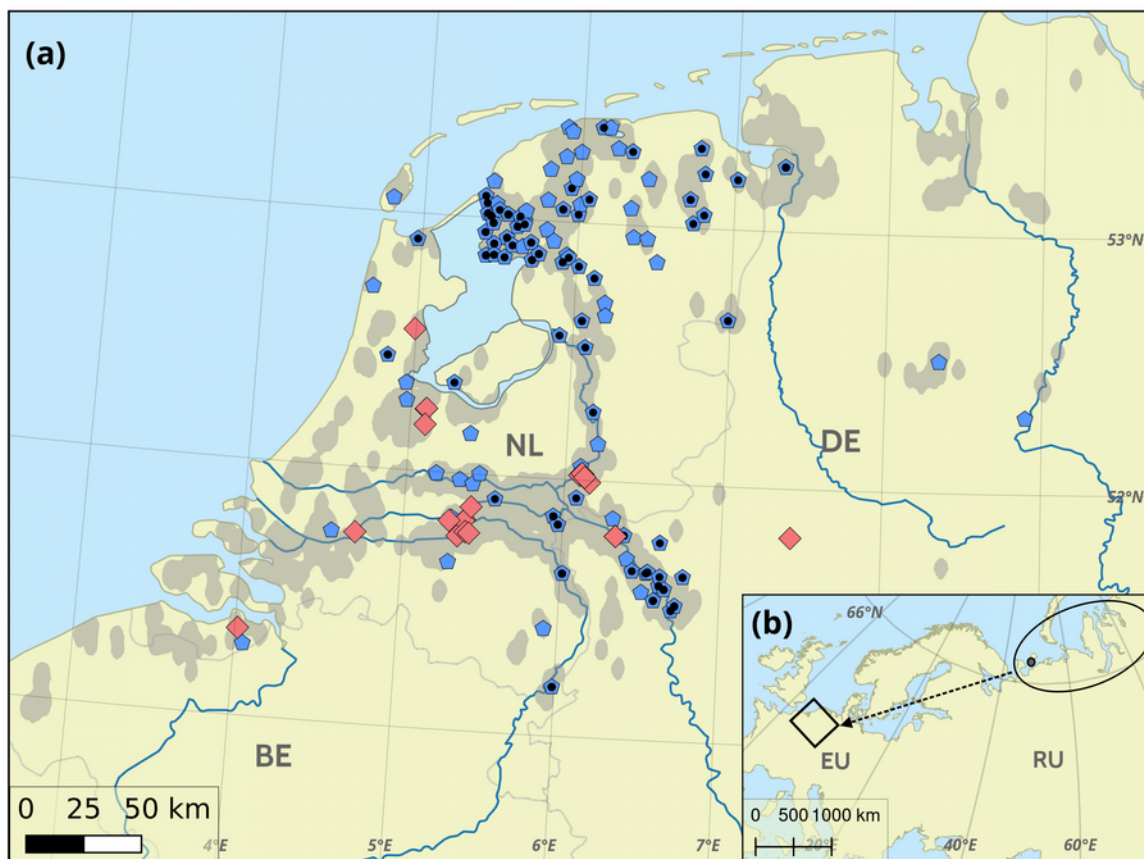# Figures


Fig. 1. (a). *Wintering grounds of greater white-fronted geese Anser a. albifrons in the Netherlands and northern Germany, showing 123 sites (blue pentagons) where the age-rato of 7,149 focks was determined, a subset of 65 sites (black dots) where 51,037 successful families were recornen in 1,884 focks. Shaded area bounds 10,635 ring-resightings. 21 split events (red diamonds) were observed in 13 GPS tracked families. Observations correspond well with major rivers and waterbodies, marked in blue. Data were collected from 2000 - 2017.* **(b)** *Breeding grounds (ellipse) in Russia with Kolguyev island (dot) and general flyway (arrow) to wintering area (rectangle) (adapted from Madsen et al. 1999).*

