

# Foraging Ecology of Southern and Northern Elephant seals

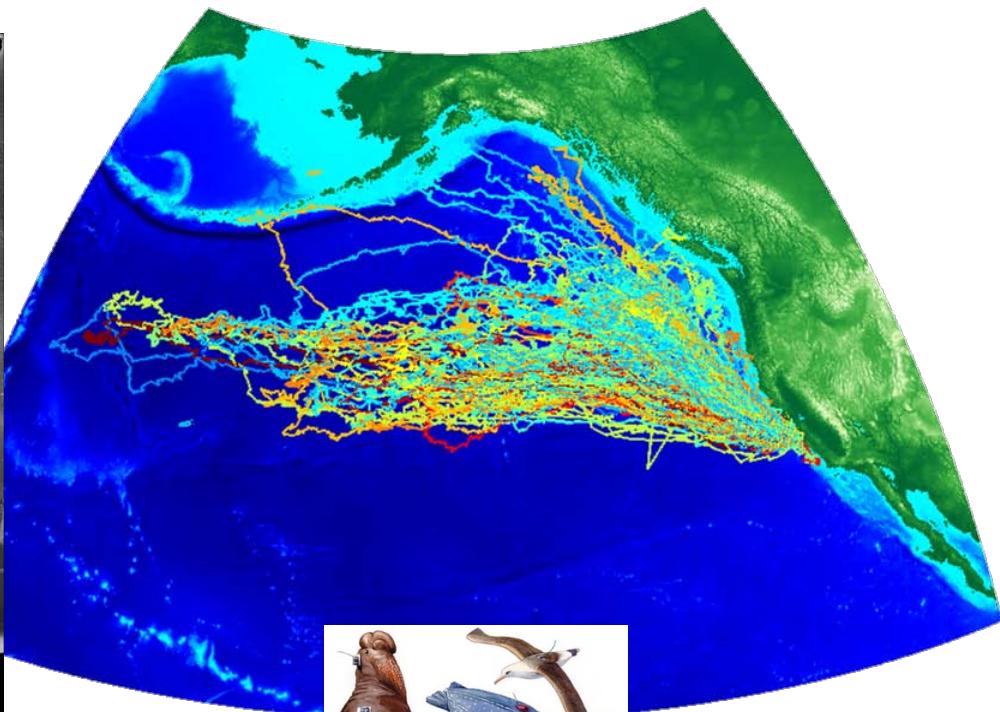
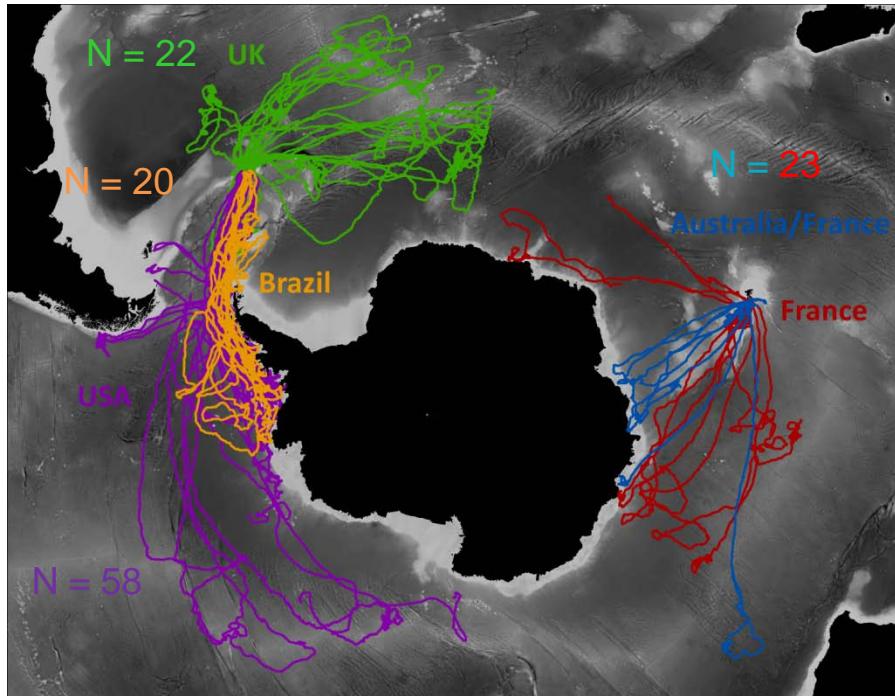


D. Costa, L. Huckstadt, P. Robinson, S. Simmons,  
B. McDonald, M. Goebel, D. Crocker, C. Guinet,  
M. Hindell, M. Muelbert & M Fedak

# Comparison Across Habitats

Southern elephant seal  
*Mirounga leonina*  
N = 123

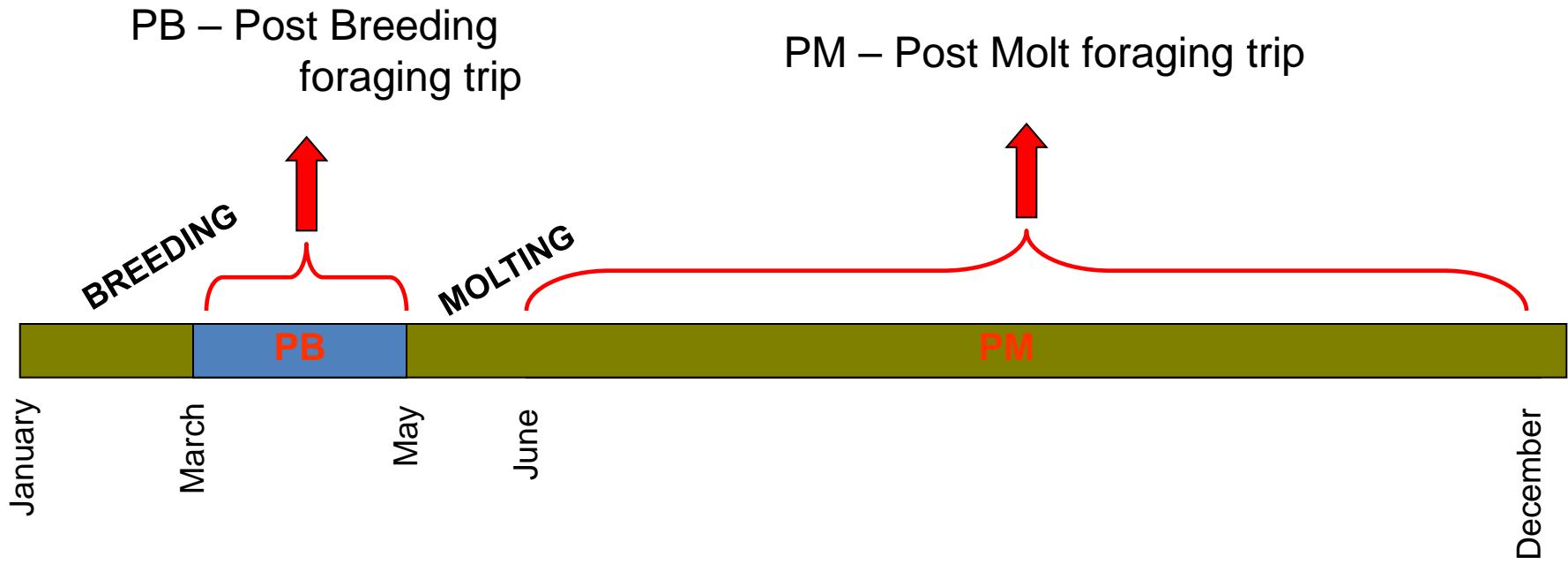
Northern elephant seal  
*Mirounga angustirostris*  
N = 197

