Use of covered and open outdoor ranges by laying hens of different flock sizes

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Most laying hens in Switzerland have access to covered and open outdoor ranges due to direct payments. Hens have to cross the covered range to get to the open range. For flock sizes of thousands of hens individual use of these areas has been unknown, so far. Visual inspections of large flocks have indicated that only few hens might use outdoor ranges. After attaching RFID tags to a subsample of 4 small (about 2,000 hens), 4 medium (about 6,000), and 4 large (up to 18,000) flocks, individual ranging behaviour was monitored for about three weeks. Flat antennae were placed in front of and behind each pophole. Neither management nor structural modifications were performed. For each tagged hen entries and exits into the covered and the open outdoor ranges were recorded. During data collection hens were between 9 and 15 months old. During the entire data collection 90.4% (STD=7.07) of the hens were recorded in the covered and 70.6% (STD=14.9) in the open ranges at least once. There was no significant influence of flock size. However, most hens did not visit the ranges every day. The percentage of days when hens entered the covered range was negatively correlated with the size of the flock (median = 79%, min. = 27, max. = 91, r = -0.66, N = 10, P = 0.04). Hens in big flocks were less likely to spend more than 66% of the days in the open range ($\chi^2 = 7.97$, df = 2, $P = 0.02$), they spent less time in the open range ($\chi^2 = 8.77$, df = 2, $P = 0.01$) and they left the house less often ($\chi^2 = 6.51$, df = 2, $P = 0.04$). Thus, flock size correlates negatively with outdoor range use but there is large variation within the same flock sizes.