

# Family size dynamics in wintering geese

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# Living in families is a good idea

- All the benefits of grouping<sup>1</sup>
- Costs shared with relatives<sup>2</sup>
- Higher rank in groups<sup>3</sup>

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<sup>1</sup>Krause and Ruxton, *Living in Groups*.

<sup>2</sup>Hamilton, "The Genetical Evolution of Social Behaviour. I."

<sup>3</sup>Poisbleau et al., "Social Dominance Correlates and Family Status in Wintering Dark-Bellied Brent Geese, *Branta bernicla bbernica*"; Scheiber et al., *The Social Life of Greylag Geese*.

# Goose families are variable

- Multi-year bonds<sup>4</sup>
- Larger *spp.* stay together longer<sup>5</sup>
- Populations may segregate in winter<sup>6</sup>

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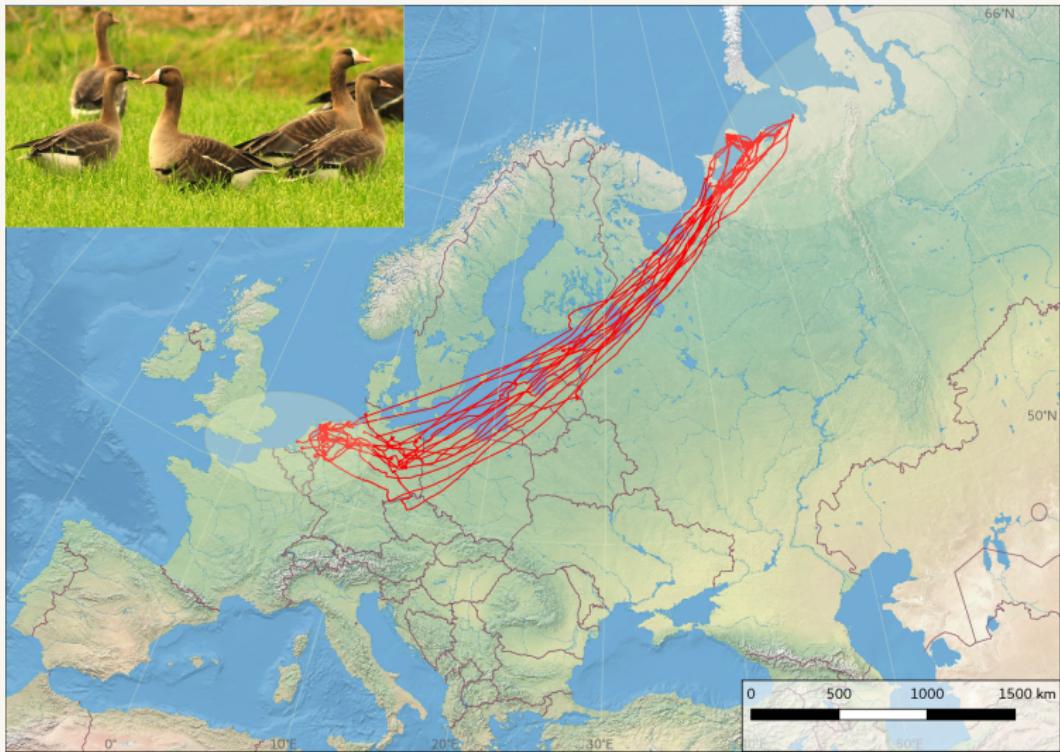
<sup>4</sup>Warren et al., “Extended Parent-Offspring Relationships in Greenland White-Fronted Geese (*Anser albifrons flavirostris*).”

<sup>5</sup>Johnson and Raveling, “Weak Family Associations in Cackling Geese During Winter.”

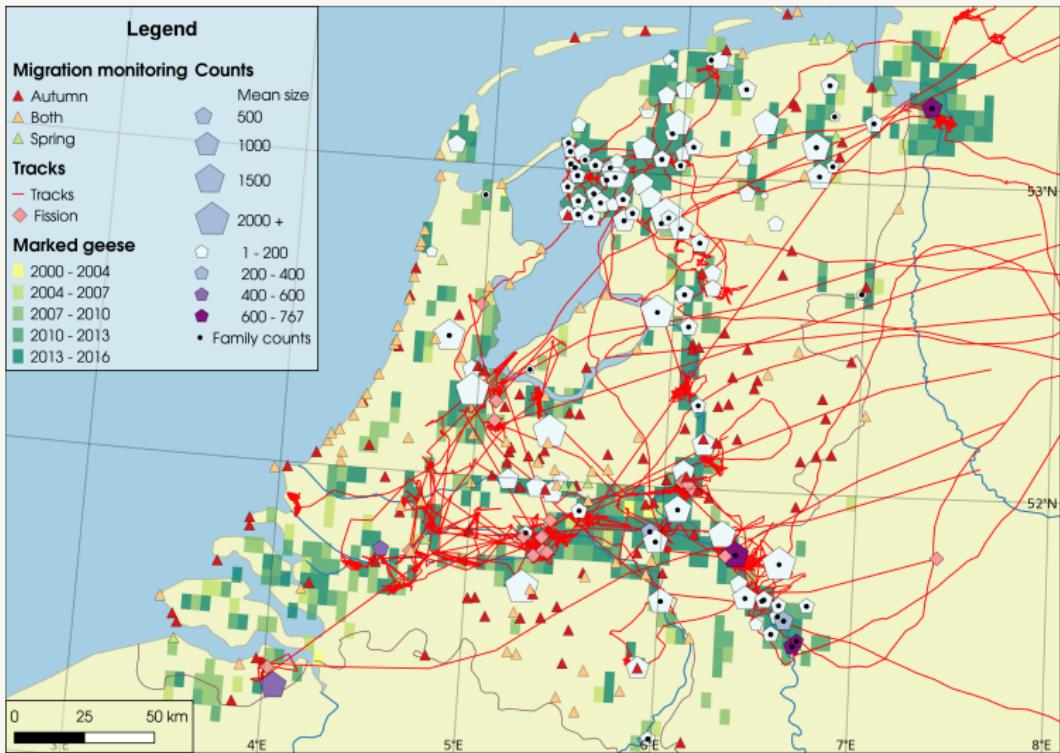
<sup>6</sup>Vangilder and Smith, “Differential Distribution of Wintering Brant by Necklace Type.”