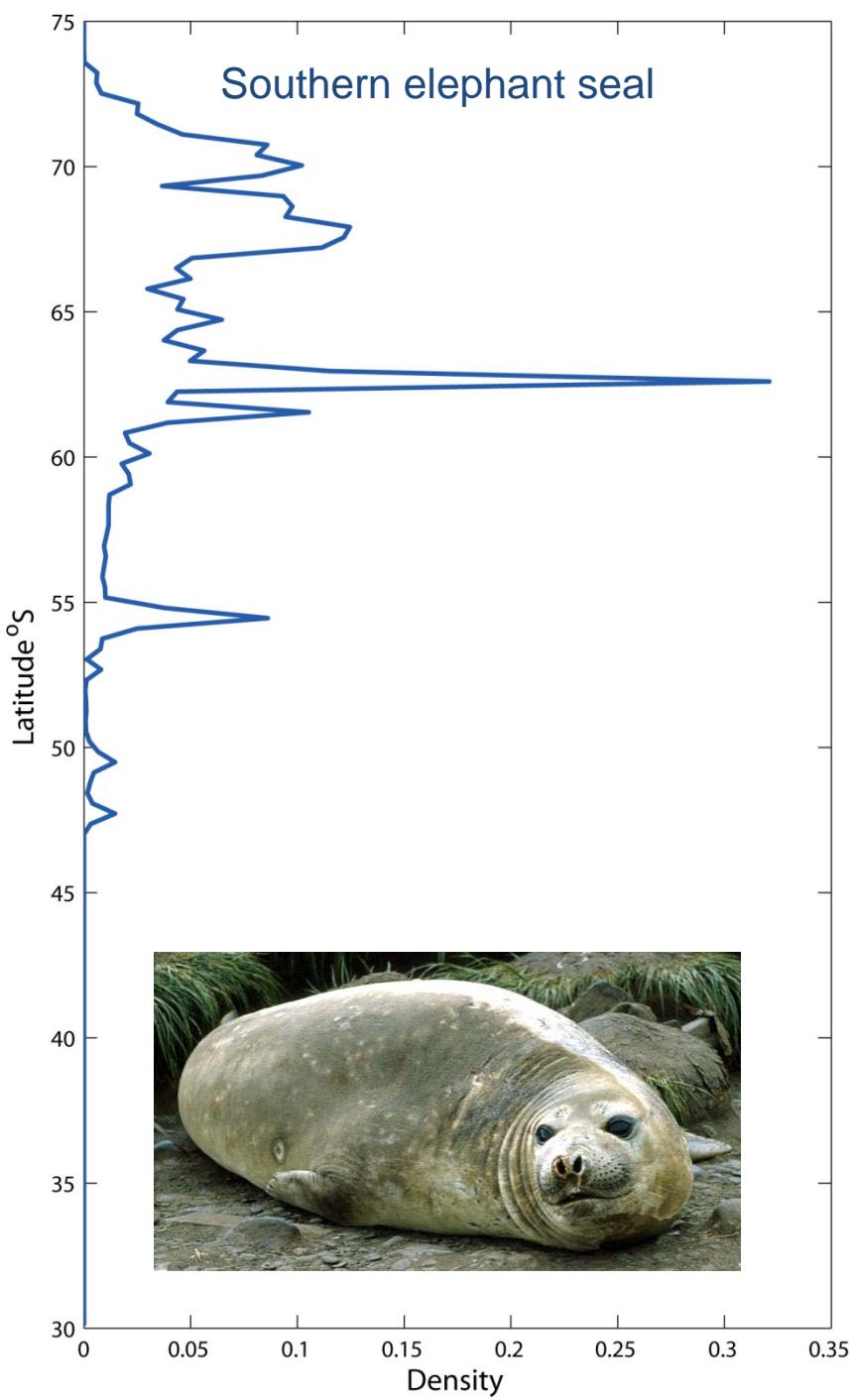
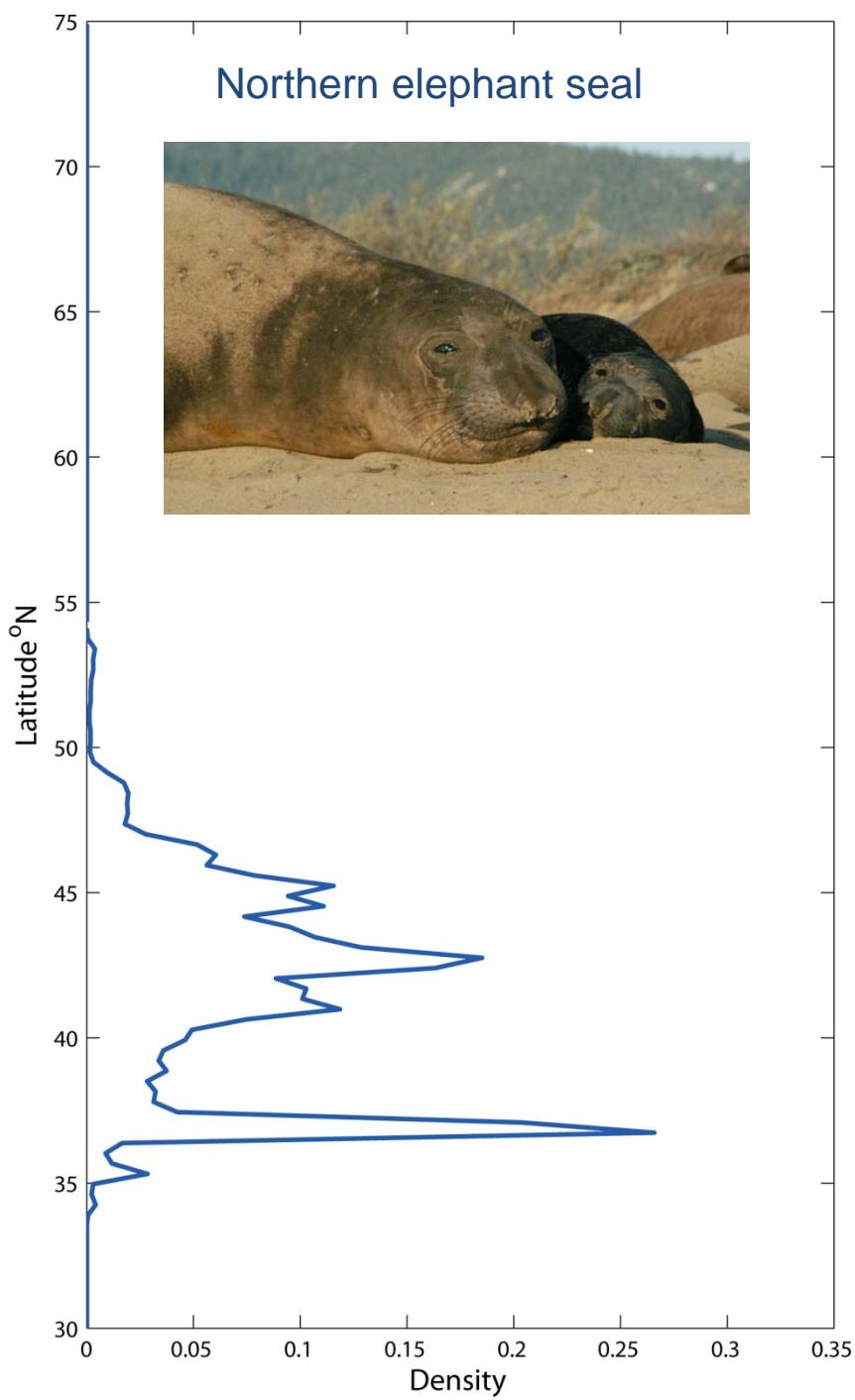


