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The Challenge of Fossil Forests for Creationist Research

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Abstract

The presence of purported fossil forests in the geological record have occupied the attention of creationists ever since they began to publish scholarly articles in the 1970s and 1980s in secular journals on the topic of the Yellowstone fossil forests. Nothing has appeared in secular journals by creation scientists on the general topic of fossil forests since that time. Creationism's focus on the Yellowstone "fossil forests" has faded into the past as far as field research goes. In the meantime, secular scientists have published scores of studies on purported fossil forests in the last four decades. The central issue among creationists is whether any purported fossil forests are truly in situ, or autochthonous. To help resolve this issue a list of criteria has been developed from a creationist standpoint to identify what is in situ. This can have profound implications for the establishment of Flood models.

Keywords: Allochthonous, autochthonous, in situ, fossil forests, tidal cycles, *Stigmaria* roots, Pennsylvanian lycopod trees, upright stumps, biomass per hectare, coal, lignite

Introduction

Truly autochthonous fossil forests place constraints on what are, and what are not, Flood sediments. Truly autochthonous forests either post-date the Flood (even if the sediments in which they grew were deposited in the Flood) or they pre-date the Flood (even if the forests themselves were buried by Flood sediments). True autochthony, then, can be used to put constraints on the pre-Flood and post-Flood boundaries. Clarey and Tompkins (2016), for example, argued that if Fossil Grove in Glasgow was autochthonous, the contained sediments represented the beginning of Flood sedimentation in that area. Since fossil forests are claimed from every major geological period starting with the Devonian when forests are first detected, it should be possible to put constraints on the upper and lower boundaries of the Flood in the geologic record. What is needed is a set of good criteria for determining autochthony of fossil forests. Although several creationist studies have already examined fossil forests (for example, Yellowstone fossil forests by Chadwick and Yamamoto 1984; Coffin 1971, 1976, 1983, 1987; Fisk and Fritz 1984; Fritz and Fisk 1978, 1979; Fritz 1980a, 1980b, 1980b, Glasgow's Fossil Grove by Clarey and Tompkins 2016; Wise 2018; Gilboa Fossil Forest by Oard 2014a), and a number of others have discussed models of explanation (for example, Austin and Sanders 2018; Clarey 2015; Lee et al. 2018; Oard 1995a, 1995b, 2008, 2014a, 2014b; Oard and Gieseke 2007; Sanders and Austin 2018; Snelling 2009; Wieland 1995; Woolley 2010, 2011a, 2011b), much more work remains to be done. Creationists who are trained in botany, paleobotany, stratigraphy, sedimentology, and ecology in particular can provide valuable studies towards deciphering the mysteries preserved in what are claimed to be fossil forests.

The Challenge

The major challenge for creationists studying fossil trees is to differentiate clearly between trees that are autochthonous and those that are allochthonous. At times this seems an impossible challenge unless firm criteria are established for such prior to commencing the study. Clarey and Tomkins (2016) give a helpful list of seven criteria that will aid creationists in establishing autochthony. This list has been expanded and elaborated upon in much greater detail by Wise (2018), who has his own list of twelve criteria. As in the Wise paper, this current paper elaborates upon the seven Clarey and Tomkins criteria as a starting point, but to comment upon each of the twelve criteria of Wise would make this study much too complex and perhaps even confusing. An additional nine criteria are established independently of other creationist studies, mainly derived from scholarly studies of claimed fossil forests. The reader is urged to read both the 2016 Clarey and Tomkins study and the 2018 Wise study before attempting to proceed further with the following paper. One must keep in mind that the term "autochthonous" refers exclusively to trees that are buried in position of growth and "allochthonous" is applied exclusively to transported, especially Flood-transported, trees.

Paleobotany is the study of plants within a geological context, that is, the study of fossil plants. Today few creationists are trained paleobotanists with a doctoral or even a master's degree in paleobotany. There are several botanists, plant physiologists, plant geneticists, or agronomists who are creationists, but what they are lacking is adequate training in either geology or paleontology (Bergman, 2018). Research on the fossil forests of Yellowstone National Park, United States, began with a flurry of published reports in the 1970s by creationists. Renewed interest in the fossil forests of Yellowstone took place following the eruption of Mount St. Helens in May of 1980 (for example, Morris and Austin 2003). That eruption offered ideal analogs for understanding the dynamics of the Yellowstone fossil forests. In this case the present became the key to the past by comparing Mount St. Helens with Yellowstone and its more than 50 levels of "fossil forests" buried in successive volcanic mudflows. In the 1970s and 1980s several creationists were able to publish articles on the Yellowstone fossil forests in professional geological journals (Chadwick and Yamamoto 1984; Coffin 1971, 1976, 1983, 1987; Fisk and Fritz 1984; Fritz and Fisk 1978, 1979; Fritz 1980a, 1980b, 1980c). The early articles on Yellowstone fossil forests included extensive studies of the impact of the 1980 eruption of Mount St. Helens, especially the discovery of upright transported stumps found in Spirit Lake (Austin 1986; Coffin 1983). Later creationist studies have followed up on the earlier studies (Austin 1991, 2010), but unfortunately, all creationist studies have largely ignored the work of Karowe and Jefferson (1987) on the implications of the Mount St. Helens uprooted trees for analyzing fossil forests. These two authors set up helpful criteria for determining which trees are allochthonous and which are autochthonous. Creationists re-examining the Yellowstone fossil forests ought to begin with the purely geological study of Karowe and Jefferson (1987) as well as the published articles by early creationists on the Yellowstone fossil forests. Creationist Leonard Brand (2018) have lamented the fact that few creationist studies have been completed on fossil forests since the quality studies of the 1970s and 1980s and have acknowledged that yet today Yellowstone remains an "uncompleted research project."

The most significant research on fossil forests recently has concentrated on one site, the Glasgow Fossil Grove (Clarey and Tomkins 2016; Wise 2018). Beyond that the only other recent scholarly creationist studies deal mostly with coal beds and the coal flora (Austin and Sanders 2018; Lee et al. 2018; Sanders and Austin 2018; Snelling 2009, 557–568; Wieland 1995; Woolley 2010, 2011a, 2011b). One recent study looks at the fossil forest at Gilboa, New York, but it is superficial and lacks any field work (Oard 2014a). Much more needs to be done at Gilboa and other similar sites, especially sites such as Glasgow that are accessible for field work.

Criteria for Establishing Autochthony

Two studies have been published recently in the *Creation Research Society Quarterly* that have reexamined the autochthonous approach to selected fossil forests. The difference between these two studies and previous ones is that they have established criteria for recognizing autochthony in the fossil record from a creationist viewpoint. The first study is by Timothy Clarey and Jeffery Tomkins (2016), who set forth seven criteria for recognizing autochthony in fossil forests. Most of these criteria as summarized below are derived from the writings of secular geologists and can offer a starting point for discussion among creationist geologists. (The two criteria not set forth by secular geologists are numbers 5 and 6 in the list below.)

1a. Monospecific forests—the presence of an entire grove of trees in position of growth representing a single species found at the same stratigraphic level.

1b. Non-random spacing—the presence of multiple trees at the same stratigraphic level that are spaced equidistantly and not in a random arrangement.

2. Non-overlapping roots—the presence of multiple trees at the same stratigraphic level that show a three-dimensional profile that includes roots and/or stigmarian axes.
3. Cross-cutting roots—the presence of roots and/or root structures that crosscut through the bedding plane of sediments.
4. Rapid burial and excellent preservation—dense clusters of mostly upright trees and/or stems, as in *Calamites*, that show catastrophic burial accompanied by good preservation and lack of rotting.
5. Paucity of underlying sedimentary layers—in any creationist Flood model one cannot postulate that Flood sediments are both below and above a purported fossil forest, otherwise the upright trees are not in position of growth.
6. Lack of distortion of bedding layers around trees—transported trees may give evidence of strata bowed downward below the tree stump, even forming a bowl-shaped depression below; in situ trees lack this evidence.
7. Mixture of vegetation—some cases have sphenopsids, such as *Calamites*, crosscutting the same layers preserving the purported in situ fossil stumps of non-sphenopsids.

The above seven criteria have been modified from Clarey and Tomkins (2016, 112–113), who relate all seven criteria to the Glasgow Fossil Grove with its upright lycopsid tree stumps. Their criterion 1 can be broken into two criteria, given as 1a and 1b above. Of the seven criteria number 5 is the most problematic because it allows any Flood model to be superimposed on the interpretation of upright stumps rather than allowing the evidence of in situ upright stumps to assist in the shaping of a particular Flood model. For example, a Flood model that assigns all sedimentary strata up into the Pleistocene as being diluvial would rule out the possibility a priori of having any in situ fossil forest present in sub-Pleistocene sediments, except for a forest very similar to the Glasgow Fossil Forest. This perhaps may be the only known exception based on a survey of recent literature on "fossil forests" (see accompanying bibliography). Thus, a Cambrian-Pleistocene Flood model disallows the use of any autochthonous criteria unless accompanied by the fifth.

The second study in the *Creation Research Society Quarterly*, published as a letter to the editor in response to Clarey and Tomkins, is by Warren H. Johns (2017). It proposes two other criteria for detecting autochthony. Criterion 8, added to the list of seven above, is the lack of truncation of roots. In other words, if roots radiate out from the upright stump in all directions without clear evidence of being broken off, the stumps are more likely to be autochthonous. In catastrophic settings, as in the eruption of Mount St. Helens, the roots of trees are snapped off and very rarely extend more than a meter in length (Coffin 1997, figs. 18–21; Fritz 1980c, Karowe and Jefferson 1987). According to fig. 1, the Junggar fossil forest in China shows most stumps with roots extending outward a meter or more and one tree with a root extending outward 12.4 m before it terminates without truncation (Johns 2017; McKnight et al. 1990). None of the 12 Wise criteria for autochthony have non-truncation of roots as a criterion; in fact, he does not discuss truncation of roots at all. Hence, a "truncation criterion" (no. 8) is necessitated for creationist studies.

In addition to the evidence for non-truncated roots radiating out in all directions at Junggar, Johns (2017) proposed that the alignment of the extremely long root with three other stumps along the same axis could be explained in either of two ways: 1) the four trees started their growth along a rotted or rotting "nurse log"; or 2) they all started their growth along a fault expressed at the earth's surface, where greater moisture would be available for rapid growth. The alignment is approximately in a NE/SW direction.

An article in *Geology* supports the "nurse-log" scenario based upon several suggested nurse logs found in a permineralized forest at San Juan Province, Argentina (Césari et al. 2010). Contemporary nurse logs are well studied and occur in wet temperate forests (Sanchez, Gallery, and Dalling 2009). The rotting log provides a "safe haven" for sprouting seedlings, which are always under attack by insects and fungi when germinating in soils. Several fossil logs in the late Paleozoic of north-west Argentina show evidence of roots penetrating nurse logs. In addition, one hollow log from the Triassic Petrified Forest of Arizona has been found to have roots penetrating the rotted chamber (Daugherty 1963). But Junggar is perhaps the only known site having four or more upright fossil stumps aligned and spaced properly as if their growth originated with a nurse log. Proof of this, however, is very tenuous without the presence of the original nurse log preserved below the stumps. What makes the nurse-log hypothesis for Junggar more believable is the fact that one stump has a 12.4 m long root extending in the same precise direction as the alignment of the three other upright stumps. The exact alignment of the four stumps is at N 50° E direction, which is close to a NE/SW orientation. (See again fig. 1.) Fifteen prostrate logs have been measured in the same stratigraphic level as the stumps, the longest of which reaches 25.3 m. in length. The allochthonous model for the Junggar Forest would suggest that the Flood waters in this particular site would have flowed almost directly East/West based on the large majority of the flat-lying logs. The alignment of the four upright trees and the one 12.4 m long root is in direct conflict with the paleocurrent measurements of the horizontal logs, perhaps indicating that Flood waters could not have aligned the four trees in identical alignment with the one long root. By contrast, the 15 prone logs appear to have been transported based on their E/W orientation. Further creationist research is needed from the standpoint of paleocurrents to determine whether the above interpretation has any validity or whether there are better interpretations.

A second criterion is set forth in the *CRSQ* article (Johns 2017). Designated as criterion 9, it is the evidence of the elevation of the base of the central stump above the level of the roots. In fact, the roots slope downward depicting a "spider-like" arrangement of the roots surrounding the stump. A good example of this is at the Blue Mesa Stump Field in the Petrified National Park, Arizona. The principal authors of this study state that "the upright stumps occur typically in mudstone usually and have long unbroken roots which extend downward some distance below the trunks" (Ash and Creber 1992, 304). This particular stump site is located in the Chinle Formation, a Triassic unit that covers Nevada, Utah, northern Arizona, western New Mexico, and western Colorado. It contains the largest concentration of petrified logs in the world, nearly all of which are prone and thus are allochthonous. In addition to criterion 9 the forest is identified as autochthonous on the basis of criterion 1b, which states that trees on the same stratigraphic level must be spaced equidistantly and not in a random fashion. Fig. 2 illustrates the spacing that is non-random and is strikingly similar to today's forests with large conifers. Criterion 9 is also applicable to the Jurassic fossil forest at Junggar, China, that has

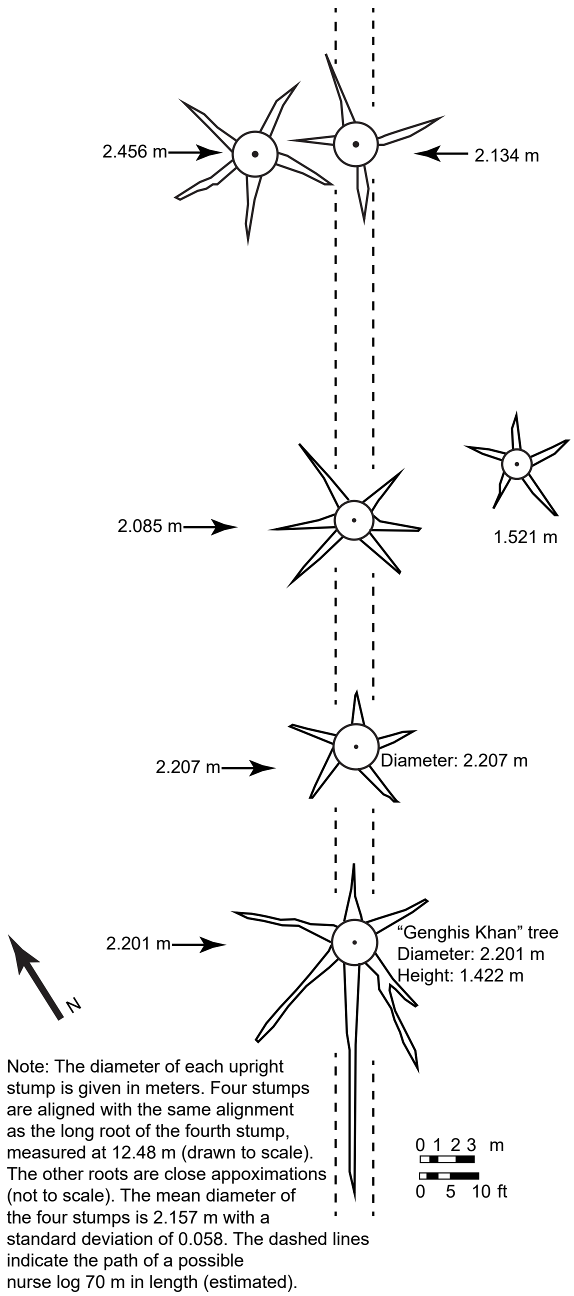


Fig. 1. Junggar Fossil Forest, China.

fossil stumps well elevated above the root level and with roots sloping downward (McKnight et al., 1990; Johns, 2017).

Criterion 9 has been modified from both Clarey and Tomkins and from Wise. Criterion 6 of Clarey and Tomkins (2016, 113) is stated as such: "finding no bowing or distortion of any sedimentary layers beneath the tree stumps," as an evidence of autochthony. Wise (2018, 250) discounts Criterion 6 by arguing: "Given, then, that the bowing of underlying sediment is not the usual expectation of allochthony, the absence of bowing in underlying sediment is not discriminatory between allochthony and autochthony." This is a good observation, but what is lacking here is the case where instead of bowing of sediments (forming bowl-shaped sediments below stumps) there is reverse bowing or the inversion of bowl-shaped sediments below fossil stumps. This then is more likely indicative of autochthony instead of allochthony. How will catastrophically transported sediments deposit stumps on mounds, as found in the Petrified Forest of Arizona or the Junggar deposits of China? One would wish to have many more examples than these two to establish autochthony, however, on the basis of Criterion 9.

Three Additional Criteria Derived from Pennsylvanian Deposits

Criterion 10 is the discovery of fossil trees buried in a tidal or marine setting dominated by purported daily tidal cycles. Many Pennsylvanian "upright fossil forests" in the eastern United States are claimed to have been buried with lunar tidal-cycle deposits because of their proximity to seacoasts and marine sediments. This situation can be interpreted on either a global-flood scenario or in situ local deposition by coastal sediments if the laminated sediments are interpreted to be tidal cycles. However, the global-flood interpretation is challenged by the discovery that many of the claimed tidal deposits in the Eastern United States would have taken many months or even a few years to accumulate.

The clearest evidence of potential tidal influence in connection with coal beds and upright stumps is found in the Dishman and Hopper Quarries, Orange County, southern Indiana in Pennsylvanian deposits that overlie Mississippian marine limestones. The underlying Indiana Limestone because of its purity is famed for its quality building stones transported to all major cities in the Midwest and East Coast of America. Overlying the beds of Salem Limestone is the Mansfield Formation with its Hindostan Whetstone beds and fine-grained siltstone interpreted as showing tidal cycles. Exposed in the Hopper and Dishman Quarries is a full exposure of a layer called the Hindostan Whetstone beds that have a total thickness of slightly less than ten meters. The Hindostan Whetstone is heavily laminated throughout. The laminations are said to be tied to lunar tidal cycles because of the unequal pairing of two laminae in the sediments (Archer and Kvale 1989; Kvale, Archer, and Johnson 1989). Fig. 3 reproduces a vertical cross-sectional sample from the Whetstone Quarry illustrating the inequality of laminations and an accompanying bar graph also depicting unequal pairs of laminations. Two pairs of laminations when coupled together are assumed to mark a diurnal or daily cycle. Modern tides generally occur twice daily with one tide significantly higher than the other tide. This is called "the inequality of the tides". The tides are approximately equal when

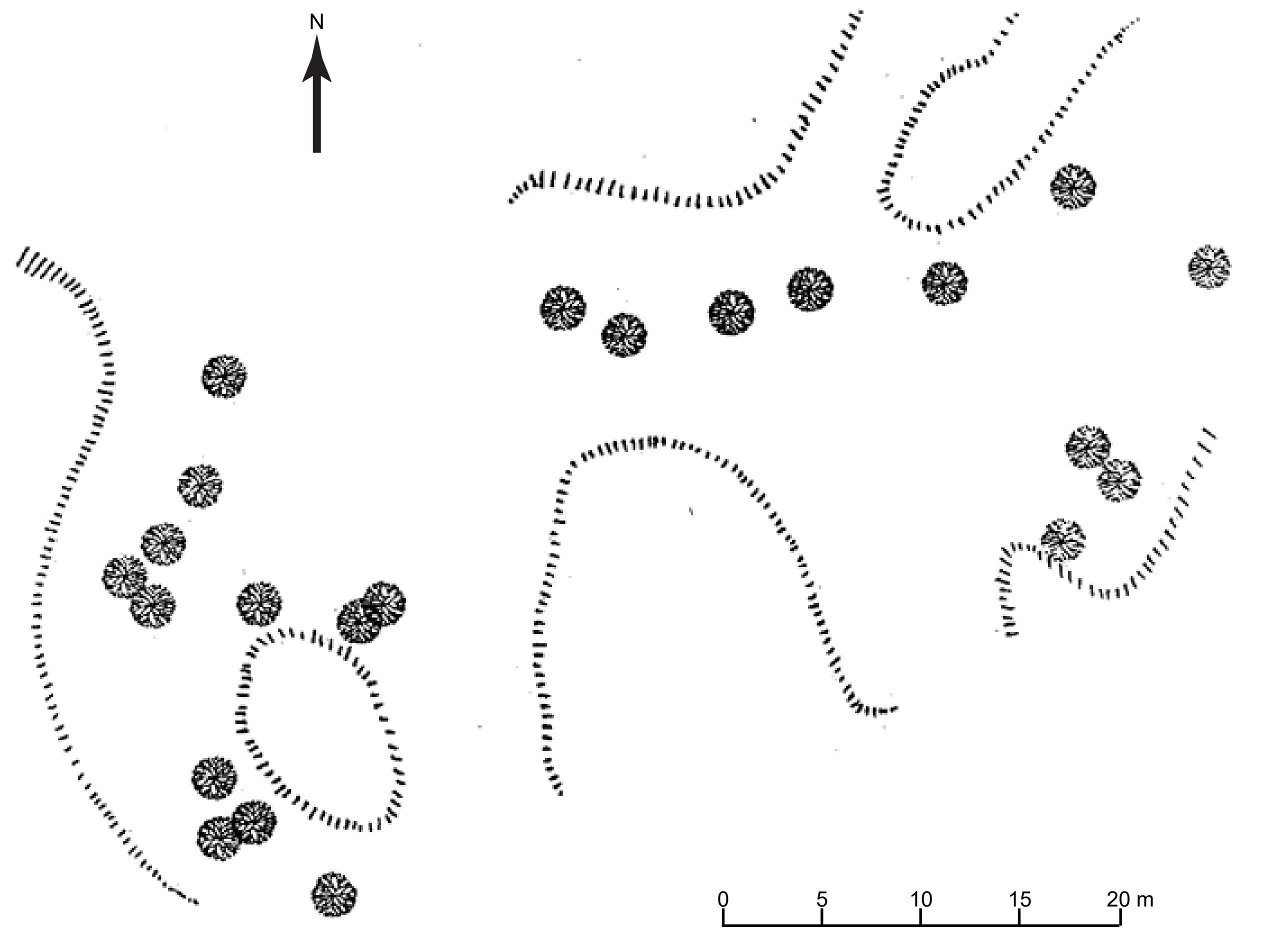


Fig. 2. Blue Mesa Stump Field, Petrified Forest National Park, Arizona. Some stumps are twin trees as in modern forests, but others are spaced usually 3-10 meters also as in modern forests. Many stumps have roots sloping downward into the ground. The hatched lines mark the areas of gullying outside of the mesa (adapted from Ash and Creber 1992, fig. 10).

the moon is directly over the equator. The moon's relative position at the same time each day fluctuates every two weeks from being over the southern hemisphere to over the northern hemisphere. When the moon crosses over the equator, this is called the "cross-over," which happens twice during the lunar cycle or approximately every 14–15 days. What is true in the modern period appears to possibly have been true in what can be called "ancient times." The cross-over when the moon is said to be over the equator is indicated in the bar diagram by two adjacent laminations being equal in thickness at the center of the diagram.

