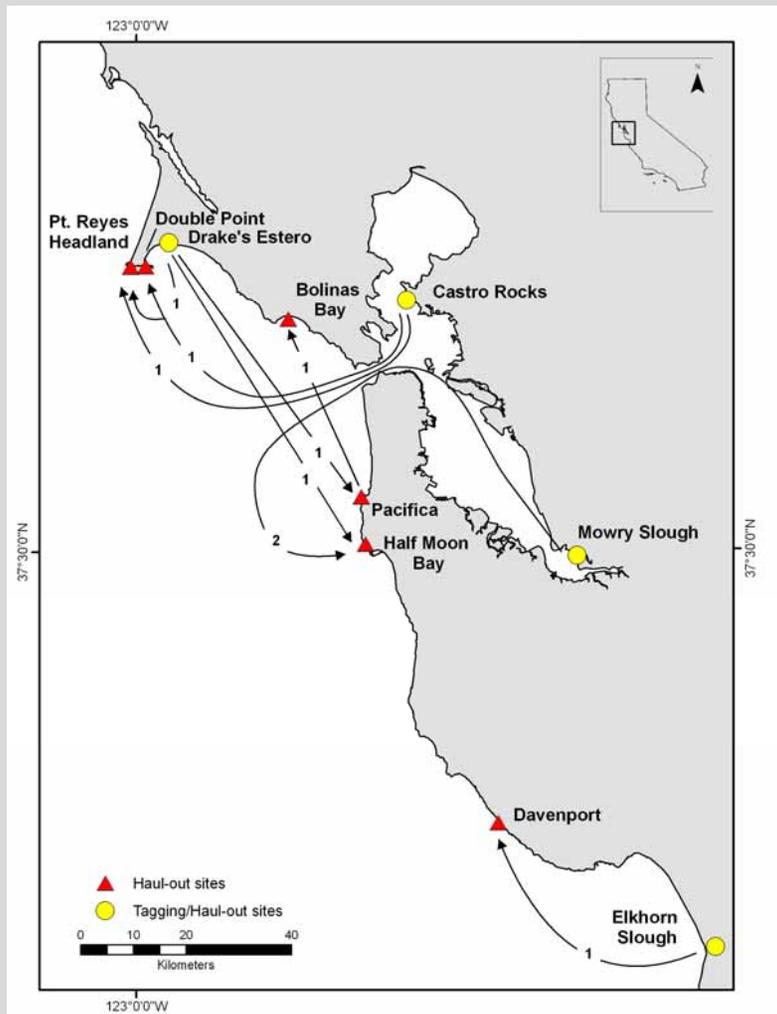
Movements  
of another  
satellite  
tagged seal