SEaOS MEOP



# Northern elephant seals (*Mirounga angustirostris*)





# Comparison Across Habitats

Southern elephant seal  
*Mirounga leonina*



$N = 123$  (5 colonies)  
SMRU SLDR-CTD

Northern elephant seal  
*Mirounga angustirostris*

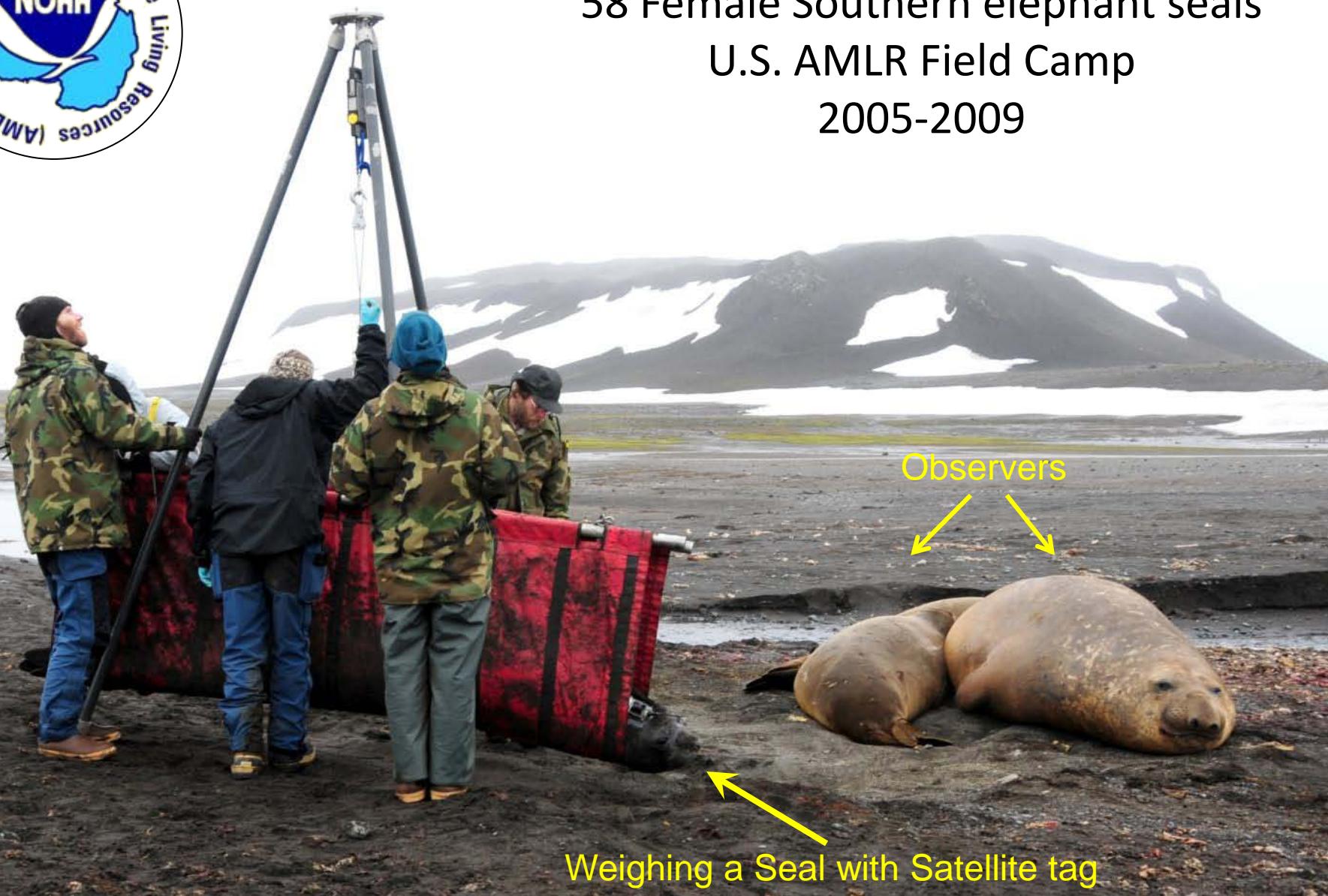


$N = 197$  (Ano Nuevo)  
MK-10 AF, Spot 5 & MK 9





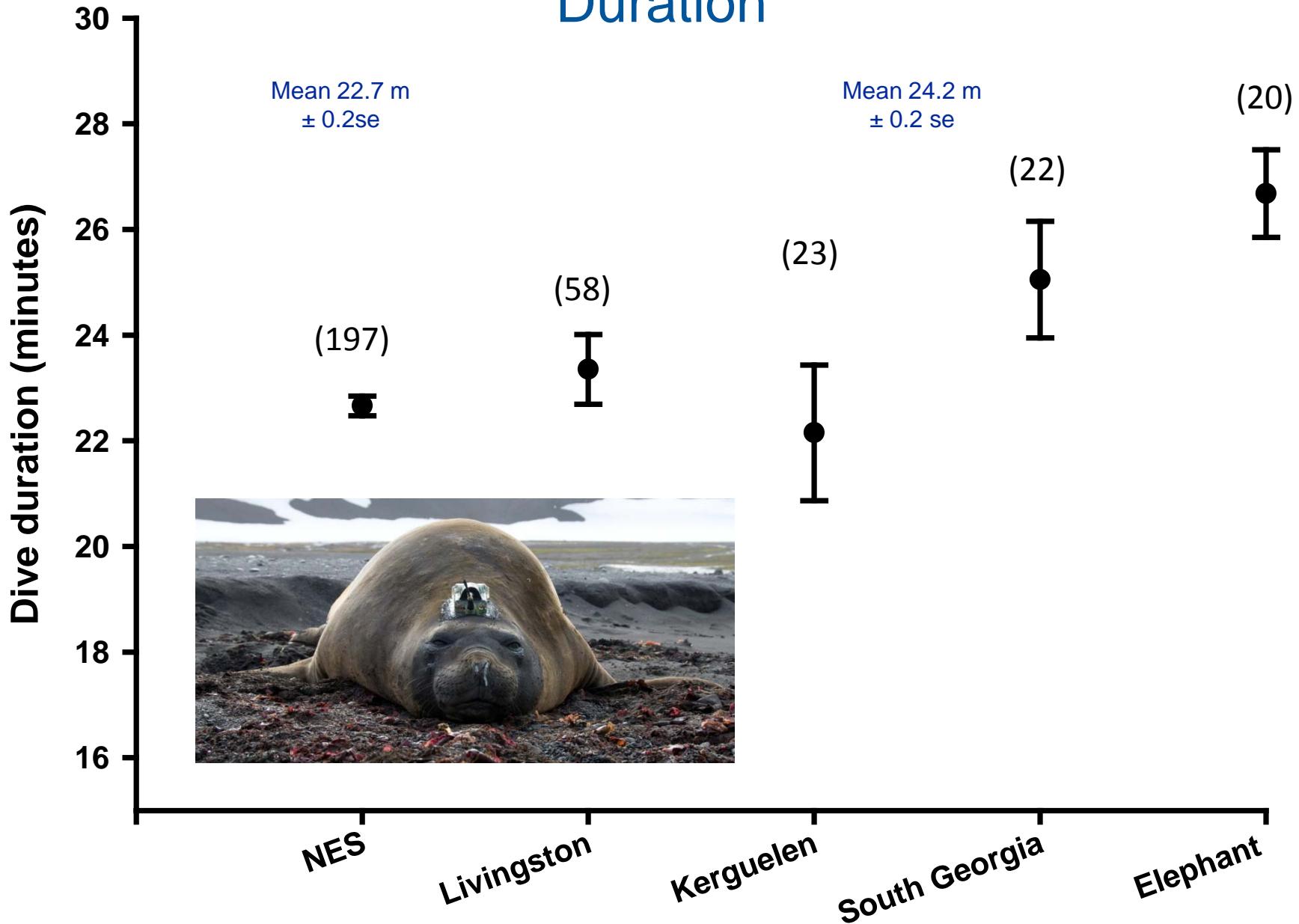
Livingston Island  
58 Female Southern elephant seals  
U.S. AMLR Field Camp  
2005-2009