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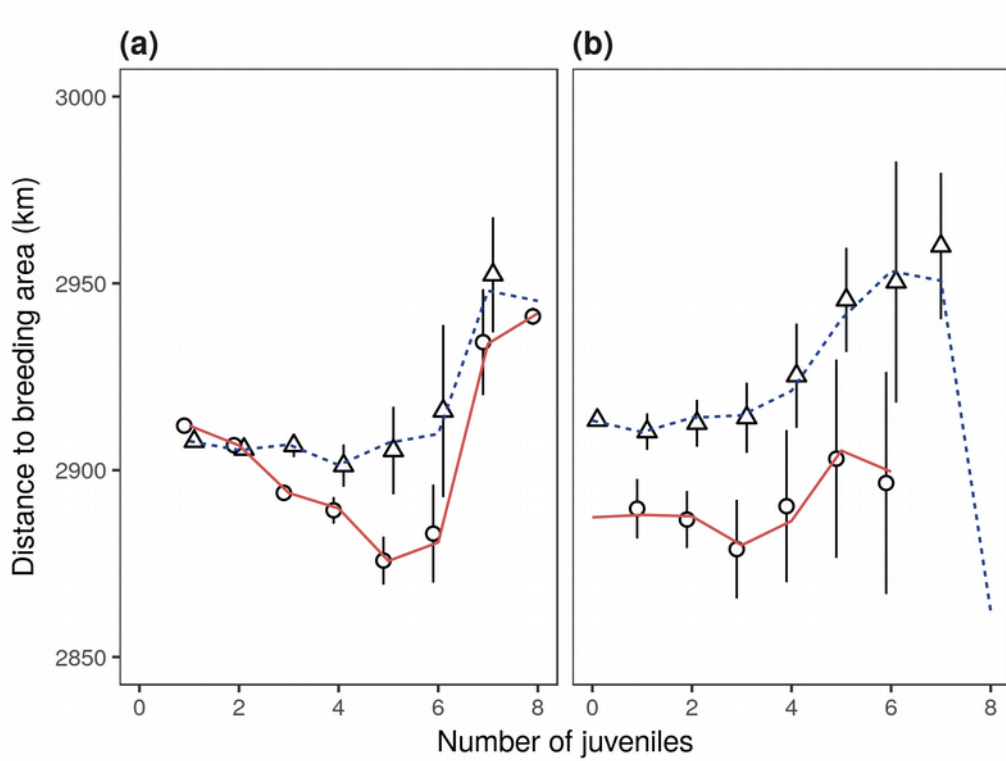
Fig. 2. *LMM fts (lines), and mean distance of wintering sites from Kolguyev island (symbols) per number of juveniles in a family for (a) family size counts and (b) ring-resightings. Data and fit for records from < 60 days after arrival to the wintering grounds (circles and solid red lines), and data and fit for records 60 days after arrival (triangles and dashed blue lines), and 95% confidence intervals for the data are shown.*

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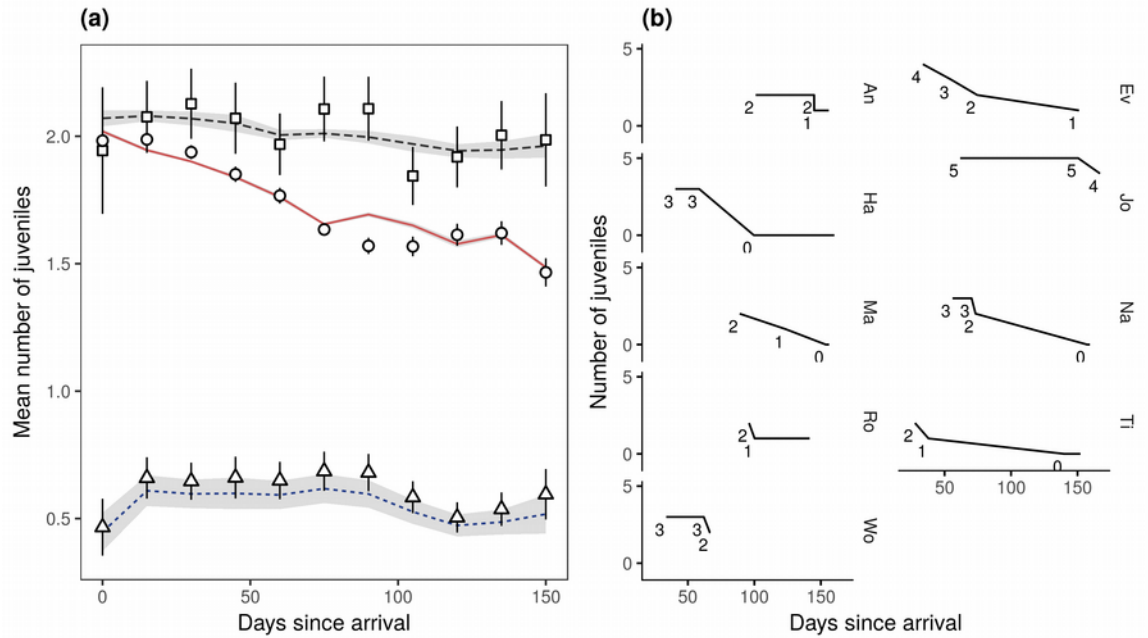
