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Does Choice of Winter Region Affect Nest Survival of King Eiders in Northern Alaska?

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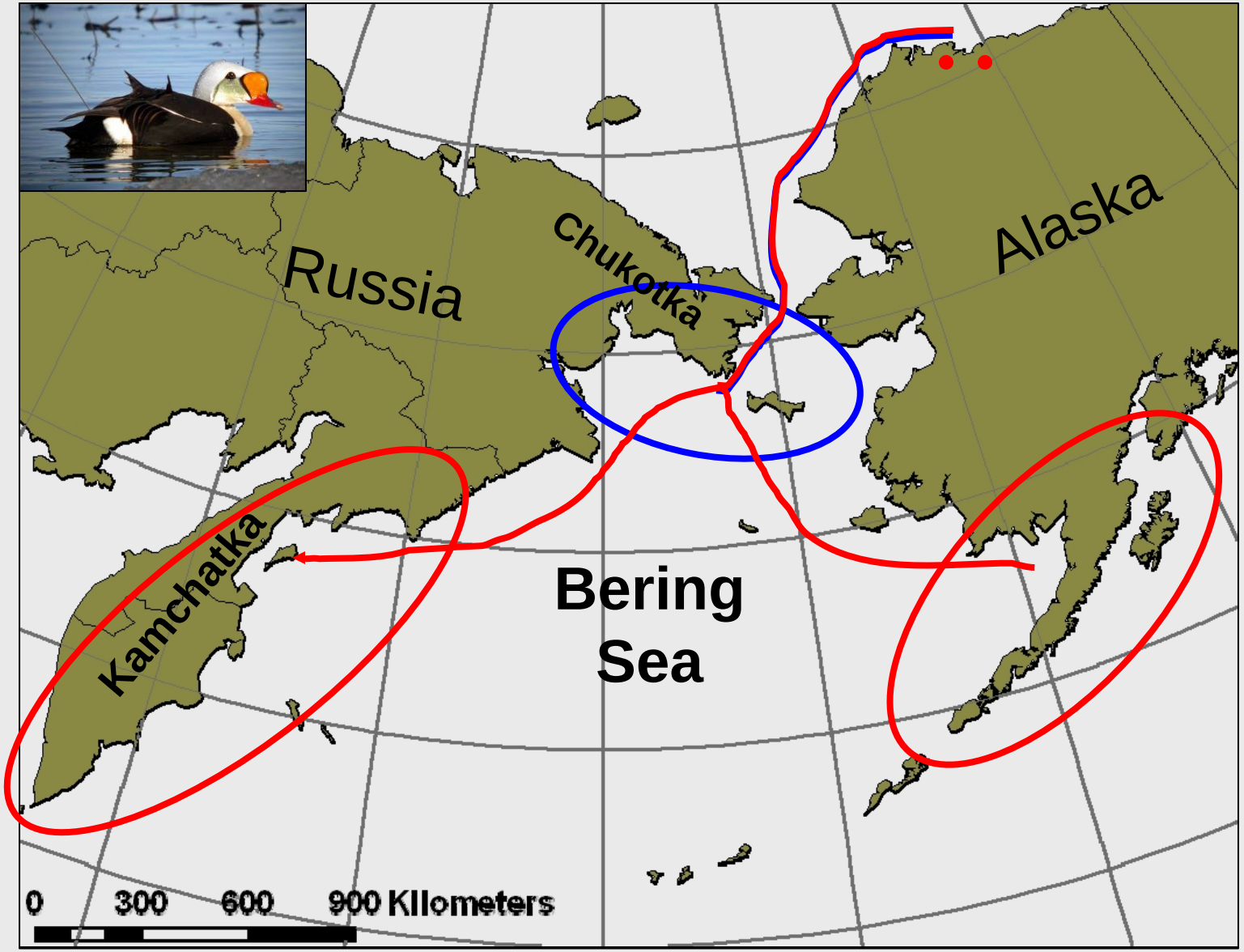
Background

- King Eider population decline – causes unknown
- seasonal interactions may affect fitness

How seasonal interactions work

- eiders use body reserves for reproduction
- maintain high incubation constancy
- poor body condition -
  lower nest survival

