



Individual variation in nutrient allocation to egg production in an arctic sea duck



Steffen Oppel, Abby Powell, Diane O'Brien

University of Alaska Fairbanks





Background

- arctic birds reproduce in a short summer
- use endogenous reserves: capital breeding

*You Idiot!
We flew 10,000 km
for **THIS**?*





Background

- King Eiders migrate at sea and breed on tundra
- available nutrients differ in $\delta^{13}\text{C}$



- 18 ‰

$\delta^{13}\text{C}$

- 26 ‰

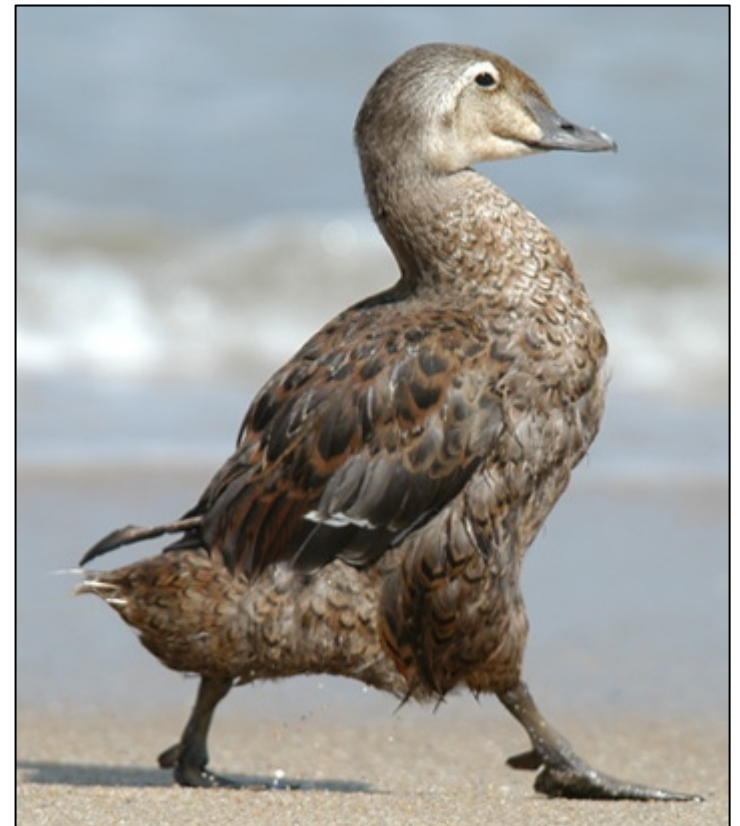
Marine prey

Freshwater
prey



Question

How much marine nutrients do King Eiders incorporate in their eggs?





Study site





Methods

- collected one egg from 107 nests (>1 egg from 17 nests)
- collected all eggshell membranes
- blood samples from 38 birds prior to nesting
- separated eggs, freeze dried yolk and albumen, and lipid-extracted yolk





Linear mixing model

Body reserves

red blood cells



Mixture

lipid-free yolk



+ 0‰
(Hobson 1995)



+ 2‰
(Federer, unpub.)

