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Biblical Chronology and the 8,000-Year-Long Bristlecone Pine Tree-Ring Chronology

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A literal understanding of the biblical chronologies places the Flood no earlier than about 2500 B.C. and the Creation no earlier than about 6000 B.C. (Allowance for unlisted names in the biblical chronologies pushes back these dates, but not much). Yet the Bristlecone Pine (hereafter BCP) long chronology, comprised of hundreds of live and dead trees, is over 8,000 years long. The presence of fossiliferous sediment under the BCPs rules out any of them being pre-Flood. So, unless we choose to push the Flood back many thousands of years, effectively disregarding biblical chronologies, how can the conflicting chronologies be reconciled? I have studied this question for many years.

An Unsound Tree-Ring Chronology?

The ring-width measurements, expressed in thousandths of a millimeter, are archived online.[1] What if the tree-ring series were matched incorrectly? To test this possibility, I ran the BCP series constituents through COFECHA,[2] which is a tree-ring statistical-matching software program from the University of Arizona Tree Ring lab. The software automatically removes low-frequency variance (long-term changes in tree-ring width caused by such things as tree idiosyncrasies, tree age, breaking-through the forest canopy, etc.) and matches only the high-frequency variance (ring-to-ring changes in width), after removing autocorrelation (the tendency for a given year's growth to be partly influenced by the weather more than one year back in time). The software measures the statistical strength of every possible matching point in two series, except the first 40 and last 40 years, which may be artifactual owing to the short length of the overlapping segments.

All of the inferred correct matches showed t-values of at least 10 to 20, and this occurring not only two tree-ring series at a time, but reciprocally for at least 10 samples per year. All alternate matches gave much lower t-values, and none reciprocally supporting each other to a sample depth greater than 3. So, unless there is something funny about the data itself, for which there is no evidence, it appears that the crossmatches are sound, and so is the BCP chronology itself.

Multiple Annual Rings?

The over 8,000 years of BCP chronology presuppose that no more than one ring ever formed per year. Every so often, claims are made about bristlecone pines having multiple rings per year.[3] The "wriggles" encountered in the BCP/C-14 progression are consistent with such a premise,[4] but there is—at present—no evidence for adult BCPs being able to produce multiple rings per growing season. While doing field work in the BCP forest,[5] and earlier, I had the privilege of meeting many BCP specialists, some of whom had been monitoring BCP growth for nearly fifty years. They were unanimous in encountering not one BCP that ever produced more than one ring per year.

Could the weather patterns right after the Flood, probably quite different from those of recent decades, have triggered flushes of multiple ring growth in the BCPs of the White Mountains, California—the ones that form the inferred 8,000 year chronology? This seems unlikely, as BCPs already grow in a variety of montane environments in the western U.S., yet none of them is known to have ever produced more than one ring per year. Could the genetics of BCPs, nowadays so strongly resistant to multiple ring growth per year, have allowed for such growth in the early post-Flood period? It would not be easy to test this hypotheses, if only because BCP generation times are so long.

The challenge is not simply to reduce 8,000 years of rings to 4,000 years of actual time. In order to march in step with C-14 dates, which themselves were inflated at first, there must have been over 5,000 BCP rings generated in under 1,000 years after the Flood, followed by the remaining 3,000 rings generated in the expected 3,000 years. This would have required five rings consistently per year for the first post-Diluvian millennium, which, on a sustained basis, is almost impossible. However, if the more-realistic 1–2 rings per year had deployed

in higher-order sequences that allowed the BCPs to crossmatch in an artificially-compressed format, then there could be a 5,000 tree-ring chronology generated in 1,000 years of real time. After about 1,000 B.C., the BCPs must have turned to the one-ring/one-year growth that characterizes the present. Otherwise, the recent part of the BCP chronology would be out of step with C-14 dates, which it is not.

Time-Staggered Repeated Disturbances?

Another hypothesis for the compression of the first 5,000 years of BCP chronology, into the real-time period from 1,000 B.C. to 2,000 B.C., has been presented elsewhere (Woodmorappe 2003b), and is only summarized here. It too allows for the march-in-step of BCP chronology with C-14 dates, which were artificially old to a greater-and-greater extent as one neared the Flood at the real-time date of about 2,500 B.C.

It has long been known that individual tree rings can be changed, during growth, from the climate-signal-dictated size to a different size as a result of some disturbance. This disturbance (for example, insect attack, earthquake, release of gas, etc.) can make the ring either smaller or larger. If these disturbances occurred at sufficient frequency, and reappeared in sequence in other trees at later times, the actually-contemporaneous trees would crossmatch in an age-staggered manner, thus creating an artificial chronology.

For illustrative purposes, imagine the simplified situation of only three trees, (A), (B), and (C), which started growing at exactly the same time, and each of which lived exactly 500 years. If nothing happened, the tree-ring series would normally crossmatch according to climatic signal, with the crossmatch point starting with the first ring each of Tree (A), Tree (B), and Tree (C). All the constituents of the 3-tree chronology would overlap completely, creating a chronology that spans exactly 500 years.

Now suppose that an external disturbance causes rings 2, 6, 9, 14, etc., in Tree (A) to grow much bigger or smaller than they otherwise would. At about this time, rings 1, 7, 10, 13, etc. are perturbed in Tree (B). 300 years after the disturbance of the growth of the rings in Tree (A), the sequence of disturbances repeats in Tree (B), affecting rings 302, 306, 309, 314, etc. (The repetition doesn't have to be exact, because the discrepancy can be covered by inferred missing rings, which are common in the BCP chronology). 400 years after the disturbances in the early rings of Tree (B), similar disturbances occur in Tree (C), affecting rings 401, 407, 410, 413, etc. Identical reasoning can be applied to many more trees, and over a much longer period of time.

The net result is the fact that Trees (A), (B), and (C) will no longer crossmatch across their 500-year common growth history. They will now only crossmatch at their ring-perturbed ends. The result is an illusory chronology that is 1200 years long. Crossmatching experiments that I had performed show that it is only necessary to disturb 2–3 rings per decade, sustained across at least a few decades, in order to override the climatic signal, and to cause the tree-ring series to artificially crossmatch at the ring-perturbed ends.

Conclusions

The 8,000-year-long BCP chronology appears to be correctly crossmatched, and there is no evidence that bristlecone pines can put on more than one ring per year. The best approach for collapsing this chronology, one that takes into the account the evidence from C-14 dates, is one that factors the existence of migrating ring-disturbing events. Much more must be learned about this phenomenon before this hypothesis can be developed further.

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