King Eider wintering regions



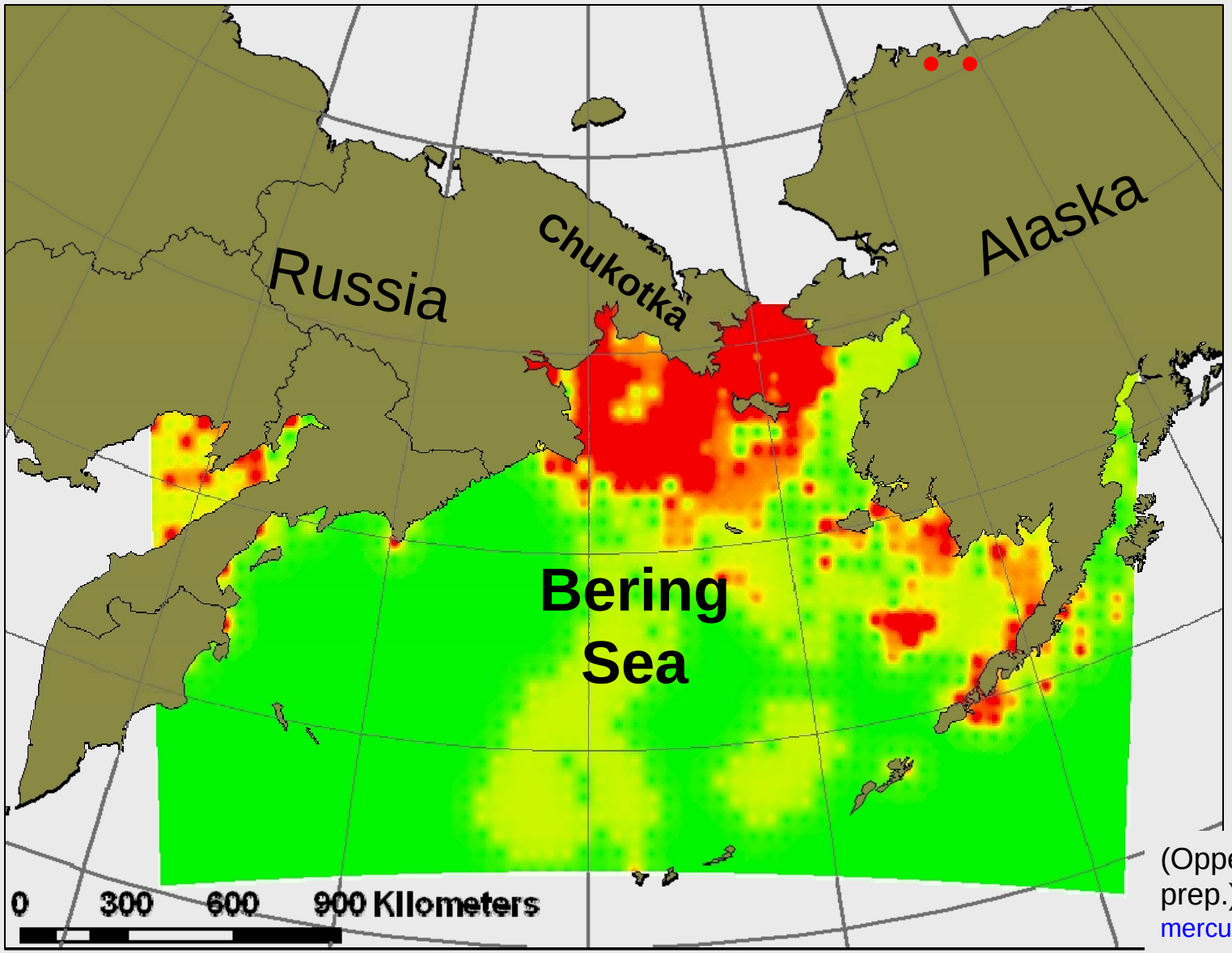
migration distance:

northern Bering Sea: 1400 km

Alaska/ Kamchatka: 2600 km

Oppel et al. 2008, *Condor* 110: 296

King Eider wintering regions



Benthic biomass
(wet weight in g/m^2)

high (2500)

low (5)

(Oppel and Huettmann in prep.)
mercury.bio.uaf.edu/benthos

Prediction

- N Bering Sea has highest food abundance
- N Bering Sea is closer to breeding grounds

→ expect birds wintering in N Bering Sea to be in better condition

Question

Is nest survival higher for females wintering in the northern Bering Sea?