Secular geologists who first studied these laminations interpreted them as varves, or annual laminations. This was in keeping with the overall estimate that a similar bed of siltstone would take many thousands of years to form, perhaps up to 10,000 years. What was previously estimated as up to 7,000 or even 10,000 years incredibly must be reduced by three orders of magnitude to less than 10 years. (See Archer and Kvale 1989; Kvale et al. 1994.) The application of this new interpretation to other purported tidal cycles laid down in connection with coal beds throughout the eastern United States and Canada means that the clastic sediments could have been deposited in years or scores of years, not tens of thousands or even thousands of years. An estimate for sedimentation rates for the Douglas Group, Upper Pennsylvanian, Kansas is an average of 3.8 meters/year (Lanier, Feldman and Archer 1993). This rate is based on measurements of neap/spring cycles for a restricted basin. When applied to a theoretical 1,000 m of sediments in the Pennsylvanian, such as can be found in the fossil forests of Nova Scotia or elsewhere, the entire sequence could be buried in less than 300 years. Granted, this is an extreme application of uniformitarianism, but it does illustrate the fact that sedimentation rates were much faster in particular settings of the past when the tidal cycles are interpreted as genuine.

The best evidence that quite likely the Hindostan whetstone laminations are tidal cycles is the fact of the alternation of thickness between pairs of laminae. Every other pair is thicker and is surrounded by thinner laminations, except for the point of when the lamination pairs are equal described as the crossover. (See fig. 3 again.) The equality of lamination pairs

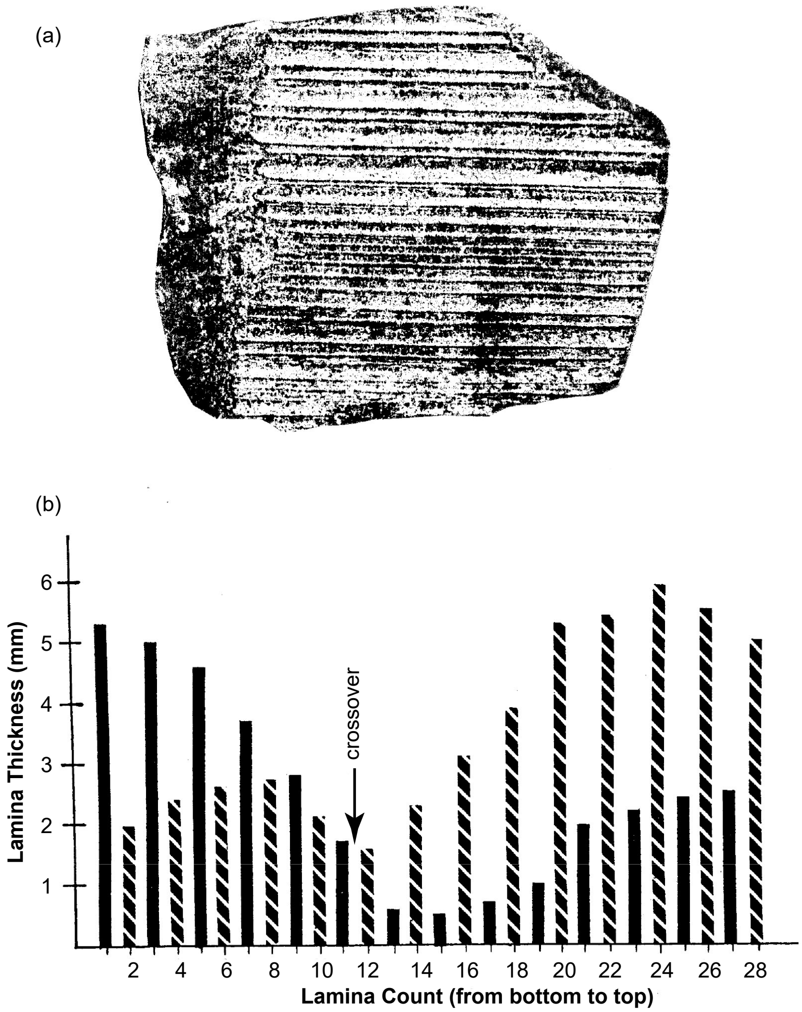


Fig. 3. (a) Vertical cross section of laminated section from Indiana Whetstone Beds, showing two weeks of tides represented by 28 laminations of twice daily tides [see (b)]. (b) Histogram of laminae thicknesses measured from cross section sample in (a). The "crossover" on the diagram represents the equality of the tides when the relative position of the moon is over the earth's equator with respect to the orbital plane of the earth around the sun.

occurs every 28th or 29th lamination, which would be every two weeks if indeed these represent tidal cycles. No allochthonous scenario presently known can account for every other lamination pair to be unequal in thickness. Sedimentologist Guy Berthault (1994) has reported that his own flume experiments along with ones involving the giant flume at Colorado State University demonstrate that laminated sediments can be formed in fast flowing waters, but nothing in his many published studies even remotely suggests alternations between unequal pairs of laminations. His experiments used sand, whereas the Indiana whetstone cycles involved silt-sized sediments with slightly smaller grain size than sand. Morris and Austin (2003, 62) note that in volcanic eruptions "varve-like laminae by the multiplied thousands [can be produced] in the span of a few hours." But nothing in catastrophic mudflows at Mount St. Helens suggests alternations between thick and thin laminae or pairs of laminae. The only valid explanation thus far is that of tidal cycles.

The bigger question is how long it would take for the plant material to accumulate. The answer is based upon whether the coal was autochthonous or allochthonous—a subject too complex to be settled in this paper. The reader is urged to read an excellent, detailed creationist study of the origin of coal published in the last ten years by Andrew Snelling (2009, 557–568). His study advocates the allochthonous interpretation of the upright stumps often found emanating upwards from Pennsylvanian coal beds.

Criterion 11 is the identification of delicate roots and rootlets having penetrated laminated sediments. Some creationists have claimed that *Stigmaria* roots and their appendages do not penetrate well-packed sand, silt, or mud (Snelling 2009, 562–565), although they are surrounded by such sediments. *Stigmaria* is the genus name given to the roots of the giant lycopod trees, such as *Sigillaria* and *Lepidodendron*, present as a ubiquitous component of Pennsylvanian coal beds. If roots and rootlets do penetrate laminations, that would indicate growth after the underlying sediments have been deposited. Wise (2003, 377) is doubtful whether lycopod roots could "penetrate traditional soils" because of their "rhyzomous nature". But the Hindostan Whetstone Quarry in southern Indiana yields evidence that lycopod roots and rootlets are found to do so. And Clarey and Tomkins (2016) report evidence of this for Fossil Grove, Scotland. According to figs 4, 5, and 6, the narrow appendages attached to the roots do penetrate through a few laminations below the roots. The laminations remain horizontal despite being penetrated. The long, horizontal depression at the top of each sample was produced by the *Stigmaria* root, below which the thin, strap-like rootlets radiate downward. A putative lycopod forest may have grown on the terrestrial sediments capping the top of the quarry with its 10 m of paired laminations, but the tree trunks have been eroded away, leaving only the *Stigmaria* roots and appendages. Lower down, however, are found upright stumps apparently rooted in the thin layer of coal at the base and underlying the 10 m of laminations.

The Hindostan Whetstone Beds also exhibit an example of Clarey and Tomkins' Criterion 4, which is excellent preservation and rapid sedimentation without any evidence of rotting or transport damage. Fig. 7 portrays the outer bark impression upon the claimed tidal-cycle laminations preserved as a cast. The impression is from a *Lepidodendron* trunk or branch that is preserved lying at an angle. The fact that it did not lie either horizontal or vertical suggests that it was most likely preserved in place of original growth as the tree/branch fell into the tidal sediments encroaching on land. The preservation too is exceptional, making it much less likely that the *Lepidodendron* was transported any distance. This interpretation is supported by Wise's 11th criterion: "Autochthonous fossil assemblages should… 11. evidence little to no pre-burial organism decomposition [vs. much pre-burial decomposition]" (Wise 2018, 251–252). The time this exceptionally preserved fossil took to be totally covered may have been days or even a few weeks at most if indeed the laminations represent twice-daily tidal cycles. An allochthonous floating-forest interpretation would mean that the branch/trunk of fig. 7 was well protected from any wave action while being transported perhaps hundreds of miles on the bed of the floating forest.

One might conclude that the Hindostan Whetstone Beds were quite likely deposited either prior to the

Fig. 4. Appendages in *Stigmaria* roots visible penetrating sediments by downward growth. U.S. silver dollar used for scale.

Fig. 5. One *Stigamaria* root visible in horizontal growth with appendages penetrating sediments by downward growth.

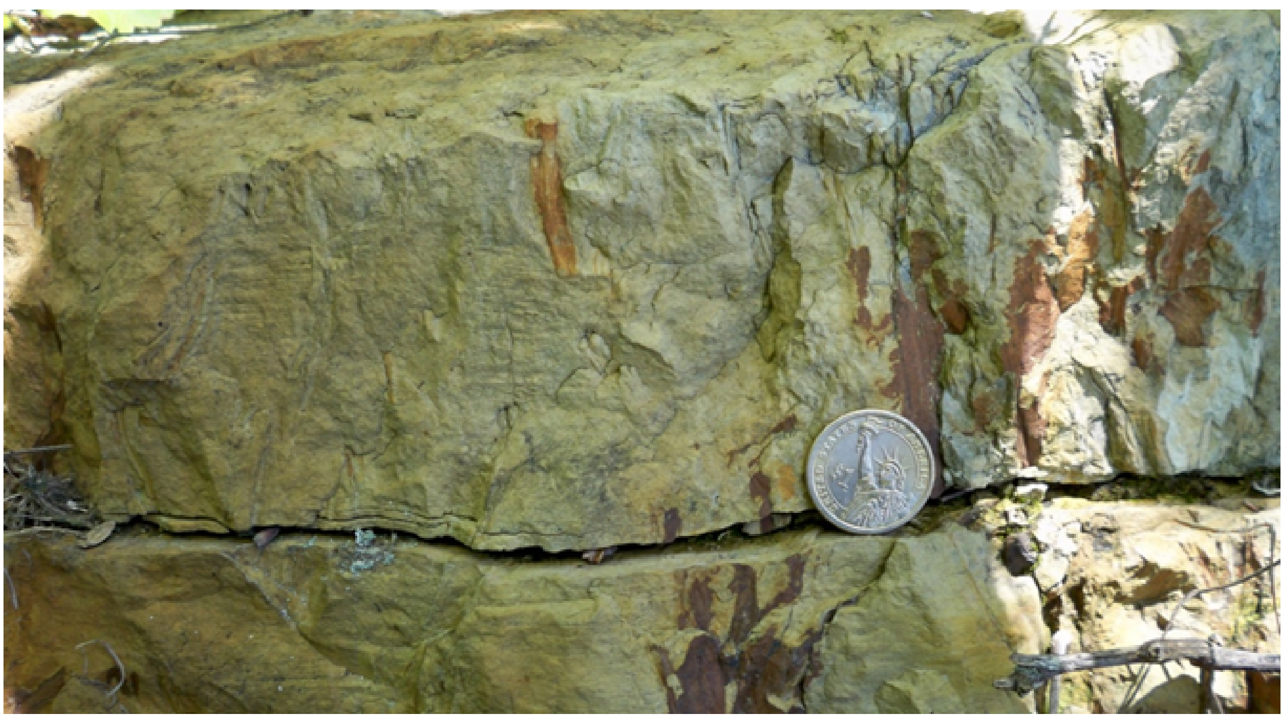


Fig. 6. Appendages from a *Stigmaria* root penetrating perfectly horizontal tidal cycles.

Flood or after the Flood if the purported tidal cycles are genuine, but under the floating-forest model the forest could have reached its final resting place during the Flood itself.

The purported discovery of possible tidal cycles in Pennsylvanian coal beds has nothing to do with cyclothems, which describe the repetitive sequence of different lithotypes between coal beds, going commonly from shale to limestone to sandy shale and/or sand to clays or claystone and back to coal again. For a thorough creationist study of cyclothems in the Midwest of the United States, see Woodmorappe (1978). Another more limited study of cyclothems is found in Coffin (2005, 99–101). Coffin explains twice-daily tides as the principal cause of cyclothems during the Flood, not the rise and fall of sea level as

Fig. 7. Cast of a Lepidodendron branch or tree trunk inclined at an 18° angle above horizontal from the Hindostan Whetstone Quarry, Mansfield Formation, Pennsylvanian, s. Indiana

conventionally taught. This is a concept he borrowed from George McCready Price. Actual tidal cycles in Pennsylvanian rocks have gone largely unstudied by creationists, although creationist Walter G. Peters (1971) discussed the claimed cyclical black shales of the Pennsylvanian in Illinois, the subject of his master's thesis. His discovery of possible cyclical patterns in laminations could be interpreted as tidal cycles. Another master's thesis a few years later reported on the discovery of twice-daily tidal cycles in the same formation (Kuecher 1983). Tidal cycles very similar to the Hindostan Whetstone beds are found in other locations, such as in the Brazil Formation of southern Indiana (Mastalerz et al. 1999) and throughout the Eastern Interior Coal Basin of the United States (Archer, Kuecher, and Kvale 1995; Greb and Archer 1995). These studies are beckoning creationists to reevaluate the other claimed tidal-cycle locations to determine if indeed they are a close match to the Hindostan beds or whether they can even be valid tidal cycles.

Creationist periodicals lack any significant discussion of Pennsylvanian tidal cycles. The Creation-Evolution Literature Database (CELD), the most comprehensive bibliographic database on creationist studies, has nothing on tidal cycles. Tidal cycles can offer a wide-open field of study appealing to those creationists who are well versed in sedimentology as well as in astronomy. The initial publication on Hindostan tidal cycles included an astronomer from Indiana University, Hollis R. Johnso (Kvale, Archer, and Johnson 1989), followed by other publications in which Johnson contributed (Archer, Kvale, and Johnson 1991; Kvale et al. 1995). Creationist astronomers can be invited to link up with creationist geologists in order to correctly decipher possible Pennsylvanian tidal cycles.

Two Additional Criterion Extracted from Multiple Locations

Criterion 12 can be designated a comparison of complete versus incomplete plant ecosystems. A complete ecosystem with great diversity is much superior to an incomplete one for determining autochthony. Criterion 12 is well supported by Wise's 2nd criterion, stated in this way: "Autochthonous fossil assemblages should… 2. include a very high disparity of higher taxa [vs. monotaxic]" (Wise 2018, 251). Many fossil forest sites have a richness in varieties of flora such that they are considered a "Pompeii-type" fossil forest. The best-known example is the Pompeii flora of the Permian from Inner Mongolia (Wang et al. 2012). The following is just a summary of its wide variety of flora: tree ferns, herbaceous ferns, lycopsids, sphenopsids, noeggerathialies of unknown affinity, cycads, and the most common Paleozoic conifer, *Cordiates*, in abundance. These all have been preserved in what is interpreted as an "air-fall ash" deposit, which would seem to preclude it from having been transported. Even if the air-fall volcanic ash had descended into Flood waters, the catastrophic movement of the waters would not have allowed much of the ash to preserve the plant life as it descended through the water column. If the ash had been deposited as a slurry on land, as in Mount St. Helens deposits, it would have swept the terrestrial flora far and wide and would have left its imprint as laminated or cross-bedded sediments. The ash is said to have fallen on a "peat" deposit. However, the Mongolian ash-fall interpretation is just an interpretation and needs independent verification. Wise (2018, 254) aptly recognizes the challenge to creationism if this claim is upheld by additional studies: "[A] systematic study of in situ fossil forest claims will certainly include some challenges for creationists (e.g. in situ ash-fall claims, ... 'tidal' rhythmites) ..."

Another peat deposit connected with a Pompeii-type Paleozoic deposit is found in a 1000-hectare underground coal mine of Illinois connected with the Herrin (No. 6) coal bed (DiMichele et al. 2007, Johnson 2007). The forest is described as "spectacular," a term rarely used in geological literature, and was abruptly drowned supposedly in situ when it is theorized that major fault movement dropped a coastal mire below sea level. This mine and neighboring mines have preserved a Pennsylvanian flora surrounded with purported tidal cycles. The sediments are marine in origin and hence could likely be representative of tidal cycles, which are found in nearby coal mines (Falcon-Lang et al. 2009). The flora is rich with "a total of 50 morphotaxa" "representing ~28 whole plant taxa and five major groups" (DiMichele et al., 2007, 417). Tree ferns and lycopsids dominate—typical of Pennsylvanian coal deposits. The richness of this Pennsylvanian flora stands in contrast to the majority of the 67 sites analyzed by DiMichele and Falcon-Lang (2011) that are reported as monotaxic. The monotaxic nature of Carboniferous fossil forests strongly suggests to Wise (2018) that such are allochthonous.

Most creationists suggest that uprooted trees have formed today's major coal beds. Two main competing creationist theories account for today's coal beds: 1) the pre-Flood floating forests model, also called by some the floating mats model (Austin 1979; Austin and Sanders 2018; Sanders and Austin, 2018; Scheven, 1981; Wise, 2003, 2018) and 2) the floating logs model (Clarey 2015; Clarey and Tompkins, 2016; Oard 2014a, 2014b). The modern creationist version of the floating forest model originated with Joachim Scheven's floating forest hypothesis (Scheven 1981, 1996) and the floating logs model originated from studies of the raft of uprooted trees floating on Spirit Lake at Mount St. Helens (Austin 1991; Coffin 1987). The two distinct models have recently been merged into one model (Austin and Sanders 2018; Sanders and Austin 2018), but for this study distinction should be made between the two. Clarey (2015) questioned whether a floating antediluvian forest could trap and retain enough fresh water to make it viable in light of the potential incursion of salt water into the forest. Also, Clarey and Tompkins (2016) object to the concept of lycopod trees with somewhat hollow branches and trunks being able to grow upright on antediluvian seas or as floating vegetation in the open ocean. They conclude "we strongly recommend that the floating-forest hypothesis be abandoned by the creationist community" (Clarey and Tompkins, 2016, 110). Creationists have not yet analyzed the coal mines of Illinois to determine whether their coal beds are allochthonous or autochthonous or perhaps represent both allochthony and autochthony.

Criterion 13 is one of the most valuable for future creationist research. It is a mathematical approach for describing wide spacing of upright fossil trees, using modern forests as analogs. This criterion is similar to, but not identical with, criterion 1b, which is related to the non-random spacing of upright tree trunks. One criterion for autochthony is the finding of fairly widely spaced upright stumps roughly matching the spacing of living trees in modern forests (Clarey and Tomkins 2016). This contrasts with finding trees gathered in heaps with broken branches being prime evidence for allochthony. The best modern example of this is the pile of broken trees and truncated stumps at the bottom of Spirit Lake, Mount St. Helens, USA (Coffin 1983, 1987). If having heaps of trees is evidence for allochthony, then evidence for autochthony is the wide spacing of upright fossil stumps apparently rooted on the same stratigraphic plane (Clarey and Tomkins 2016; Johns 2017).

Criterion 13 goes beyond previous creationist studies by quantifying mathematically the spacing of upright fossil trees. The distances between trees and their arrangement are crucial for an accurate quantification in order to rightly compare such with modern trees in forests. Often the spacing of fossil forests is quantified as mass per hectare after measuring the diameter of fossil trees and the spacing between trees. When a close match is made with a modern forest, the fossil forest may have been autochthonous. The fossil record has many examples exhibiting this potential spacing evidence for autochthony scattered around the world (Artabe et al. 2007; Ash and Creber 1992; Batten 2002; Brea, Artabe, and Spalleti 2008; Brea et al. 2015; Császár et al. 2009; Cúneo et al. 2003; Davies-Vollum et al. 2011; DiMichele, Eble, and Chaney 1996; DiMichele et al. 2007; DiMichele and Falcon-Lang 2011; DiMichele, Lucas, and Krainer 2012; Falcon-Lang, 2004a; Falcon-Lang 2006; Gastaldo, Stevanovic-Walls, and Ware 2004; Greenwood and Bassinger, 1993; Gulbranson et al. 2012; Hinz et al. 2010; McKnight et al. 1990; Miller et al. 2016; Opluštil et al.

2009a, 2009b, 2014; Pfefferkorn, Archer, and Zodrow 2001; Rinehart et al. 2015; Rößler et al. 2012; Stein et al. 2012; Thorn 2005; Varela et al. 2016; Williams 2002; Williams et al. 2003a, 2003b, 2008, 2009; Wang et al. 2012). Creation scientists need to review these studies from a paleoecological standpoint to determine whether the claims for autochthony have any validity. All these studies were published after creationists had completed original scholarly work on the fossil forests of Yellowstone, which also exhibit wide spacing. None of these studies report on heaps of broken trees, stumps, and branches such as can be found at Mount St. Helens.

The Mathematical Approach for De ining Fossil Forests

Two examples of the mathematical study of spacing are the Upper Triassic corystosperm fossil forest of the Rio Blanco Formation, Mendoza Province, Argentina, and the Suihent Petrified Forest, Upper Jurassic, Mongolia. The Argentine corystosperm fossil forest represents an extinct group of seed ferns with a woody axis up to 70 cm in diameter (Artabe et al. 2007). This forest was found in the La Elcha Mine of the Rio Blanca Formation (Triassic) and consists of two major groups of upright fossil stems separated by about 100 m (see fig. 8). Each major grove has been subdivided into minor stands that depict clusters of older mature trees in some clumps and younger trees in others. The most unique aspect of this fossil forest is that it is monospecific—that is, it has only corystosperms outcropping on a single bedding plane over 600 m long. This alone would suggest autochthony. The first, and perhaps the foremost, of the seven criteria set forth by Clarey and Tomkins (2016, 112) states: "Finding multiple, single-species trees spaced in growth position in the same horizontal plane, nearly equidistantly spaced in all directions…" The Argentine corystosperm forest seems to fit this criterion amazingly well, especially when noticing the spacing of trees in the sub-clusters (see again fig. 8). The two largest oblate circles enclose [not inclose] a group of stumps with a mean nearest-neighbor index of 2.58 and 3.71 m respectively when the spacing is measured in each group.