# Dive Behavior

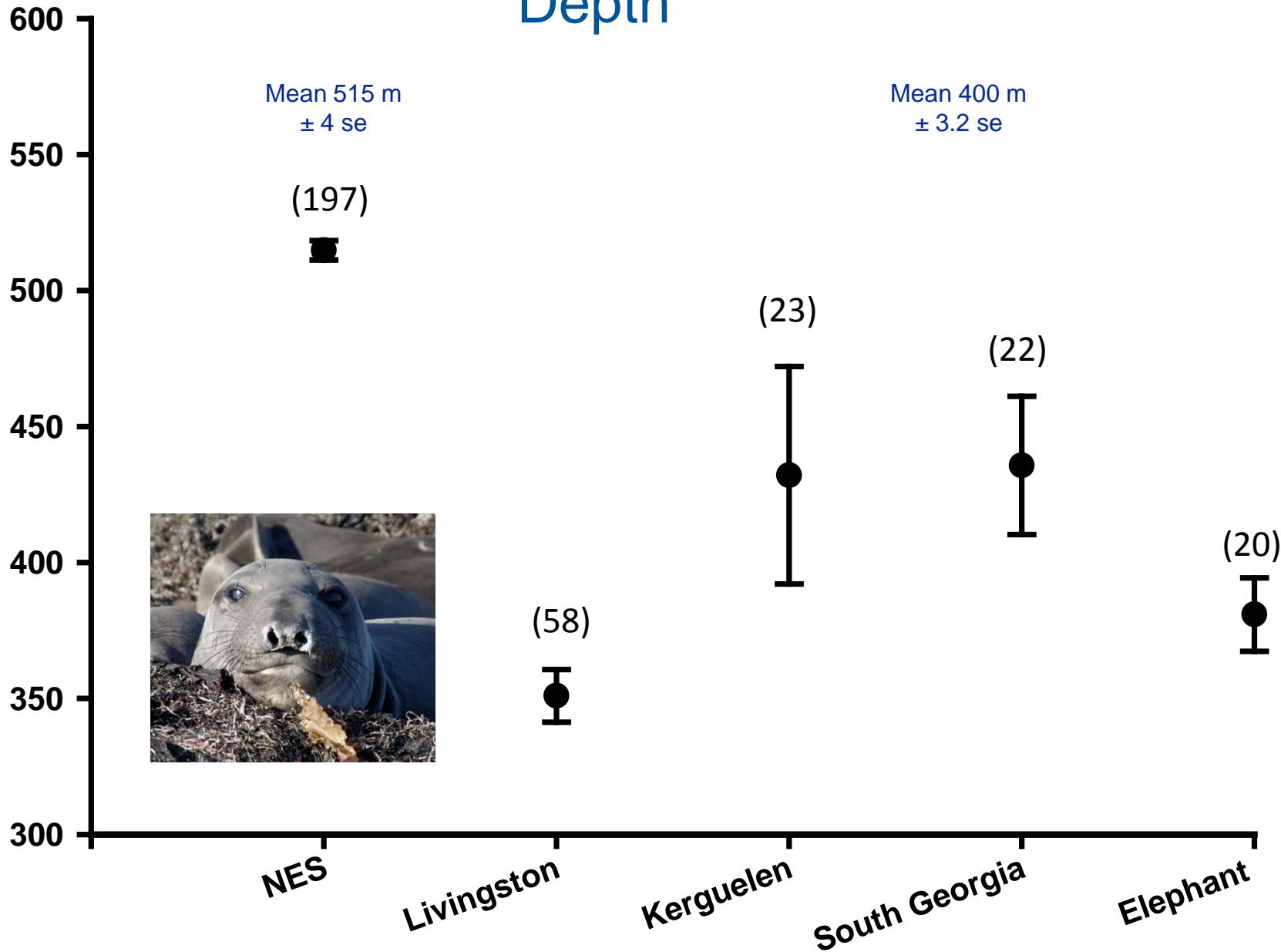


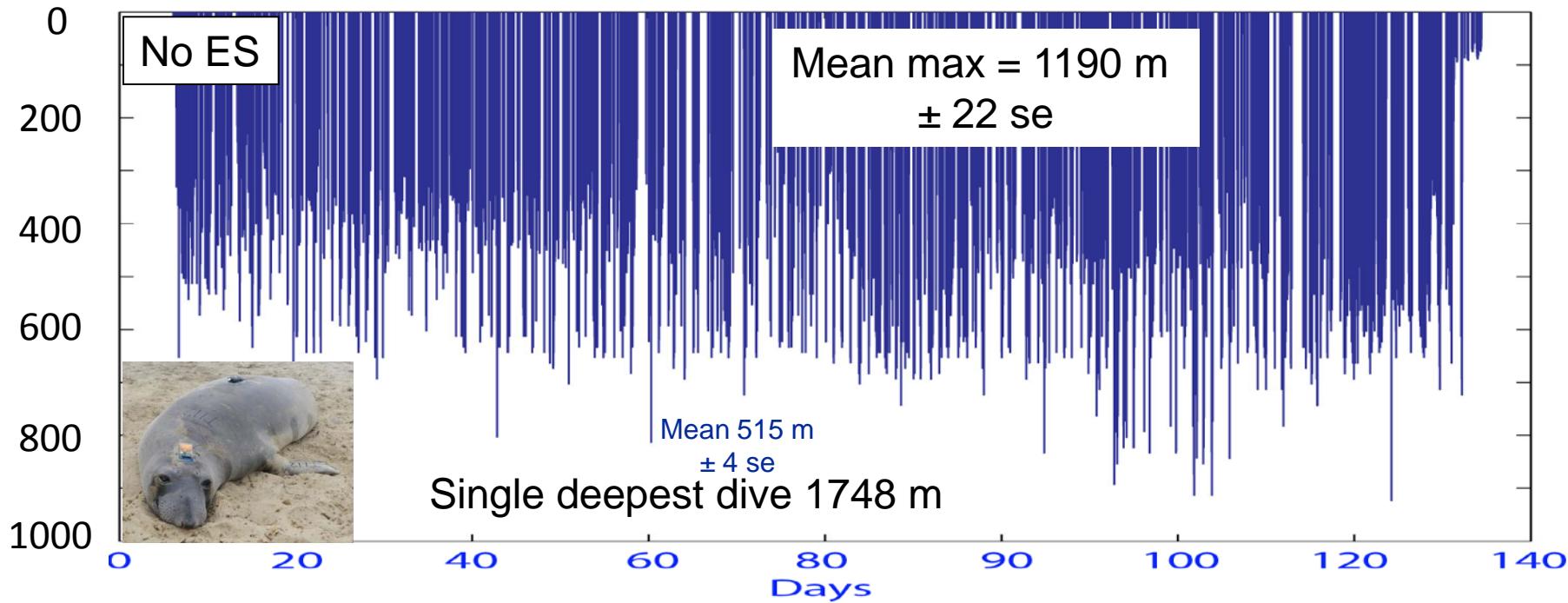
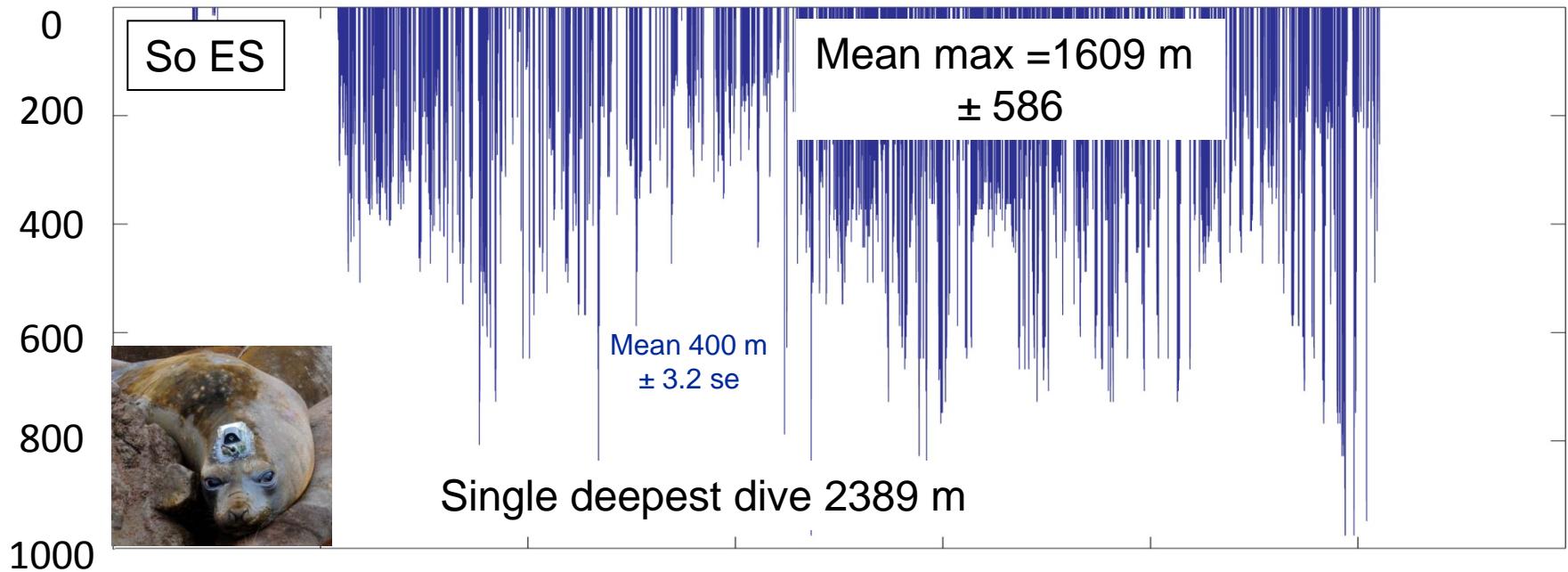
# Duration



# Depth

Mean dive depth (meters)