# Movement between sites (Harvey & Goley 2005)



Between tagged sites  
and haul out sites



# Food Web

Predator and prey relationships

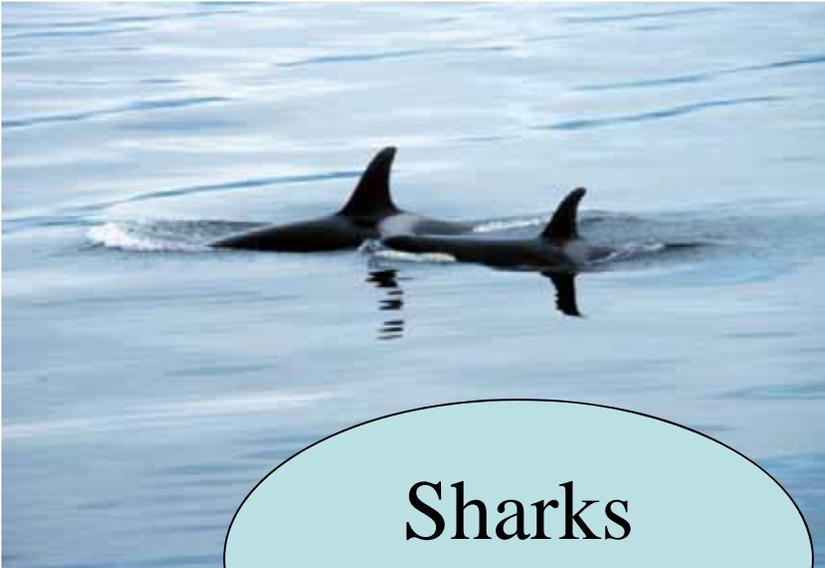
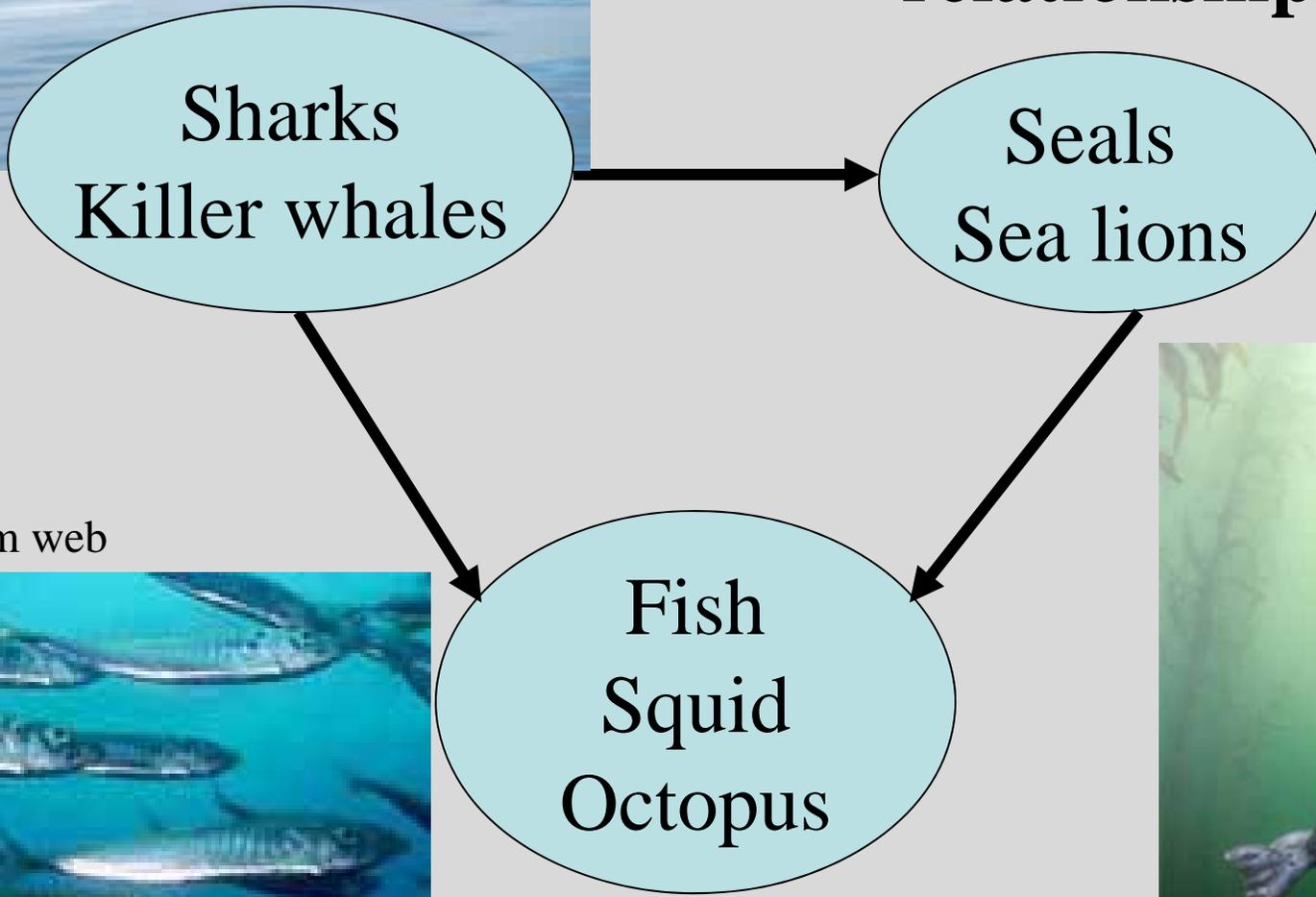
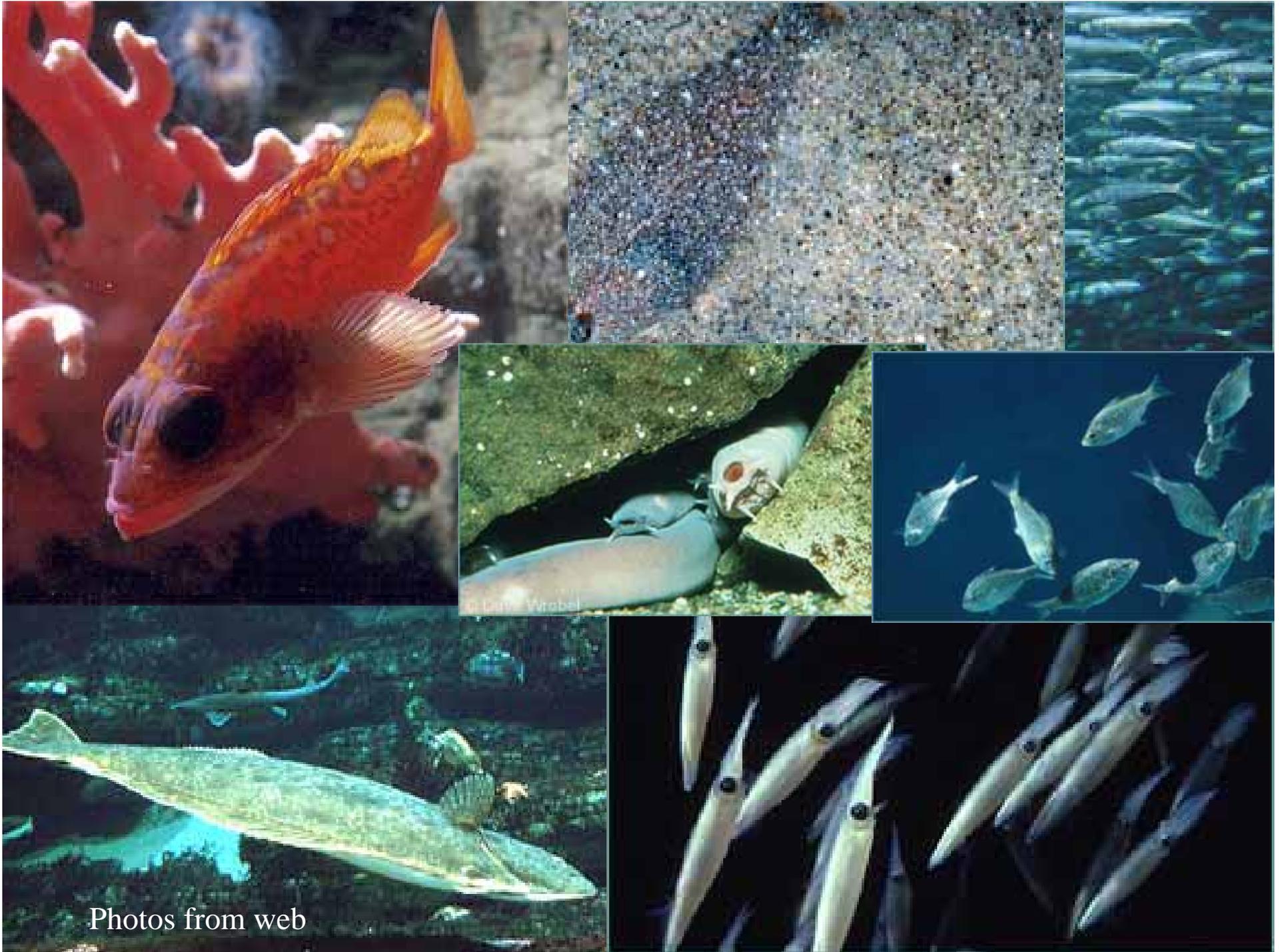


