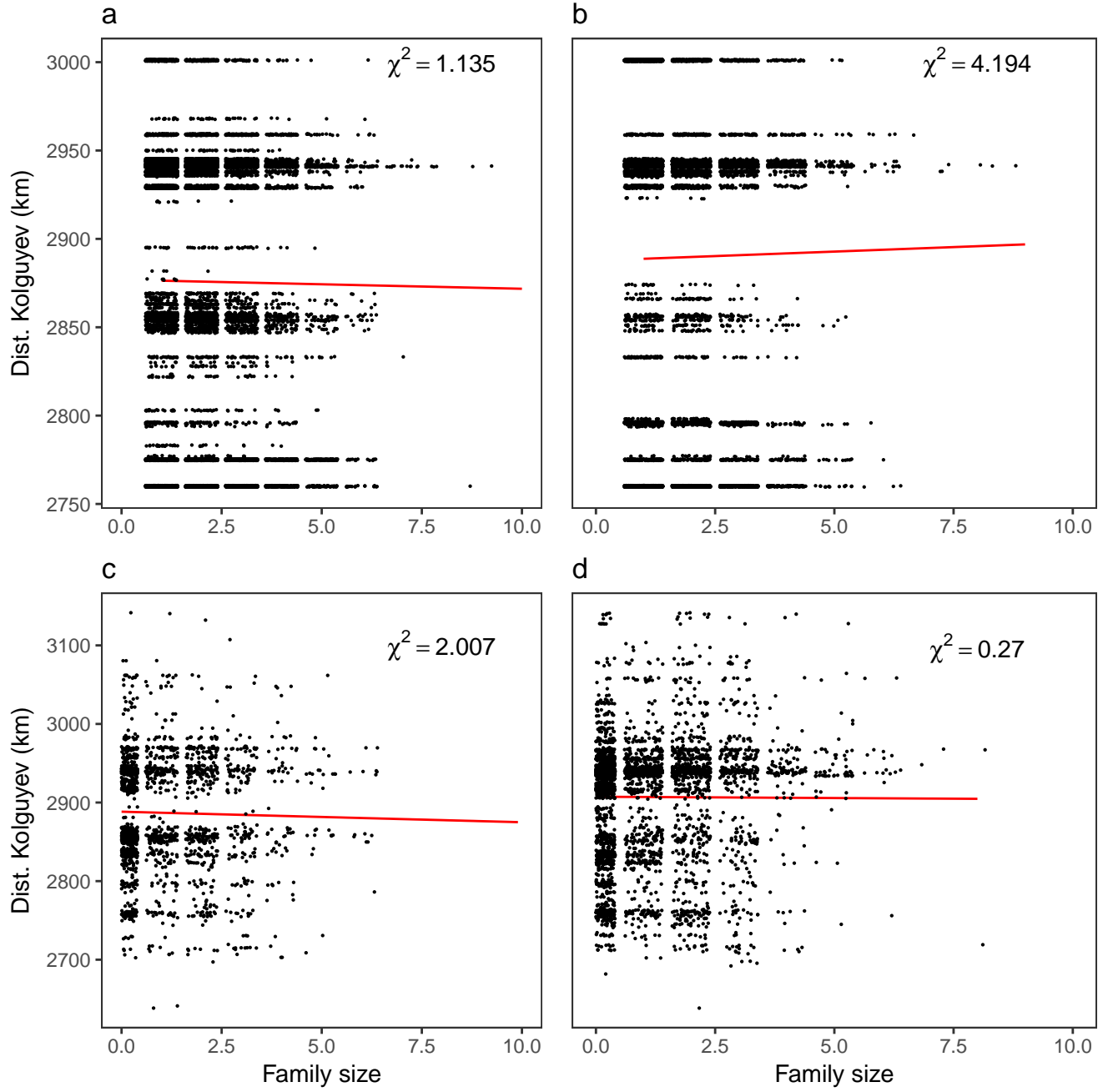
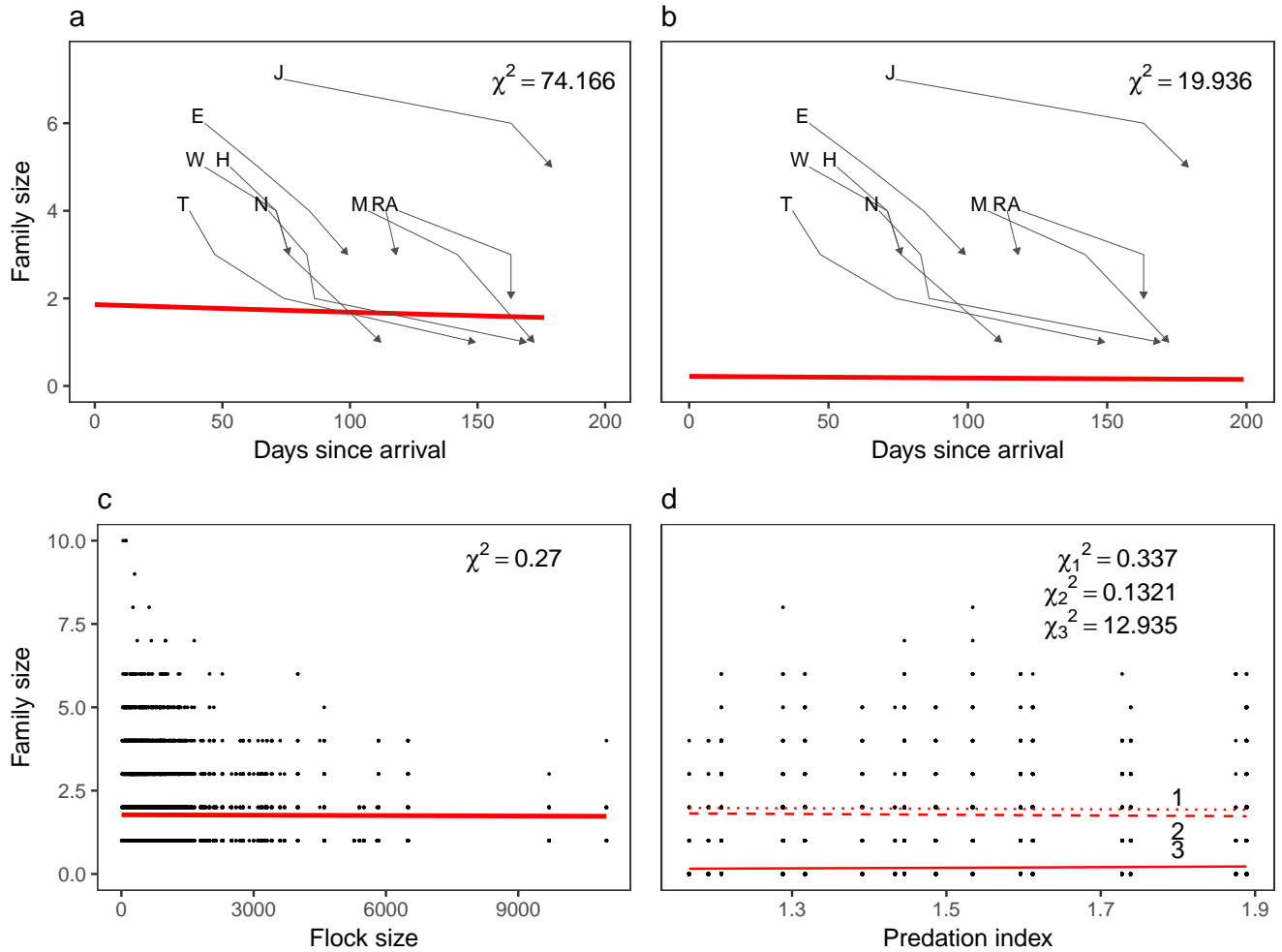


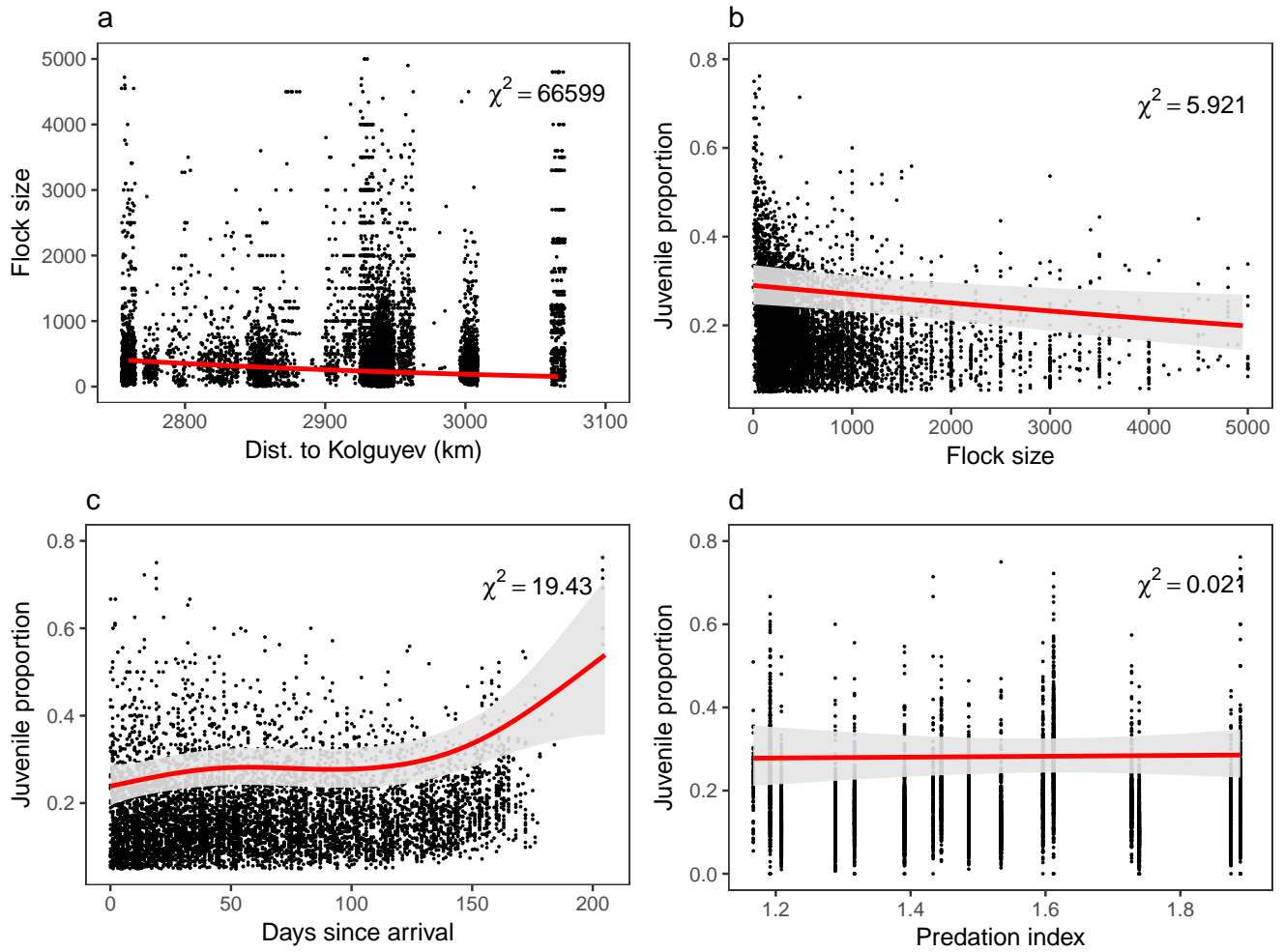
**Figure 1:** Wintering grounds of greater white-fronted geese *Anser a. albifrons* in the Netherlands and north-west Germany with sites (circles,  $n = 64$ ) where successful families ( $n = 51,037$ ) within flocks ( $n = 1,884$ ) were recorded. Triangles mark fission ( $n = 19$ ) in GPS tracked families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



**Figure 2:** 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*).



**Figure 3:** 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*).



**Figure 4:** 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*).