The density of this corystosperm forest is then 726.74 trees per hectare when the forest is viewed in its entirety, inclusive of spacing between sub-clusters, but the sub-cluster density averages 1503.75 trees per hectare, comparable to mid-latitude mixed forests of the southern hemisphere. The possibility of autochthony in this forest is based not only on it being a monospecific species, but also on the quantitative data. Granted, most "fossil forests" have been assumed to be autochthonous based on non-quantitative data. Creationists should be wary of any

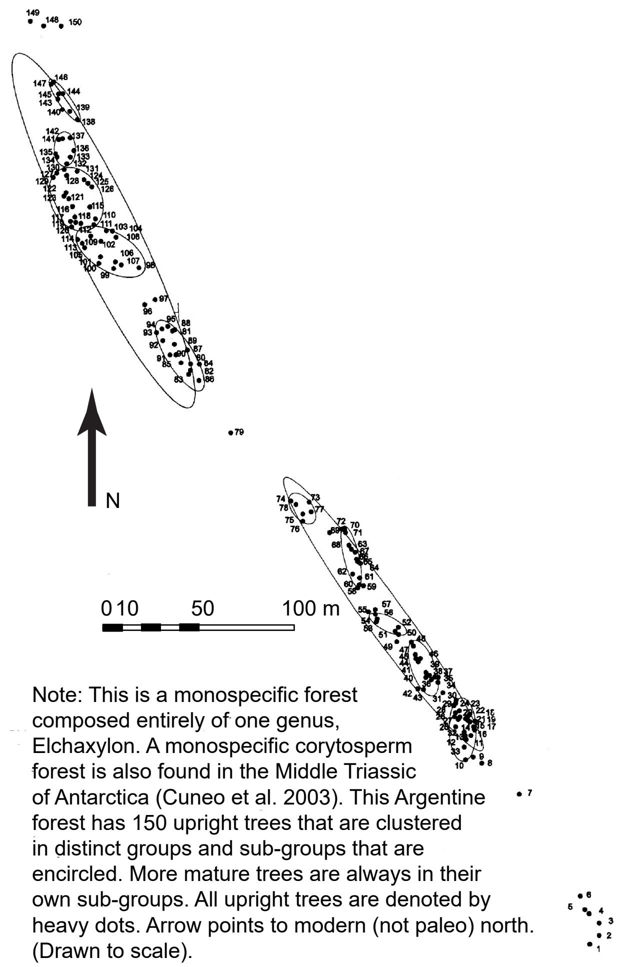
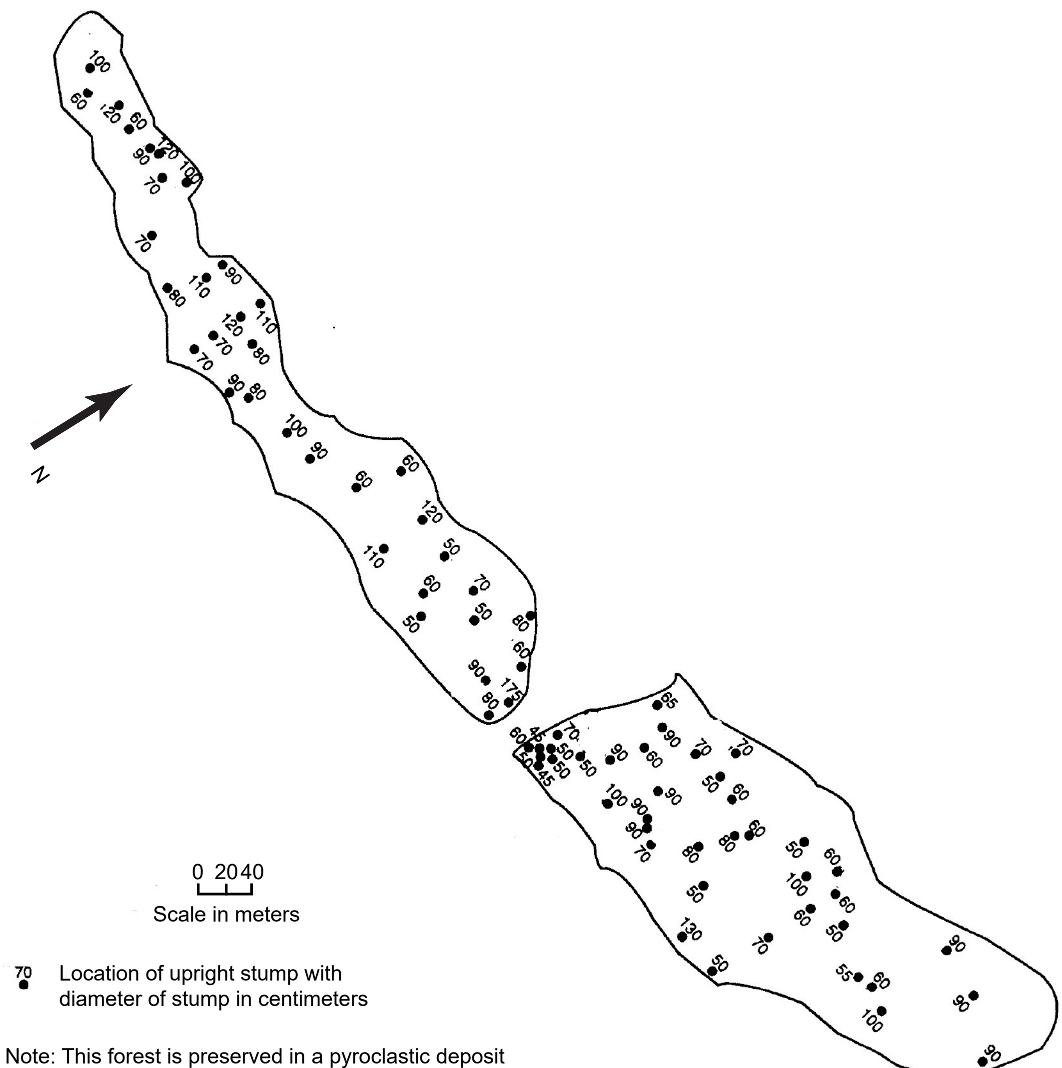


Fig. 8. Corystosperm Fossil Forest, Le Elcha Mine, Upper Triassic, Rio Blanco Formation, Mendoza Province, Argentina.

determinations that are based without quantitative, measurable data derived from a 3-dimensional view of the "forest." Regrettably fossil forests, such as those at Yellowstone National Park and at Joggins, Nova Scotia, can be measured only with two dimensions, not three, because their best exposures are on the sides of cliffs. Density can be best determined from fossil forests in three dimensions as at La Elcha Mine, Argentina, as well as at Suihent, Mongolia.

The 12 criteria of Kurt Wise (2018) lack a mathematical quantification of the Glasgow Fossil Grove, but perhaps such is not needed in order to decide the issue of autochthony versus allochthony. In other cases, such as the La Elcha Mine "fossil forest" of Argentina the quantification is important. Even when quantification suggests possible autochthony, the data cannot prove whether the trees originally grew where they are found as fossils or whether they were transported as part of an antediluvian floating forest. According to Wise (2018), the second and third criteria would classify a forest as allochthonous if it is "monotaxic." The La Elcha Mine forest is entirely monotaxic, being composed of a single taxon of corystosperm. On this basis alone it should be allochthonous, but the floating forest hypothesis renders it as originally autochthonous before being transported by Flood waters to its present resting site as a unit, not as individual trees. This confronts us with a contradiction that present creationist criteria are not specific enough to resolve.

A schematic diagram of the Suihent Petrified Forest found in Upper Jurassic beds in Mongolia is shown in fig. 9, modified from Keller and Hendrix (1997). The planar view shows 72 stumps, all upright, with an average spacing of 10–40 m, indicating about the proper spacing of an open-savannah forest. An additional 49 prostrate logs (not shown) are mixed throughout this upright-tree forest. Sixty-eight percent of the logs at Suihent are upright stumps (Keller and Hendrix 1997, 285). The prostrate logs that can be measured depict a preferred orientation of northwest to southeast by south, which may indicate transport. Only four of the 72 upright stumps have roots exposed sufficiently to view them as penetrating the subsurface, thus establishing those four as in situ. According to Fritz and Harrison (1985) if 10% to 15% of the total logs are upright, then the probability is high that at least some of them are in situ, based on an analysis of upright and prostrate trees at Mount St. Helens. The trees may have been buried in a volcanic pyroclastic flow, whereas the Yellowstone and Mount St. Helens trees were buried in water-laid deposits containing large amounts of volcanic-eruption sediments. Both the Argentine and Mongolian fossil forests are excellent examples of criterion 13. Of the two, the Argentine forest is more controversial for creationists because it can be interpreted as being allochthonous because of it being monospecific or as autochthonous because of



Note: This forest is preserved in a pyroclastic deposit and consists of 72 upright stumps interspersed with 49 horizontal logs in an area approximately 100 × 720 meters. The largest stump is 1.75 meters in diameter and the longest log is 13 meters in length. The arrow points to modern (not paleo) north. (Drawn to scale).

Fig. 9. The Suihent Fossil Forest, Upper Jurassic, Southeastern Mongolia.

its proper spacing being preserved while transported en toto as an antediluvian floating forest.

Autochthony in Tertiary Brown Coal Beds

Above the Pennsylvanian coal beds stratigraphically are Mesozoic coal beds, especially in the western United States, and yet higher in the geologic column are the Cenozoic brown coal beds of the northern great plains of the United States and of the open-pit mines scattered across northern and eastern Europe. The floating mat model flounders today on the discovery of mammoth coal deposits outside of Carboniferous deposits. The Miocene brown coal or lignite deposits of eastern Germany and western Poland are problematic. An open-pit lignite mine near the city of Gross Raschen in Germany preserves the evidence of two fossil forests, one on top of the other, later considered to be in Miocene sedimentary units (see fig. 10 adapted from Stutzer, 1940, 15). The trees are spaced apart as in a modern mixed forest with angiosperms and conifers, thus conforming to criteria 1b. Even the size distribution fits modern forests that have large mature trees interspersed with very young trees. The first criterion of Clarey and Tomkins is proving to be one of the most crucial ones for assisting in the determination of autochthony in fossil forests, but it is not the only significant one.

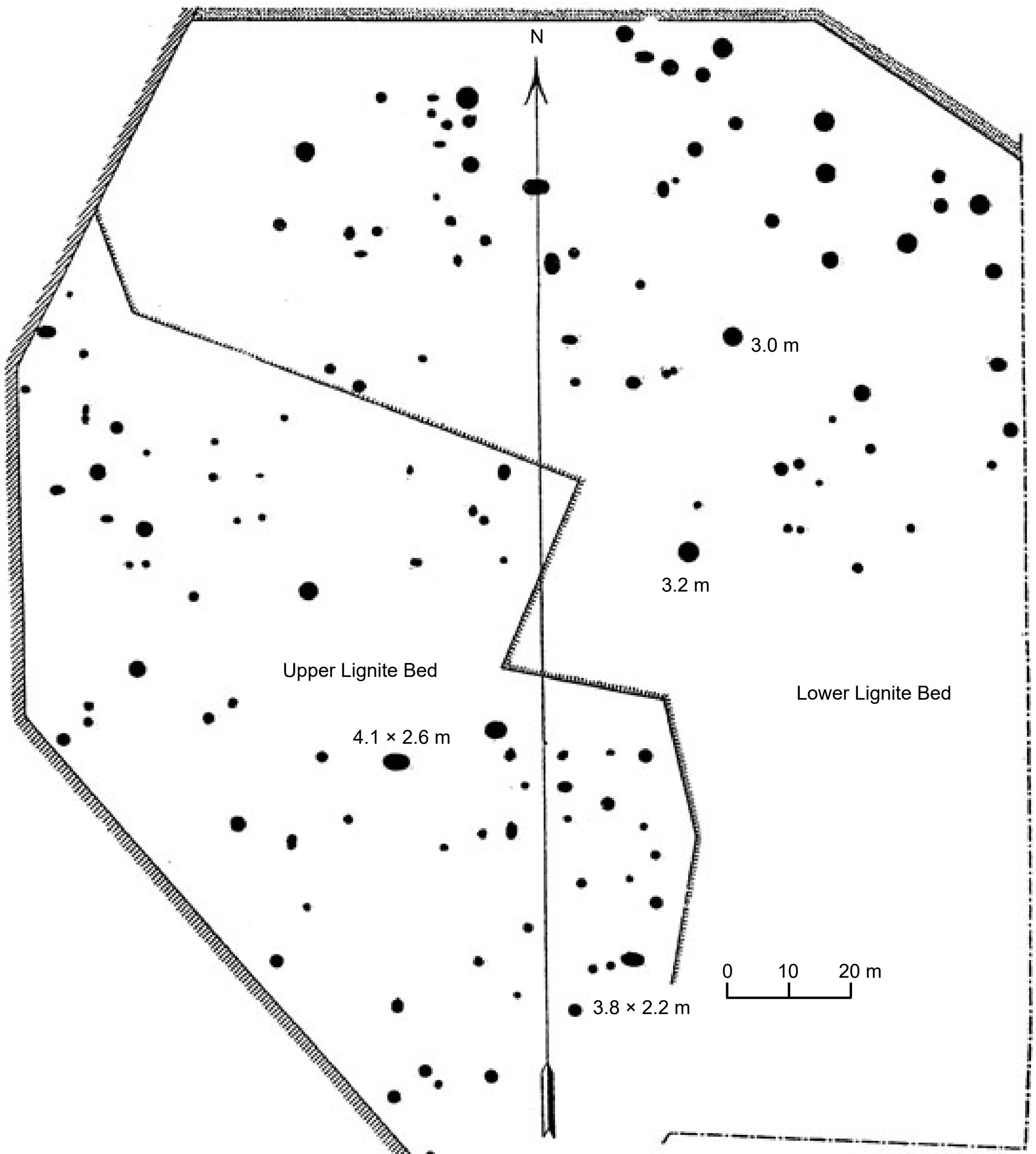


Fig. 10. Two lignite beds (lower and upper) with some upright stumps over 3.0 m in diameter and some having tree-ring counts of nearly 1000. Location is a strip mine in Germany (Stutzer 1940, 150).

A possible explanation for the Tertiary brown-coal beds of Europe is to invoke the floating mat hypothesis. But the floating mat hypothesis cannot explain where floating mats of Tertiary coals composed mostly of angiosperms and modern gymnosperms may have originated. The two major types of floating mats, Carboniferous and Miocene, are incompatible if both were floating at the same time on diluvial waters. Why is it that without exception the Cenozoic brown or soft coals are always stratigraphically much higher than the Paleozoic hard coals, especially if both floating mats originated at the same time? Why is it that floating mats composed of entirely extinct Paleozoic plants in the one and of modern plants somewhat typical of today's forests in the other have never intermixed if they were floating at the same time? It could be argued that the floating mats at some point would have collided and even intermixed. Schönknecht (1997) calculates that prior to the Flood the lignite beds represented vegetation that would have covered 40% of today's land surface, based upon lignite coal deposits today occupying $60 \times 10^6\,km^2$ of land surfaces. He concluded that many of the Tertiary lignite beds may have accumulated as a result of small post-Flood catastrophes. The discovery of upright fossil trees in connection with coal beds presents problems for explaining such as either pre-Flood or post-Flood. Again, much more creationist research is needed.

The Gross Raschen open-pit mine of Germany offers a new twist on criteria 1, which pertains to "finding multiple, single-species trees spaced in growth position *in the same horizontal plane*…" (Clarey and Tomkins 2016, emphasis added). The German open-pit mine unambiguously has two levels of fossil forests, one superimposed directly on top of the other. This fact alone merits the proposal of a new criterion that is modification of criterion 1. Criterion 14 modified from criterion 1 reads: "finding both conifers and angiosperms nearly equidistantly spaced in all directions from the upright trunks located *on two or more levels* of peat, lignite, or coal." Advocates of either the floating-logs or the floating-forest hypotheses will have a most difficult time explaining how the two mats with some very large trees, some having a ring count of nearly 1,000 rings, have been superimposed on two levels perhaps during the Flood. However, the challenge presented here to both the floating-forest and floating-logs hypotheses are quickly resolved if the Miocene "forests" at Gross Raschen are declared to be post-diluvian.

Insights Gleaned from Mount St. Helens

The eruption of Mount St. Helens on May 19, 1980, has created an ideal laboratory for studying fossil trees and establishing two additional criteria for autochthony versus allochthony. The most obvious and convincing evidence for allochthony has been discovered at the bottom of Spirit Lake, the large lake that survived the volcanic explosion. Creationist Harold Coffin studied dozens of upright stumps floating upright in the lake months after the eruption and deposited upright on the lake bottom (Coffin 1983). His historic report was published in *Geology*. He used side-scan sonar to identify the upright stumps that many times protruded significantly upward from the lake bottom. All of these were clearly allochthonous.

A study almost entirely neglected by creationists was published a few years later by Karowe and Jefferson (1987). It offers two more important criteria for distinguishing allochthonous upright stumps from those that were autochthonous. Criterion 15 is what can be labeled "disparity of sediments." Rooted in situ stumps are declared in situ if the sediment at the rooted zone and below it is much finer grained than the sediment surrounding the stumps, which often contains boulders and cobbles. This criterion becomes especially significant if it is employed in conjunction with root length in the post-eruption sediments, described as follows: "Upright stumps containing roots which penetrated a finer-grained matrix below the volcani-clastic sediment in which they were buried were considered to be *in situ*, whereas horizontal logs or upright stumps bearing detached roots were considered to be transported" (Karowe and Jefferson, 1987, 191–192).

Criterion 16 is derived from a comparison of stump height versus width in the post-eruption sediments. The authors state: "Few instances were noted of trees which clearly had been transported in upright position. Those that were seen [at the North Fork Tuttle River, Washington] measured less than two m high and had broad root mats, approximately 1.5 m across…. Root systems often incorporated large boulders and were encased within a mudflow matrix" (Karowe and Jefferson 1987, 197). According to criterion 16, the height/width dimensions of stumps are critical. Stumps having many meters of height and only a meter or so of stump base diameter will more likely to be autochthonous. Allochthony has been assessed where the stumps were bottom heavy, stabilized in a vertical stance by wide root systems that were wider than the height of the stump or by boulders entrapped in the root mass. Another situation of allochthony occurs when whole groves of stumps have been "transported over considerable distances" via a mudflow. One mudflow matrix in the middle of Smith Creek appears to have a dozen or so upright stumps on its surface. The "island" in the creek's center was estimated to be 10 m. by 20 m., and it was hypothesized that the island was transported as a single entity from a higher slope. This discovery may offer creationists a new interpretation for the transport of groves of trees as single units in volcanic mudflow deposits, such as at Yellowstone. This especially could help support the floating-forest hypothesis. One should keep in mind that Karowe and Jefferson's study concentrated solely on mudflow deposits caused by volcanic eruptions at Mount St. Helens and at Yellowstone and may not be applicable to non-volcanic settings.

The Past and Future of Creationist Paleobotanical Studies

One major impetus for the founding of the modern creationist movement was the discussion of fossil forests at the same time the radiocarbon method of dating was first used. The discussions took place in the late 1940s at annual meetings of the American Scientific Affiliation (A.S.A.), an evangelical organization composed entirely of scientists who wished to harmonize the various sciences with the Biblical account. The leader of an attack on the writings and ideas of George McCready Price, the best-known advocate of Flood geology, was a Wheaton College graduate, J. Laurence Kulp. (Kulp later went on to establish the radiocarbon dating lab at Columbia University in 1951.) Kulp's attacks were both oral and written, which were summarized in a 1950 issue of the society's journal in an article entitled "Flood Geology." One of his leading arguments against the short chronology of Price was this: "In Yellowstone Park there is a stratigraphic section of 2000 feet exposed which shows 18 successive petrified forests. Each forest grew to maturity before it was wiped out with a lava flow. The lava had to be weathered into soil before the next forest could even start. Further, this is only a small section of the stratigraphic column in this area. It would be most difficult for flood geology to account for these facts" (Kulp 1950, 11).

One member of A.S.A. in those days was Henry Morris, who ardently attempted to put Flood geology back on their agenda, despite attacks against it by Kulp. Later in the 1950s Morris was joined by the efforts of John C. Whitcomb and others. This culminated with the publication of *The Genesis Flood* (Whitcomb and Morris 1961), a book that counteracts the arguments of Kulp and A.S.A. associates and advocates many of the arguments of Price. In this work Morris had a considerable discussion of the Yellowstone fossil forests after quoting in full the 1950 passage from Kulp cited above (Whitcomb and Morris 1961, 418–421). Morris even published a schematic diagram of the cliffs at Specimen Ridge, showing the 18 levels mentioned by Kulp. Whitcomb and Morris accepted the fact that today at that one locality there are 18 buried "forests" on top of one another. Undoubtedly, the focus by Morris on these fossil forests caught the interest of creationists at several academic institutions, resulting in much research and numerous publications in secular journals defending a creationist interpretation of the Yellowstone fossil forests. This has not been repeated by any creationist research and subsequent publications on fossil forests since the 1980s other than on the Paleozoic lycopod "forests". One can conclude that it was the debate about the origin of the Yellowstone fossil forests that gave impetus to the A.S.A. conferences in the late 1940s and spilled over into the 1961 publication of *The Genesis Flood*. The final ripple effect of this early discussion was the field work done by numerous individuals on the Yellowstone fossil forests.

The proposal of this paper is that creationists ought to rally many of its scientists, especially those trained in botany and its related fields, to carry out joint research projects on fossil forests comparable to the exhaustive studies of the Yellowstone Fossil Forests carried out in the 1970s and 1980s. Since that time a deluge of studies by secular geologists have been published claiming multiple discoveries of purported fossil forests around the world. An exhaustive bibliography is attached to this study in order to facilitate further the efforts of creationists in determining which upright trees are in situ and which are transported

Conclusion

A total of 16 criteria, including the two additional ones proposed in the neglected Karowe and Jefferson (1987) study, are established for use by creationists in determining the possibility of autochthony in fossil forests below the Pleistocene. Two or more criteria are needed in conjunction with each other to suggest autochthony for each purported fossil forest. Currently, the two fossil forests with the highest probability of being autochthonous are the Junggar Fossil Forest of western China in the upper part of the Jurassic and the Hindostan Whetstone Quarry with its accompanying evidence of lycopsid root and rootlet growth in the Lower Pennsylvanian of southern Indiana. Those two fossil forests mark either the end of the Flood or its beginning if the forests are confirmed in future studies as being in situ. This present study is the first from a creationist viewpoint to combine an analysis of purported tidal cycles with possible Pennsylvanian fossil forests of the Midwestern United States. It is also the first to utilize paleocurrents in a possible forest of western China (Junggar) to distinguish autochthony from allochthony. Mathematical rigor based on field measurements is critical for evaluating the potential of some fossil forests where such data are available.

