**Figure 1. Relationship between success in locating a host and the odor plume shape.** A. Schematic showing the plume measurements that were estimated in order to match the results in B. $w$ is an estimate of maximum plume width, $r_c$ is the host critical radius, $l$ the plume length, and $r_f$ is the average crosswind flight length for a mosquito engaging in the crosswind plume finding behavior. $r_c$ and $r_f$ are constant over all runs, but $w$ and $l$ were averaged over time and over different host arrangements. B. Simulation results for a fixed number of hosts arranged with decreasing density given by the solid markers with $\pm$ one standard deviation (UW = upwind, DW = downwind, CW = crosswind). Open markers use estimates of plume width to predict contact probability. $\beta$ is the area of the host patch divided by the area of the simulation region (the proportion of the domain covered by hosts). As $\beta$ increases, the hosts spread out (i.e., decrease in density) and the number of mosquitoes locating a host increases. The $x$-axis is $\beta$ multiplied by 100 for ease of viewing, since $\beta$ is quite small.