Photo from web



Photo Norbert Wu





Photos from web



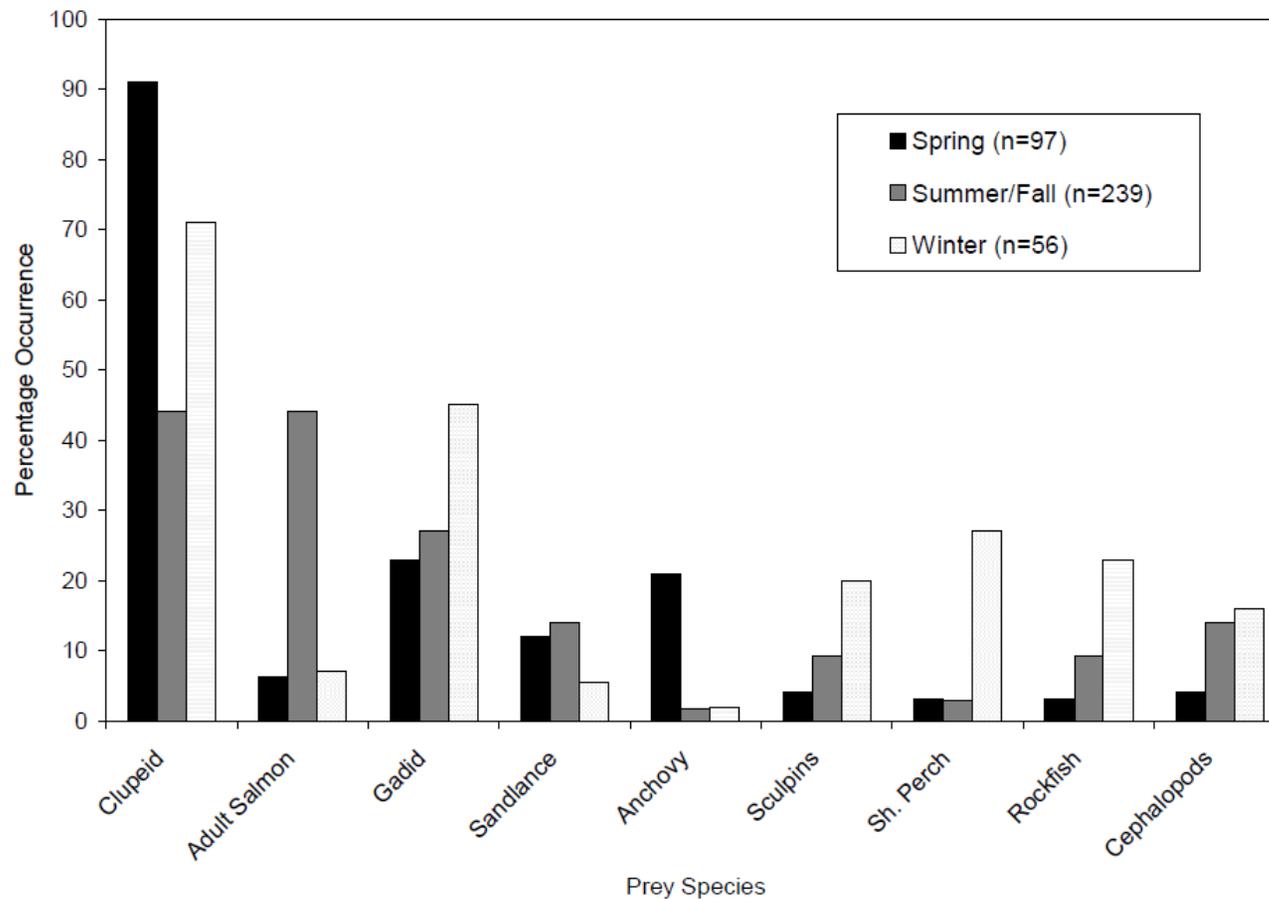
Photo Jon Stern

# What seals eat



One study in Puget Sound showed diet changed seasonally (Lance and Jeffries 2007)