References

Archer, A.W., and E.P. Kvale. 1989. "Seasonal and Yearly Cycles Within Tidally Laminated Sediments: An Example From the Pennsylvanian of Indian, U.S.A. In *Geology of the Lower Pennsylvanian in Kentucky, Indiana, and Illinois*, edited by J.C. Cobb, *Illinois Basin Studies* 1: 45–56. [Bloomington, Indiana]: Illinois Basin Consortium.

Archer, Allen W., Gerald J. Kuecher, and Erik P. Kvale. 1995. "The Role of Tidal-Velocity Asymmetries in the Deposition of Silty Tidal Rhythmites (Carboniferous, Eastern Interior Coal Basin, U.S.A.)." *Journal of Sedimentary Research* 65, no. 2a (April): 408–416.

Artabe, Analía E., Luis A. Spalletti, Mariana Brea, Ari Iglesias, Eduardo M. Morel, and Daniel G. Ganuza. 2007. "Structure of a Corystosperm Fossil Forest From the Late Triassic of Argentina." *Palaeogeography, Palaeoclimatology, Palaeoecology* 243, no. 3–4 (January 22): 451–470.

Ash, Sidney R., and Geoffrey T. Creber. 1992. "Paleoclimatic Interpretation of the Wood Structures of the Trees in the Chinle Formation (Upper Triassic), Petrified Forest National Park, Arizona, USA." *Palaeogeography, Palaeoclimatology, Palaeoecology* 96, no. 3–4 (October 27): 299–317.

Austin, Steven A. 1979. "Depositional Environment of the Kentucky No. 12 Coal Bed (Middle Pennsylvanian) of Western Kentucky, with Special Reference to the Origin of Coal Lithotypes. Ph.D. thesis, Pennsylvania State University. State College: Pennsylvania.

Austin, Steven A. 1986. "Mount St. Helens and Catastrophism." In *Proceedings of the First International Conference on Creationism*, vol. 1, 3–9. Pittsburgh, Pennsylvania: Creation Science Fellowship.

Austin, S.A. 1991. Floating logs and log deposits of Spirit Lake, Mount St. Helens Volcano National Monument, Washington. *Geological Society of America Abstracts with Program* 23, no. 5: 85.

Austin, Steve. 2010. "Why is Mount St. Helens Important to the Origins Controversy?" In *New Answers Book 3*, edited by Ken Ham, 253–262. Green Forest, Arkansas: Master Books.

Austin, Steven A., and Roger W. Sanders. 2018. "Historical Survey of the Floating Mat Model for the Origin of Carboniferous Coal Beds." In *Proceedings of the Eighth International Conference on Creationism*, edited by J.H. Whitmore, 277–286. Pittsburgh, Pennsylvania: Creation Science Fellowship.

Batten, David J. 2002. "Palaeoenvironmental Setting Of the Purbeck Limestone Group Of Dorset, Southern England." In: *Life and Environments in Purbeck Times*, edited by Andrew R. Milner and David J. Batten, Special Papers in Paleontology 68: 13–20.

Bergman, Jerry. 2018. "Darwin Skeptics: A Select List of Science Academics, Scientists, and Scholars Who are Skeptical of Darwinism." https://www.rae.org/essay-links/darwinskeptics/.

Berthault, Guy. 1994. "Experiments in Stratification." In *Proceedings of the Third International Conference on Creationism*, edited by R.E. Walsh, 103–110. Pittsburgh, Pennsylvania: Creation Science Fellowship.

Brand, Leonard, and Arthur Chadwick. 2016. *Faith, Reason, and Earth History: A Paradigm of Earth and Biological Origins by Intelligent Design*. 3rd ed. Berrien Springs, Michigan: Andrews University Press.

Brand, Leonard. 2018. "An Explanation for the "Yellowstone Fossil Forests." *Origins (Geoscience Research Institute)* 65: 75–80.

Brea, Mariana, Analía E. Artabe, Juan R. Franzese, Alejandro F. Zucol, Luis A. Spalleti, Eduardo M. Morel, Gonzalo D. Veiga, and Daniel G. Ganuza. 2015. "Reconstruction of a Fossil Forest Reveals Details of the Palaeoecology, Palaeoenvironments and Climatic Conditions in the Late Oligocene of South America. *Palaeogeography, Palaeoclimatology, Palaeoecology* 418 (15 January): 19–42.

Césari, S.N., P. Busquets, F. Colombo Piñol, I. Méndez Bedia, and C.O. Limarino. 2010. "Nurse Logs: An Ecological Strategy in a Late Paleozoic Forest From the Southern Andean Region." *Geology* 38, no. 4 (April): 295–298.

Chadwick, Arthur, and Tetsuya Yamamoto. 1984. "A Paleoecological Analysis of the Petrified Trees in the Specimen Creek Area of Yellowstone National Park, Montana, U.S.A." *Palaeogeography, Palaeoclimatology, Palaeoecology* 45, no. 1 (February): 39–48.

Clarey, Timothy L. 2015. "Examining the Floating Forest Hypothesis: A Geological Perspective." *Journal of Creation* 29, no. 3 (December): 50–55.

Clarey, Timothy L., and Jeffrey P. Tomkins. 2016. "An Investigation into an In Situ Lycopod Forest Site and Structural Anatomy Invalidates the Floating-Forest Hypothesis." *Creation Research Society Quarterly* 53, no. 2 (Fall): 110–122.

Coffin, Harold G. 1971. "Vertical Flotation of Horsetails (*Equisetum*): Geological Implications." *Geological Society of America Bulletin* 82, no. 7 (July): 2019–2022.

Coffin, Harold G. 1976. "Orientation of Trees in "Yellowstone Petrified Forests." *Journal of Paleontology* 50, no. 3: 539–543.

Coffin, Harold G. 1983. "Erect Floating Stumps in Spirit Lake, Washington." *Geology* 11, no. 5 (May): 298–299.

Coffin, Harold G. 1987. "Sonar and Scuba Survey of a Submerged Allochthonous "Forest" in Spirit Lake, Washington." *Palaios* 2, no. 2: 179–180.

Coffin, Harold G. 1997. "The Yellowstone Petrified 'Forests'." *Origins* 24, no. 1: 2–44.

Coffin, Harold G. 2005. "Research on the Yellowstone Petrified Forests." In *Origin by Design*, rev. edition, edited by Harold G. Coffin, Robert H. Brown, and L. James Gibson, 230–249. Hagerstown, Maryland: Review and Herald.

Császár, Géza, Miklos Kazmer, Erdei Boglarka, and Imre Magyar. 2009. "A Possible Late Miocene Fossil Forest PaleoPark in Hungary." *Carnets de Geologie / Notebooks on Geology,* 121–133. http://doc.rero.ch/record/208914.

Cúneo, N. Rubén, Edith L. Taylor, Thomas N. Taylor, and Michael Krings. 2003. "*In situ* Fossil Forest From the Upper Fremouw Formation (Triassic) of Antarctica: Paleoenvironmental Setting and Paleoclimate Analysis." *Palaeogeography, Palaeoclimatology, Palaeoecology* 197, no. 3–4 (September 1): 239–261.

Daugherty, Lyman H. 1963. "Triassic Roots From the Petrified Forest National Park." *American Journal of Botany* 50, no. 8 (September): 802–805.

Davies-Vollum, Katherine Sian, Lisa Diane Boucher, Patrick Hudson, and Andrzej Yael Proskurowski. 2011. "A Late Cretaceous Coniferous Woodland From the San Juan Basin, New Mexico." *Palaios* 26, no. 1–2 (January–February): 89–98.

DiMichele, William A., Cortland F. Eble, and Dan S. Chaney. 1996. "A Drowned Lycopsid Forest Above the Mahoning Coal (Conemaugh Group, Upper Pennsylvanian) in Eastern Ohio, U.S.A." *International Journal of Coal Geology* 31 (no. 1–4): 249–276.

DiMichele, William A., Howard J. Falcon-Lang, W. John Nelson, Scott D. Elrick, and Philip R. Ames. 2007. "Ecological Gradients Within a Pennsylvanian Mire Forest." *Geology* 35, no. 5 (May): 415–418.

DiMichele, William A., and Howard J. Falcon-Lang. 2011. "Pennsylvanian "Fossil Forests" in Growth Position (T^0 Assemblages): Origin, Taphonomic Bias and Palaeoecological Insights." *Journal of the Geological Society, London* 168, no. 2 (February): 585–605. https://pdfs.semanticscholar.org/1687/99e58f3023086aeed302c6e9cda232b6d340.pdf.

DiMichele, William A., Spencer G. Lucas, and Karl Krainer. 2012. "Vertebrate Trackways Among a Stand of *Supai* White Plants on an Early Permian Floodplain, New Mexico." *Journal of Paleontology* 86, no. 4 (July): 584–594.

Falcon-Lang, Howard J. 2006. "Latest Mid-Pennsylvanian Tree-Fern Forests in Retrograding Coastal Plain Deposits, Sydney Mines Formation, Nova Scotia, Canada." *Journal of the Geological Society, London* 163, no. 1: 81–93.

Falcon-Lang, Howard J., William A. DiMichele, Scott Elrick, and W. John Nelson. 2009. "Going Underground: In Search of Carboniferous Coal Forests." *Geology Today* 25, no. 5 (September–October): 181–184.

Fisk, Lanny H., and William J. Fritz. 1984. "Pseudoborings in Petrified Wood from the Yellowstone 'Fossil Forests'." *Journal of Paleontology* 58, no. 1 (January): 58–62.

Francis, Jane. 1982. The Fossil Forests of the Basal Purbeck Formation (Upper Jurassic) of Dorset, Southern England: Palaeobotanical and Palaeoenvironmental Investigations. Ph.D. dissertation, University of Southampton, United Kingdom. https://eprints.soton.ac.uk/388126/.

Fritz, William John, and Lanny H. Fisk. 1977. "Paleoecology of Petrified Woods from the Amethyst Mountain 'Petrified Forest', Yellowstone National Park." *National Park Proceedings* 5, no. 2:743-749. Washington, D.C.: United States Government Printing Office.

Fritz, W.J., and L.H. Fisk. 1978. "Eocene Petrified Woods From One Unit of the Amethyst Mountain 'Petrified Forest'." *Northwest Geology* 7: 10–19.

Fritz, W.J. 1980a. "Stratigraphic Framework of the Lamar River Formation in Yellowstone National Park." *Northwest Geology* 9: 1–18.

Fritz, William J. 1980b. "Reinterpretation of the Depositional Environment of the Yellowstone 'Fossil Forests'." *Geology* 8, no. 7 (July): 309–313.

Fritz, William J. 1980c. "Stumps Transported and Deposited Upright by Mount St. Helens Mud Flows." *Geology* 8, no. 12 (December 1): 586–588.

Fritz, William J., and Sylvia Harrison. 1985. "Transported Trees From the 1982 Mount St. Helens Sediment Flows: Their Use as Paleocurrent Indicators." *Sedimentary Geology* 42, no. 1–2: 49–64.

Gastaldo, Robert A., Ivana Stevanoviç-Walls, and William N. Ware. 2004. "Erect Forests are Evidence for Coseismic Base-Level Changes in Pennsylvanian Cyclothems of the Black Warrior Basin, U.S.A." In *Sequence Stratigraphy, Paleoclimate, and Tectonics of Coal-bearing Strata*, edited by J.C. Pashin and R.A. Gastaldo, A.A.P.G. Studies in Geology 51: 219–238.

Greb, Stephen F., and Allen W. Archer. 1995. "Rhythmic Sedimentation in a Mixed Tide and Wave Deposit, Hazel Patch Sandstone (Pennsylvanian), Eastern Kentucky Coal Field." *Journal of Sedimentary Research* B65, no. 1 (February 15): 96–106.

Greenwood, David R., and James F. Basinger. 1993. "Stratigraphy and Floristics of Eocene Swamp Forests from Axel-Heiberg Island, Canadian Arctic Archipelago." *Canadian Journal of Earth Sciences* 30, no. 9: 1914–1923.

Gulbranson, E.L., J.L. Isbell, E.L. Taylor, P.E. Ryberg, T.N. Taylor, and P.P. Flaig. 2012. "Permian Polar Forests: Deciduousness and Environmental Variation." *Geobiology* 10, no. 6 (November): 479–495.

Hinz, Juliane K., Ian Smith, Hans-Ulrich Pfretzschner, Oliver Wings, and Ge Sun. 2010. "A High-Resolution Three-Dimensional Reconstruction of a Fossil Forest (Upper Jurassic Shishugou Formation, Junggar Basin, Northwest China)." *Palaeodiversity and Palaeoenvironments* 90, no. 3 (September): 215–240.

Johns, Warren H. 2017. "Can Creationists Accept Fossil Forests as Being in Situ?" *Creation Research Society Quarterly* 54, no. 1 (Summer): 71–75.

Johnson, Kirk Rodney. 2007. "Palaeobotany: Forests Frozen in Time." *Nature* 447, no. 7146 (June 14): 786–787.

Karowe, Amy L., and Timothy H. Jefferson. 1987. "Burial of Trees by Eruptions of Mount St. Helens, Washington: Implications for the Interpretation of Fossil Forests." *Geological Magazine* 124, no. 3 (May): 191–204.

Keller, Alysa M., and Marc S. Hendrix. 1997. "Paleoclimatologic Analysis of a Late Jurassic Petrified Forest, Southeastern Mongolia." *Palaios* 12, no. 3 (June): 282–291.

Kuecher, Gerald J. 1983. Rhythmic Sedimentation and Stratigraphy of the Middle Pennsylvanian Francis Creek Shale Near Braidwood, Illinois. M.S. thesis, Northeastern Illinois University, Chicago, Illinois.

Kulp, J. Laurence. 1950. "Deluge Geology." *Journal of the American Scientific Affiliation* 2, no. 1: 1–15.

Kvale, Erik P., Allen W. Archer, and Hollis R. Johnson. 1989. "Daily, Monthly, and Yearly Tidal Cycles Within Laminated Siltstones Of the Mansfield Formation (Pennsylvanian) Of Indiana." *Geology* 17, no. 4 (April): 365–368.

Kvale, Erik P., Gordon S. Fraser, Allen W. Archer, Ann Zawistoski, Nathan Kemp, and Patrick McGough. 1994. "Evidence Of Seasonal Precipitation In Pennsylvanian Sediments Of the Illinois Basin." *Geology* 22, no. 4 (April): 331–334.

Kvale, Erik P., Jeff Cutright, Douglas Bilodeau, Allen Archer, Hollis R. Johnson, and Brian Pickett. 1995. "Analysis Of Modern Tides and Implications For Ancient Tidalites." *Continental Shelf Research* 15: no. 15 (December): 1921–1943.

Lanier, William P., Howard R. Feldman, and Allen W. Archer. 1993. "Tidal Sedimentation From a Fluvial to Estuarine Transition, Douglas Group, Missourian–Virgilian, Kansas." *Journal of Sedimentary Petrology* 63, no. 5 (September 1): 860–873.

Lee, Nayeon, Sungkwang Mun, Mark Horstemeyer, Stephen J. Horstemeyer, and David J. Lang. 2018. "A Characterization of Petrified and Mummified Wood From an Eocene Deposit in Mississippi." In *Proceedings of the Eighth International Conference on Creationism*, edited by J.H. Whitmore, 238–247.

Mastalerz, Maria, Erik P. Kvale, B. Artur Stankiewicz, and Kristin Portle. 1999. "Organic Geochemistry in Pennsylvanian Tidally Influenced Sediments from SW Indiana." *Organic Geochemistry* 30, no. 1 (January): 57–73.

McKnight, Cleavy L., S.A. Graham, A.R. Carroll, Q. Gan, David L. Dilcher, Min Zhao, and Yun Hai Liang. 1990. "Fluvial Sedimentology of an Upper Jurassic Petrified Forest Assemblage, Shishu Formation, Junggar Basin, Xinjiang, China." *Palaeogeography, Palaeoclimatology, Palaeoecology* 79, nos. 1–2 (July): 1–9.

Miller, Molly F., Nichole E. Knepprath, David J. Cantrill, Jane E. Francis, and John L. Isbell. 2016. "Highly Productive Polar Forests From the Permian Of Antarctica." Permian and Triassic fossil forests from the central Transantarctic Mountains. *Palaeogeography, Palaeoclimatology, Palaeoecology* 441 (January): 292–304.

Morris, John, and Steven A. Austin. 2003. *Footprints In the Ash: The Explosive Story of Mount St. Helens*. Green Forest, Arkansas: Master Books.

Oard, M.J. 1995a. "Mid and High Latitude Flora Deposited in the Genesis Flood. Part 1: Uniformitarian Paradox." *Creation Research Society Quarterly* 32, no. 2 (September): 107–115.

Oard, M.J. 1995b. "Mid and High Latitude Flora Deposited in the Genesis Flood. Part 2: A Creationist Hypothesis. *Creation Research Society Quarterly* 32, no. 3 (December): 138–141.

Oard, Michael J., and Hank Gieseke. 2007. "Polystrate Trees Require Rapid Deposition." *Creation Research Society Quarterly* 43, no. 3 (March): 232–240.

Oard, Michael J. 2008. "The Paradox of Warm-Climate Vegetation in Antarctica." *Journal of Creation* 22, no. 2 (August): 8–10.

Oard, Michael J. 2014a. "'Earliest' Fossil 'Forest' Surprisingly Complex." *Journal of Creation* 28, no. 2 (August): 15–16.

Oard, Michael J. 2014b. "Post-Flood Log Mats Potentially Can Explain Biogeography." *Journal of Creation* 28, no. 3 (December): 19–22.

Opluštil, Stanislav, Josef Pšenička, Milan Libertín, Jiří Bek, Jiřina Dašová, Zbyněk Šimůnek, and Jana Drábková. 2009a. "Composition and Structure Of an *In Situ* Middle Pennsylvanian Peat-Forming Plant Assemblage Buried In Volcanic Ash, Radnice Basin (Czech Republic)." *Palaios* 24, nos. 11–12 (November–December): 726–746.

Opluštil, Stanislav, Josef Pšenička, Milan Libertín, Arden R. Bashforth, Zbyněk Šimůnek, Jana Drábková, and Jiřina Dašková. 2009b. "A Middle Pennsylvanian (Bolsovian) Peat-Forming Forest Preserved *In Situ* In Volcanic Ash of the Whetstone Horizon In the Radnice Basin, Czech Republic." *Review of Palaeobotany and Palynology* 155, nos. 3–4 (June): 234–274.

Opluštil, Stanislav, Josef Pšenička, Jiří Bek, Jun Wang, Zhuo Feng, Milan Libertín, Zbyněk Šimůnek, Jan Bureš, and Jana Drábková. 2014. T^0 Peat-Forming Plant Assemblage Preserved In Growth Position By Volcanic Ash-Fall: A Case Study From the Middle Pennsylvanian of the Czech Republic." *Bulletin of Geosciences* 89, no. 4 (November): 773–818.

Peters, Walter G. 1971. "The Cyclical Black Shales." *Creation Research Society Quarterly* 7, no. 4 (March): 193–200.

Pfefferkorn, Herman W., Allen W. Archer, and Erwin L. Zodrow, 2001. "Modern Tropical Analogues to Carboniferous Standing Forests: Comparison of Extinct *Mesocalamites* With Extant *Montrichardia*." *Historical Biology* 15, 3: 235–250.

Rinehart, Larry F., Spencer G. Lucas, Lawrence Tanner, W. John Nelson, Scott D. Elrick, Dan S. Chaney, and William A. DiMichele. 2015. "Plant Architecture And Spatial Structure Of An Early Permian Woodland Buried By Flood Waters, Sangre de Christo Formation, New Mexico." *Palaeogeography, Palaeoclimatology, Palaeoecology* 424, (15 April): 91–110.

Rößler, Ronny, Thorid Zierold, Zhuo Feng, Ralph Kretzschmar, Mathias Merbitz, Volker Annacker, and Jörg W. Schneider. 2012. "A Snapshot Of An Early Permian Ecosystem Preserved By Explosive Volcanism: New Results From The Chemnitz Petrified Forest, Germany." *Palaios* 27, nos. 11–12 (November–December): 814–834.

Sanchez, Evelyn, Rachel Gallery, and James W. Dalling. 2009. "Importance Of Nurse Logs As a Substrate For the Regeneration Of Pioneer Tree Species On Barro Colorado Island, Panama." *Journal of Tropical Ecology* 25, no. 4 (July): 429–437.

Sanders, Roger W., and Steven A. Austin. 2018. "Paleobotany Supports the Floating Mat Model For the Origin Of Carboniferous Coal Beds." In *Proceedings of the Eighth International Conference on Creationism*, edited by J.H. Whitmore, 525–552. Pittsburgh, Pennsylvania: Creation Science Fellowship.

Scheven, J. 1981. "Floating Forests On Firm Ground. Advances in Carboniferous Research." *Journal of the Biblical Creation Society* 3, no. 9: 36–43.

Scheven, Joachim 1996. "The Carboniferous Floating Forest: An Extinct Pre-Flood Ecosystem." *Creation Ex Nihilo Technical Journal* 10, no. 1 (April): 70–81.

Schönknecht, Gerhard. 1997. "Too Much Coal For a Young Earth?" *Creation Ex Nihilo Technical Journal* 11, no. 3 (December): 278–282.

Snelling, Andrew A. 2009. *Earth's Catastrophic Past: Geology, Creation And The Flood*. 2 vols. Dallas, Texas: Institute for Creation Research.

Stein, William E., Christopher M. Berry, Linda VanAller Hernick, and Frank Mannolini. 2012. "Surprisingly Complex Community Discovered In The Mid-Devonian Fossil Forest at Gilboa." *Nature* 483, no. 7387 (1 March): 78–81.

Stutzer, Otto. 1940. *Geology of Coal*. Translated by Carl Noé Adolf. Edited by Gilbert Haven Cady. Chicago, Illinois: University of Chicago Press.

Thorn, Vanessa. 2005. "A Middle Jurassic Fossil Forest From New Zealand." *Palaeontology* 48, no. 5 (September 15): 1021–1039.

Varela, A.N., A. Iglesias, D. Poiré, A. Zamuner, S. Richiano, and M. Brea. 2016. "Fossil Forests In The Austral Basin (Argentina) Marking A Cenomanian Heterogeneous Forced Regressive Surface." *Geobiology* 14, no. 3 (May): 293–313.

Wang, Jun, Hermann W. Pfefferkorn, Yi Zhang, and Zhuo Feng. 2012. "Permian Vegetation Pompeii From Inner Mongolia And Its Implications For Landscape Paleoecology And Paleobiogeography Of Cathaysia." *Proceedings of the National Academy of Sciences* 109, no. 13 (March 27): 4927–4932.