Fig. 3. (a). *GLMM fits (lines) and mean number of juveniles per family every 15 days since goose autumn arrival (shapes) for each dataset. Successful families in flocks (circles and solid red line), ring-resightings including unsuccessful pairs (triangles and dotted blue line), and ring-resightings with only successful pairs (squares and dashed black line). **(b)**. Number of juveniles in each family (name in box) which split, at the start of the tracking period, and following each subsequent juvenile split.*

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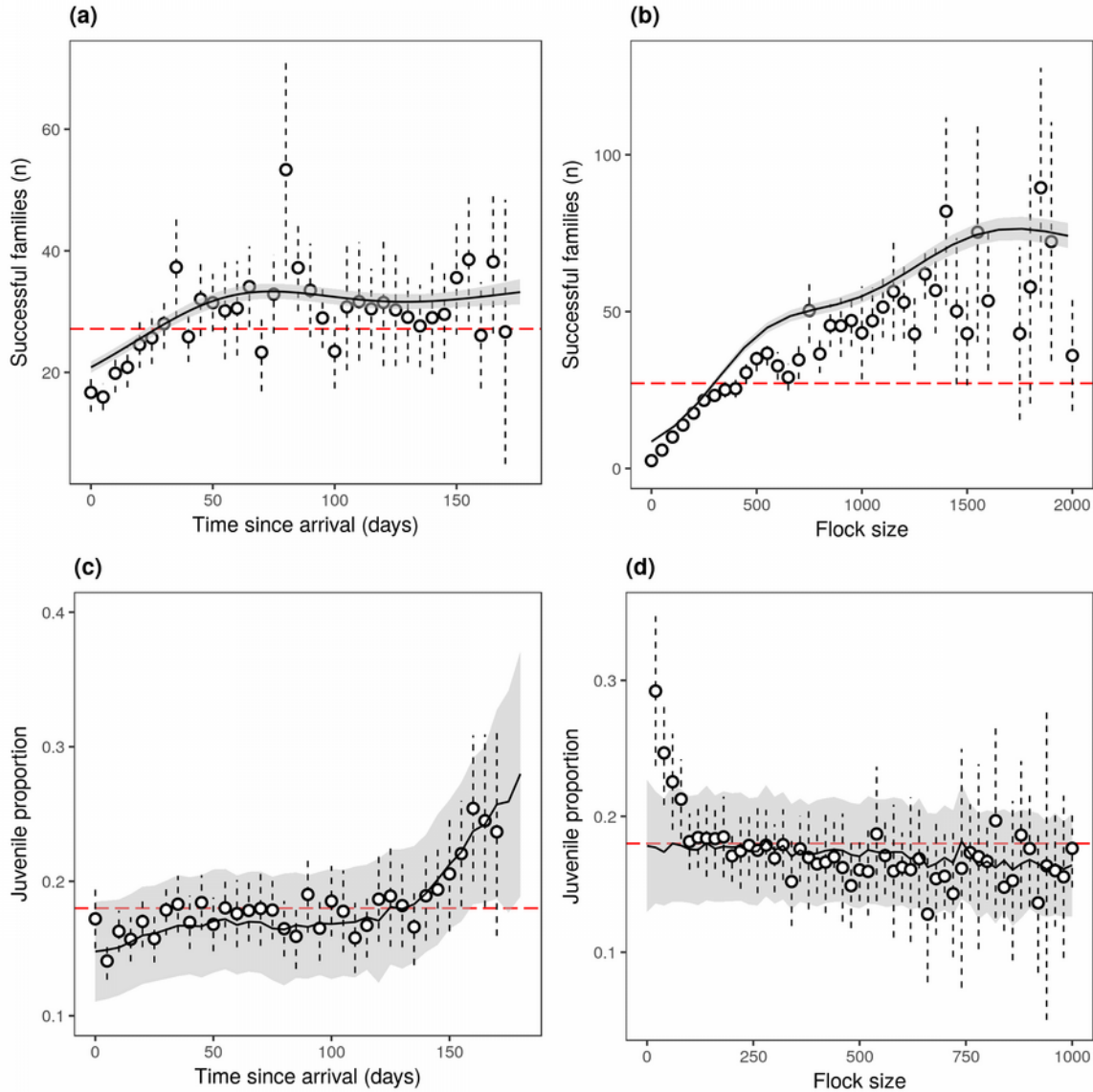
Fig. 4. *GAMM fits (solid black lines), data (circles), 95% confidence intervals for data (vertical dashed lines) and fits (shaded grey areas), and overall