Methods: feather analysis

- in 2005 - 2007 captured 74 female King Eiders on nests
- collected head feathers from each female
- assigned females to winter region based on head feather isotope ratios

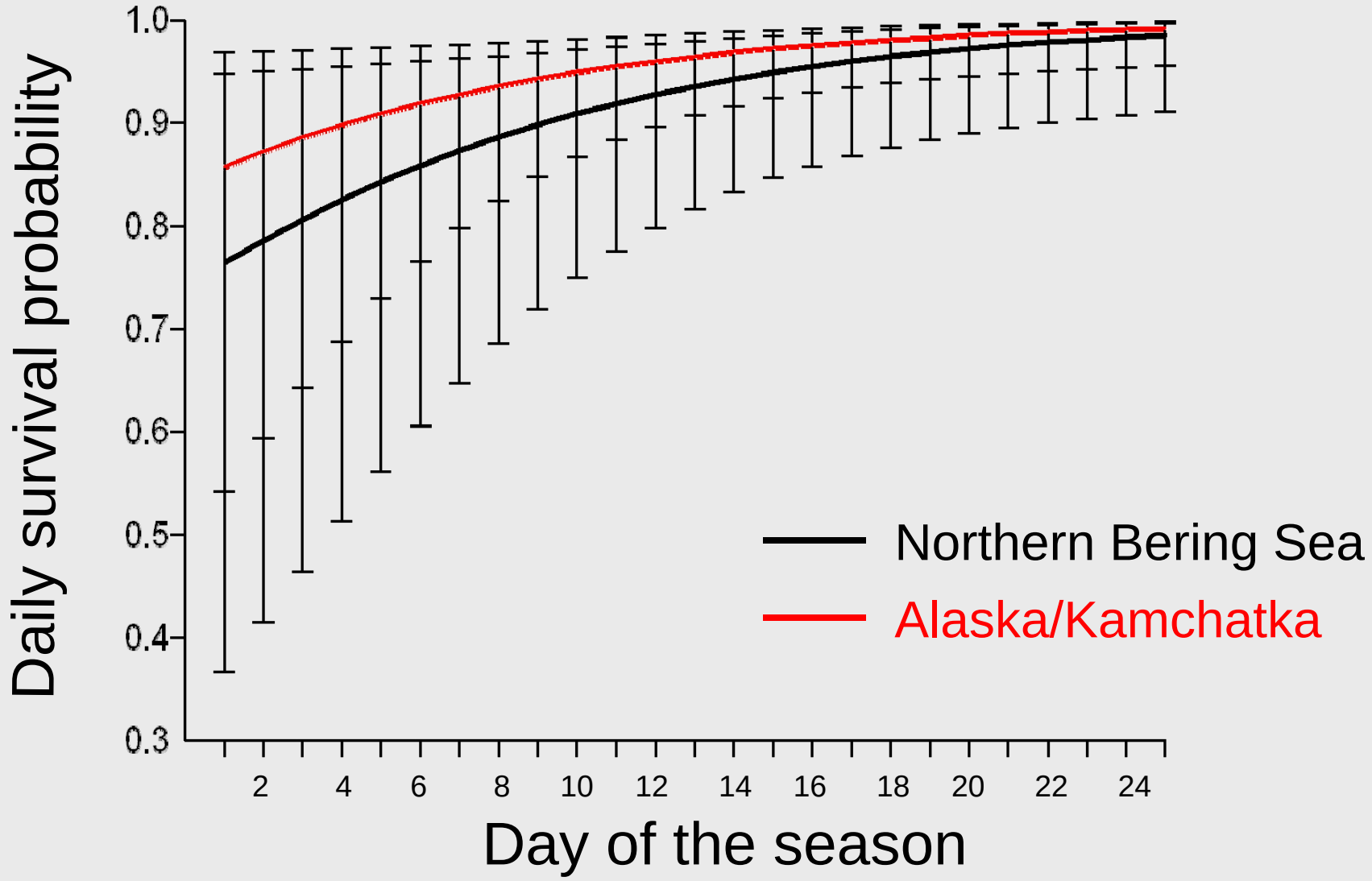
Methods: nest survival

- monitored nests to determine nest fate
- analyzed daily survival rate using MARK
- controlled for year, site, bird size, nest age, and observer effects (Bentzen et al. 2008, *JWM* 72: 1781)

Results: AIC model table

Model	*k*	ΔAIC_c	ωAIC_c
nest age + year + site + observer effect + wing chord length	6	0.00	0.47
winter region + nest age + year + site + observer effect + wing chord length	7	0.47	0.37
winter region + nest age + year + site + observer effect + wing chord length + **winter region*year**	8	2.17	0.16

Results: daily nest survival rates



Discussion

- nest survival very similar among winter regions
- spring staging area as buffer?
- arrival time and foraging efficiency?
- nest survival not affected by body condition?

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Questions?

pictures courtesy of Robert Suydam, Ray Fellner, Keith Brady, and Kim Hanisch