Whitcomb, John C., and Henry M. Morris. 1961. *The Genesis Record: The Biblical Record And Its Scientific Implications*. Phillipsburg, New Jersey: Presbyterian and Reformed Publishing Company.

Wieland, Carl. 1995. "Forests That Grew On Water." *Creation* 18, no. 1 (December): 20–24.

Williams, Christopher James. 2002. Reconstruction Of High-Latitude Tertiary Floodplain Forests In The Canadian Arctic. Ph.D. dissertation, University of Pennsylvania.

Williams, Christopher J., Arthur H. Johnson, Ben A. LePage, David R. Vann, and Karen D. Taylor. 2003a. "Reconstruction Of Tertiary *Metasequoia* Forests. I. Test Of A Method For Biomass Determination Based On Stem Dimensions." *Paleobiology* 29, no. 2 (Spring): 256–270.

Williams, Christopher J., Arthur H. Johnson, Ben A. LePage, David R. Vann, and Tatsuo Sweda. 2003b. "Reconstruction Of Tertiary *Metasequoia* Forests. II. Structure, Biomass, And Productivity Of Eocene Floodplain Forests In The Canadian Arctic." *Paleobiology* 29, no. 2 (Spring): 271–292.

Williams, Christopher J., Emily K. Mendell, Jennifer Murphy, Wesley M. Court, Arthur H. Johnson, and Suzanna L. Richter. 2008. "Paleoenvironmental Reconstruction Of A Middle Miocene Forest From The Western Canadian Arctic." *Palaeogeography, Palaeoclimatology, Palaeoecology* 261, no. 1–2 (24 April): 160–176.

Williams, Christopher J., Ben A. LePage, Arthur H. Johnson, and David R. Vann. 2009. "Structure, Biomass, and Productivity Of A Late Paleocene Arctic Forest." *Proceedings of the Academy of Natural Sciences of Philadelphia* 158, no. 1 (1 April): 107–127.

Williams, E.L., G.F. Howe, G.T. Matzko, R.R. White, and W.G. Stark. 1995. "Fossil Wood Of Big Bend National Park, Brewster County, Texas. Part 4: Wood Structure, Nodules, Paleosols And Climate." *Creation Research Society Quarterly* 31, no. 4 (March): 225–238.

Wise, K. 2003. "The Pre-Flood Floating Forest: A Study In Paleontological Pattern Recognition." In *Proceedings of the Fifth International Conference on Creationism*, edited by R.L. Ivey, 371–381. Pittsburgh, Pennsylvania: Creation Science Fellowship.

Wise, Kurt P. 2018. "Fossil Grove And Other Paleozoic Forests As Allochthonous Flood Deposits." *Answers Research Journal* 11 (November 7): 247–266.

Woodmorappe, J. 1978. "A Diluvian Interpretation Of Ancient Cyclic Sedimentation." *Creation Research Society Quarterly* 14, no. 4 (March): 189–208.

Woolley, Joanna F. 2010. "The Origin Of The Carboniferous Coal Measures—Part 1: Lessons From History." *Journal of Creation* 24, no. 3: 76–81.

Woolley, Joanna F. 2011a. "The Origin Of The Carboniferous Coal Measures—Part 2: The Logic Of Lycopod Root Structure." *Journal of Creation* 25, no. 1: 69–76.

Woolley, Joanna F. 2011b. "The Origin Of The Carboniferous Coal Measures—Part 3: A Mathematical Test Of Lycopod Root Structure." *Journal of Creation* 25, no. 3: 74–78.

Bibliography

Akkemik, Ünal, Necla Turkoglu, Imogen Poole, İhsan Çiçek, Nesibe Köse, and Gürcan Gürgen. 2009. "Woods of a Miocene Petrified Forest near Ankara, Turkey." *Turkish Journal of Agriculture and Forestry* 33, no. 1: 89–97.

Akkemik, Ünal, Mustafa Arslan, Imogen Poole, Suat Tosun, Nesibe Köse, Nurgül Karlıoğlu Kiliç, and Abdurrahim Aydin. 2016. "Silicified Woods From Two Previously Undescribed Early Miocene Forest Sites Near Seben, Northwest Turkey." *Review of Palaeobotany and Palynology* 235 (December): 31–50.

Allen, M.W. 2008. "The Heavener Roadcut: Deltaic Environment or Flood Deposit?" *Creation Research Society Quarterly* 44, no. 4 (Spring): 301–307.

Allen, Sarah E. 2017. "Reconstructing the Local Vegetation and Seasonality of the Lower Eocene Blue Rim Site of Southwestern Wyoming Using Fossil Wood." *International Journal of Plant Sciences* 178, no. 9 (November–December): 689–714.

Amidon, Lorin. 1997. "Paleoclimate Study of Eocene Fossil Woods and Associated Paleosols from the Gallatin Petrified Forest, Gallatin National Forest, SW Montana." M.S. Thesis, University of Montana, Missoula, Montana, USA.

Ammons, Richard, William J. Fritz, R.B. Ammons, and Ailsa Ammons. 1987. "Cross-Identification of Ring Signatures in Eocene Trees (*Sequoia magnifica*) From the Specimen Ridge Locality of the Yellowstone Fossil Forests." *Palaeogeography, Palaeoclimatology, Palaeoecology* 60: 97–108.

Andrews, H.N., and L.W. Lenz. 1946. "The Gallatin Fossil Forest." *Annals of the Missouri Botanical Garden* 33, no. 3 (September): 309–313.

Appleton, Peter, Jacqui A. Malpas, Barry A. Thomas, and Christopher J. Cleal. 2011. "The Brymbo Fossil Forest." *Geology Today* 27, no. 3 (May): 107–113. https://www.researchgate.net/publication/232084477_The_Brymbo_Fossil_Forest.

Archer, Allen W. 1991. "Modeling of Tidal Rhythmites Using Modern Tidal Periodicities and Implications for Short-Term Sedimentation Rates." In *Sedimentary Modeling: Computer Simulations and Methods for Improved Parameter Definition*, edited by E.K. Franseen, W.L., Watney, C.G.St.C. Kendal, and W. Ross, Kansas Geological Survey Bulletin 233: 185–194.

Archer, Allen W., Erik P. Kvale, and Hollis R. Johnson. 1991. "Analysis of Modern Equatorial Tidal Periodicities as a Test of Information Encoded in Ancient Tidal Rhythmites." In *Clastic Tidal Sedimentology*, edited by D.G. Smith, G.E. Reinson, B.A. Zaitlin, and R.A. Rahmani, 189–196. Canadian Society of Petroleum Geologists, Memoir 16.

Archer, Allen W., Howard R. Feldman, Erik P. Kvale, and William P. Lanier. 1994. "Comparison of Drier- to Wetter-Interval Estuarine Roof Facies in the Eastern and Western Interior Coal Basins, USA." *Palaeogeography, Palaeoclimatology, Palaeoecology* 106, nos. 1–4: 171–185.

Archer, Allen W., Scott Elrick, W. John Nelson, and William A. DiMichele. 2016. "Cataclysmic Burial of Pennsylvanian Period Coal Swamps in the Illinois Basin: Hypertidal Sedimentation During Gondwanan Glacial Melt-Water Pulses." *Contributions to Modern and Ancient Tidal Sedimentology: Proceedings of the Tidalites 2012 Conference*, edited by Bernadette Tessier and Jean-Yves Reynaud. International Association of Sedimentologists Special Publication 47: 217–231.

Arct, M.J. 1979. "Dendrochronology of the Yellowstone Fossil Forests." Loma Linda, California: M.A. thesis, Loma Linda University.

Arct, Michael J. 1991. Dendroecology in the Fossil Forests of the Specimen Creek area, Yellowstone National Park. Ph.D. dissertation, Loma Linda University.

Ash, Sidney R., and Geoffrey T. Creber. 2003. "The Late Triassic *Araucarioxylon arizonica* Trees of the Petrified Forest National Park, Arizona, USA." *Palaeontology* 43, no. 1 (November): 15–28.

Bailey, Robin John. 2011. "Buried Trees and Basin Tectonics: A Discussion." *Stratigraphy* 8, no. 1 (January): 1–6.

Baker, Rodger A., and William A. DiMichele. 1997. "Biomass Allocation in Late Pennsylvanian Coal-Swamp Plants." *Palaios* 12, no. 2 (April): 127–132.

Ballhaus, Chris, Carole T. Gee, Conny Bockrath, Karin Greef, Tim Mansfeldt, and Dieter Rhede. 2012. "The Silicification of Trees in Volcanic Ash: An Experimental Study." *Geochimica et Cosmochimica Acta* 84 (May 1): 62–74.

Banerjee, Manju. 2005. "Autochthonous Deposition of Indian Coal Beds with Palaeobotanical Evidences of *in situ* Plants from Saharjuri Basin, Jharkhand." *Current Science* 88, no. 9 (10 May): 1487–1490.

Bannister, J.M., J.G. Conran, and D.E. Lee. 2016. "Life on the Phylloplane: Eocene Epiphyllous Fungi from Pikopiko Fossil Forest, Southland, New Zealand." *New Zealand Journal of Botany* 54, no. 4: 412–432.

Bashforth, Arden R., Howard J. Falcon-Lang, and Martin R. Gibling. 2010. "Vegetation Heterogeneity on a Late Pennsylvanian Braided-River Plain Draining the Variscan Mountains, La Magdalena Coalfield, Northwestern Spain. *Palaeogeography, Palaeoclimatology, Palaeoecology* 292, no. 3–4 (15 June): 367–390.

Bashforth, Arden R., and William A. DiMichele. 2012. "Permian Coal Forest Offers a Glimpse of Late Paleozoic Ecology." *Proceedings of the National Academy of Sciences* 109, no. 13 (March 27): 4717–4718.

Basinger, J.F. 1991. "The Fossil Forests of the Buchanan Lake Formation (early Tertiary), Axel Heiberg Island, Canadian Arctic Archipelago: Preliminary Floristics and Paleoclimate." *Bulletin—Geological Survey of Canada* 403: 39–65.

Basinger, J.F., D.R. Greenwood, and T. Sweda. 1993. "Early Tertiary Vegetation of Arctic Canada and Its Relevance to Paleoclimatic Interpretation." In *Cenozoic Plants and Climates of the Arctic*, eds. Michael C. Boulter and Helen C. Fisher, 175–198. London NATO Advanced Research Workshop (Nov. 1993).

Bateman, Richard M., Liadan G. Stevens, and Jason Hilton. 2016. "Stratigraphy, Palaeoenvironments and Palaeoecology of the Loch Humphrey Burn Lagerstätte and other Mississippian Palaeobotanical Localities of the Kilpatrick Hills, Southwest Scotland." *PEERJ* 4 (February 18): e1700.

Beasley, Greg J. 1993. "Long-Lived Trees: Their Possible Testimony to a Global Flood and Recent Creation." *CEN Technical Journal* 7, no. 1 (April):43–67.

Bell, Brian R., and Ian T. Williamson. 2017. "Fossil Trees, Tree Moulds, and Tree Casts in the Palaeocene Mull Lava Field, NW Scotland: Context, Formation, and Implications for Lava Emplacement." *Earth and Environmental Science Transactions of the Royal Society of Edinburgh* 107, no. 1 (September): 53–71.

Bell, C.M., and M. Suarez. 1995. "Triassic Alluvial Braidplain and Braided River Deposits of the La Ternera Formation, Atacama Region, Northern Chile." *Journal of the South American Earth Sciences* 8, no. 1 (January): 1–8.

Benecio, José Rafael Wanderley, Rafael Spiekermann, Joseline Manfroi, Dieter Uhl, Etiene Fabbrin Peres, and André Jasper. 2016. "Palaeoclimatic Inferences Based on Dendrological Patterns of Permineralized Wood from the Permian of the Northern Tocantins Petrified Forest, Parnaíba Basin, Brazil." *Palaeobiodiversity and Palaeoenvironments* 96, no. 2 (June): 255–264.

Berry, Christopher M., and John E.A. Marshall. 2015. "Lycopsid Forests in the Early Late Devonian Paleoequatorial Zone of Svalbard." *Geology* 43, no. 12 (December): 1043–1046.

Bomfleur, Benjamin, Christian Pott, and Hans Kerp. 2011. "Plant Assemblages from the Shafer Peak Formation (Lower Jurassic), North Victoria Land, Transantarctic Mountains." *Antarctic Science* 23, no. 2 (April): 188–208.

Brea, Mariana, Sergio Matheos, Alba Zamuner, and Daniel Ganuza. 2005. Growth rings analysis of the Victor Víctor Szlápelis Fossil Forest, lower Tertiary of Chubut, Argentina. *Ameghiniana* 42, no. 2 (June 30): 407–418.

Brea, Mariana, Analia E. Artabe, and Luis A. Spalletti. 2008. "Ecological Reconstruction of a Mixed Middle Triassic Forest from Argentina." *Alcheringa* 32, no. 4: 365–393.

Brea, Mariana, Analia E. Artabe, and Luis A. Spalletti. 2009. "Darwin Forest at Agua de la Zorra: The first *in situ* Forest Discovered in South America by Darwin in 1835. *Revista de la Asociación Geológica Argentina* 64, no. 1 (April): 21–31.

Brea, M., S.D. Matheos, M.S. Raigenborn, A. Iglesias, A.F. Zucol, and M. Prámparo. 2011. "Paleoecology and Paleoenvironments of Podocarp Trees in the Ameghino Petrified Forest (Golfo San Jorge Basin, Patagonia, Argentina): Constraints for Early Paleogene Paleoclimate." *Geologica Acta* 9: no. 1 (March): 13–28.

Brondi, A., and F. Brondi. 1999. "The Fossil Forest of Dunarobba (Terni, central Italy)." *Memorie Descrittive della Carta Geologica d'Italia* 54: 97–100.

Bruce, Wesley. 2002. "The Salinity of a Floating Forest." *TJ* 16, no. 3 (December): 95–97.

Brzyski, Boleslaw. Ryszard Gradziński, and Roma Krzanowska. 1976. "Upright Calamite Stems From Brynów and Conditions of Their Burial." *Annales Societatis Geologorum Poloniae* 46, no. 1–2: 159–182.

Burnham, Robyn J., Scott L. Wing, and Geoffrey G. Parker. 1992. "The Reflection of Deciduous Forest Communities in Leaf Litter: Implications For Autochthonous Litter Assemblages From the Fossil Record." *Paleobiology* 18, no. 1 (Winter): 30–49.

Calder, J.H., M.R. Gibling, C.F. Eble, A.C. Scott, and D.J. MacNeil. 1996. "The Westphalian D Fossil Lepidodendrid Forest at Table Head, Sydney Basin, Nova Scotia: Sedimentology, Paleoecology and Floral Response to Changing Edaphic Conditions." *International Journal of Coal Geology* 31, no. 1–4: 277–313.

Calder, John H., Martin R. Gibling, Andrew C. Scott, Sarah J. Davies, and Brian L. Hebert. 2006. "A Fossil Lycopsid Forest Succession in the Classic Joggins Section of Nova Scotia: Paleoecology of a Disturbance-Prone Pennsylvanian Wetland." In *Wetlands through Time*, edited by Stephen F. Greb and William A. DiMichele. *GSA Special Paper* 399: 169–195.

Calder, Mary Gordon. 1953. "A Coniferous Petrified Forest in Patagonia." *Bulletin of the British Museum (Natural History). Geology Series* 2, nos. 2: 99–138.

Cantrill, David J., and Howard J. Falcon-Lang. 2001. "Cretaceous (Late Albian) Coniferales of Alexander Island, Antarctica. 2. Leaves, Reproductive Structures and Roots." *Review of Palaeobotany and Palynology* 115, nos. 3–4 (June): 119–145.

Capretz, Robson Louiz, and Rosemarie Rohn. 2013. "Lower Permian Stems as Fluvial Paleocurrent Indicators of the Parnaíba Basin, Northern Brazil." *Journal of South American Earth Sciences* 45 (August): 69–82.

Césari, Silvia N., Pedro Busquets, Isabel Méndez-Bedia, Ferran Colombo, Carlos O. Limarino, Raúl Cardó, and Gloria Gallastegui. 2012. "A Late Paleozoic Fossil Forest from the Southern Andes, Argentina." *Palaeogeography, Palaeoclimatology, Palaeoecology* 333–334, no. 5 (15 May): 131–141.

Chadwick, A. V., and L. R. Brand. 1974. "Fossil Tree Orientation in the Chinle Formation." *Origins* 1, no. 1: 22–28.

Christie, R. L., and N. J. McMillan, eds. 1991. "The Fossil Forests of Tertiary Age in the Canadian Arctic Archipelago." *Commission Géologique du Canada* 403: 1–227.

Coffin, Harold G. 1969. "Research on the Classic Joggins Petrified Trees." *Creation Research Society Quarterly* 6, no. 1 (June): 35–44.

Coffin, Harold G. 1979a. "The Organic Levels of the Yellowstone Petrified Forests." *Origins (Geoscience Research Institute)* 6, no. 2: 71–82. http://www.grisda.org/origins/06071.pdf.

Coffin, Harold G. 1979b. The Yellowstone petrified forests. *Spectrum* 9, no. 4: 42–53.

Coffin, Harold G. 1992. "The Puzzle of the Petrified Trees." *Dialogue* 4, no. 1: 11–13, 30–31.

Colombi, Carina E., and Judith Totman Parrish. 2008. "Late Triassic Environmental Evolution in Southwestern Pangea: Plant Taphonomy of the Ischigualasto Formation." *Palaios* 23, nos. 11–12: 778–795.

Comer, Emily E., Rudy L. Slingerlands, J. Marcelo Krause, Ari Iglesias, William C. Clyd, María Sol Raigemborn, and Peter Wilf. 2015. "Sedimentary Facies and Depositional Environments of Diverse Early Paleocene Floras, North-Central, San Jorge Basin, Patagonia, Argentina." *Palaios* 30, no. 7 (July): 553–573.

Cross, A.T., R.E. Taggart, A. Jameossanaie, and K.C. Kelley. 1988. "Reconstruction of a Fossil Forest, Menefee Formation, Late Cretaceous, New Mexico." *American Journal of Botany* 75, no. 6, pt. 2 (1 June): 106.

Da Conceição, Domingas Maria, Luiz Saturnino de Andrade, Juan Carlos Cisneros, Roberto Iannuzzi, Agostinha Araújo Pereira, and Francisco Carlos Machado. 2016. "New Petrified Forest in Maranhão, Permian (Cisuralian) of the Parnaíba Basin, Brazil." *Journal of the South American* 70 (October): 308–323.

Damon, P.E., and H.W. Miller, Jr. 1963. "A Lava Covered Tertiary Forest in Southern Arizona." *Journal of the Arizona Academy of Science* 2, no. 3 (February): 117–119.

Da Conceição, D.M., J.H. da Silva, J.C. Cisneros, R. Iannuzzi, B.C. Viana, G.D. Saraiva, J.P. Sousa, and P.T.C. Freire. 2018. "Spectroscopic Studies on Permian Plant Fossils in the Pedra de Fogo Formation from the Parnaiba Basin, Brazil." *Journal of King Saud University—Science* 30, no. 4 (October): 483–488.

Davies, S.J., and M.R. Gibling. 2003. "Architecture of Coastal and Alluvial Deposits in an Extensional Basin: the Carboniferous Joggins Formation of Eastern Canada." *Sedimentology* 50, no. 3 (June): 415–439.

Davies, S.J., M.R. Gibling, M.C. Rygel, J.H. Calder, and D.M. Skilliter. 2005. "The Pennsylvanian Joggins Formation of Nova Scotia: Sedimentological Log and Stratigraphic Framework of the Historic Fossil Cliffs." *Atlantic Geology* 41, nos. 2–3 (July): 115–142.

De Franceschi, Dario, Marion Bamford, Martin Pickford, and Brigitte Senut. 2016. "Fossil Wood From the Upper Miocene Mpesida Beds at Cheparain (Baringo District, Kenya): Botanical Affinities and Palaeoenvironmental Implications." *Journal of African Earth Sciences* 115 (March): 271–280.

Decombeix, Anne-Laure, Edith L. Taylor, and Thomas N. Taylor. 2011. "Root Suckering in a Triassic Conifer From Antarctica: Paleoecological and Evolution Implications." *American Journal of Botany* 98, no. 7 (July): 1222–1225.

Decombeix, Anne-Laure, Benjamin Bomfleur, Edith L. Taylor, and Thomas N. Taylor. 2014. "New Insights into the Anatomy, Development, and Affinities of Corystosperm Trees From the Triassic of Antarctica." *Review of Palaeobotany and Palynology* 203 (April): 22–34.

DeBord, Phillip L. 1977. Gallatin Mountain "Petrified Forests": A Palynological Investigation Of The *In Situ* Model. Ph.D. dissertation, Loma Linda University.

Degani-Schmidt, Isabela, Margot Guerra-Sommer, Joalice de Oliveira Mendonça, João Graciano Mendonça Filho, André Jasper, Miriam Cazzulo-Klepzig, and Roberto Iannuzzi. 2015. "Charcoalified Logs as Evidence of Hypautochthonous/Autochthonous Wildfire Events in a Peat-Forming Environment From the Permian of Southern Paraná Basin (Brazil)." *International Journal of Coal Geology* 146 (July): 55–67.

Dei Fueyo, Georgina M., Edith L. Taylor, Thomas N. Taylor, and Rubén Cúneo. 1995. "Triassic Wood from the Gordon Valley, Central Transantarctic Mountains, Antarctica." *IAWA Journal* 16, no. 2: 111–126.

Demko, Timothy Michael. 1995. Taphonomy of Fossil Plants in the Upper Triassic Chinle Formation. Ph.D. dissertation, The University of Arizona.

Dilcher, David L., and Raymond M. Pheifer. 1974. "Stump Casts of Arborescent Lycopods." *Proceedings of the Indiana Academy of Sciences* 84: 114–121. https://journals.iupui.edu/index.php/ias/article/view/8144/8103.

DiMichele, William A., and Philip J. DeMaris. 1987. "Structure and Dynamics of a Pennsylvanian-Age *Lepidodendron* Forest: Colonizers of a Disturbed Swamp Habitat in the Herrin (No. 6) Coal of Illinois. *Palaios* 2, no. 2: 146–157.

DiMichele, William A., and W. John Nelson. 1989. "Small-Scale Spatial Heterogeneity in Pennsylvanian-Age Vegetation from the Roof Shale of the Springfield Coal (Illinois Basin)." *Palaios* 4, no. 3 (June 1): 276–280.

