

Neonatal sexual-size dimorphism in a Mexican colony of the northern elephant seal

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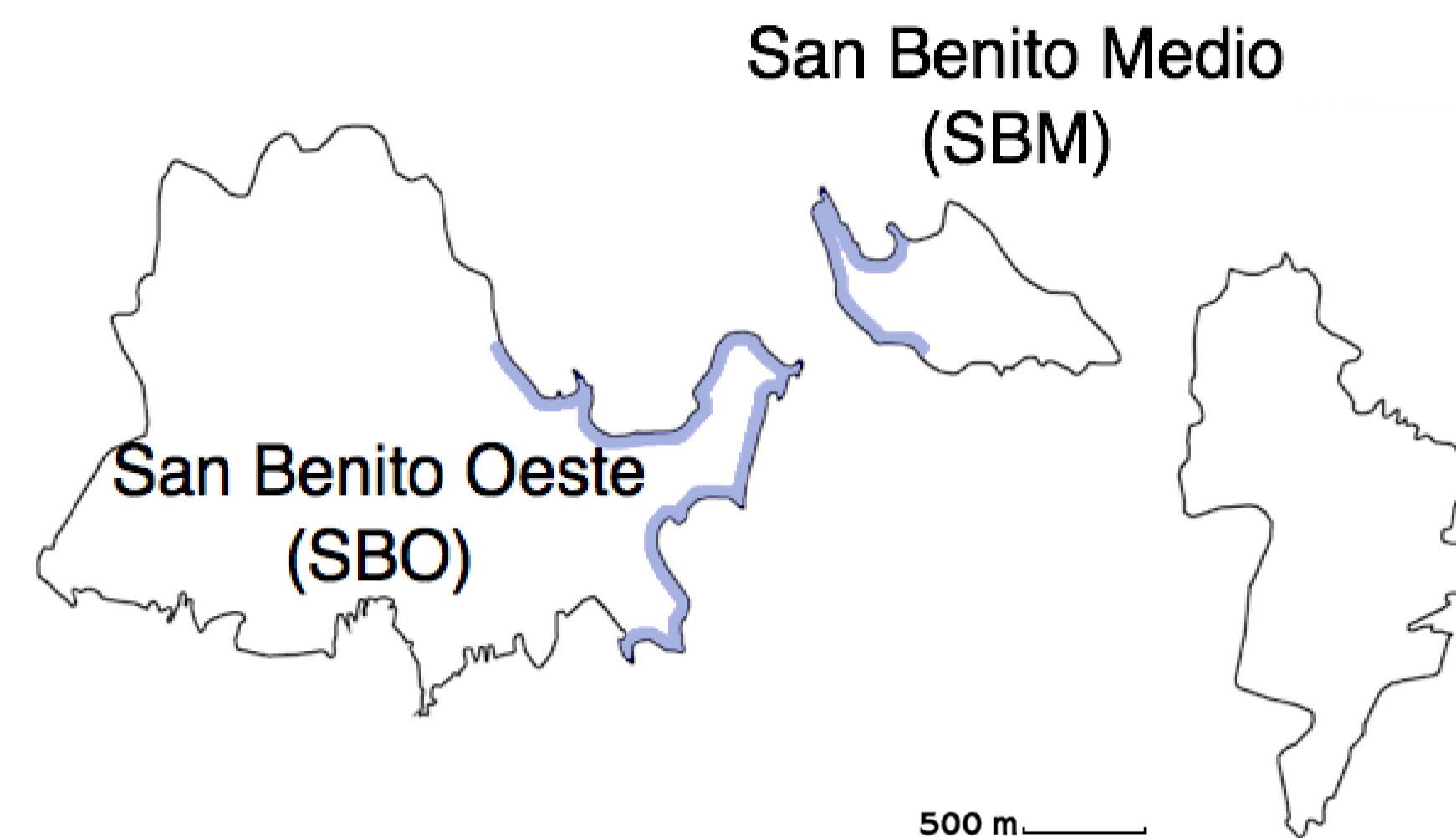
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Introduction

Northern elephant seal (*Mirounga angustirostris*) is the mammal species with the highest polygyny and sexual dimorphism. Adult males are bigger than females, likely a result of sexual selection, but little is known about body size differences at birth.

Methods

- We studied elephant seals in the southernmost breeding colony, at the San Benito Islands, Baja California, Mexico, in 2006 and 2007.
- The study area was situated on two of the three islands of the San Benito's archipelago: San Benito Oeste (SBO) and San Benito Medio (SBM).
- We weighed 206 pups, and measured 175 of them 0-4 days after birth.