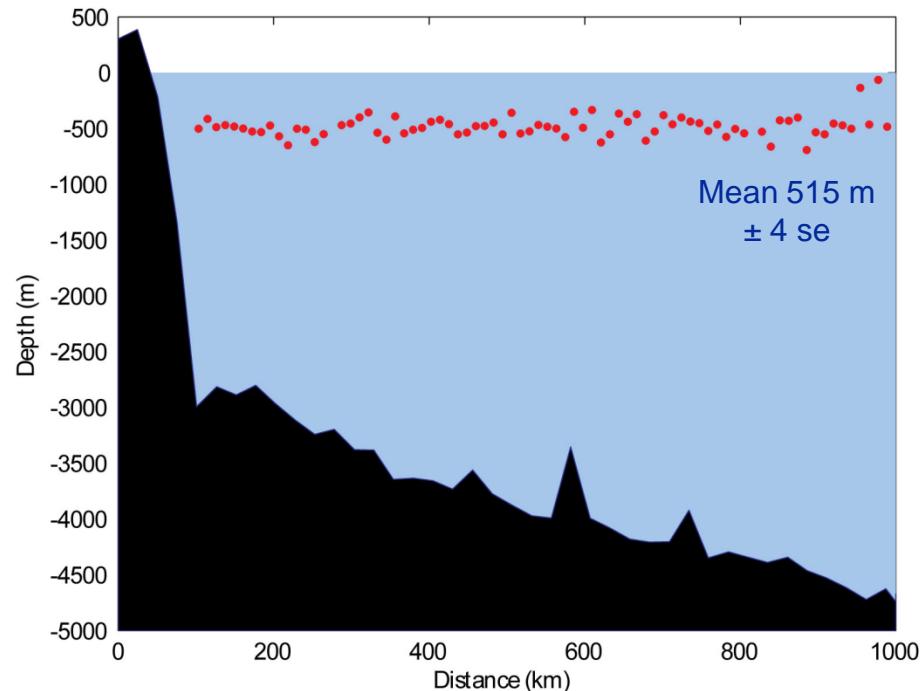
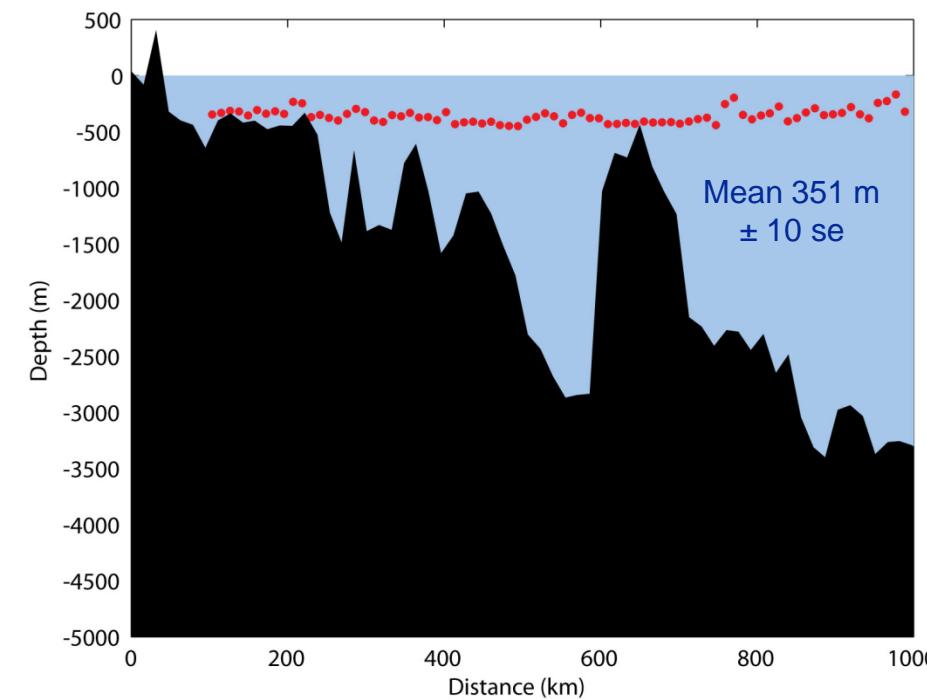
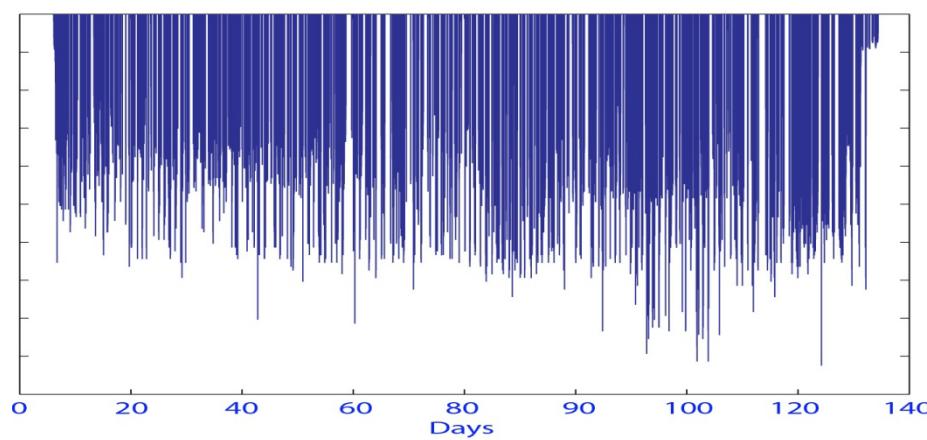
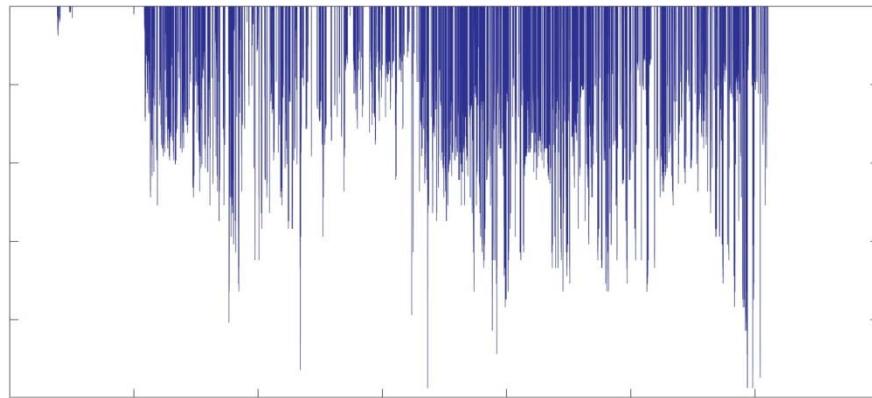




