# Supplementary material part 2

While covering a distance *dmax*, an individual with a perceptual range of *dper* will be able to search a total surface of 2× *dper* × *dmax* + *dper*2× π

*dper*

*dmax*

As each individual has a circular foraging area. The radius of a circle with a surface of 2× *dper* × *dmax* + *dper*2× π is defined as