ESTIMATING SUBPOPULATION SIZE AND
CALCULATING PERCENT OF REPRODUCTIVE PLANTS

Use this protocol to estimate the total size of a large population. If plants are found in distinct groupings, you may repeat the protocol in each section to arrive at two or more estimates that can be added for the total. See Figures 4 and 5 on the following page.

CALCULATE TOTAL AREA
1. Flag the perimeter (outside edge) of the population.
2. Measure N-S extent of the subpopulation at its widest: _____meters (m)*
3. Measure E-W extent of the subpopulation at its widest: _____ meters (m)*
4. Calculate the total area by multiplying the N-S and E-W extents: _____ meters squared (m^2)

SET UP TRANSECTS
5. Imagine a box around your subpopulation, and use this imaginary box when setting up transects (Figs. 4 & 5).
6. Set a baseline along the short edge of the population, then parallel transect lines of 30 - 50 meters each, at right angles to the baseline, through the population. Transects should start at random points along the baseline. For this example, we run three transects. You may have more of fewer depending on the size of the population you are estimating. Record the total length of each transect:

   Transect 1 length: _____m; Transect 2 length: _____m; Transect 3 length: _____m

COUNT PLANTS
7. Count all plants within one meter (or another standard distance+) on one side of the tape. Tally flowering/fruiting (Fl/Fr), and non-flowering vegetative (V) plants separately.
8. Add the plants counted from all the transects

   _____Fl/Fr plants + _____V plants = _____total plants counted in transects

9. Calculate the estimated percent of plants that are reproductive (flowering or fruiting)

   _____Fl/Fr plants ÷ _____total plants = _____ % of plants that are reproductive

CALCULATE ESTIMATE
10. Calculate the total area sampled with transects by adding transect lengths, and multiplying by width sampled (e.g., 1 meter, 2 meters, ½ meter. See #7 above).

   (____m Transect 1 + ____m Transect 2 + ____m Transect 3) × ____m width = _____m^2 sampled

11. Calculate the average number of plants per meter squared, based on your sample.

   _____ plants counted (from #8) ÷ _____ m^2 sampled (from #10) = _____ plants per m^2

12. Estimate the total number of plants in the subpopulation and enter on monitoring form. Be sure to indicate that population was estimated, and to detail your estimation method in the Notes section on page 3

   _____ plants per m^2 (from #11) × _____ m^2 (from #4) = _____ estimated total plants

For very large subpopulations, population area can be measured from GPS readings. Contact POC for assistance.

+*If plants are large, count all plants within 2 meters of the tape. If plants are very small, you may count within ½ meter. You must take this width into account when calculating your total estimate in step 10.*