

Recruitment Protocol

Recorded by Katherine Muller, 30 June 2011

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Materials:

- Flag bags (1 bag per 2 people)
- Flags
 - Blue (at least 27 per bag)
 - Yellow (at least 27 per bag)
 - Red (at least 10 per bag)
- Metal detectors (1+ for each plot)
- Data sheets (2 for each plot)
- Clipboards (2 for each plot)
- Measuring tapes – reel tapes and/or reins (at least 4 per plot)
- Surveyor pins (at least 4 per plot)
- Tags
- Pens/Pencils
- Pliers for lifting nails
- Shiners
- Wooden stakes for shiners
- Hammer for pounding in shiners
- Fiberglass poles (4)
- Cap for pounding in poles
- Gloves for handling fiberglass poles

Description of study area (terminology)

Plots: The recruitment study includes 10 plots (14x20m) at various sites.

Units: Each plot contains 6 square units (4x4m) separated by a 2m buffer zone. The corners are marked by shiners.

Zones: Each unit contains nine randomly-located circular zones (area=1000cm²; radius = appr.17.85 cm) where Echinacea seeds were scattered in past years. A nail marks the center of each zone.

Protocol:

1. Find the plot:
 - a. After arriving to the site, search for the fiberglass poles that mark the four corners of the recruitment plot (do not touch the poles!).
 - b. If any poles are missing, measure their positions and replace them with new fiberglass poles (use gloves).
2. Mark the units:
 - a. Establish which two poles mark the top of the plot (see data sheet for cardinal direction).
 - b. Use the metal detector and measuring tapes to find shiners. Mark with red flags (this helps establish where it is safe to walk).
3. Mark the recruitment zones. This works best with two people: One person calls out coordinates from the data sheet and one person measures and flags.:
 - a. Stake a measuring tape at each of the top two corners of the unit. Make sure the zero meter mark is over the center of the shiner (keep in mind that some tapes begin at a metal hook).

- b. The data sheet lists each recruitment zone as a set of coordinates. The first number is the distance (in meters) from the top left corner and the second number is the distance from the top right corner.
 - c. In order to avoid trampling plants, it is best to begin marking at the bottom of the unit and work your way up. One person reads off the coordinates and the other finds those distances on the measuring tapes. The point at which the tapes join should mark the location of the nail (you may need a metal detector). Place a blue flag in each nail.
 - d. Sometimes you won't be able to find a nail. If this happens, search with the metal detector to affirm that there is a nail there, then double mark the location with a blue and yellow flag. This signals the searchers to look for a nail.
 - e. Repeat for all six zones in the plot.
4. Search recruitment zones (work in pairs):
 - a. Starting at the bottom of the unit, search around each nail for Echinacea plants. The search zone is the size of a Disc-craft Ultra-Star, the official Ultimate Frisbee disc. For non-frisbee aficionados, the radius is approximately 17.85cm.
 - b. Look for a nail next to the flag. If you cannot find the nail, mark HNS on the data form for "heard, not seen." These locations should be double flagged.
 - c. The data sheet contains a list of recruitment zones for each unit in order of their distance from the top of the unit. For each recruitment zone, enter the number of Echinacea plants (not including seedlings) and the initials of the people searching the zone.
 - d. Each recruitment zone will have a handwritten number to the left of the coordinate indicating a previous plant count for this zone (the highest count in the last three years). This is for reference only and should not influence your search. For all you know past groups may have overlooked a plant.
 - e. Flowering plants:
 - i. Plants are marked with a tag the first year they flower. If you find a tagged plant that is basal, write tag#.b (e.g. 1642.b) on the data sheet. If it is flowering, make a note of the number of heads it has. For a plant with one head, you'll write tag#.1, for two heads you'll write tag#.2, etc.
 - ii. If you find a flowering plant with no tag, attach a new tag and write down the tag number (tag#.#heads).
 - f. Seedlings:
 - i. If you find seedlings within your recruitment zone, make a note of the seedling count. Seedlings are not included in the plant count.
 - g. Rosettes: Sometimes it is difficult to distinguish separate plants from rosettes of the same plant. Use your judgment and get a consensus with your partner. You can use the previous count as a guideline, but you shouldn't let this influence your judgement too much. Seeing a few examples of plants with multiple rosettes will help develop your search image.
5. When you have finished searching a zone, replace the blue flag with a yellow flag.
 6. Cleanup: Remove flags and bring back equipment. Be careful not to step in recruitment units.