

Question: How about the claim that younger trees have more carbon than old growth trees?

This seems to me to be a very strange claim to make, so I am trying to figure out what it might mean. *Prima facie*, it seems to me, a larger tree contains more biomass both above and below ground so inevitably must contain more carbon since carbon is the dominant component of biomass. So, what could the claim really be making. If the meaning is that young trees have a greater potential to sequester carbon than old growth trees, I'd probably agree (on average) since the younger tree has its youth, middle age, and old age to accumulate carbon while the old growth tree has already accumulated through the first two stages of its life and only has the old growth stage left in which to accumulate more.

In terms of the rate of carbon capture and storage, there seems to be some disagreement as to whether young stands are quicker than old growth stands; it probably depends on the species under consideration and the conditions in which they are being grown. If conditions are ideal, I'd guess whoever occupies the location (young or old growth) would be relatively rapid at carbon storage.

The component of this equation that surprised me is that when I was teaching ecology, the accepted paradigm was that forests reach their peak growth (carbon capture and storage as biomass) in the early decades of life, and gradually slow as they age to become essentially non-incremental in old age. The justification for this was that photosynthetic capture of carbon dioxide in an old growth tree was essentially balanced by the respiratory break-down of the carbohydrates to extract the energy necessary to keep the cells and tree alive. This seems to be one of those old standard and well-accepted 'truths' that has been debunked by more recent studies suggesting old growth trees continue to capture and store ever more carbon at a rapid rate well into old growth age.