Figure 4. Frequency of occurrence (expressed as percent) of Clupeids, adult Salmon, Gadids, Pacific sand lance, Northern Anchovy, rockfish and cephalopods in the diet of harbor seals in the San Juan Islands by season, 2006-07



# What eats seals



Photo: Jason Thompson



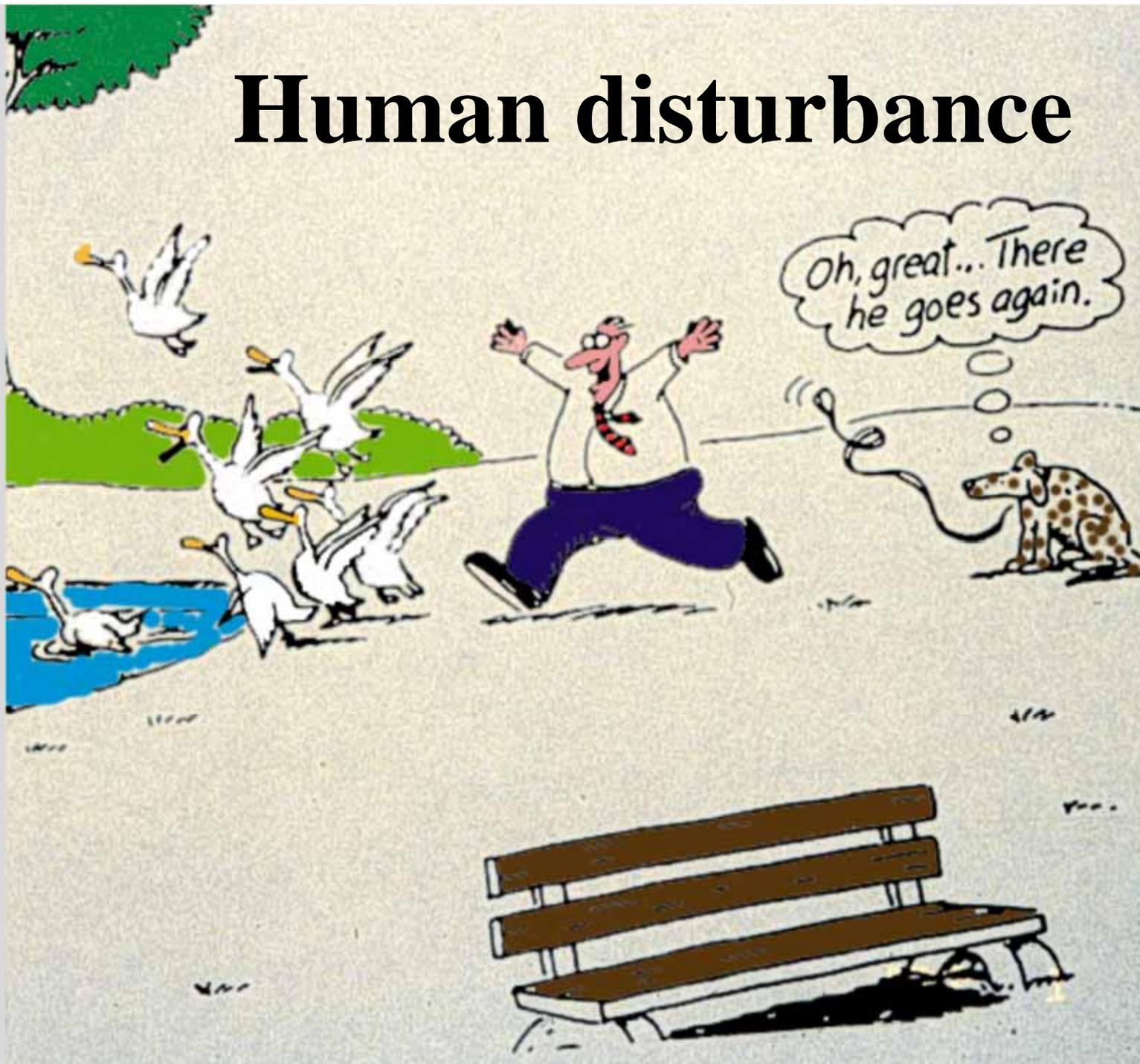
# New predator to region



Photos: Jason Thompson



# Human disturbance



# Disturbance sequence



Head alert

