

## Datamap

Wintering grounds of greater white-fronted geese *Anser a. albifrons* in the Netherlands and north-west Germany with sites (circles,  $n = 64$ ) where successful families ( $n = 51,037$ ) within flocks ( $n = 1,884$ ) were recorded. Triangles mark fission ( $n = 19$ ) in GPS tracked families ( $n = 13$ ). Area shaded grey bounds observations ( $n = 10,635$ ) of marked geese. Data were collected from 2000 - 2016.

## Distance $\sim$ family size

Predicted distance of wintering site from breeding grounds on Kolguyev for  $(a,b)$  successful families in flocks, and  $(c,d)$  marked geese, within  $(a,c)$  the first 60 days, and  $(b,d)$  the remainder of winter. Winter days were calculated from flight activity data (see *Methods*).

## Family trends

Predicted size of  $(a)$  successful families in flocks and  $(b)$  families of marked geese after arrival on the wintering grounds. Predicted size of  $(c)$  successful families in flocks over flock size, and of  $(d)$  1 successful families in flocks, 2 successful families of marked geese, and 3 all marked geese over summer predation levels. Arrival dates were calculated from flight activity data, and predation index from Arctic rodent abundance (see *Methods*).

## Flock trends

Predicted  $(a)$  flock size at distances from breeding grounds on Kolguyev. Predicted proportion of first winter juveniles in relation to  $(b)$  flock size,  $(c)$  days after arrival, and  $(d)$  summer predation index. Arrival dates were calculated from flight activity data, and predation index from Arctic rodent abundance (see *Methods*).