

### Virtual forest assignment

The Haphazard technique is the most time efficient as it took 12 hours and 32 minutes compared to the other two where the first area random or systematic technique took 15 hours and 6 minutes and the second area random or systematic technique took a total of 12 hours and 39 minutes. The technique that was most accurate for common species is the Haphazard technique as it had the least amount of error compared to the other techniques. For rare species it's difficult to say which technique was most accurate as the amount error varied alot between the techniques however the 1st area random or systematic technique had less error for rare species compared to the other techniques. Also, I believe that there weren't enough sample points to accurately estimate the abundance of the species especially for the rare species as the error rate was very high for some of them. If there were more sample points there's a possibility of obtaining a higher accuracy result with less error.

The following table represents the comparison of actual vs estimated densities for each species

Species	Actual density	1) 1st area random or systematic technique density 2) Percent error	1) 2nd area random or systematic technique density 2) Percent error	1) Haphazard technique density 2) Percent error
Red maple	403.7	340 15.77%	395.8 2.1%	379.2 6.06%
White oak	74.5	90 20.8%	37.5 49.7%	70.8 4.96%
Chestnut oak	82.9	66.7 19.54%	87.5 5.55%	54.2 34.62%
Witch Hazel	142.4	90 36.8%	166.7 17.06%	129.2 9.27%

Red/Black oaks	46.7	16.7 64.24%	95.8 105.2%	45.8 1.9%
Eastern Hemlock	45.6	16.7 63.38%	29.2 35.96%	62.5 37.06%
Black Tupelo	33.5	3.3 90.15%	8.3 75.22%	20.8 37.9%
White pine	12.8	13.3 3.96%	12.5 2.34%	4.2 67.19%
Downy juneberry	9.9	10 1%	8.3 16.16%	12.5 26.26%
Striped Maple	13.6	0 100%	0 100%	62.5 359.56%
Hawthorn	4.5	3.3 26.67%	20.8 362.33%	0 100%
Black cherry	1.5	3.3 120%	0 100%	0 100%
Sweet birch	1.2	0 100%	0 100%	0 100%
American basswood	1.5	0 100%	8.3 453%	0 100%
Yellow birch	0.8	0 100%	0 100%	0 100%
White ash	0.8	0 100%	0 100%	4.2 425%