Flush to water

Enter water



# Disturbance sequence



Flush to water



Enter water



# Disturbance effects



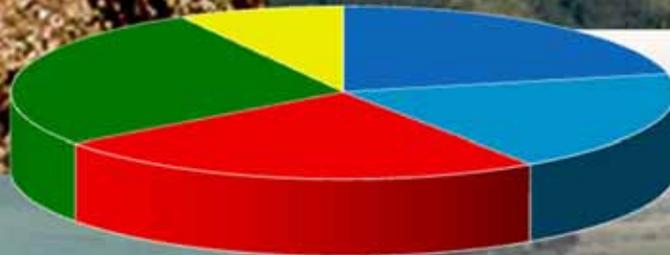
## Short-term

- ❖ Disturb resting period
- ❖ Pup separation

## Long-term

- ❖ Reduced usage/abandonment
- ❖ Nocturnal haul out
- ❖ Reduced pup production

# Disturbance Sources



■ Watercraft

■ Aircraft

■ Unknown

■ Human

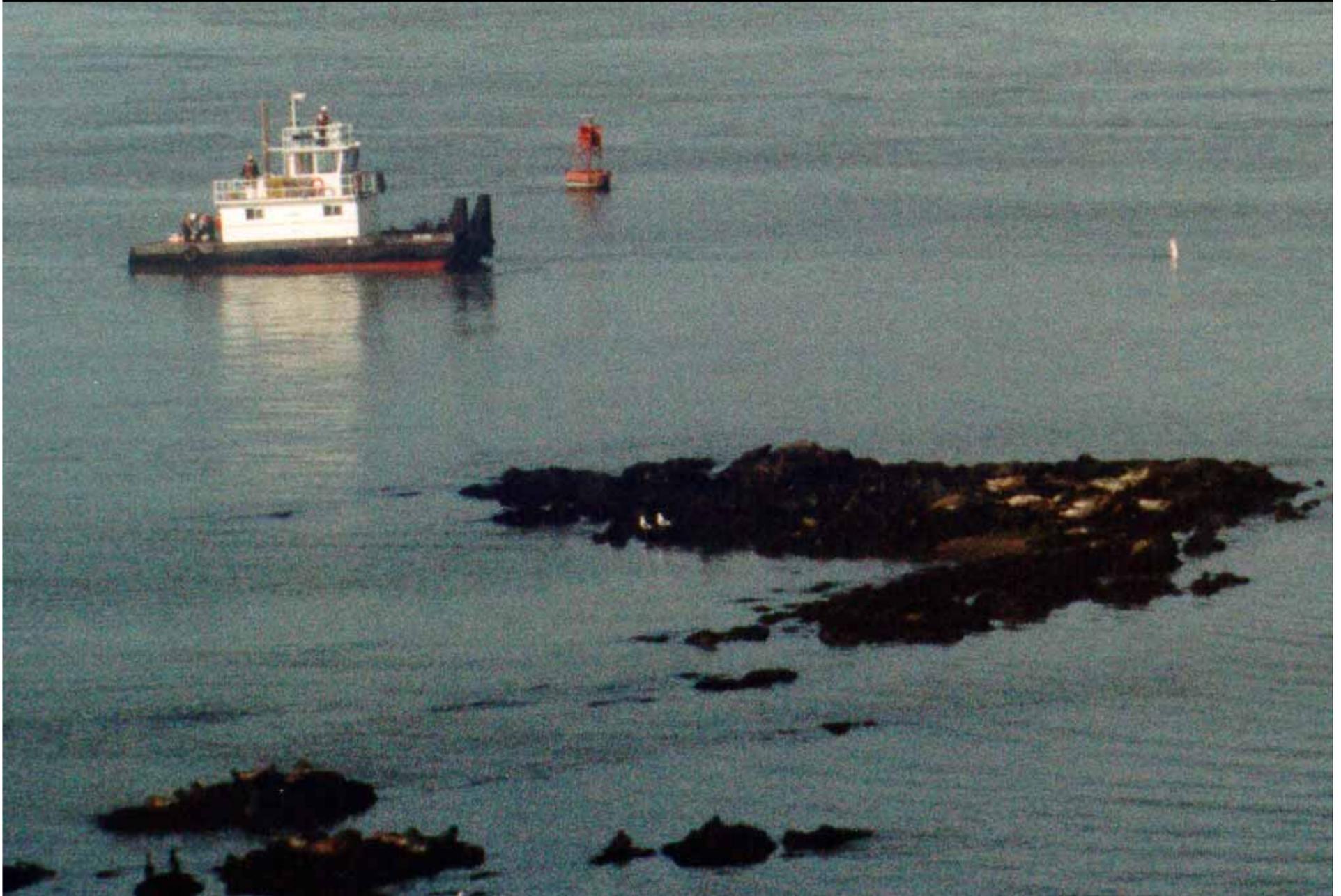
■ Birds



