Estimating Tree Growth Models from Complex Forest Monitoring Data: Appendix F

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Appendix F: Latent unmeasured sizes for nine trees

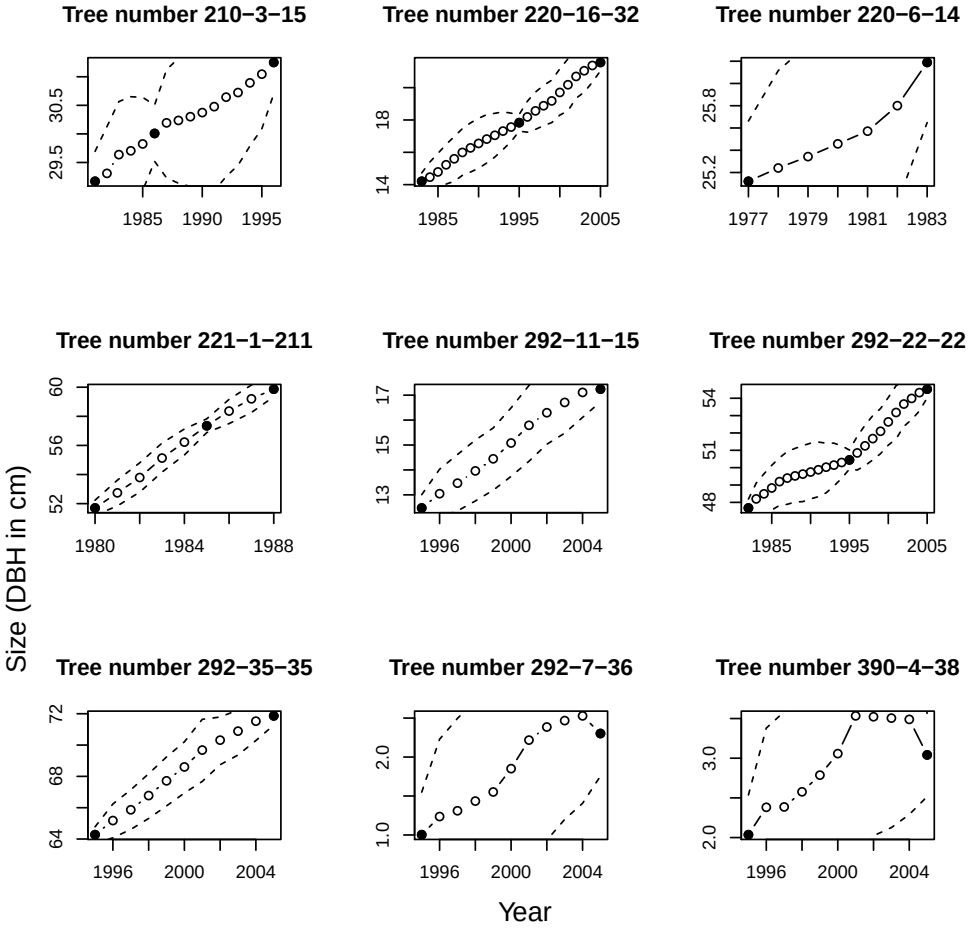

Figure F1: The latent states x of nine trees sampled from the model are shown below with 95% credible intervals to show that the estimates give positive growth with no other constraints, and that the credible bands tighten up in the neighborhood of measured data points (as in Clark et al. 2007). Note that for smaller trees, the credible bands are wider and point estimates do show the potential for negative growth; the estimation procedure is less precise for slower growth. For white fir, there are 60 trees out of 691 that are 3 cm or smaller at the beginning of the inventory, so this is fewer than 10% of the trees in the model. The remaining trees show reasonable point estimates for annual growth increments. These results are from the model with a gamma prior on observation error with equal shape and rate, which gives the largest estimates for observation error.

References

Clark, J. S., M. Wolosin, M. Dietze, I. Ibáñez, S. LaDeau, M. Welsh, and B. Kloeppel. 2007. Tree growth inference and prediction from diameter censuses and ring widths. Ecological Applications **17**:1942–53.