Dimichele, William A., W. John Nelson, Scott Elrick, and Philip R. Ames. 2009. "Catastrophically Buried Middle Pennsylvanian *Sigillaria* And Calamitean Sphenopsids From Indiana, USA: What Kind Of Vegetation Was This?" *Palaios* 24, 3–4 (1 March): 159–166.

DiMichele, William A., and Howard J. Falcon-Lang. 2012. "Calamitalean 'Pith Casts' Reconsidered." *Review of Palaeobotany and Palynology* 173 (April 1):1–14.

DiMichele, William A., Scott D. Elrick, and W. John Nelson. 2017. "Vegetational Zonation in a Swamp Forest, Middle Pennsylvanian, Illinois Basin, USA, Indicates Niche Differentiation in a Wetland Plant Community." *Palaeogeography, Palaeoclimatology, Palaeoecology* 487 (December 1): 71–92.

Doman, J.H. n.d. Paleontology and Paleoecology of the Late Miocene Mpesida Beds and Lulkeino Formation, Tugen Hills Succession, Baringo, Kenya." Ph.D. thesis, Yale University, Connecticut.

Dorf, Erling. 1960. "Tertiary Fossil Forests of Yellowstone National Park, Wyoming." In Billings Geological Society: Eleventh Annual Field Conference, West Yellowstone Earthquake Area (September 7–10), 253–260.

Dorf, Erling. 1964. "The Petrified Forests of Yellowstone Park." *Scientific American* 210, no. 4 (April): 106–115.

Driese, Steven G., Claudia I. Mora, and Jennifer M. Elick. 1997. "Morphology and Taphonomy of Root and Stump Casts of the Earliest Trees (Middles to Late Devonian), Pennsylvania and New York, U.S.A." *Palaios* 12, no. 6 (December): 524–537.

Dzieduszyńska, Danuta A., Joanna Petera-Zganiacz, and Marek Krapiec. 2011. "The Age of the Subfossil Trunk Horizon in Deposits of the Warta River Valley (Central Poland) Based on ^{14}C Dating." *Geochronometria* 38, no. 4: 334–340.

Dzieduszyńska, Danuta A., Piotr Kittel, Joanna Petera-Zganiacz, Stephen J. Brooks, Katarzyna Korzeń, Marek Krąpiec, Dominik Pawłowski, et al. 2014. "Environmental Influence on Forest Development and Decline in the Warta River Valley (Central Poland) During the Late Weichselian." *Quaternary International* 324 (4 March): 99–114.

Elliott, William S., and J. Doug Foster. 2014. "Petrified Wood of Southwestern Oregon: Implications for Cenozoic Climate Change." *Palaeogeography, Palaeoclimatology, Palaeoecology* 402 (15 May): 1–11.

Elrick, Scott D., W. J. Nelson, Philip R. Ames, and William A. DiMichele. 2017. "Floras Characteristic of Late Pennsylvanian Peat Swamps Arose in the late Middle Pennsylvanian." *Stratigraphy* 14, nos. 1–4: 123–141.

Erdie, B., M. Dolezych, and L. Hably. 2009. "The Buried Miocene Forest at Bükkábrány, Hungary." *Review of Palaeobotany and Palynology* 155, nos. 1–2 (May): 69–79.

Estrada-Ruiz, Emilio, Garland R. Upchurch, Elisabeth A. Wheeler, and Greg H. Mack. 2012. "Late Cretaceous Angiosperm Woods from the Crevasse Canyon and McRae Formations, South-Central New Mexico, USA: Part 1." *International Journal of Plant Sciences* 173, no. 4 (May): 412–428.

Fairon-Demaret, M., E. Steurbaut, F. Damblon, C. Dupuis, T. Smith, and P. Gerrienne. 2003. "The In Situ *Glyptostroboxylon* Forest of Hoegaarden (Belgium) at the Initial Eocene Thermal Maximum (55 Ma)." *Review of Palaeobotany and Palynology* 126, nos. 1–2 (September): 103–129.

Falaschi, Paula, Javier Grosfeld, Alba B. Zamuner, Nicolás Foix, and Stella M. Rivera. 2011. "Growth Architecture and Silhouette of Jurassic Conifers from La Matilde Formation, Patagonia, Argentina." *Palaeogeography, Palaeoclimatology, Palaeoecology* 302, nos. 3–4 (15 March): 122–141.

Falcon-Lang, H. J., and D. J. Cantrill. 2000. "Cretaceous (Late Albian) Coniferales of Alexander Island, Antarctica. 1: Wood Taxonomy: A Quantitative Approach." *Review of Palaeobotany and Palynology* 111, nos. 1–2 (August): 1–17.

Falcon-Lang, H. J., D. J. Cantrill, and G. J. Nichols. 2001. "Biodiversity and Terrestrial Ecology of a Mid-Cretaceous, High-latitude Floodplain, Alexander Island, Antarctica." *Journal of the Geological Society, London* 158, no. 4 (1 July): 709–724.

Falcon-Lang, H. J. 2004a. "Early Mississippian Lycopsid Forests in a Delta-Plain Setting at Norton, near Sussex, New Brunswick, Canada." *Journal of the Geological Society, London* 161, no. 6: 969–981.

Falcon-Lang, Howard J. and Arden R. Bashforth. 2004b. "Pennsylvanian Uplands Were Forested by Giant Cordaitalean Trees." *Geology* 32, no. 5 (May 1): 417–420.

Falcon-Lang, Howard J. 2005. "Small Cordaitalean Trees in a Marine-Influenced Coastal Habitat in the Pennsylvanian Joggins Formation, Nova Scotia." *Journal of the Geological Society, London* 162: 485–500.

Falcon-Lang, Howard J., and Arden Roy Bashforth. 2005. "Morphology, Anatomy, and Upland Ecology of Large Cordaitalean Trees from the Middle Pennsylvania of Newfoundland." *Review of Palaeobotany and Palynology* 135, nos. 3–4 (July): 223–243.

Falcon-Lang, H. J., M. J. Benton, S. J. Brady, and S. J. Davies. 2006. "The Pennsylvanian Tropical Biome Reconstructed From the Joggins Formation of Nova Scotia, Canada." *Journal of the Geological Society, London* 163: 561–576.

Falcon-Lang, Howard J. 2009. "A Macroneuropteris scheuchzeri Tree Preserved in Growth Position in the Middle Pennsylvanian Sydney Mines Formation, Nova Scotia, Canada." *Atlantic Geology* 45: 74–80.

Falcon-Lang, Howard J. 2011a. "Secrets of Antarctica's Fossilised Forests." BBC News, 8 February. https://www.bbc.com/news/science-environment-12378934.

Falcon-Lang, Howard J. 2011b. "Fossil Wood." *Geology Today* 27, no. 4 (July–August): 154–158.

Falcon-Lang, Howard J., Christopher J. Cleal, Janine L. Pendleton, and Charles H. Wellman. 2012. "Pennsylvanian (Mid/Late Bolsovian-Asturian) Permineralized Plant Assemblages of the Pennant Sandstone Formation of Southern Britain: Systematics and Palaeoecology." *Review of Palaeobotany and Palynology* 173 (1 April): 23–45.

Falcon-Lang, Howard J. 2015. "A Calamitalean Forest Preserved in Growth Position in the Pennsylvanian Coal Measures of South Wales: Implications for Palaeoecology, Ontogeny and Taphonomy." *Review of Palaeobotany and Palynology* 214 (March): 51–67.

Falcon-Lang, Howard J., Spencer G. Lucas, Hans Kerp, Karl Krainer, Isabel P. Montañez, Daniel Vachard, Dan S. Chaney, et al. 2015. "Early Permian (Asselian) Vegetation From a Seasonally Dry Coast in Western Equatorial Pangea: Paleoecology and Evolutionary Significance." *Palaeogeography, Palaeoclimatology, Palaeoecology* 433 (1 September): 158–173.

Falcon-Lang, Howard J., W. John Nelson, Philip H. Heckel, William A. DiMichele, and Scott D. Elrick. 2018. "New Insights On the Stepwise Collapse of the Carboniferous Coal Forests: Evidence from Cyclothems and Coniferopsid Tree-Stumps Near the Desmoinesian-Missourian Boundary in Peoria County, Illinois, USA." *Palaeogeography, Palaeoclimatology, Palaeoecology* 490 (15 January): 375–392.

Feldman, Howard R., Allen W. Archer, Erik P. Kvale, Christopher R. Cunningham, Christopher G. Maples, and Ronald R. West. 1993. "A Tidal Model of Carboniferous Konservat-Lagerstätten Formation." *Palaios* 8, no. 5 (October): 485–498.

Felix, C. 1993. "The Mummified Forests of the Canadian Arctic." *Creation Research Society Quarterly* 29, no. 4 (September): 189–191.

Fielding, Christopher R., and Jan Alexander. 2001. "Fossil Trees in Ancient Fluvial Channel Deposits: Evidence of Seasonal and Longer-Term Climatic Variability." *Palaeogeography, Palaeoclimatology, Palaeoecology* 170, nos. 1–2 (1 June): 59–80.

Fisk, Lanny H. 1976. Palynology of the Amethyst Mountain "Fossil Forest," Yellowstone National Park, Wyoming. Ph.D. dissertation, Loma Linda University, California.

Francis, Jane E. 1984. "The Seasonal Environment of the Purbeck (Upper Jurassic) Fossil Forests." *Palaeogeography, Palaeoclimatology, Palaeoecology* 48, nos. 2–4: 285–307.

Francis, Jane E. 1988. "A 50-Million-Year-Old Fossil Forest from Strathcona Fiord, Ellesmere Island, Arctic Canada: Evidence For a Warm Polar Climate." *Arctic* 41, no. 4 (December): 314–318.

Francis, Jane E. 1990. "Polar Fossil Forests." *Geology Today* 6, no. 3 (May): 92–95.

Francis, J.E. 1991. "The Dynamics of Polar Fossil Forests: Tertiary Fossil Forests of Axel Heiberg Island, Canadian Arctic Archipelago." *Bulletin of the Geological Survey of Canada* 403 (January): 29–38.

Francis, Jane E., K.J. Woolfe, M.J. Arnott, and P.J. Barrett. 1994. "Permian Climates of the Southern Margins of Pangea: Evidence From Fossil Wood in Antarctica. In *Pangea: Global Environments and Resources Memoir 17*, edited by Ashton F. Embry, Donald J. Glass, and Benoit Beauchamp, 275–282. Calgary, Alberta: Canadian Society of Petroleum Geologists.

Fritz, William Jon. 1977. Paleoecology of Petrified Woods From Amethyst Mountain "Fossil Forest," Yellowstone National Park, Wyoming. M.S. thesis, Walla Walla College, Washington.

Froede, Carl R. Jr. 2000. "Coal-Bearing Strata Within an *In-Situ* (?) Fossilized Paleo-Fern-Tree Forest: Which Models and Settings Apply?" *Creation Research Society Quarterly* 37, no. 2 (September): 123–127.

Gallois, Arnaud, Dan Bosence, and Peter M. Burgess. 2018. "Brackish To Hypersaline Facies In Lacustrine Carbonates: Purbeck Limestone Group, Upper Jurassic–Lower Cretaceous, Wessex Basin, Dorset, UK." *Facies* 64, no. 2 (April): Article 12.

Garland, M.J., J.M. Bannister, D.E. Lee, J.D.L. White. 2007. "A Coniferous Tree Stump of Late Early Jurassic Age From the Ferrar Basalt, Coombs Hills, Southern Victoria Land, Antarctica." *New Zealand Journal of Geology and Geophysics* 50, no. 3 (September): 263–269.

Gastaldo, Robert A. 1984. "A Case Against Pelagochthony: The Untenability of Carboniferous Arborescent Lycopod-Dominated Floating Peat Mats." In *The Evolution-Creation Controversy: Perspectives on Religion, Philosophy, Science and Education*, edited by K.R. Walker. The Paleontological Society Special Publications 1: 97–116.

Gastaldo, Robert A. 1986a. "An Explanation for Lycopod Configuration, 'Fossil Grove' Victoria Park, Glasgow." *Scottish Journal of Geology* 22, no. 1 (May 1): 77–83.

Gastaldo, Robert A. 1986b. "Implications on the Paleoecology of Autochthonous Lycopods in Clastic Sedimentary Environments of the Early Pennsylvanian of Alabama." *Palaeogeography, Palaeoclimatology, Palaeoecology* 53, nos. 2–4 (March): 191–212.

Gastaldo, Robert A. 1987. "Confirmation of Carboniferous Clastic Swamp Communities." *Nature* 326 (April 30): 869–871.

Gastaldo, Robert A., Timothy M. Demko, and Yuejin Liu. 1991. "A Mechanism to Explain Persistent Alternation of Clastic and Peat-Accumulating Swamps in Carboniferous Sequences." *Bulletin de la Société Géologique de France* 162, no. 2: 299–305.

Gastaldo, Robert A. 1992. "Regenerative Growth in Fossil Horsetails Following Burial by Alluvium." *Historical Biology* 6, no. 3: 203–219.

Gastaldo, Robert A. 1999. "Debates on Autochthonous and Allochthonous Origin of Coal: Empirical Science Versus the Diluvialists." In *The Evolution-Creation Controversy II: Perspectives on Science, Religion, and Geological Education*, edited by Patricia Kelley, Jonathan Bryan, and Thor Hansen. The Paleontological Society Papers 5 (October): 135–167.

Gerrienne, Philippe, Freddy Damblon, Muriel Fairon-Demaret, Florence Hauregard, Daniel Petricevic, and Thieery Smith. 2000. "La Forêt fossile d'Overlaar, Belgique (Transition Paleocene-Eocene)." *Monografías de la Real Academia de Ciencias Exactas, Físicas, Químicas y Naturales de Zaragoza* 16: 27–29.

Gibling, Martin R., Arden R. Bashforth, Howard J. Falcon-Lang, Jonathan P. Allen, and Christopher R. Fielding. 2010. "Log Jams and Flood Sediment Buildup Caused Channel Abandonment and Avulsion in the Pennsylvanian of Atlantic Canada." *Journal of Sedimentary Research* 80, no. 3 (April): 268–287.

Goldring, Winifred. 1927. "The Oldest Known Petrified Forest." *Scientific Monthly* 24, no. 6 (June): 514–529.

Goldring, W. 1930. The oldest known petrified forest. *American Forests and Forest Life* 36, no. 8: 491–493, 546.

Gradziński, Ryszard, and Marek Doktor. 1995. "Upright Stems and Their Burial Conditions in the Coal-Bearing Mudstone Series (Upper Carboniferous), Upper Silesia Coal Basin, Poland." *Studia Geologica Polonica* 108: 129–147.

Grattan, D.W. 1991. "The Conservation of Specimens From the Geodetic Hills Fossil Forest Site, Canadian Arctic Archipelago." *Geological Survey of Canada, Bulletin* 403: 213–227.

Greenwood, David R., and James F. Basinger.1994. "The Paleoecology of High-Latitude Eocene Swamp Forests From Axel-Heiberg Island, Canadian High Arctic." *Review of Palaeobotany and Palynology* 31, no. 1: 83–97.

Grey, Melissa, and Zoe V. Finkel. 2011. "The Joggins Fossil Cliffs UNESCO World Heritage Site: A Review of Recent Research." *Atlantic Geology* 47: 185–200. https://www.mmab.ca/pubs/grey-2012-ag-47-185.pdf.

Guerra-Sommer, M., and C.M.S. Scherer. 2000. "Middle-Late Triassic Petrified Forests from Mata Sandstone at Rio Grande do Sul State, Brazil: A Preliminary Geological, Taphonomic and Biostratigraphic Setting." *Revista da Universidade de Guarulhos* 30: 117–120.

Habermann, Jörg M., Ian G. Stanistreet, Harald Stollhofen, Rosa M. Albert, Marion K. Bamford, Michael C. Pante, Jackson K. Njau, and Fidelis T. Masao. 2016. "In Situ ~2.0Ma Trees Discovered As Fossil Rooted Stumps, Lowermost Bed I, Olduvai Gorge, Tanzania." *Journal of Human Evolution* 90 (January): 74–87.

Hamed, Younes, Samir Anwar Al-Gamal, Wassim Ali, Abederazzak Nahid, Hamed Ben Dhia. 2014. "Palaeoenvironments of the Continental Intercalaire Fossil From the Late Cretaceous (Barremian-Albian) in North Africa: A Case Study of Southern Tunisia." *Arabian Journal of Geosciences* 7, no. 3 (March): 1165–1177.

Hamor-Vido, Mario, Tamás Hoffmann, and Albert Levente. 2010. "In Situ Preservation and Paleoenvironmental Assessment of Taxodiacea Fossil Trees in the Bükkalja Lignite Formation, Bükkábrány Open Cast Mine, Hungary." *International Journal of Coal Geology* 81, no. 4 (April): 203–210.

Havelcová, Martina, Ivana Sýkorová, Achim Bechtel, Karel Mach, Hana Trejtnarová, Margit Žaloudková, Petra Matysová, Jaroslav Blažek, Jana Boudová, and Jakub Sakala. 2013. "'Stump Horizon' in the Bílina Mine (Most Basin, Czech Republic)—GC–Ms, Optical and Electron Microscopy in Identification of Wood Biological Origin." *International Journal of Coal Geology* 107 (1 March): 62–77.

Hayward, Bruce W. 1997. "North Island Fossil Forests." *Geological Society of New Zealand Newsletter* 114: 28–32.

Hayward, Jessica J., and Bruce W. Hayward. 1995. "Fossil Forests Preserved in Volcanic Ash and Lava at Ihumatao and Takapuna, Auckland." *Tane* 35: 127–142.

Henderson, Elsa, and Howard J. Falcon-Lang. 2011. "Diversity and Ontogeny of Pitus Tree-Trunks in the Early Mississippian Rocks of the Isle of Bute, Scotland: The Importance of Sample Size and Quantitative Analysis for Fossil Wood Systematics." *Review of Palaeobotany and Palynology* 166, nos. 3–4 (August): 202–212.

Hennigan, Tom, and Jennifer J. Bergman. 2011. "The Origin of Trees." *Creation Research Society Quarterly* 47, no. 4 (Spring): 259–270.

Holroyd, Edmond W., III. 1996. "Observations of Fossil Material and Charcoalized Wood in the Dakota Formation, Colorado and Wyoming." *Creation Research Society Quarterly* 33, no. 3 (December): 170–175.

Homes, Aline M., Ellen Cieraad, Daphne E. Lee, Jon K. Lindqvist, J. Ian Raine, Elizabeth M. Kennedy, and John G. Conran. "A Diverse Fern Flora Including Macrofossils, With In Situ Spores From the Late Eocene of Southern New Zealand." *Review of Palaeobotany and Palynology* 220, no. 9 (September): 16–28.

Howe, Jodie. 2003. Mid Cretaceous Fossil Forests of Alexander Island, Antarctica. Ph.D. dissertation, University of Leeds, United Kingdom.

Howe, J., and J. E. Francis. 2005. "Metamorphosed Palaeosols Associated With Cretaceous Fossil Forests, Alexander Island, Antarctica." *Journal of the Geological Society* 162 (November): 951–957.

Hunt, Adrian P. 1991. "Integrated Vertebrate, Invertebrate and Plant Taphonomy of the Fossil Forest Area (Fruitland and Kirtland Formations, Late Cretaceous), San Juan County, New Mexico, USA." *Palaeogeography, Palaeoclimatology, Palaeoecology* 88, nos. 1–2 (November): 85–107.

Hunt, Adrian P. and Spencer G. Lucas. 2003. "Origin and Stratigraphy of Historic Dinosaur Quarries in the Upper Cretaceous Fruitland Formation of the Fossil Forest Research Natural Area, North-western New Mexico." *Guidebook—New Mexico Geological Society* 54: 383–388.

Ielpi, Alessandro, Martin R. Gibling, Arden Roy Bashforth, and Chinemerem I. Dennar. 2015. "Impact of Vegetation on Early Pennsylvanian Fluvial Channels: Insight From the Joggins Formation of Atlantic Canada." *Journal of Sedimentary Research* 85, no. 8: 999–1018.

Jacobs, Bonnie F., Neil Tabor, Mulugeta Feseha, Aaron Pan, John Kappelman, Tab Rasmussen, William Sanders, Michael Wiemann, Jeff Crabaugh, and Julian Leandro Garcia Massini. 2005. "Oligocene Terrestrial Strata of Northwestern Ethiopia: A Preliminary Report on Paleoenvironments and Paleontology." *Palaeontologia Electronica* 8, no. 1: 25A.

Jagels, Richard, G. E. Visscher, and Elisabeth A. Wheeler. 2005. "An Eocene High Arctic Angiosperm Wood." *IAWA Journal* 26, no. 3 (January): 387–392.

Jahren, A. Hope, and Leonel Silveira Lobo Sternberg. 2002. "Eocene Meridional Weather Patterns Reflected in the Oxygen Isotopes of Arctic Fossil Wood." *GSA Today* 12, no. 1 (January): 4–9.

Jahren, A. Hope. 2007. "The Arctic Forest of the Middle Eocene." In *Annual Review of Earth and Planetary Sciences*, edited by R. Jeanloz, 509–540. Palo Alto, California: Annual Reviews.

Janssen, Raymond E. 1942. "Fossil Forests of the Great Coal Age." *Scientific Monthly* 55, no. 3 (September): 195–208.

Jasper, André, Rualdo Menegat, Margot Guerra-Sommer, Miriam Cazzulo-Klepzig, and Paulo Alves de Souza. 2006. "Depositional Cyclicity and Paleoecological Variability in an Outcrop of Rio Bonito Formation, Early Permian, Paraná Basin, Rio Grande do Sul, Brazil." *Journal of South American Earth Sciences* 21, no. 3 (July): 276–293.

Jefferson, Timothy H. 1982. "Fossil Forests From the Lower Cretaceous of Alexander Island, Antarctica." *Palaeontology* 25 (November): 681–708.

Jennings, James R. 1980. "Fossil Plants from the Fountain Formation (Pennsylvanian) of Colorado." *Journal of Paleontology* 54, no. 1 (January): 149–158.

Johns, Warren H. 2008. "Scriptural Geology, 1820–1860: An Essay and Review." *Origins* 62 (January 1): 42–60.

Johns, Warren H. 2016. "Scriptural Geology, Then and Now." *Answers Research Journal* 9 (November 30): 317–337.

Juby, Ian A. 2006. "The Fossil Cliffs of Nova Scotia." *Creation Research Society Quarterly* 43, no. 1 (June): 48–53.

Juby, Ian A. 2009. "The Joggins Polystrate Fossils." In *Rock Solid Answers*, edited by Michael J. Oard and John K. Reed, 217–230. Green Forest, Arkansas: Master Books.