Tundra nutrients

shell membranes



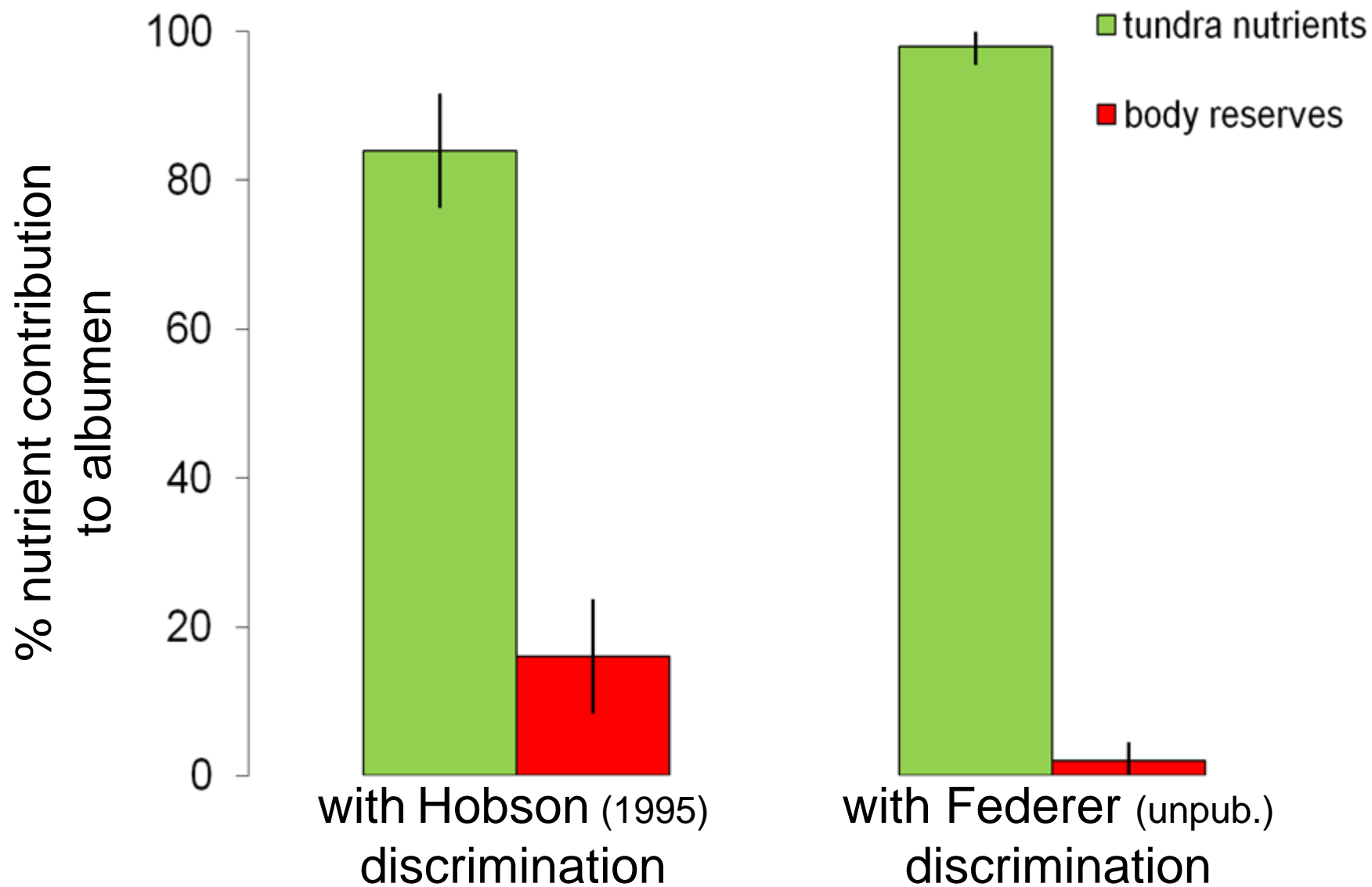
- 3.2‰
(Hobson 1995)



- 1.6‰
(Federer, unpub.)