# Point Reyes National Seashore Science Program



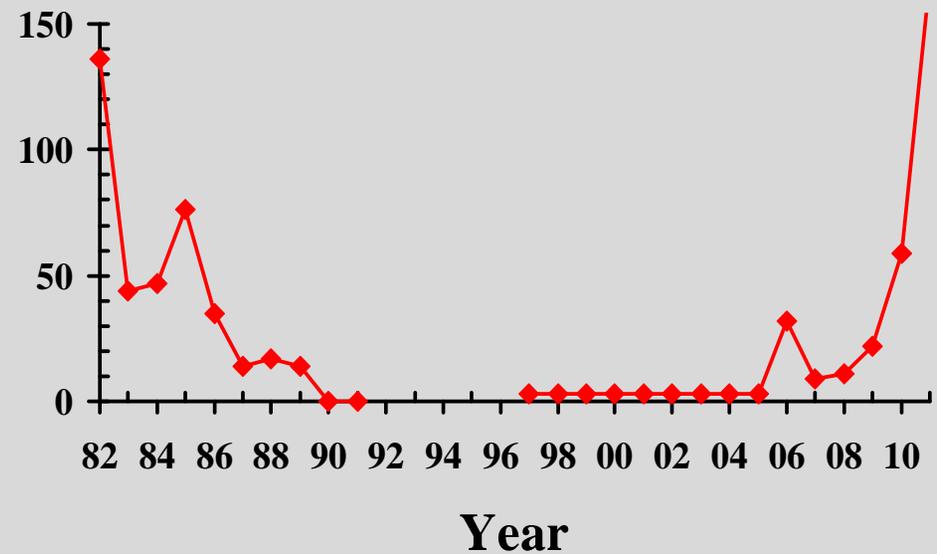
# Some seals habituate



# Abandonment



**Chronic disturbance can result  
in site abandonment  
Hog Island on Tomales Bay**



***Coming next training day.....***

***Long-term Monitoring of  
Harbor seals at  
Point Reyes***





The end.....



# Special protections of colonies during the breeding season

## FERAL WEST

By K. LeMieux