Southern elephant seal  
Livingston Island

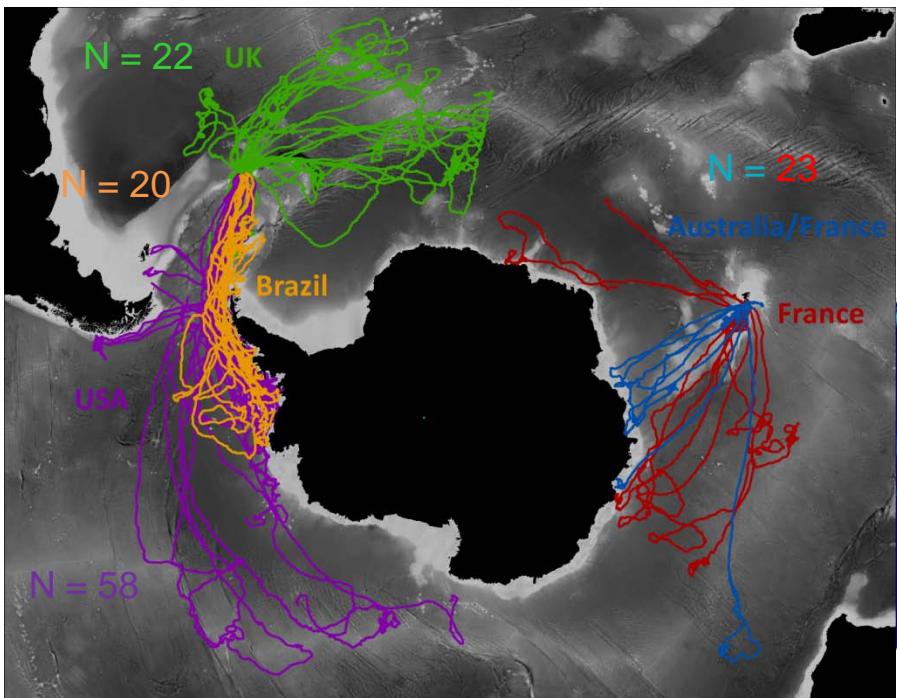


Northern elephant seal



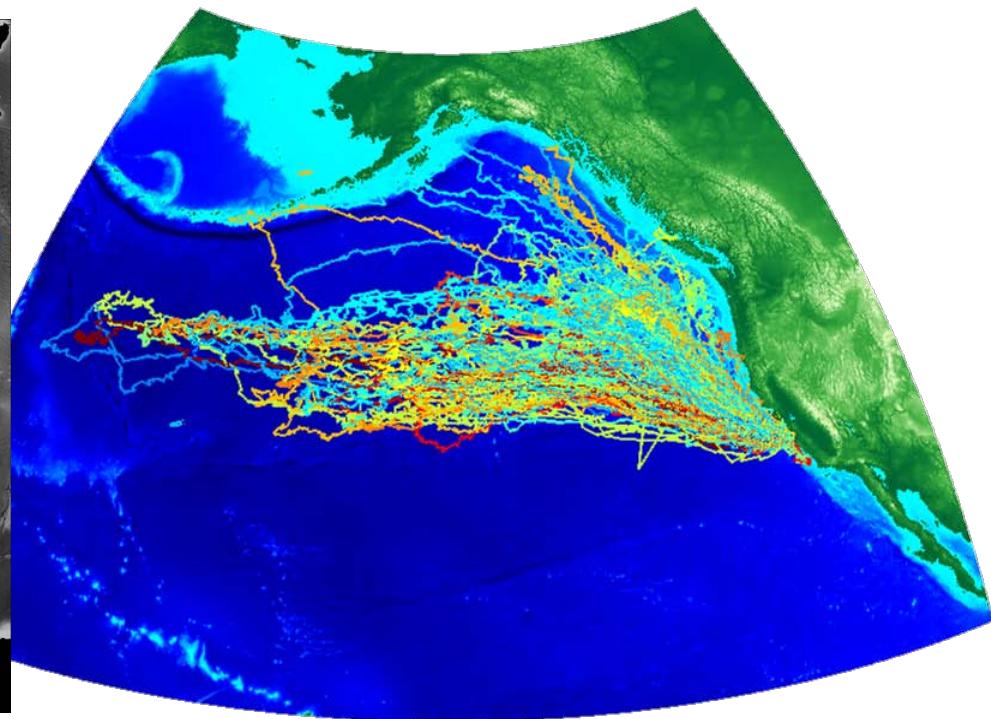
# Comparison Across Habitats

Southern elephant seal  
*Mirounga leonina*  
N = 123

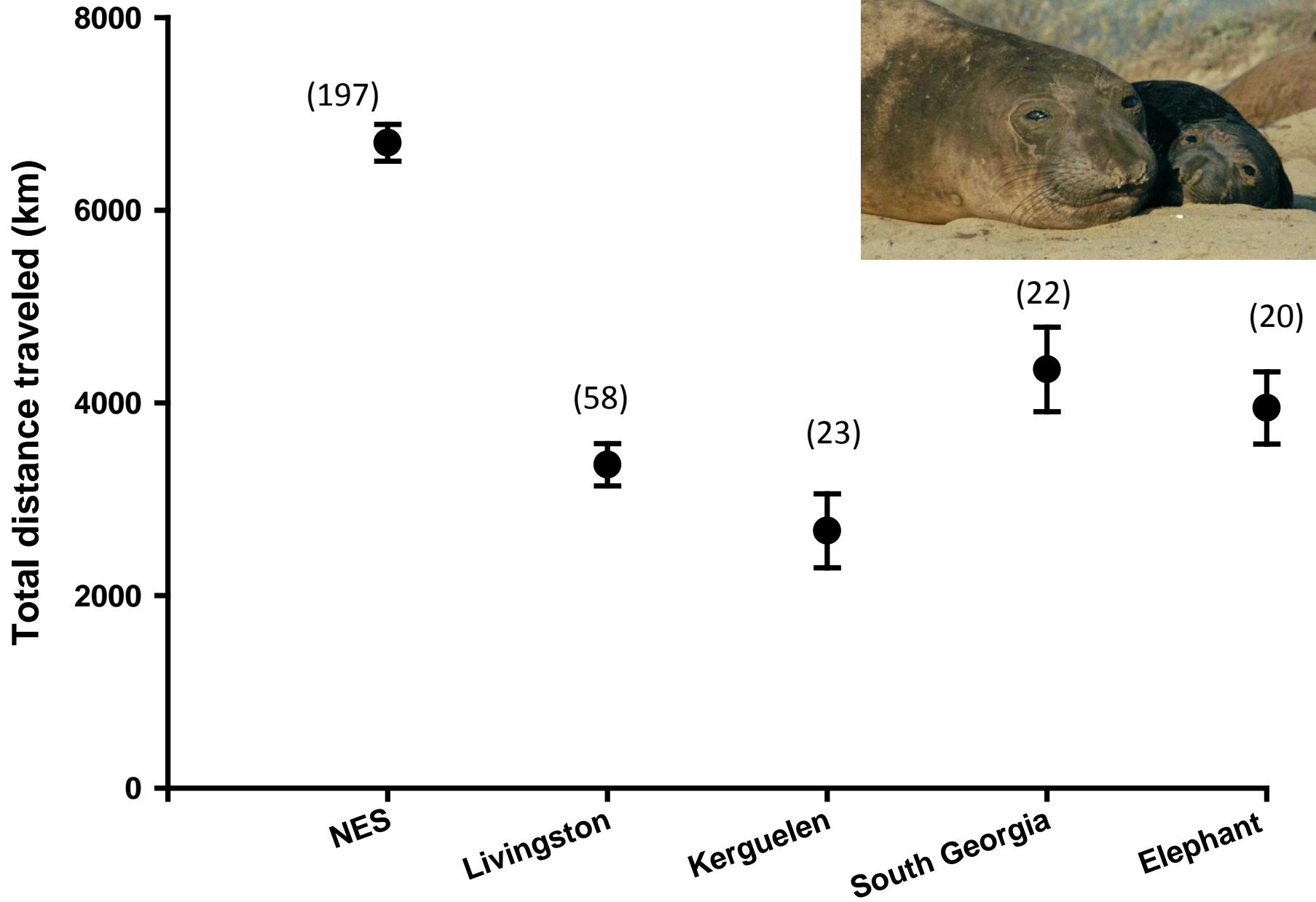


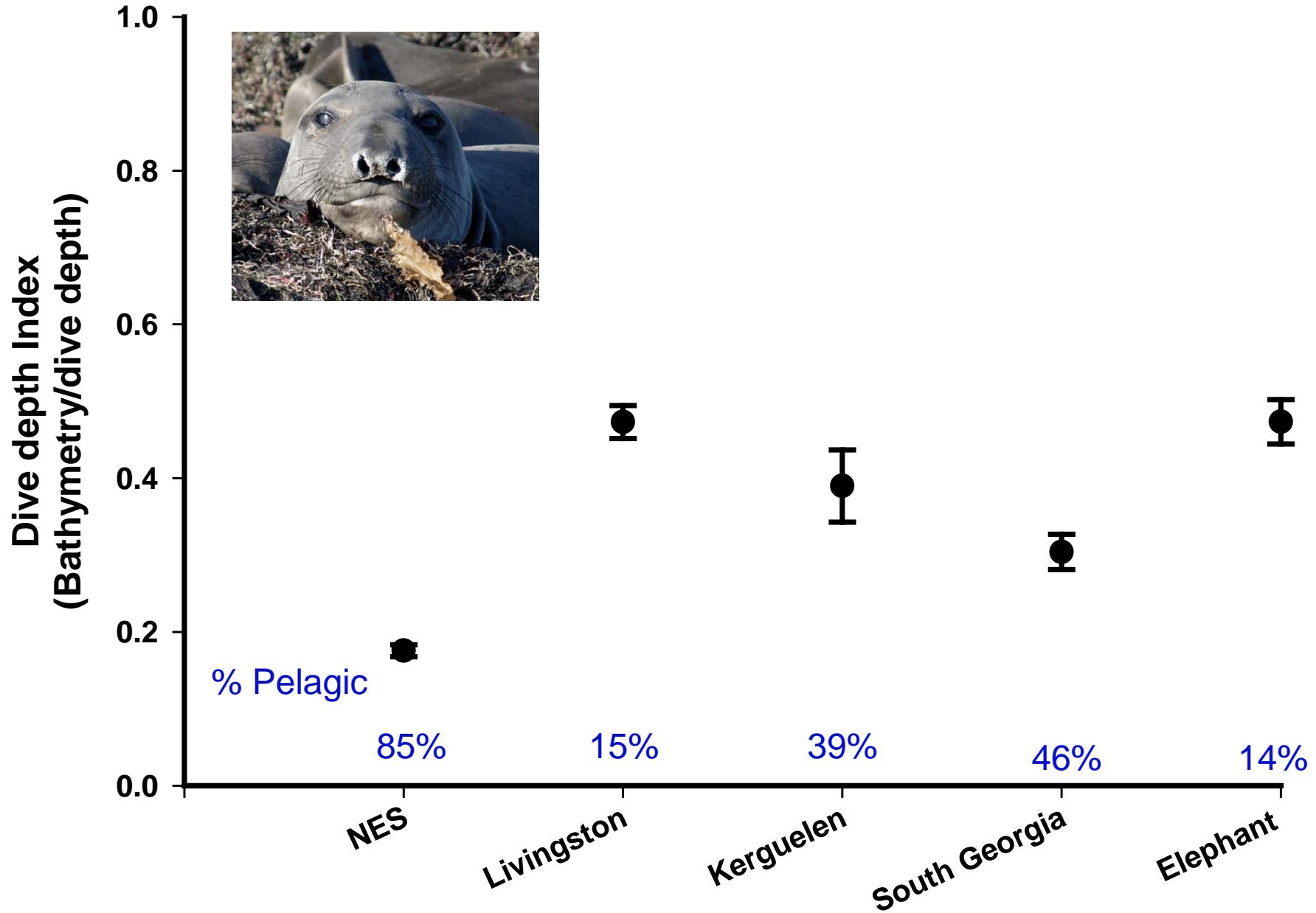
24% foraged offshore  
Distance traveled  $3384 \text{ km} \pm 425 \text{ se}$

Northern elephant seal  
*Mirounga angustirostris*  
N = 197



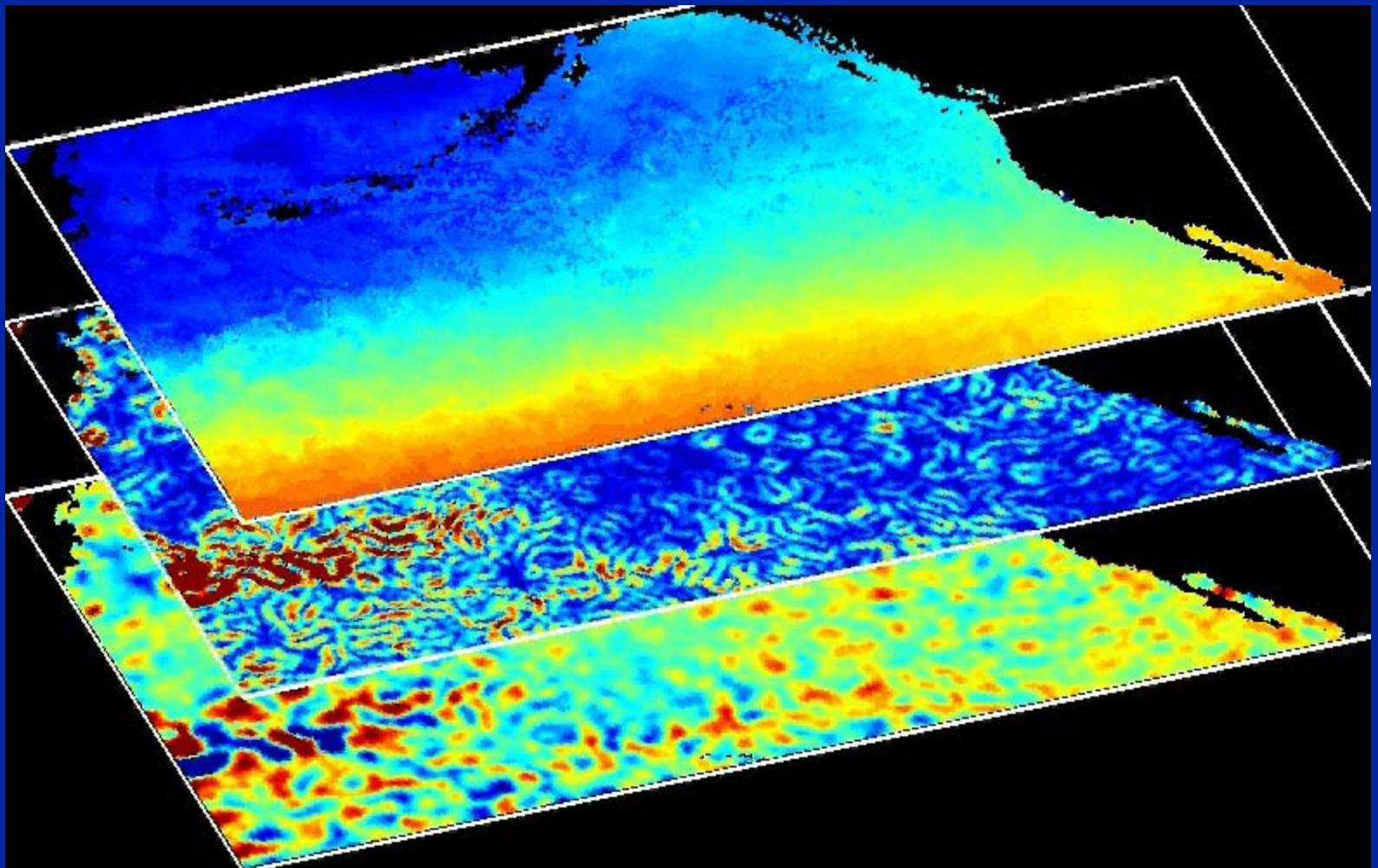
85% of foraged offshore  
Distance traveled  $6699 \text{ km} \pm 190 \text{ se}$

