

Protocol for measuring tree mortality - written by C. Field, March 2013

The purpose of this SOP is to quantify the extent of crown dieback and tree mortality along a transect from the edge of the marsh into the forest. The point of reference for this transect is the point that was marked and georeferenced and the bearing that was taken at the marsh edge according to the **Identifying/georeferencing the marsh edge SOP**.

The tree mortality transect protocol requires a 100 m measuring tape (metric), a compass, measuring tape, a two meter measuring stick, diameter tape (metric), and a tree ID guide - Sibley's Guide to Birds is probably the easiest guide to use if you're an ornithologist.

Setting up the transect

Using the compass as a guide, roll out the measuring tape from the marsh edge point to the full length of the transect in the direction of the transect bearing. The full length of the transect is determined before going out into the field (you should aim for 75 – 100 m), but often it is impossible to go the full length before reaching a property line, wall, cliff, or trail. Transects should be at least 20 m. For each tree > 1cm dbh within 1m on either side of the transect line, we will be taking several measures:

Distance

Record how far along the transect each tree is, measuring the point along the transect at which a perpendicular line from the center of the base of the tree intersects it. Distances should be recorded to the nearest cm - e.g. 14.05 m.

Alive?

Record a 1 if the tree has at least one leaf; 0 if there are no leaves.

Broken?

Record a 1 if a main stem of the tree is broken; 0 if there is no physical damage or only branches are broken.

% dieback

Percent crown dieback is a measure of current stresses on a tree. To measure dieback, we are following the procedures outlined in the Forest Inventory and Analysis (FIA) Program. First, identify the base of the "obvious live crown". From the FIA protocol: The "obvious live crown" is described as the point on the tree where most live branches/twigs above that point are continuous and typical for a tree species (and/or tree size) on a particular site. Include most crown branches/twigs, but exclude epicormic twigs/sprigs and straggler branches that usually do not contribute much to the tree's growth. The base of the live branch/twig bearing the lowest foliage may be above or below this line. If any live branch > 1" diameter is within 5 feet below this "obvious live crown" line, a new horizontal line is established. Create the new line at the base of live foliage on that branch. Continue this evaluation process until no live branches are found within 5 feet of the foliage of the lowest qualifying branch.

Once the base of the crown is identified, draw an imaginary line from this base around the crown, connecting the ends of the branches. From the FIA protocol: Assume the perimeter of the crown is a two-dimensional outline from branch-tip to branch-tip, excluding snag branches and large holes or gaps in the crown (See Figure 1). Project a two-dimensional crown outline, block in the dieback and estimate the percent of the crown that has no leaves.

Protocol for measuring tree mortality - written by C. Field, March 2013

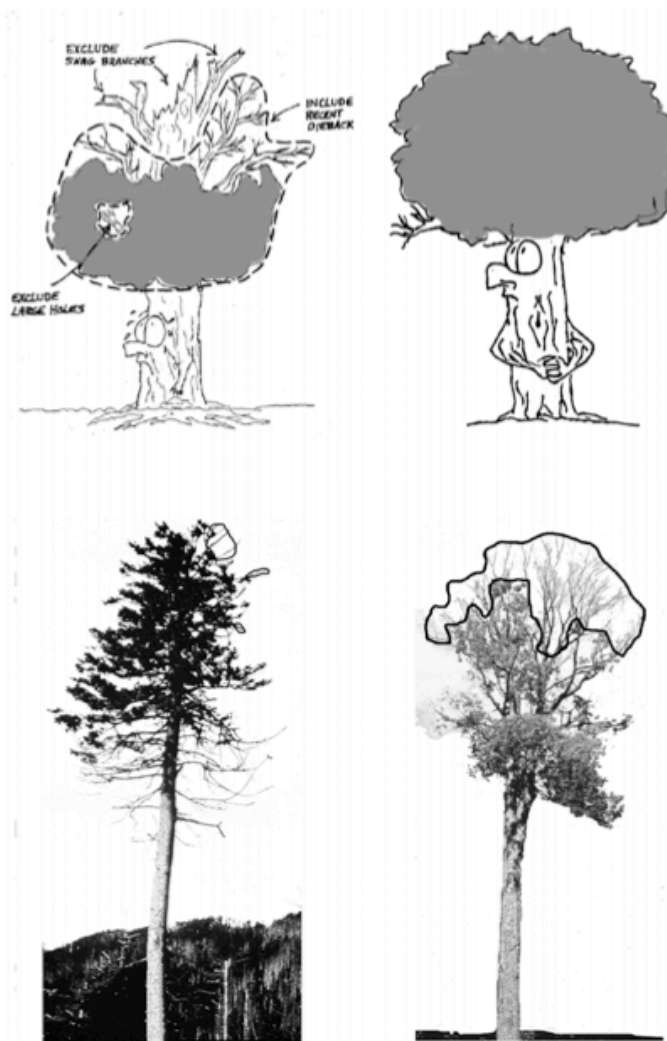


Figure 1.

Species

Record the tree species. If you cannot determine species in the field, collect or take a picture of a leaf (on a whiteboard with the point and tree ID number) to bring back to the lab for identification.

DBH (diameter at breast height)

Use the diameter tape to measure diameter of the stem at 1.3m off the ground. If there are multiple stems at this height, measure and record the diameter of each stem.

Sandy?

If a tree is dead, is it likely a casualty of hurricane Sandy? 1 - Yes; 0 - No; M - Maybe; UK - unknown. If tree damage is suspected to be Sandy-related, it might be useful to take a picture to send to a manager later.

Sandy how?

If a 1, 0, or M, record how you made this determination. E.g. "Clearly fresh break, and in an area that is known to have been impacted by Sandy" or "Expert opinion from NAME".

Picture and core (Y/N)

Was a picture taken for ID or to evaluate whether it was Sandy damage? Was the tree part of the coring study?