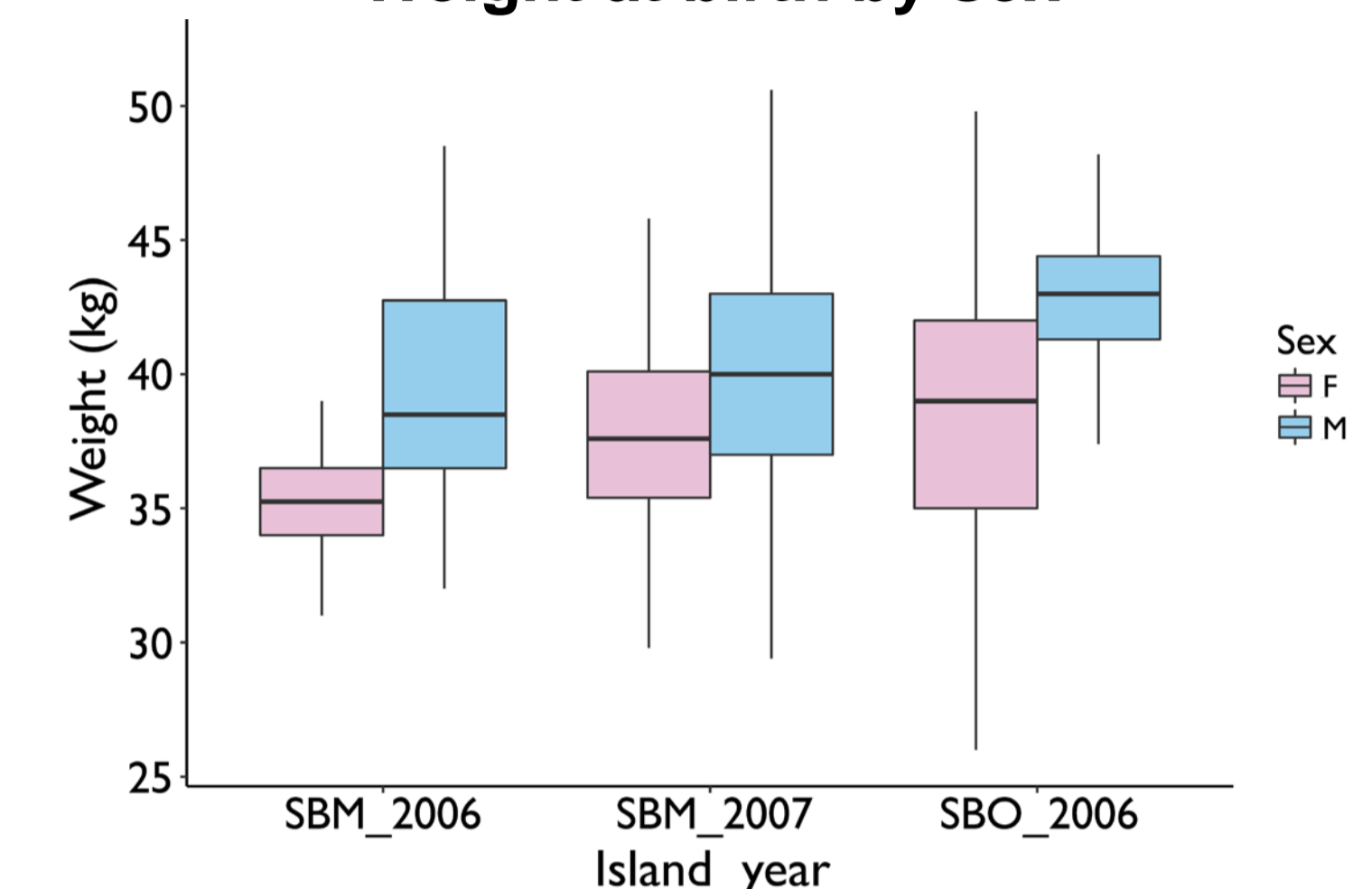


- We restrained pups by hand and weighed them using a weighing bag hung from a digital dynamometer.
- Body length was measured as nose to tail distance, by laying the pups straight on their belly on a measuring board.
- Repeatability of measurements was high (Weight: $R = 0.998$, $n = 23$; Length: $R = 0.980$, $n=28$).

