

Vermont Monitoring Cooperative  
PROCEDURE FOR MONITORING BUD DEVELOPMENT

**OBJECTIVE:** To determine the timing of key bud development stages on an annual basis.

**METHODS:**

At the present time, bud development stages have been described for sugar maple, yellow birch and American beech (Table 1). While it is possible to apply these stages to other species, some adjustments may need to be made.

Select at least 5 dominant or codominant trees and 5 saplings of each species at each site. Tag them so that re-visits can be made using the same trees each time. It is also helpful to view the trees from the same location, so a marker at the viewing site may also be needed.

A high powered spotting scope (45X) is needed to view buds at the upper and lower canopy of trees. If purchasing a scope, it is recommended that you buy one with a 45 degree eyepiece for ease of viewing. Regeneration can be viewed without a scope if close to the ground.

Begin recording data when buds are still dormant, early April for most species. Initially, a once-per-week visit to record the development is all that is needed, but as weather warms, site visits should be made twice weekly. Sunny days are preferable, since on overcast days it is often difficult to discern subtle changes in bud color and expansion. No data collection should be made in the rain.

At each level in the canopy (upper, lower and on saplings) an initial scanning of a variety of branches is made to determine the variation in development. In addition to the verbal description of bud stages (Table 1), a photographic guide can be used to help determine stages of development (Parker and Skinner; Wilmot and Simmons). Then counts of the number of buds in each stage are made on 10 representative buds. These counts are made for both vegetative and flower buds (if present).

When leaves on all 5 trees and saplings are fully expanded (stage 8), even if not full size, data collection is complete for the year.