Juby, Ian. 2015a. A Study of the Cliffs of Joggins—Part II. Part II: The trunks. https://ianjuby.org/a-study-of-the-cliffs-of-joggins-part-ii/ .

Juby, Ian. 2015b. A Study of the Cliffs of Joggins—Part III. Part III: Interaction of Strata and Fossils. https://ianjuby.org/a-study-of-the-cliffs-of-joggins-part-iii/ .

Jud, Nathan A., and Jeremy I. Dunham. 2017. "Fossil Woods From the Cenozoic of Panama (Azuero Peninsula) Reveal an Ancient Neotropical Rainforest." *IAWA Journal* 38, no. 3: 366–S2.

Kaiser, Knut, Silke Oldorff, Carsten Breitbach, Christoph Kappler, Martin Theuerkauf, Tobias Scharnweber, Manuela Schult, et al. 2018. "A Submerged Pine forest From the Early Holocene in the Mecklenburg Lake District, Northern Germany." *Boreas* 47, no. 3 (July): 910–925.

Kazmer, Miklos. 2008. "The Miocene Bükkábrány Fossil Forest in Hungary: Field Observations and Project Outline." *Hantkeniana* 6, no. 6 (November): 229–244.

Kazmer, Miklos. 2011. "Structure of the 7 Ma Bükkábrány Fossil Forest in Hungary. *Japanese Journal of Historical Botany* 19, nos. 1–2: 47–54.

Kauffmann, Marjorie, André Jasper, Dieter Uhl, Jessica Meneghini, Isa Carla Osterkamp, Gustavo Zvirtes, and Etiene Fabbrin Pires. 2016. "Evidence for Palaeo-Wildfire in the Late Permian Palaeotropics: Charcoal From the Motuca Formation in the Parnaíba Basin, Brazil." *Palaeogeography, Palaeoclimatology, Palaeoecology* 450 (15 May): 122–128.

Kearsey, Timothy I., Carys E. Bennett, David Millward, Sarah J. Davies, Charles J. B. Gowing, Simon J. Kemp, Melanie J. Leng, John E. A. Marshall, and Michael A. E. Browne.

2016. "The Terrestrial Landscapes of Tetrapod Evolution in Earliest Carboniferous Seasonal Wetlands of SE Scotland." *Palaeogeography, Palaeoclimatology, Palaeoecology* 457, (1 September): 52–69.

Klinger, Herbert C. 1986. "The "Fossil Forest" of Mzamba." *Sagittarius* 1, no. 2: 19–21.

Kloster, Adriana C., and Silvia C. Gnaedinger. 2018. "Coniferous Wood of Agathoxylon from the La Matilde Formation (Middle Jurassic), Santa Cruz, Argentina." *Journal of Paleontology* 92, no. 4 (July): 546–567.

Knepprath, Nichole Elizabeth, 2006. Late Permian forests of the Buckley Formation, Beardmore Glacier Area, Antarctica. M.S. thesis, Vanderbilt University, Nashville, Tennessee.

Kraus, Mary J. 1988. "Nodular Remains of Early Tertiary Forests, Bighorn Basin, Wyoming." *Journal of Sedimentary Research* 58, no. 5: 888–893.

Kuecher, Gerald J., Bertram G. Woodland, and Frederick M. Broadhurst. 1990. "Evidence of Deposition From Individual Tides and of Tidal Cycles from the Francis Creek Shale (Host Rock to the Mazon Creek Biota), Westphalian D. (Pennsylvanian), Northeastern Illinois." *Sedimentary Geology* 68, no. 3 (September): 211–221.

Kumagai, Hiroyuki, and Yoshio Fukao. 1992. "Resolving Volcanic Activity of 20 MA Ago With Relative Accuracy of 1 Yr From Tree Rings of Petrified Woods." *Geophysical Research Letters* 19, no. 18 (23 September): 1859–1862.

Kumagai, Hiroyuki, Tatsuo Sweda, Kazuo Hayashi, Satoru Kojima, James F. Basinger, Masasuke Shibuya, and Yoshio Fukaoa. 1995. "Growth-Ring Analysis of Early Tertiary Conifer Woods From the Canadian High Arctic and Its Paleoclimatic Interpretation." *Palaeogeography, Palaeoclimatology, Palaeoecology* 116, nos. 3–4 (July): 247–262.

Kumar, Madhav, Gaurav Srivastava, Robert A. Spicer, Teresa E. V. Spicer, Rakesh C. Mehrotra, and Naresh C. Mehrotra. 2012. "Sedimentology, Palynostratigraphy and Palynofacies of the Late Oligocene Makum Coalfield, Assam, India: A Window on Lowland Tropical Vegetation During the Most Recent Episode of Significant Global Warmth." *Palaeogeography, Palaeoclimatology, Palaeoecology* 342 (15 July): 143–162.

Kustatscher, Evelyn, Howard Falcon-Lang, and Alexander Lukeneder. 2013. "Early Cretaceous Araucarian Driftwood From Hemipelagic Sediments of the Puez Area, South Tyrol, Italy." *Cretaceous Research* 41, no. 2 (April): 270–276.

Kvale, Erik P., Allen W. Archer, and Hollis R. Johnson. 1989. "Daily, Monthly, and Yearly Tidal Cycles Within Laminated Siltstones of the Mansfeld Formation (Pennsylvanian) of Indiana." *Geology* 17, no. 4 (April 1): 365–368.

Kvale, Erik P., and Allen W. Archer. 1990. "Tidal Deposits Associated With Low-Sulfur Coals, Brazil Fm. (Lower Pennsylvanian), Indiana." *Journal of Sedimentary Petrology* 60, no. 4 (July 1): 563–574.

Kvale, Erik P., and Allen W. Archer. 1991. "Characteristics of Two Pennsylvanian-Age, Semidiurnal Deposits in the Illinois Basin, USA." In *Clastic Tidal Sedimentology*, edited by D.G. Smith, G.E. Reinson, B.A. Zaitlin and R.A. Rahmani. *Canadian Society of Petroleum Geologists Memoir* 16: 179–188.

Kvale, Erik P., Gordon S. Fraser, Allen W. Archer, Ann Zawistoski, Nathan Kemp, and Patrick McGough. 1994. "Evidence of Seasonal Precipitation in Pennsylvanian Sediments of the Illinois Basin." *Geology* 22, no. 4 (April 1): 331–334.

Läbe, Sashima, Carole T. Gee, Chris Ballhaus, and Thorsten J. Nagel. 2012. "Experimental Silicification of the Tree Fern *Dicksonia Antarctica* At High Temperature With Silica-Enriched H_2O Vapor." *Palaios* 27, no. 11 (November): 835–841.

Lehman, Thomas M., and Elisabeth A. Wheeler. 2001. "A Fossil Dicotyledonous Woodland/Forest From The Upper Cretaceous of Big Bend National Park, Texas." *Palaios* 16, no. 1 (February): 102–108.

Lewis, D. W., and A. A. Ekdale. 1991. "Lithofacies Relationships in a Late Quaternary Gravel and Loess Fan Delta Complex, New Zealand." *Palaeogeography, Palaeoclimatology, Palaeoecology* 81, nos. 3–4 (January): 229–251.

Libertín, Milan, Stanislav Opluštil, Josef Pšenička, Jiří Bek, Ivana Sýkorová, and Jiřina Dašková. 2009. "Middle Pennsylvanian Pioneer Plant Assemblage Buried *In Situ* By Volcanic Ash-Fall, Central Bohemia, Czech Republic." *Review of Palaeobotany and Palynology* 155, nos. 3–4 (June): 204–233.

Libertín, Milan, Jiřina Dašková, Stanislav Opluštil, Jiří Bek, and Nader Edress. 2009. "A Palaeoecological Model For A Vegetated Early Westphalian Intramontane Valley (Intra-Sudetic Basin, Czech Republic)." *Review of Palaeobotany and Palynology* 155, nos. 3–4 (June): 175–203.

Lindqvist, Jon K., and Michael J. Isaac. 1991. "Silicified Conifer Forests and Potential Mining Problems in Seam-M2 of the Gore Lignite Measures (Miocene), Southland, New Zealand. *International Journal of Coal Geology* 17, no. 2 (April): 149–169.

Liu, Jianqiu, Cairong Wu, Shaohong Wang, Binghua Chen, Yulin Fang, and Mington Yu. 2007. "Coenotypes in Submerged Paleoforests in the Qianhu Bay, Fujian Province." *Acta Geological Sinica* 81, no. 5 (October): 722–726.

Liu, Lu, Min Qin, Ning Tian, Changfu Zhou, Deming Wang, James F. Bassinger, and Jinzhuang Xue. 2018. "Belowground Rhizomes and Roots in Waterlogged Paleosols: Examples From the Middle Jurassic of Beijing, China." *Geobios* 51, no. 5 (October): 419–433.

Lucas, Spencer G., Adrian P. Hunt, and Robert M. Sullivan. 2006. "Stratigraphy and Age Of The Upper Cretaceous Fruitland Formation, West-Central San Juan Basin, New Mexico." *New Mexico Museum of Natural History and Science Bulletin* 35: 1–6.

Luthardt, Ludwig, Ronny Rößler, and Joerg W. Schneider. 2016. "Palaeoclimatic and Site-Specific Conditions In The Early Permian Fossil Forest of Chemnitz: Sedimentological, Geochemical and Palaeobotanical Evidence." *Palaeogeography, Palaeoclimatology, Palaeoecology* 441, no. 4 (1 January): 627–652.

Luthardt, Ludwig, and Ronny Rößler. 2017a. "Fossil Forest Reveals Sunspot Activity In The Early Permian." *Geology* 45, no. 3 (March 01): 279–282.

Luthardt, Ludwig, Ronny Rößler, and Joerg W. Schneider. 2017b. "Tree-Ring Analysis Elucidating Palaeo-Environmental Effects Captured In An *In-Situ* Fossil Forest: The Last 80 years Within An Early Permian Ecosystem." *Palaeogeography, Palaeoclimatology, Palaeoecology* 487 (1 December): 278–295.

Luthardt, Ludwig, Mandy Hofmann, Ulf Linnemann, Axel Gerdes, Linda Marko, and Ronny Rößler. 2018. "A New U-Pb Zircon Age And a Volcanogenic Model For The Early Permian Chemnitz Fossil Forest." *International Journal of Earth Sciences* 107, no. 7 (October): 2465–2489.

Macaluso, Loredana, Edoardo Martinetto, Bartolomeo Vigna, Adele Bertini, Antonella Cilia, Vasilis Teodoridis, and Zlatko Kvaček. 2018. "Palaeofloral and Stratigraphic Context of a New Fossil Forest from the Pliocene of NW Italy." *Review of Palaeobotany and Palynology* 248 (January): 15–33.

Macphail, Mike, and David J. Cantrill. 2006. "Age and Implications of the Forest Bed, Falkland Islands, Southwest Atlantic Ocean: Evidence From Fossil Pollen and Spores." *Palaeogeography, Palaeoclimatology, Palaeoecology* 240, nos. 3–4 (19 October): 602–629.

Manchester, Steven R. 2001. "Update On the Megafossil Flora of Florissant, Colorado." *Denver Museum of Nature and Science* Ser. 4, no. 1 (October 1): 137–167.

Marra, M.J., B.V. Alloway, and R.M. Newnham. 2006. "Paleoenvironmental Reconstruction Of a Well-Preserved Stage 7 Forest Sequence Catastrophically Buried By Basaltic Eruptive Deposits, Northern New Zealand." *Quaternary Science Reviews* 25, nos. 17–18: 2143–2161.

Martin-Closas, Carles, and Jean Galtier. 2005. "Plant Taphonomy and Paleoecology Of Late Pennsylvanian Intramontane Wetlands in the Graissessac-Lodève Basin (Languedoc, France)." *Palaios* 20, no. 3 (June): 249–265.

Martinetto, Edoardo. 1994. "Paleocarpology and the *In Situ* Ancient Plant Communities Of a Few Italian Pliocene Fossil Forests." In *Studies On Ecology and Palaeoecology Of Benthic Communities* edited by R. Matteucci, Maria Gabriella Carboni, and Johannes S. Pignatti. *Proceedings of the Fifth Paleobenthos Symposium, Roma*, September 28–30. Bollettino della Società Paleontologica Italiana, Special Volume 2, Modena, Italy: Mucchi.

Martinetto, Edoardo, Giancarlo Scardia, and Dario. Varrone. 2007. "Magnetobiostratigraphy Of the Stura Di Lanzo Fossil Forest Succession (Piedmont, Italy)." *Rivista Italiana di Paleontologia e Stratigrafia* 113, no. 1 (March): 109–125.

Martinez-Cabrera, Hugo I., and Emilio Estrada-Ruiz. 2014. "Wood Anatomy Reveals High Theoretical Hydraulic Conductivity and Low Resistance To Vessel Implosion In a Cretaceous Fossil Forest From Northern Mexico." *PloS One* 2014 (October 3): e108866.

Martino, Ronald L., and Dewey D. Sanderson. 1993. "Fourier and Autocorrelation Analysis of Estuarine Tidal Rhythmites, Lower Breathitt Formation (Pennsylvanian), Eastern Kentucky, USA." *Journal of Sedimentary Research* 63, no. 1 (January 1): 105–119.

García Massini, J.G., P. Falaschi, and A.B. Zamuner. 2012. "Fungal-Arthropod-Plant Interactions From the Jurassic Petrified Forest Monumento Natural Bosques Petrificados, Patagonia. *Palaeogeography, Palaeoclimatology, Palaeoecology* 329–330 (15 April): 37–46.

Mattison, Elise. 1990. "California's Fossil Forest, Sonoma County." *California Geology* 44, no. 9 (September): 195–202.

Matysová, Petra, Menno Booi, Michael C. Crow, Fauzi Hasibuan, Andri Putri Perdono, Isabel M. Van Waveren, and Stephen K. Donovan. 2018. "Burial and Preservation Of a Fossil Forest On an Early Permian (Asselian) Volcano (Merangin River, Sumatra, Indonesia)." *Geological Journal* 53, no. 5 (September/October): 2352–2370.

Maxbauer, Daniel P., Dana L. Royer, and Ben A. LePage. 2014. "High Arctic Forests During the Middle Eocene Supported By Moderate Levels of Atmospheric CO_2." *Geology* 42, no. 12 (December 1): 1027–1030.

Medrano, Kastalia. 2017. "Antarctica: Can Ancient Flood in Bible's Book of Genesis Explain Mysterious Fossilized Forest?" *Newsweek*, December 20, 2017. https://www.newsweek.com/antarctica-discovery-ancient-forest-bible-flood-book-genesis-753747.

Mehrotra, Rakesh C., and Gaurav Srivastava. 2017. "*In Situ* Lecythidaceae Wood From the Oligocene of Makum Coalfield, Northeast India." *IAWA Journal* 38, no. 2 (May): 162–169.

Meyer-Berthaud, Brigitte, and Anne Laure Decombeix. 2012. "In the Shade Of the Oldest Forest." *Nature* 483 (March 1): 41–42.

Mintz, Jason S., Steven G. Driese, and Joseph D. White. 2010. "Environmental and Ecological Variability of Middle Devonian (Givetian) Forests in Appalachian Basin Paleosols, New York, United States." *Palaios* 25, no. 2 (February): 85–96.

Moncrieff, A.C.M., and S.R.A. Kelly. 1993. "Lithostratigraphy Of the Uppermost Fossil Bluff Group (Early Cretaceous) Of Alexander Island, Antarctica: History Of an Albian Regression." *Cretaceous Research* 14, no. 1 (February): 1–15.

Montgomery, Homer, and Scott Clark. 2016. "Paleoecology Of the Gaddis Site In the Upper Cretaceous Aguja Formation, Terlingua, Texas." *Palaios* 31, no. 7 (July): 347–357.

Morgans-Bell, H.S., and Duncan McIlroy. 2005. "Palaeoclimatic Implications of Middle Jurassic (Bajocian) Coniferous Wood From the Neuquén Basin, West-Central Argentina." In *The Neuquén Basin, Argentina: A Case Study In Sequence Stratigraphy And Basin Dynamics*, edited by G.D. Veiga, L.A. Spalletti, J.A. Howell, and E. Schwarz. *Special Publications (Geological Society)* 252: 267–278. London, United Kingdom: Geological Society.

Morris, John D. 1999. "The Polystrate Trees and Coal Seams Of Joggins Fossil Cliffs." *Acts and Facts Impact*, no. 316 (October): i–iv. https://www.icr.org/i/pdf/imp/imp-316.pdf.

Mosbrugger, V., C.T. Gee, G. Belz, and A.R. Ashraf. 1994. "Three-Dimensional Reconstruction Of an In-Situ Miocene Peat Forest From the Lower Rhine Embayment, Northwestern Germany: New Methods in Palaeovegetation Analysis." *Palaeogeography, Palaeoclimatology, Palaeoecology* 110, nos. 3–4 (August): 295–317.

Mossa, Joann, and B.A. Schumacher. 1993. "Fossil Tree Casts In South Louisiana Soils." *Journal of Sedimentary Petrology* 63, no. 4 (July): 707–713.

Mustoe, George E. 2001. "Washington's Fossil Forests." *Washington Geology* 29, nos. 1–2 (September): 10–20.

Mustoe, George E. 2008. "Mineralogy and Geochemistry Of Late Eocene Silicified Wood From Florissant Fossil Beds National Monument, Colorado." In *Paleontology of the Upper Eocene Florissant Formation, Colorado*, edited by H.W. Meyer and D.M. Smith. Geological Society of America Special Paper 435: 127–141. Denver, Colorado: Geological Society of America.

Mustoe, George E. 2018. "Non-Mineralized Fossil Wood." *Geosciences* 8, no. 6 (June): 223. https://www.mdpi.com/2076-3263/8/6/223.

Mustoe, George E., Mike Viney, and Jim Mills. 2019. "Mineralogy of Eocene Fossil Wood From the "Blue Forest" Locality, Southwestern Wyoming, United States. *Geosciences* 9: no. 1 (January): 35. https://www.mdpi.com/2076-3263/9/1/35.

Neregato, Rodrigo, Ronny Rößler, Rosemarie Rohn, and Robert Noll. 2015. "New Petrified Calamitaleans From the Permian of the Parnaiba Basin, Central-North Brazil. Part 1." *Review of Palaeobotany and Palynology* 215 (April): 23–45.

Nikolouli, Katerina, Anastasia Pournou, Glenn McConnachie, George Tsiamis, and Dimitris Mossialos. 2016. "Prokaryotic Diversity In Biodeteriorated Wood Coming From the Bükkábrány Fossil Forest." *International Biodeterioration & Biodegradation* 108 (March): 181–190.

Nilas, Karl J. 1994. "Predicting the Height of Fossil Plant Remains: An Allometric Approach To An Old Problem." *American Journal of Botany* 81, no. 10 (October): 1235–1243.

Ouaja, Mohamed, Georges Barale, Marc Phillippe, and Serge Ferry. 2011. "Occurrence Of an *In-Situ* Fern Grove In the Aptian Douiret Formation, Tataouine area, South-Tunisia." *Geobios* 44, no. 5 (September–October): 473–479.

Parrish, Judith Totman, and Howard J. Falcon-Lang. 2007. "Coniferous Trees Associated With Interdune Deposits In the Jurassic Navajo Sandstone Formation, Utah, USA." *Palaeontology* 50, no. 4 (July): 829–843.

Pashin, Jack C. 2005. "Pottsville Stratigraphy And the Union Chapel Lagerstätte." In *Pennsylvanian Footprints in the Black Warrior Basin of Alabama*, edited by R.J. Buta, A.K. Rindsberg, and D.D. Kopaska-Merkel. *Alabama Paleontological Society Monograph* 1: 39–58.

Pires, Etiene F., and Margot Guerra-Sommer. 2011. "Growth Ring Analysis Of Fossil Coniferous Woods From Early Cretaceous of Araripe Basin (Brazil)." *Anais da Academia Brasileira de Ciências* 83, no. 2 (June): 409–423.

Pirrie, Duncan, Jim D. Marshall, and J. Alistair Crame. 1998. "Marine High Mg Calcite Cements in *Teredolites*-Bored Fossil Wood; Evidence For Cool Paleoclimates In the Eocene La Meseta Formation, Seymour Island, Antarctica." *Palaios* 13, no. 3 (June): 276–286.

Pole, Mike. 1999. "Structure Of a Near-Polar Latitude Forest From the New Zealand Jurassic." *Palaeogeography, Palaeoclimatology, Palaeoecology* 147, nos. 1–2 (March): 121–139.

Pole, Mike. 2001. "Repeated Flood Events And Fossil Forests at Curio Bay (Middle Jurassic), New Zealand." *Sedimentary Geology* 144, nos. 3–4 (November): 223–242.

Pole, Mike. 2017. What Latitude Did the Jurassic Fossil Forest Curio Bay Grow At? http://www.mikepole.com/2017/08/03/latitude-jurassic-fossil-forest-curio-bay/.

Poole, Imogen, and David J. Cantrill. 2006. "Cretaceous and Cenozoic Vegetation of Antarctica Integrating the Fossil Wood Record." *Geological Society (London), Special Publications* 258 (1 January): 63–81.

Prakash, U., and Elso S. Barghoorn. 1961. "Miocene Fossil Woods From the Columbia Basalts of Central Washington." *Journal of the Arnold Arboretum* 42, no. 2 (April): 165–203.

Pratt, Sara. 2005. "Fossil Forests Sunk by Salt." *Geotimes* (July). http://www.geotimes.org/july05/NN_Jogginstrees.html.

Pregitzer, Kurt S., David D. Reed, Theodore J. Bornhorst, David R. Foster, Glenn D. Mroz, Jason S. Mclachlan, Peter E. Laks, Douglas D. Stokke, Patrick E. Martin, and Shannon E. Brown. 2000. "A Buried Spruce Forest Provides Evidence At the Stand and Landscape Scale For the Effects Of Environment On Vegetation At the Pleistocene/Holocene Boundary." *Journal of Ecology* 88, no. 1 (February): 45–53.

Pšenička, Josef, and Stanislav Opluštil. 2013. "The Epiphytic Plants In the Fossil Record and Its Example From *In Situ* Tuff From Pennsylvanian of Radnice Basin (Czech Republic)." *Bulletin of the Geosciences* 88, no. 2 (June): 401–416.

Pujana, Roberto R., Sergio N. Santillana, and Sergio A. Marenssi. 2013. "Conifer Fossil Woods From the La Meseta Formation (Eocene Of Western Antarctica): Evidence of Podocarpaceae-Dominated Forests." *Review of Palaeobotany and Palynology* 200 (January): 122–137.