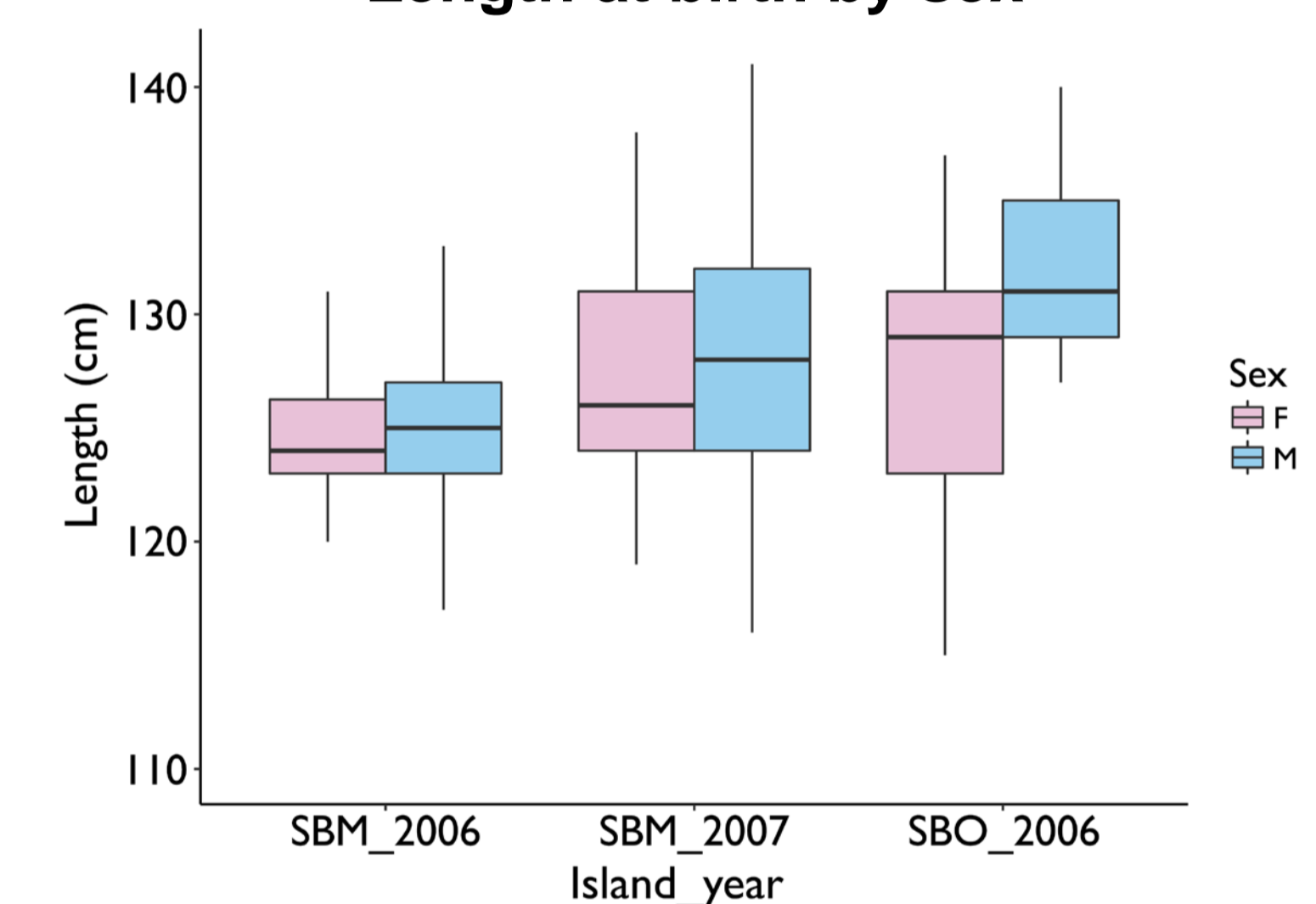
Results

- Males were significantly heavier than females (males: 40.7 ± 4.7 kg, $n = 102$; females: 37.2 ± 4.6 kg, $n = 104$; $P < 0.001$).
- Males were larger than females in body length (males: 128.8 ± 5.6 cm, $n = 81$; females: 126.2 ± 5.4 cm, $n = 94$), but this difference was significant only in San Benito Oeste in 2006 ($P = 0.006$, $n = 43$).
- The effect size was greater for sexual-size dimorphism in body mass (Cohen's $d = 0.76$, $n = 206$), than in body length (Cohen's $d = 0.46$, $n = 175$).

Weight at birth by sex



Length at birth by sex



Conclusions

- Body mass was significantly different between sexes, with males about 10% heavier than females.
- There was an important effect size for sexual-size dimorphism in body mass. This was larger than in a previous study at Año Nuevo Island, California (Cohen's $d = 0.51$).¹
- We found differences in sexual dimorphism between the islands of the colony that deserve further investigation.

1. Le Boeuf, B. J., Condit, J., & Clark, R. (1989). Parental investment and the secondary sex ratio in northern elephant seals. *Behav Ecol Sociobiol*, 25(2), 109-117.