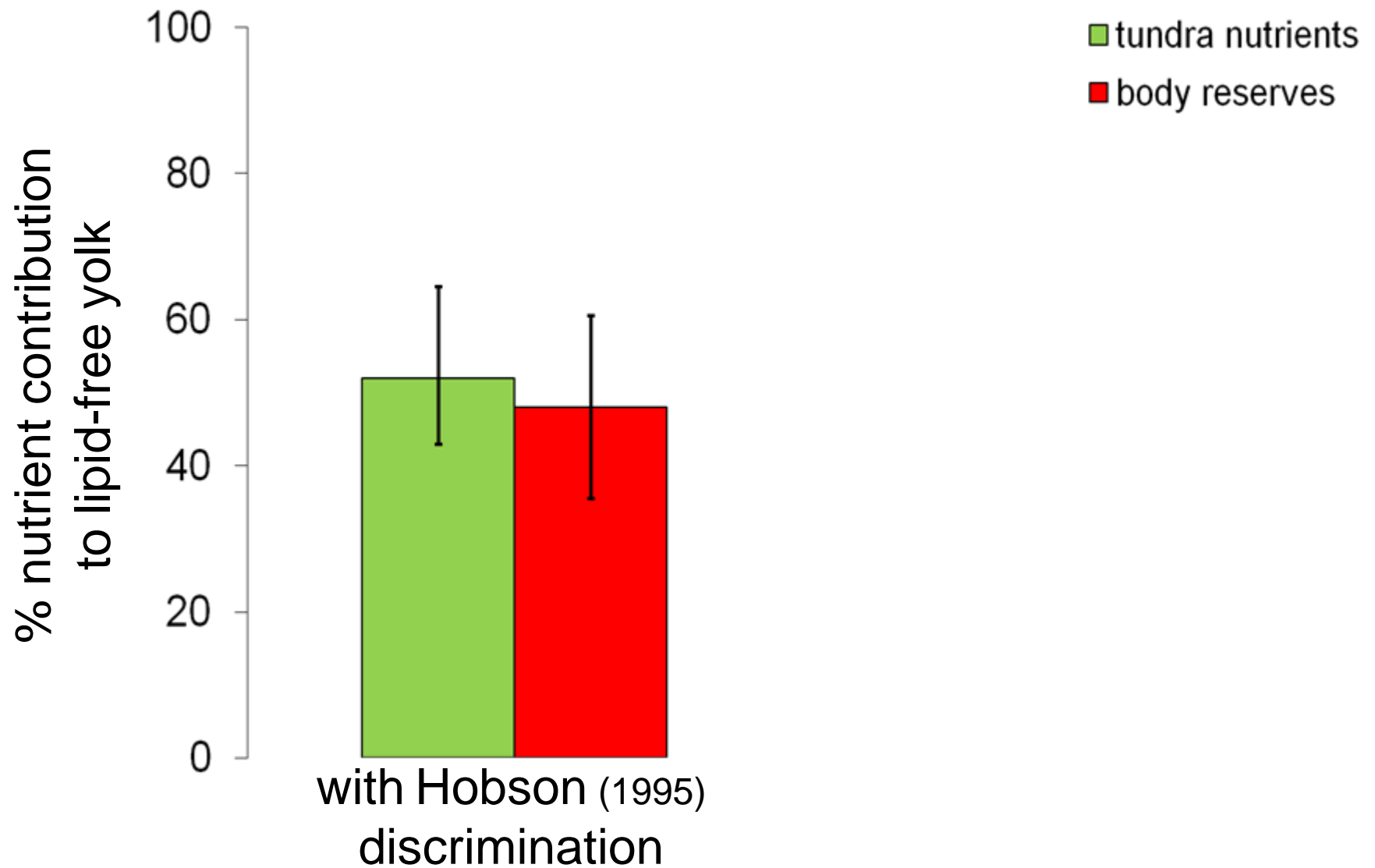


Results: albumen



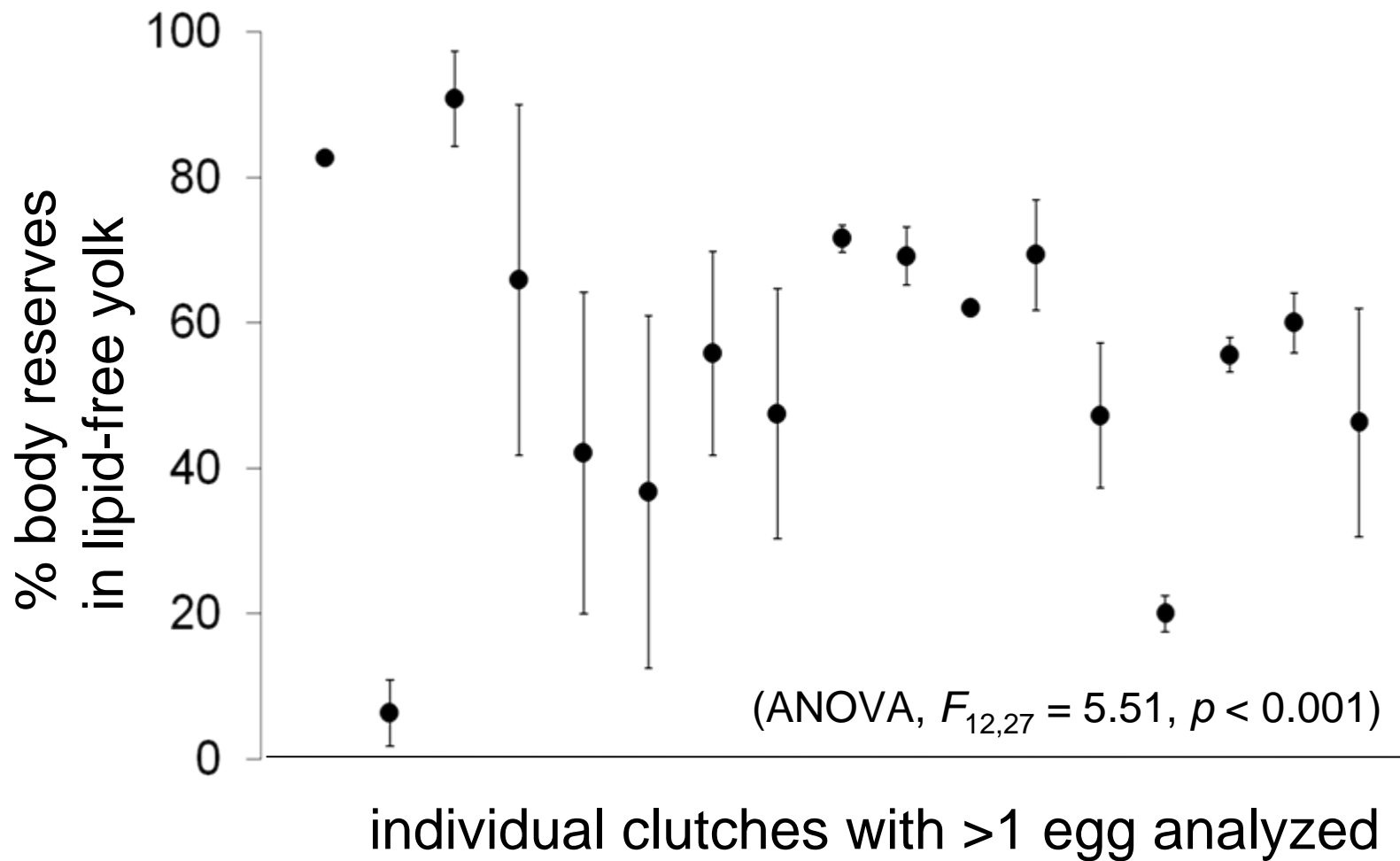


Results: lipid-free yolk





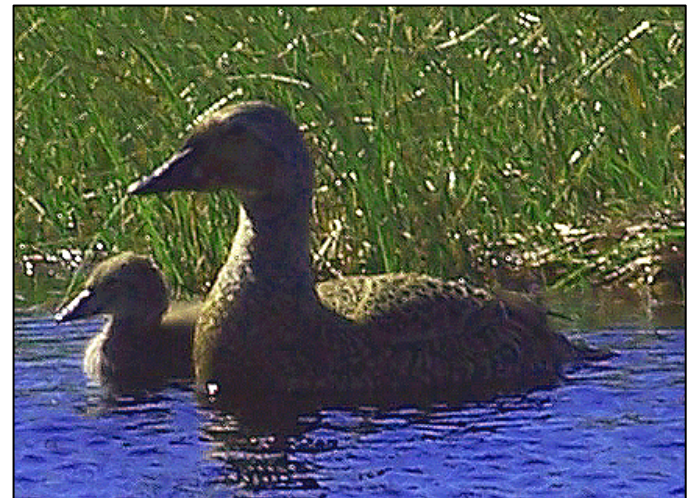
Results: lipid-free yolk





Conclusions

- King Eiders are not capital breeders
- variation in nutrient allocation among individuals
- discrimination factors affect results





Acknowledgements

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... thanks for
not collecting
MY egg!!

Robert Suydam
Rebekka Federer
Rebecca Bentzen
Mike Knoche
Chris Latty
Sumiyo Sekine
Reinhard Fellner
...and many others



Questions?



<http://mercury.bio.uaf.edu/kingeider>

