

SUBPOPULATION SIZE ESTIMATION AND PERCENT REPRODUCTIVE PROTOCOL

For subpopulations greater than 250 (optional protocol, but encouraged – the size classes on the monitoring form for plant numbers > 100 are acceptable)

For POC, this is a different methodology than presented in the 2007 Manual for estimating plant numbers, which we think is more accurate than the former method of counting plants in quadrats. You will need a calculator. (Refer to Figures 1 and 2). If plants in the subpopulation are in separate sections surrounded by a large gap, you may repeat this protocol in each section to arrive at two or more estimates that can be added for the total.

1. Flag the perimeter or outside edge of the population, placing flags about 2 m apart.
2. Measure the N-S extent of the population at its widest: _____ meters (m)
3. Measure the E-W extent of the population at its widest: _____ meters (m)
4. Estimate the subpopulation area by multiplying N-S & E-W extents: _____ meters squared (m²)

For very large populations, it is possible to determine these measurements from GPS readings or aerial photography. Please contact the POC Research Assistant for assistance with this.

5. Mentally put a box around the population, from the N-S and E-W extents used above. Use this whole imaginary box when setting up your transects (Figure 2).
6. Set a baseline along the short edge of the population, then run 3 parallel transect lines of 30-50 meters each (**record these lengths**) at right angles (perpendicular) to the baseline through the long orientation of the population starting at **3 random points** (you may choose a random starting point and then set the lines at equal intervals.)

Transect 1 Length _____m

Transect 2 Length _____m

Transect 3 Length _____m

7. Count all the plants within a meter (or two meters)* to the left (or right) of the tape; pick one and be consistent. Tally **flowering/fruitletting (Fl/Fr plants)** and vegetative plants (**Non-Fl/Fr plants**) **separately**.

** If plants are large, count all plants within two meters of the tape; examples of these large plants are *Carex bromoides*, *Comptonia peregrina*, *Rubus odoratus*, *Valeriana edulis var. ciliata*, or *Cypripedium candidum*. If plants are smaller, count all within one meter.*

8. Add all the tallied plants from all the transects:

_____ **Fl/Fr** plants + _____ **Non-Fl/Fr** plants = _____ number of plants in transects

9. _____% **Reproductive** = the number of Fl/Fr plants divided by the total number of plants in transect. Enter on monitoring form.

10. _____ Area of the transects (m²) = add all the transect lengths (m) and multiply by the distance (m) from transects that the plants were counted within (one or two meters.)

11. _____ Number of plants per m² = number of plants in transect divided by the area of the transects.

12. _____ Estimate of the total number of plants in the subpopulation = number of plants per m² multiplied by the subpopulation area (# 4 above). Enter on monitoring form.

POPULATION SIZE ESTIMATION EXERCISE DIAGRAMS