observed mean response value (horizontal dashed red line) for **(a)** Mean number of successful families in flocks every 5 days after autumn arrival; **(b)** Mean number of families in flocks, in increments of 50 individuals; **(c)** Mean proportion of first-winter juveniles in flocks every 5 days; **(d)** Mean juvenile proportion of flocks, in increments of 20 individuals. Means and proportions were pooled across all years. Note that in C days since arrival was modelled as a smoothed covariate using thin plate splines, and 4 knots. Conditional fits shown in (c) and (d).*

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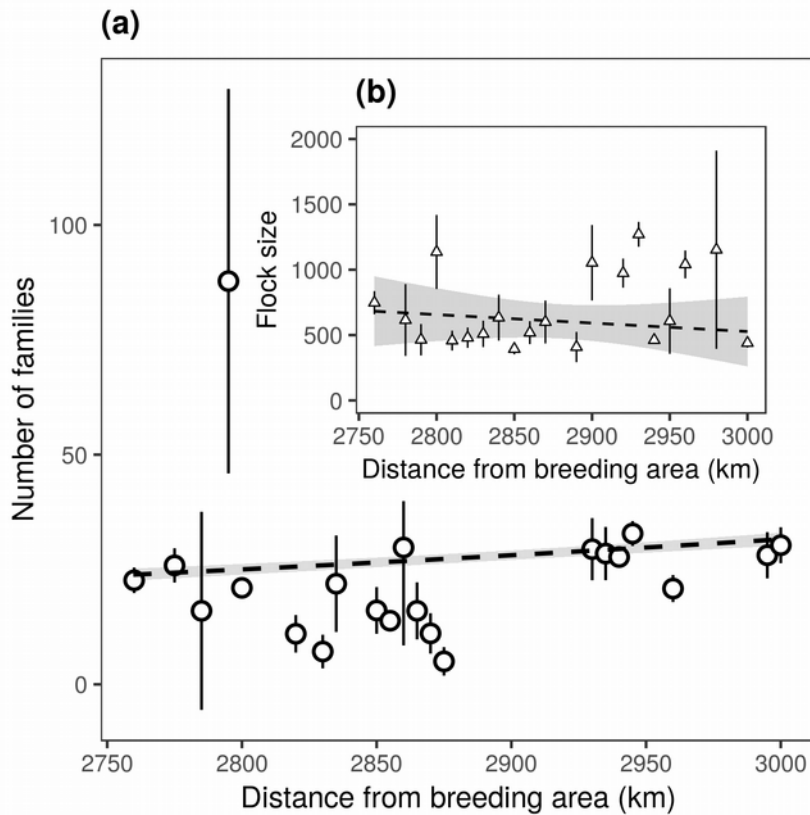
Fig. 5. *GAMM fit (dashed line), data (circles), and 95% confidence intervals