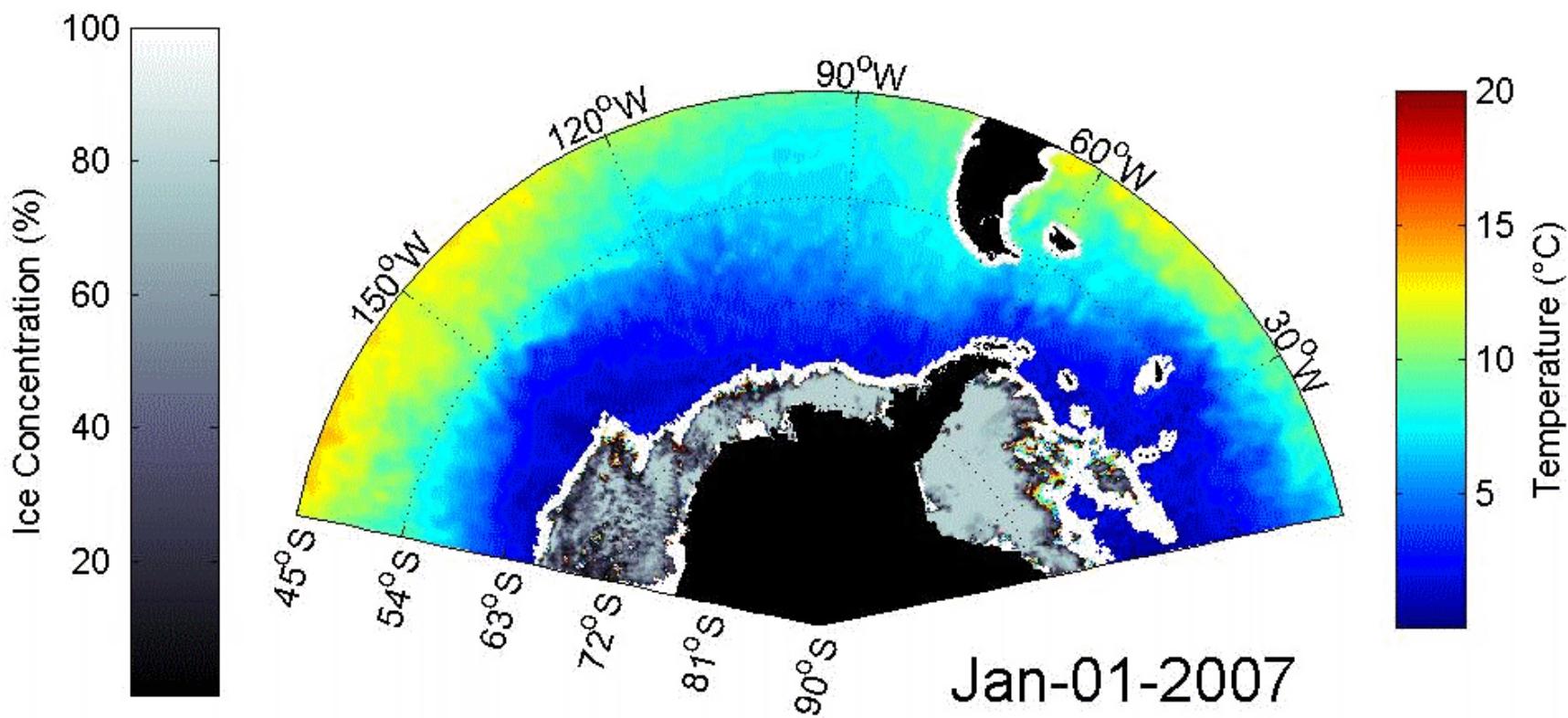




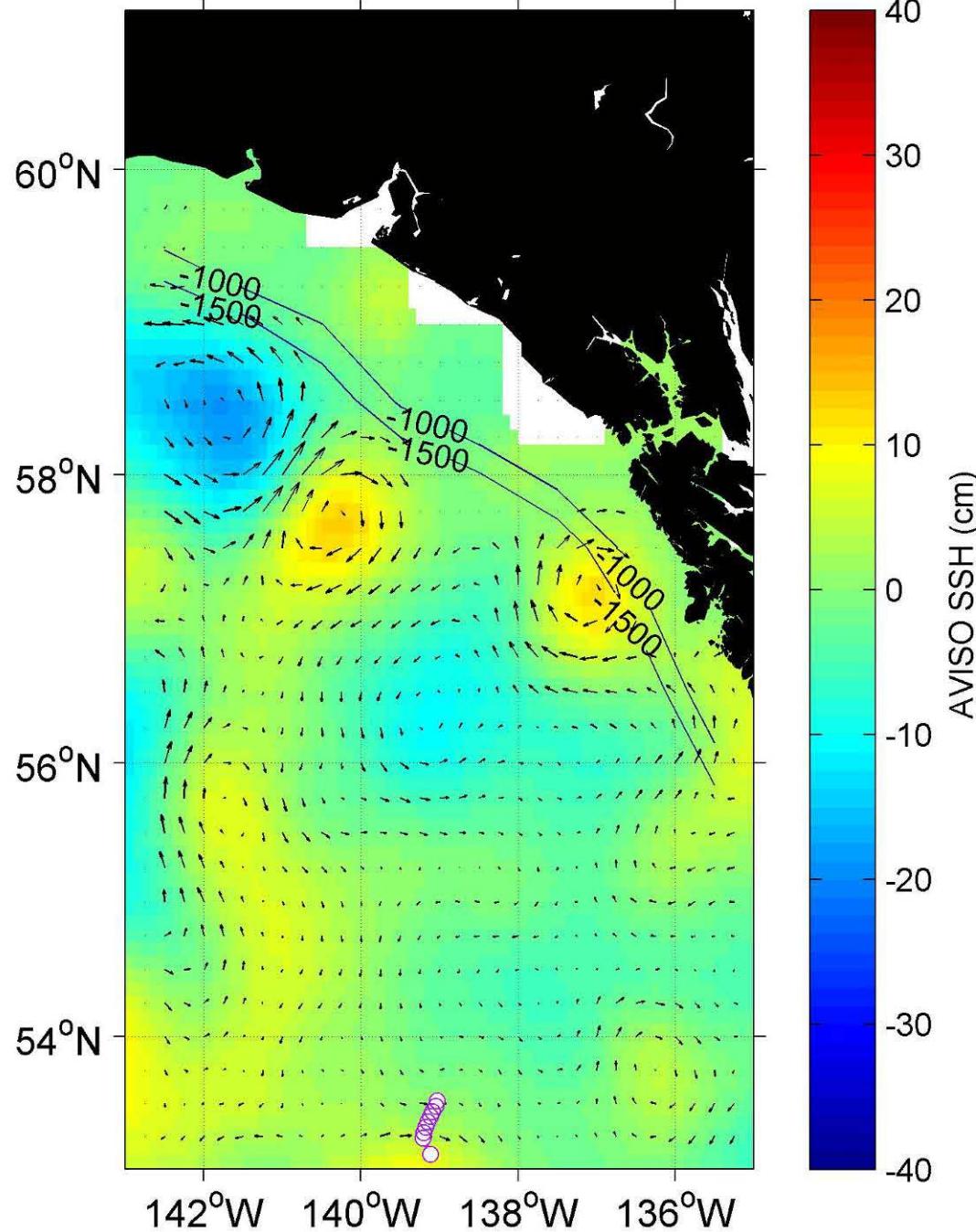
# What Features Are Associated With These Regions?

