1. Collection and analysis of allopreening behaviour

Behavioural data were obtained for each individual at each of the 33 study nests using videos. Nests were assigned to five groups (relating to how many sites could fit in the field of view of the camera) and video footage (from dawn till dusk) was obtained for each group once every five days. Video analysis could only be performed from 05:00 to 21:00 due to poor light conditions before and after these times. In all cases, videos were observed in real time (or slightly faster when no activity was evident; only for the case of between pair analysis; see below), but reviewed at a slower speed setting when any behavioural events were detected. Although the data collection for within and between pair allopreening events were identical, the methods of analyses differed between groups.

Allopreening events within pairs occurs during the short periods when birds are changing over incubation duties i.e., after time apart from each other. Allopreening within pairs is most intense during the period immediately after the pair is reunited, so we restricted the analysis of within pair allopreening to the first 20 minutes following the return of the mate. On average, the arriving bird preens its partner at a higher rate than the incubating bird, so observations of both sexes arriving were essential in order to remove any possibilities of sampling error. In addition, the identity of the arriving bird was included as a factor in the statistical analysis, in order to examine other effects after accounting for this effect. The sequence of preening events within each pair was recorded in an individual specific format, in order to determine the number of preening movements each bird directed to its partner in this 20 minute period. From these frequency data, the preen rate of the male and the female could each be calculated by dividing by 20. In 27% of cases, one bird left within 20 minutes, so the number of preening events was divided by the actual time the pair spent together at

the nest. We recorded 5258 within-pair preening events from 33 pairs during 124 observations (amounting to *ca*. 40 hours). Preen events typically lasted a several seconds (0.157 ± 0.194 min (range 0.017-3.08 min).

Allopreening between neighbouring birds is less clumped since they spend much longer periods of time together during incubation than mates. Because there are long periods of inactivity, adopting a systematic protocol as within pairs, or a random sampling protocol, would have resulted in a high proportion of non-preening events being recorded. Instead, sites with neighbours were observed for the entire day from videos, in order to record all of the allopreening events between neighbouring birds. The number of allopreening events carried out on the neighbouring bird was calculated for every individual. The allopreening rate of neighbours was calculated for each bird by dividing the number of preen events towards its neighbour by the number of hours the bird was observed (i.e., from the start of the filming (or when it arrived), to the end of the filming (or when it departed). If a bird did not preen its neighbour at all during the entire day (or however long it was present), we recorded a zero rate. Each site (with a neighbour) was observed for three or more days. We recorded 923 between pair (neighbour) preening events from ten pairs during 44 observations (amounting to *ca*. 180 hours).

We also recorded the number of fights per day between neighbours at the same 10 sites for every possible neighbour-neighbour combination (i.e., for sites with 1 neighbour we noted the number of fights during the four following combinations: male (nest 1) with male (nest 2); male (nest 1) with female (nest 2); female (nest 1) with male (nest 2); female (nest 1) with female (nest 2). If no fights were observed, we recorded a zero for that observation period.