

Proposed protocol: NutNet woody stem removal.

Background: Tree seedling or woody stem invasion into the NutNet experiments will eventually alter the herbaceous characteristics of the sites, and so it is desirable to prevent this. However, as the experiment is in place, this provides an opportunity to gather information about the role of nutrients and mammal herbivory on this successional process. To this end, we have a protocol that will allow us to maintain the herbaceous nature of the experimental plots while collecting publishable data on the factors affecting wood encroachment of grasslands.

When sampling NutNet site at peak biomass, the following removal protocol applies to woody invasion (tree seedlings) throughout the entire plot, not just the core subplot within a plot.

Protocol:

[minimum] For each plot, count and identify the number of woody stems in each subplot, then clip or cut them at ground level and remove them from the plot.

[more involved (a)] For each plot, count the number of woody stems in each subplot. Clip or cut them at ground level and remove them from the plot. Dry and weigh [a subsample / all] removed material to estimate aboveground woody biomass.

[more involved (b)] For each plot, count the number of woody stems in each subplot. For each stem, measure the diameter of the stem at ground level, and the height to the tallest growing bud. Clip or cut them at ground level and remove them from the plot.

[best] For each plot, count the number of woody stems. For each stem, measure the diameter of the stem at ground level, and the height to the tallest growing bud. Clip or cut them at ground level and remove them from the plot. Dry and weigh [a subsample / all] removed material to estimate aboveground woody biomass.

Notes:

As woody invasion may happen non-randomly at the margin of the block or site, it will be important to account for the spatial arrangement of the plots when analyzing any potential effects of nutrients or fences.