for data (vertical lines) and fits (shaded grey area) for **(a)** Mean number of
families in flocks at distances from Kolguyev Island, in increments of 5km,
and **(b)** Mean flock size at distances from Kolguyev Island, in increments of
25km. Sites to the north-east of the study site are approximately 500 km
nearer to Kolguyev than sites in the south-west.*

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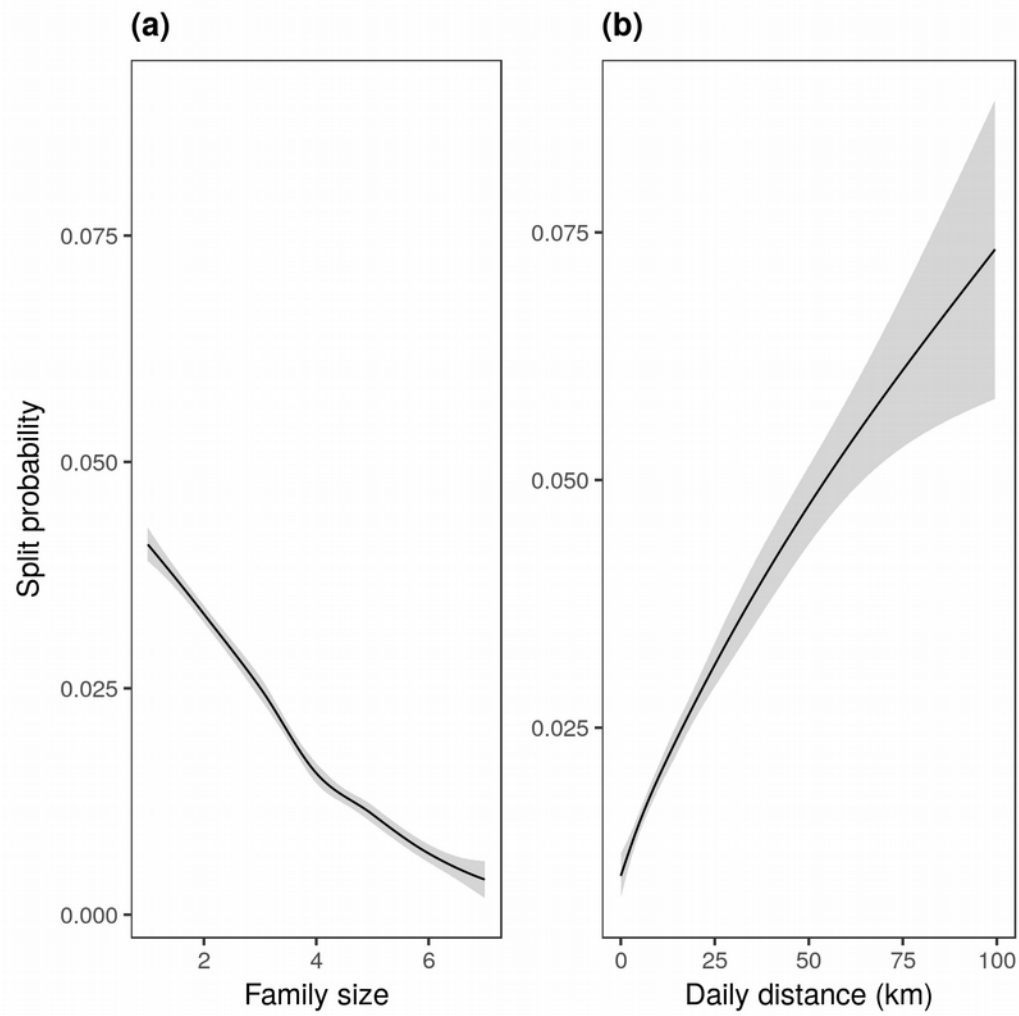
Fig. 6. *GLMM fits (lines) for split probability in relation to **(a)** family size, and **(b)** daily distance travelled, with confidence intervals (shaded regions).*

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