# We want to know

- Wintering site ~ family size
- Family size ~ time ↓
- Family size ~ flock size ↓
- $p(split)$  ~ flight activity ↑



## Eurasian whitefronts



Death by data



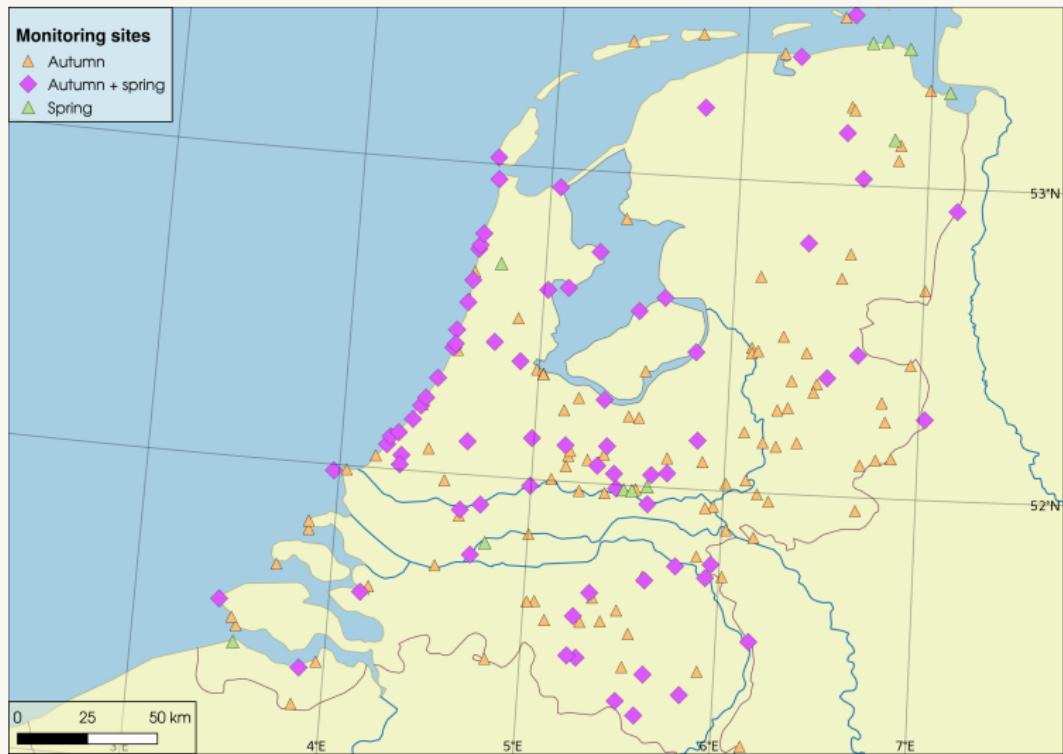
## Flock counts



## Family counts



## Observations of marked geese



## Flight activity monitoring



## Tracked geese

# Hypothesis 1

## Refs

Hamilton, W.D. "The Genetical Evolution of Social Behaviour. I." *Journal of Theoretical Biology* 7, no. 1 (1964): 1–16.

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Krause, Jens, and Graeme D Ruxton. *Living in Groups*. Oxford University Press, 2002.

Poisbleau, Maud, Hervé Fritz, Marion Valeix, Pierre-Yves Perroi, Sébastien Dalloyau, and Marcel M. Lambrechts. "Social Dominance Correlates and Family Status in Wintering Dark-Bellied Brent Geese, *Branta bernicla bbernica*." *Animal Behaviour* 71, no. 6 (2006): 1351–8.

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Scheiber, Isabella BR, Kurt Kotrschal, Brigitte M Weiß, and Josef Hemetsberger. *The Social Life of Greylag Geese*. Cambridge University Press