Temperature  
Sea Surface Height (SSH)  
SSH gradient

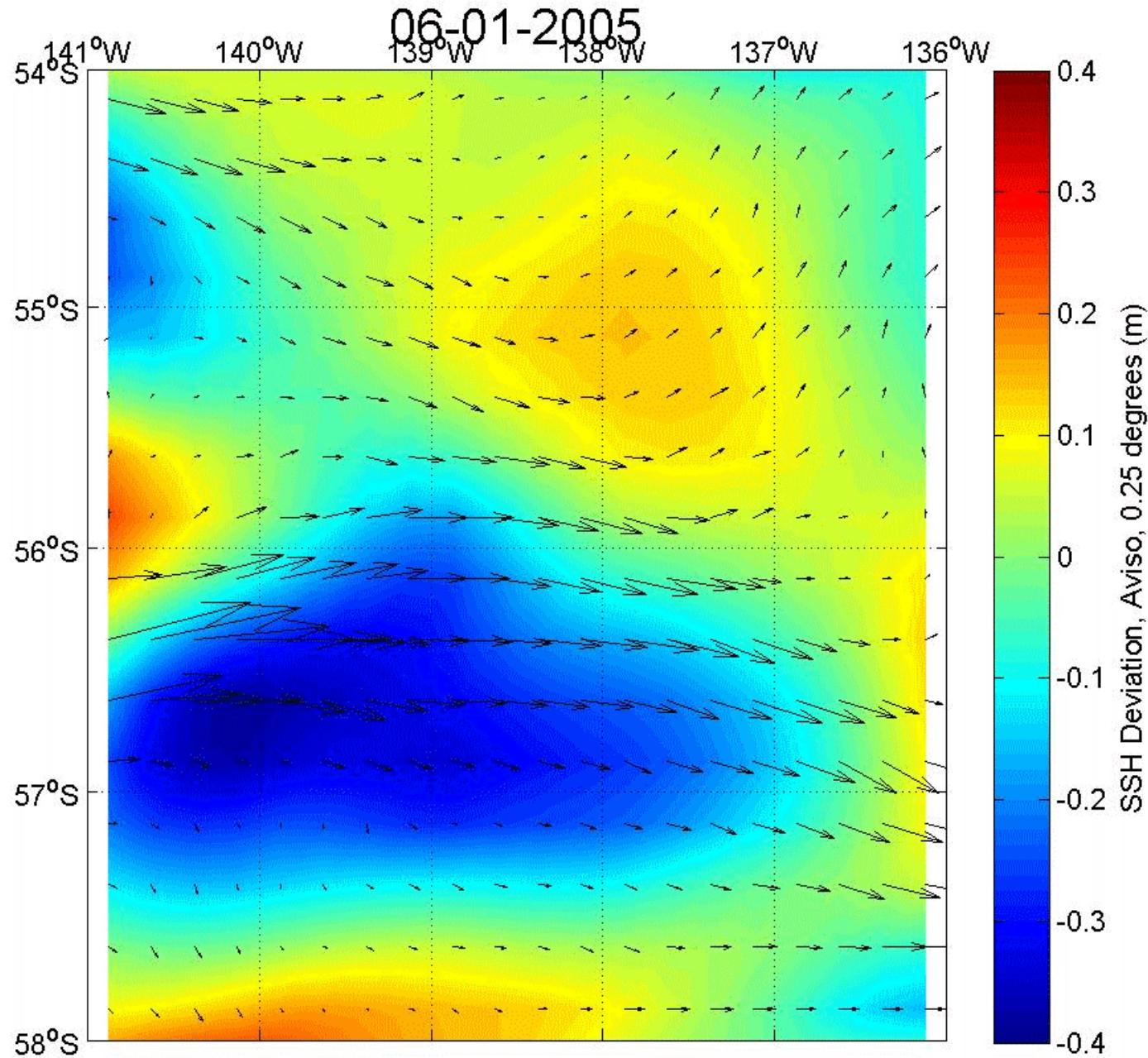




02-Jan-2005



06-01-2005



# Area Restricted Search Fractal D

Southern elephant seal

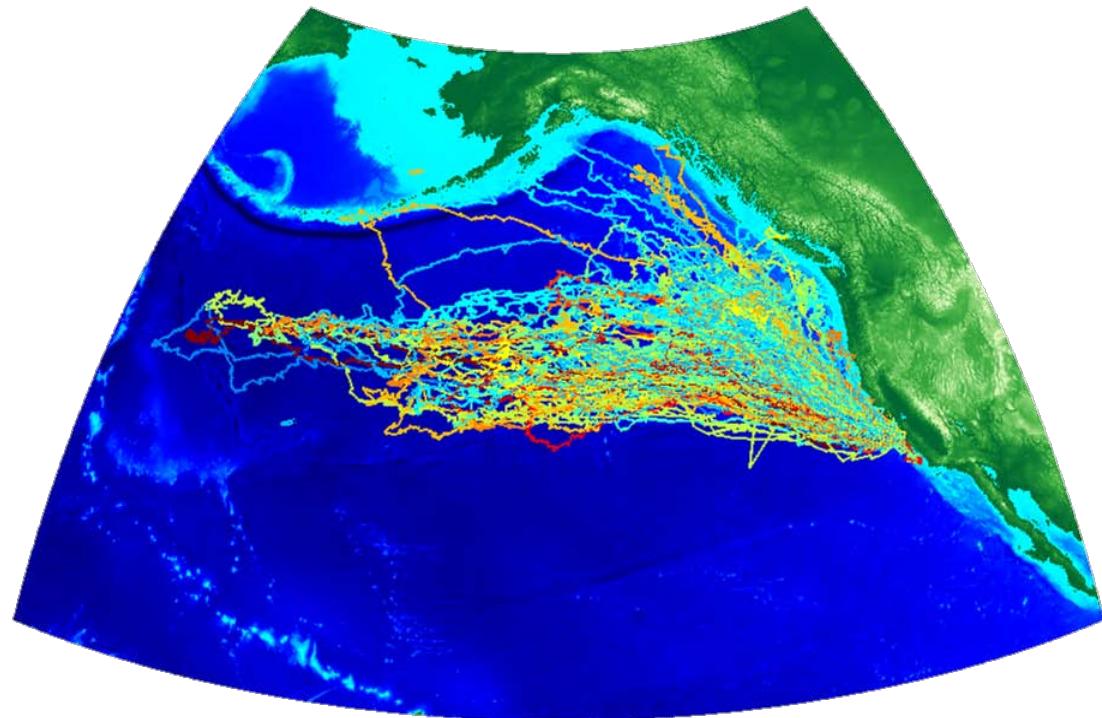
*Livingston Isld*

$N = 58$

Northern elephant seal

Ano Nuevo

$N = 197$



Time searching

Days

SES  $4.6 \pm 2.5$

NES  $4.3 \pm 2.7$

Distance covered

Km

SES  $121 \pm 60$

NES  $61 \pm 68$

Tremblay et al 1997



ANIMAL BEHAVIOUR, 2004, 68, 1349–1360  
doi:10.1016/j.anbehav.2003.12.013

Available online at www.sciencedirect.com

SCIENCE @ DIRECT<sup>®</sup>

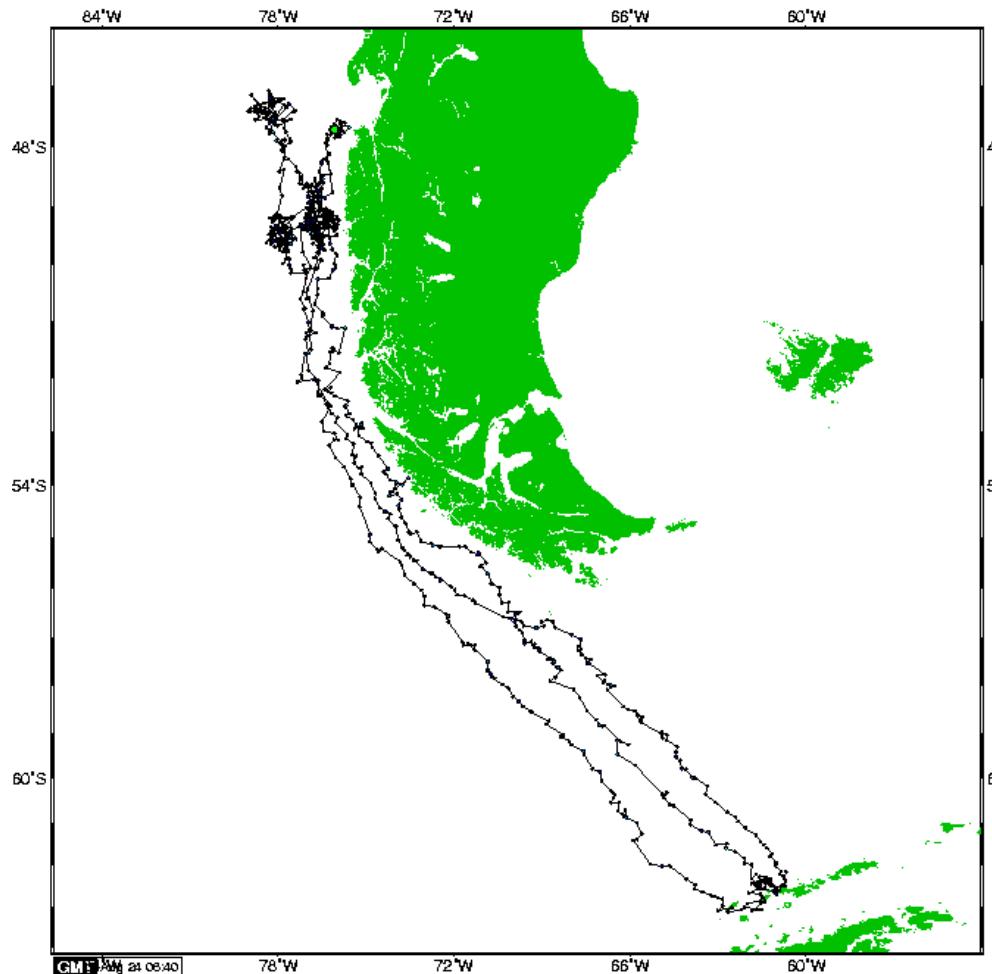


## Loyalty pays: potential life history consequences of fidelity to marine foraging regions by southern elephant seals

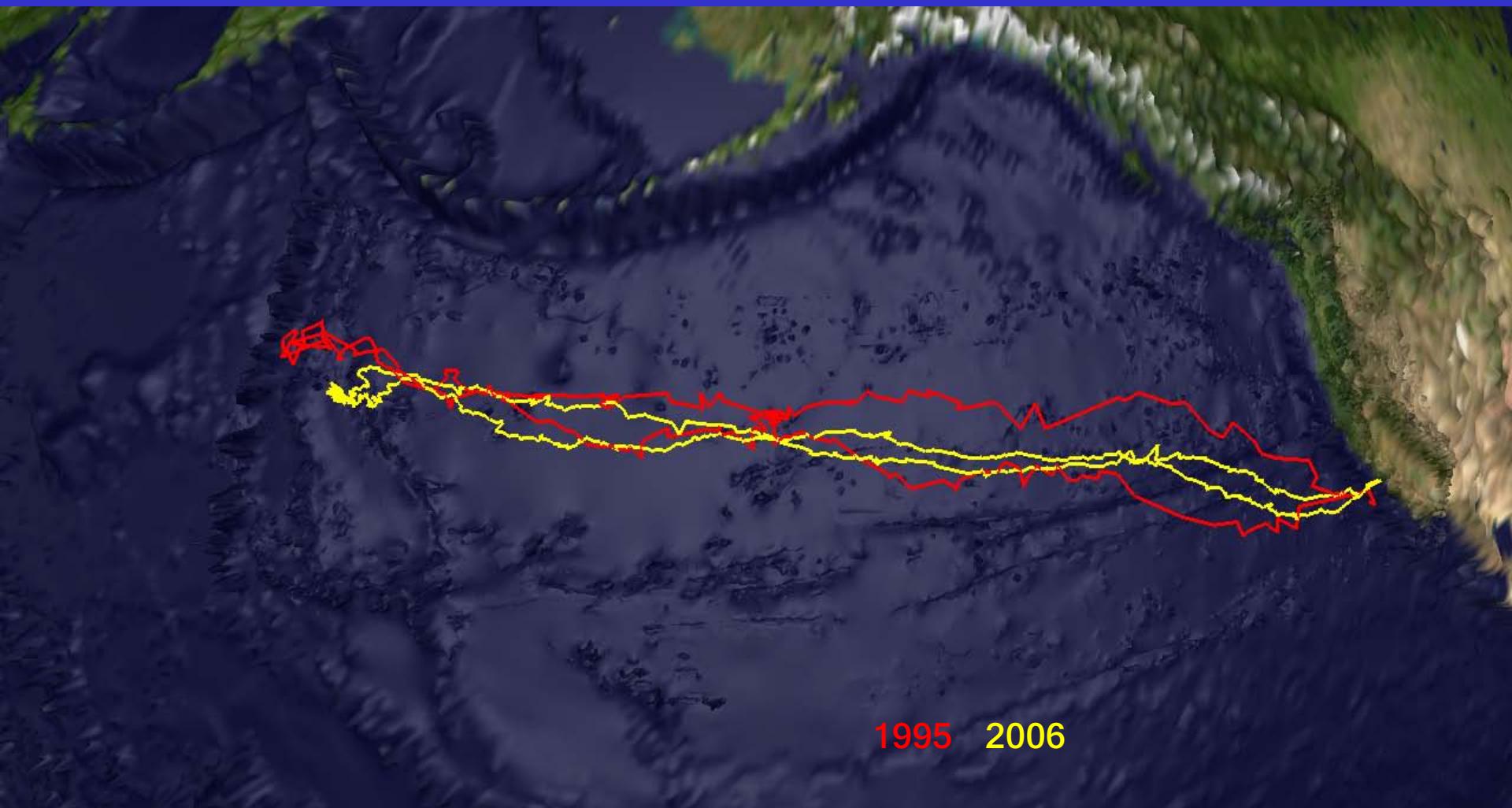
COREY J. A. BRADSHAW\*, MARK A. HINDELL\*, MICHAEL D. SUMNER\*† & KELVIN J. MICHAEL†

\*Antarctic Wildlife Research Unit, School of Zoology, University of Tasmania

†Antarctic Cooperative Research Centre & Institute of Antarctic and Southern Ocean Studies, University of Tasmania



## Fidelity to Foraging Site



# Conclusions

- Diving behavior similar
  - NES dive deeper on average
  - SES dive deepest
- NES travels farther to forage
- Foraging habitat
  - Most NES feed offshore
  - Most SES feed on continental shelf
  - Extensive deep continental shelf in WAP
- Use similar oceanographic features
- Similar search characteristics
  - Same time spent in ARS
  - SES search over 2X the area
- High site fidelity

# THANK YOU!



National Science Foundation  
WHERE DISCOVERIES BEGIN



THE David &  
Lucile Packard  
Foundation

Gordon and Betty  
**MOORE**  
FOUNDATION