Purvis, Kevin, and V.P. Wright. 1991. "Calcretes Related To Phreatophytic Vegetation From the Middle Triassic Otter Sandstone of South West England." *Sedimentology* 38, no. 3: 539–551.

Reese, Carl A., Grant L. Harley, Kristine L. DeLong, Samuel J. Bentley, Kehui Xu, Suyapa Gonzalez, Jonathan T. Truong, Jeffrey Obelcz, and Alicia Caporaso. 2018. "Stratigraphic Pollen Analysis Performed On a Late Pleistocene Cypress Forest Preserved On the Northern Gulf of Mexico Continental Shelf." *Journal of Quaternary Science* 33, no. 8: 865–870.

Retallack, Gregory J. 1999. "Carboniferous Fossil Plants And Soils Of An Early Tundra Ecosystem." *Palaois* 14, no. 4 (August): 324–336.

Ritland, R.M., and S.L. Ritland. 1974. "The Fossil Forests Of the Yellowstone Region." *Spectrum* 6, nos. 1–2: 19–66.

Roberts, Eric M., and Marc S. Hendrix. 2000. "Taphonomy of a Petrified Forest in the Two Medicine Formation (Campanian), Northwest Montana: Implications For Palinspastic Restoration of the Boulder Batholith and Elkhorn Mountains Volcanics." *Palaios* 15, no. 5: 476–482.

Rössler, Ronny. 2006. "Two Remarkable Permian Petrified Forests: Correlation, Comparison and Significance." In *Non-Marine Permian Biostratigraphy and Biochronology*, edited by Spencer G. Lucas, Guiseppe Cassinis, and Joerg W. Schneider. Geological Society, London, Special Publications, 265, no. 1: 39–63.

Rößler, Ronny, and Robert Noll. 2006. "Sphenopsids Of the Permian. (1): The Largest Known Anatomically Preserved Calamite, An Exceptional Find From the Petrified Forest of Chemnitz, Germany." *Review of Palaeobotany and Palynology* 140, nos. 3–4 (July): 145–162.

Rößler, Ronny, Zhuo Feng, and Robert Noll. 2012. "The Largest Calamite and Its Growth Architecture—*Arthropitys bistriata* From The Early Permian Petrified Forest Of Chemnitz." *Review of Palaeobotany and Palynology* 185 (1 October): 64–78.

Rößler, Ronny, Mathias Merbitz, Volker Annacker, Ludwig Luthardt, Robert Noll, Rodrigo Neregato, and Rosemarie Rohn. 2014. "The Root Systems Of Permian Arborescent Sphenopsids: Evidence From the Northern and Southern Hemispheres." *Palaeontographica Abteilung B-Paläophytologie* 290, nos. 4–6 (February): 65–107.

Rowell, Marcus V., Gregory J. Jordan, and Richard W. Barnes. 2001. "An In Situ Late Pleistocene Melaleuca Fossil Forest At Coal Head, Western Tasmania, Australia." *Australian Journal of Botany* 49, no. 2: 235–244.

Ruiz, Daniela P., Mariana Brea, M. Sol Raigemborn, and Sergio D. Matheos. 2017. "Conifer Woods From the Salamanca Formation (Early Paleocene), Central Patagonia, Argentina: Paleoenvironmental Implications." *Journal of South American Earth Sciences* 76 (July): 427–445.

Rupke, N.A. 1966. "Prolegomena To a Study Of Cataclysmal Sedimentation." *Creation Research Society Quarterly* 3, no. 1 (May): 16–37.

Rupke, N.A. 1969. "Sedimentary Evidence For the Allochthonous Origin of *Stigmaria*, Carboniferous, Nova Scotia." *Geological Society of America Bulletin* 80, no. 10 (October 1): 2109–2114.

Rusconi, C. 1941. "'Bosques petrificados' De Mendoza." *Anales de la Sociedad Cientifica Argentina* 132: 80–96.

Rygel, Michael C., Martin R. Gibling, and John H. Calder. 2004. "Vegetation-Induced Sedimentary Structures From Fossil Forests In the Pennsylvanian Joggins Formation, Nova Scotia." *Sedimentology* 51, no. 3 (May): 531–552.

Rygel, Michael C., Corinne Lally, Martin R. Gibling, Alessandro Ielpi, John H. Calder, and Arden R. Bashforth. 2015. "Sedimentology and Stratigraphy Of the Type Section Of the Pennsylvanian Boss Point Formation, Joggins Fossil Cliffs, Nova Scotia, Canada." *Atlantic Geology* 51: 1–43.

Šamonil, Pavel, Alice Moravcová, Petr Pokorný, P. Žáčková, Jakub Kašpar, Ivana Vašíčková, Pavel Daněk, Jan Novák, Petra Hájková, Dušan Adam, and Hanns Hubert Leuschner. 2018. "The Disturbance Regime Of an Early Holocene Swamp Forest In the Czech Republic, As Revealed By Dendrochronological, Pollen And Macrofossil Data." *Palaeogeography, Palaeoclimatology, Palaeoecology* 507 (15 October): 81–96.

Sanborn, W.B. 1951. "Groves Of Stone: Fossil Forests Of the Yellowstone Region. *Pacific Discovery* 4, no. 3: 18–25.

Schindler, Thomas, Dieter Uhl, Robert Noll, Markus Poshmann, Thomas Bach, Werner Höhn, Benno Rahm, Dieter Schweiss, and Michael Wuttke. 2004. "First Record Of In Situ Stumps of *Sigillaria* in Rotliegend Deposits (Late Carboniferous to Early Permian) Of the Northern Palatinate (SW Germany)." *Neues Jahrbuch für Geologie und Paläontologie—Abhandlungen* 233, no. 1 (July): 1–26.

Scott, Andrew C., and John H. Calder. 1994. "Carboniferous Fossil Forests." *Geology Today* 10, no. 6 (November): 213–217.

Scott, Andrew C. 2001. "Roasted Alive In The Carboniferous." *Geoscientist* 11, no. 3 (March): 4–7.

Shun-Li, Li, Xing-He Yu, Cheng-Peng Tan, Ronald Steel, and Xiu-Fang Hu. 2014. "Jurassic Sedimentary Evolution of Southern Junggar Basin: Implication For Palaeoclimate Changes In Northern Xinjiang Uygur Autonomous Region, China." *Journal of Palaeogeography* 3, no. 2 (April): 145–161.

Smirnoff, Leonid, and William Connelly. 1980. "Axes Of Elongation Of Petrified Stumps In Growth Position As Possible Indicators Of Paleosouth, Alaska Peninsula." *Geology* 8, no. 11 (November): 547–548.

Snelling, Andrew, and John Mackay. 1984. "Coal, Volcanism and Noah's Flood." *Creation Ex Nihilo Technical Journal* 1, no. 1 (April): 11–29.

Snelling, Andrew A. 2016. "Ancient Tropical 'Transitional' Forests Found Fossilized in the Arctic." Answers in Genesis, March 17. https://answersingenesis.org/fossils/tropical-transitional-forests-found-fossilized-in-arctic/.

Snelling, Andrew A. 2019. "Stumped By Forests In Antarctica." *Answers Magazine* 14, no. 1 (January–February): 26–29.

Spalleti, Luis A., Gonzalo D. Veiga, and Juan R. Franzese. 2013. "Gravitational-Fluvial Processes And Preservation Of Forest Vegetation In A Volcanic Area: Rancahue Formation (Oligocene), Neuquén Andes, Argentina." *Andean Geology* 40, no. 3: 521–538.

Spicer, Robert A. 1990. "Reconstructing High-Latitude Cretaceous Vegetation And Climate: Arctic And Antarctic Compared." In *Antarctic Paleobiology: Its Role In The Reconstruction of Gondwana*, edited by T.N. Taylor and E.L Taylor, 27–36. New York: Springer-Verlag.

Staccioli, Giuseppe, Andrea Meli, and Fabio Fratini. 2002a. "Investigation On Fossil Barks From An Arctic Canadian Site Constituted By A Multiple Level Tertiary Fossil Forest 45 Million Years Old." *Holzforschung* 56, no. 1 (February): 20–24.

Staccioli, G., N.J. McMillan, A. Meli, and G. Bartolini. 2002b. "Chemical Characterization Of A 45 Million Year Bark From Geodetic Hills Fossil Forest, Axel Heiberg Island, Canada." *Wood Science and Technology* 36, no. 5 (November): 419–427.

Stein, William E., Frank Mannolini, Linda VanAller Hernick, Ed Landing, and Christopher M. Berry. 2007. "Giant Cladoxylopsid Trees Resolve The Enigma Of The Earth's Earliest Forest Stumps At Gilboa." *Nature* 446, (19 April): 904–907.

Stern, W.L., and R.H. Eyde. 1962. "Preliminary View Of Tertiary Fossil Forest of Ocu, Panama." *American Journal of Botany* 49, no. 6 (July): 670.

Stern. W.L., and R.H. Eyde. 1963. "Fossil Forests Of Ocu, Panama." *Science* 140, no. 3572 (June 14): 1214.

Stevenson, Ian R., and Marion K. Bamford. 2003. "Submersible-Based Observations Of In-Situ Fossil Tree Trunks In Late Cretaceous Seafloor Outcrops, Orange Basin, Western Offshore, South Africa." *South African Journal of Geology* 106, no. 4 (December): 315–326.

Stevenson, John J. 1911. "The Formation Of Coal Beds: I. An Historical Summary Of Opinion From 1700 To The Present Time. *Proceedings of the American Philosophical Society*, L, no. 198A (January–April): 1–116.

Sutherland, J. Isabel. 2003. "Miocene Petrified Wood And Associated Borings And Termite Faecal Pellets From Hukatere Peninsula, Kaipara Harbour, North Auckland, New Zealand." *Journal of the Royal Society of New Zealand* 33, no. 1 (March): 395–414.

Tarnocai, C., H. Kodama, and C. Fox. 1991. "Characteristics And Possible Origin Of The White Layers Found In The Fossil Forest Deposits, Axel Heiberg Island, Arctic Archipelago." *Bulletin of the Geological Survey of Canada* 403: 189–200.

Tarnocai, C., and C.A.S. Smith. 1991. "Paleosols Of The Fossil Forest Area, Axel Heiberg Island." *Bulletin of the Geological Survey of Canada* 403 (January): 171–187.

Taylor, E.L., R. Cùneo, and T.N. Taylor. 1991. "Permian And Triassic Fossil Forests From The Central Transantarctic Mountains." *Antarctic Journal of the United States* 26, no. 5: 23–24.

Taylor, Edith L., Thomas N. Taylor, and N. Rubén Cúneo. 1992. "The Present Is Not The Key To The Past: A Polar Forest From The Permian of Antarctica." *Science* 257, no. 5077 (September 18): 1675–1677.

Taylor, Edith L., and Thomas N. Taylor. 1993. "Fossil Tree Rings And Paleoclimate From The Triassic of Antarctica." In *The Non-Marine Triassic*, edited by S.G. Lucas and M. Morales, The New Mexico Museum of Natural History and Science, Bulletin No. 3: 453–455. Albuquerque, New Mexico: New Mexico Museum of Natural History and Science.

Taylor, Edith L., Thomas N. Taylor, and N. Rubén Cúneo. 2000. "Permian And Triassic High Latitude Paleoclimates: Evidence From Fossil Biotas." In *Warm Climates in Earth History*, edited by Brian T. Huber, Kenneth G. Macleod, and Scott L. Wing, 321–350. Cambridge, England: Cambridge University Press.

Taylor, Edith L., and Patricia E. Ryberg. 2007. "Tree Growth At Polar Latitudes Based On Fossil Tree Ring Analysis." *Palaeogeography, Palaeoclimatology, Palaeoecology* 255, nos. 3–4 (13 November): 246–264.

Thomas, Barry A. 2016. "A Carboniferous Fossil Forest In North Wales: Problems And Potentials Associated With Developing And Conserving A "Soft-Rock" Site." *Geoheritage* 8, no. 4 (December): 401–406.

Thomas, Barry A., and Leyla J. Seyfullah. 2015. "*Stigmaria* Brongniart: A New Specimen from Duckmantian (Lower Pennsylvania) Brymbo (Wrexham, North Wales) Together With A Review Of Known Casts And How They Were Preserved." *Geological Magazine* 152, no. 5: 858–870.

Thorn, Vanessa. 2001. "Vegetation Communities Of A High Palaeolatitude Middle Jurassic Forest In New Zealand. *Palaeogeography, Palaeoclimatology, Palaeoecology* 168, nos. 3–4 (15 April): 273–289.

Tidwell, William D., and Naomi Hebbert. 1992. "Species Of The Cretaceous Tree Fern Tempskya From Utah." *International Journal of Plant Sciences* 153, no. 3: 513–528.

Trümper, Steffen, Ronny Rößler, and Jens Götze. 2018. "Deciphering Silification Pathways Of Fossil Forests: Case Studies From The Late Paleozoic Of Central Europe." *Minerals* 8, no. 10 (October): 432. doi:10.3390/min8100432.

Turner, Brian R., and Issa M. Makhlouf. 2005. "Quaternary Sandstones, Northeast Jordan: Age, Depositional Environments And Climatic Implications." *Palaeogeography, Palaeoclimatology, Palaeoecology* 229, no. 3 (December): 230–250.

Vanner, Mathew R., John G. Conran, Jennifer M. Bannister, and Daphne E. Lee. 2018. "Cenozoic Conifer Wood From The Gore Lignite Measures, Southland, New Zealand." *New Zealand Journal of Botany* 56, no. 3: 291–310.

Vargemezis, G., N. Zouros, P. Tsourlos, and I. Fikos. 2009. "High-Resolution Magnetic Gradient And Electrical Resistivity Tomography Survey At The Plaka Petrified Forest Park In Lesvos Island, Greece." *Near Surface Geophysics* 7, no. 3 (June): 207–215.

Vasconcelos, Marcela Vitória de, Iracilde Maria de Moura Fé Lima, and Maria Valdirene Araújo Rocha Moraes. 2016. "Floresta Fóssil Do Rio Poti Em Teresina, Piauí: Porque Não Preservar." *Revista Equador (UFPI)* 5, no. 3: 239–259.

Vasileiadou, Katerina, Madelaine Böhhme, Thomas A. Neubauer, Georgios L. Georgalis, George E. Syrides, Lambrini Papadopoulou, and Nickolas Zouros. 2017. "Early Miocene Gastropod And Ectothermic Vertebrate Remains From The Lesvos Petrified Forest (Greece)." *PalZ* 91, no. 4 (December): 541–564.

Vassio, E., E. Martinetto, M. Dolezych, and J. Van der Bergh. 2008. "Wood Anatomy Of The *Glyptostrobus europaeus* "Whole-Plant" From A Pliocene Fossil Forest Of Italy." *Review of Palaeobotany and Palynology* 151, no. 3–4: 81–89.

Velitzelos, E., and N. Zouros. 1997. "The Petrified Forest Of Lesvos—Protected National Monument." In *Engineering Geology and the Environment*, edited by P. G. Marionos, G. C. Koukis, G. C. Tsiambaos, and G. C. Stournaras, 3037–3043. Rotterdam, Netherlands: A.A. Balkema.

Vera, Ezequiel Ignacio. 2012. "Further Evidence Supporting High Diversity Of Cyathealean Tree Ferns In The Early Cretaceous of Antarctica." *Cretaceous Research* 56, (September–December): 141–154.

Wagner, Robert H. 1989. "A Late Stephanian Forest Swamp With *Sporangiostrobus* Fossilized By Volcanic Ash Fall In The Puertollano Basin, Central Spain." *International Journal of Coal Geology* 12, nos. 1–4: 523–552.

Waldron, John W. F., Michael C. Rygel, Martin R. Gibling, and John H. Calder. 2013. "Evaporite Tectonics And The Late Paleozoic Stratigraphic Development Of The Cumberland Basin, Appalachians Of Atlantic Canada." *GSA Bulletin* 125, no. 5–6: 945–960.

Waldron, John W. F., and Michael C. Rygel. 2005. "Role Of Evaporite Withdrawal In The Preservation Of A Unique Coal-Bearing Succession: Pennsylvanian Joggins Formation, Nova Scotia." *Geology* 33, no. 5: 337–340.

Walker, Tas. 2001. "Coal: Memorial To The Flood." *Creation* 23, no. 2 (March): 22–27.

Weaver, L., S. McLoughlin, and A. N. Drinnan. 1997. "Fossil Woods From The Upper Permian Bainmedart Coal Measures, Northern Prince Charles Mountains, East Antarctica." *AGSO Journal of Australian Geology and Geophysics* 16, no. 5 (May): 655–676.

Webster, Clyde L. Jr. 2018. "A Chemist's Perspective On The Yellowstone Petrified 'Forests'." *Origins* 65: 62–74.

West, Ian. 2016. "Fossil Forest, Lulworth Cove; Part 1: The Ledge And Strata." http://www.southampton.ac.uk/~imw/Fossil-Forest.htm.

West, Ian. 2018. "The Fossil Forest; Part 2: The Purbeck Fossil Trees." http://www.southampton.ac.uk/~imw/Fossil-Forest-Purbeck-Trees.htm.

Wheeler, E.A. 2001. "Fossil Dicotyledonous Woods From Florissant Fossil Beds National Monument, Colorado." *Proceedings of the Denver Museum of Natur & Science* 4, no. 1 (October 1): 187–203.

White, Mary. 1981. "Fish Beds Reveal Lush Fossil Forest." *Australian Natural History* 20, no. 7: 227–230.

Williams, Christopher J. 2007. "High-Latitude Forest Structure: Methodological Considerations And Insights On Reconstructing High-Latitude Fossil Forests." *Bulletin of the Peabody Museum of Natural History* 48, no. 2 (October): 339–357.

Williams, E. L., and G. F. Howe. 1993. "Fossil Wood Of Big Bend National Park, Brewster County, Texas. Part 1: Geologic Setting." *Creation Research Society Quarterly* 30, no. 1 (June): 47–54.

Williams, E. L. 1993. "Fossil Wood Of Big Bend National Park, Brewster County, Texas. Part 2: Mechanism Of Silicification Of Wood And Other Pertinent Factors." *Creation Research Society Quarterly* 30, no. 2 (September): 106–111.

Williams, E. L., G. T. Matzko, G. F. Howe, R. R. White, and W. G. Stark. 1993. "Fossil Wood Of Big Bend National Park, Brewster County, Texas. Part 3: Chemical Tests Performed On Wood." *Creation Research Society Quarterly* 30, no. 3 (December): 169–176.

Wing, Scott L., Leo J. Hickey, and Carl C. Swisher. 1993. "Implications Of An Exceptional Fossil Flora For Late Cretaceous Vegetation." *Nature* 363 (May 27): 342–344.

Wnuk, Christopher, and Hermann W. Pfefferkorn. 1984. "The Life habits and paleoecology of Middle Pennsylvanian Medullosan Pteridosperms Based On An *In Situ*

Assemblage From The Bernice Basin (Sullivan County, Pennsylvania, U.S.A.)." *Review of Palaeobotany and Palynology* 41, no. 3–4: 329–357.

Wnuk, Christopher, and Hermann W. Pfefferkorn. 1987. "A Pennsylvanian-Age Terrestrial Storm Deposit; Using Plant Fossils To Characterize The History And Process Of Sediment Accumulation." *Journal of Sedimentary Petrology* 57, no. 2 (1 March): 212–221.

Wolberg, Donald L., Jean P. Hall, Diane BeHis, William X. Chavez, Orin Anderson, Robert Moro, and April Gil. 1988. "Regional Historic, Stratigraphic, And Paleontologic Framework Of The Late Cretaceous (Campanian-Maastrichtian) Fossil Forest Locality Near Split Lip Flats, San Juan Basin, San Juan County, New Mexico." *Bulletin 122—Contributions to Late Cretaceous Paleontology and Stratigraphy of New Mexico* (September), 7–21.

Woodcock, Deborah, Herbert Meyer, Nelia Dunbar, William McIntosh, Isabel Prado, and Guillermo Morales. 2009. "Geologic And Taphonomic Context Of El Bosque Petrificado Piedra Chamana (Cajamarca, Peru)." *Geological Society of America Bulletin* 121, no. 7–8 (June): 1172–1178.

Woodcock, D. W., H. W. Meyer, and Y. Prado. 2017. "The Piedra Chamana Fossil Woods (Eocene, Peru)." *IAWA Journal* 38, no. 3: 313–365.

Wright, William E., Christopher Baisan, Martin Streck, W. Walton Wright, and Paul Szejner. 2016. "Dendrochronology And Middle Miocene Petrified Oak: Modern Counterparts And Interpretation." *Palaeogeography, Palaeoclimatology, Palaeoecology* 445 (1 March): 38–49.

Xu, Hong-He, Christopher M. Berry, William E. Stein, Yi Wang, Peng Tang, and Qiang Fu. 2017. "Unique Growth Strategy In The Earth's First Trees Revealed In Silicified Fossil Trunks From China." *Proceedings of the National Academy of Sciences* 114, no. 45 (November 7): 12009–12014.

Yamakawa, Chiyomi, Arata Momohara, Takeshi Saito, and Tomoo Nunotani. 2017. "Composition And Paleoenvironment Of Wetland Forests Dominated By *Glyptostrobus* And *Metasequoia* In The Latest Pliocene In Central Japan." *Palaeogeography, Palaeoclimatology, Palaeoecology* 467 (1 February): 191–210.

Yamamoto, Tetsuya. 1980. Identification Of Fossil Wood From The Specimen Creek Area Of The Gallatin Petrified Forest, Yellowstone National Park, Montana. M.A. thesis, Loma Linda University.

Yossifova, Mariana G., Greta M. Eskenazy, and Sevdalina P. Valčeva. 2011. "Petrology, Mineralogy, And Geochemistry Of Submarine Coals And Petrified Forest In The Sozopol Bay, Bulgaria." *International Journal of Coal Geology* 87, no. 3–4 (September 1): 212–225.

Yuretich, Richard F. 1984. "Yellowstone Fossil Forests: New Evidence For Burial In Place." *Geology* 12, no. 3 (March 1): 159–162.

Zodrow, Erwin L. 2002. "The "Medullosalean Forest" At The Lloyd Cove Seam (Pennsylvanian, Sydney Coalfield, Nova Scotia, Canada)." *Atlantic Geology* 38, no. 2–3 (July): 177–195.

Appendix

The following quotation from the third edition of *Faith, Reason & Earth History: A Paradigm of Earth and Biological Origins by Intelligent Design* (2016), by Leonard Brand and Arthur Chadwick, opens the door to the possibility that tidal cycles in Pennsylvanian forests may depict more time than one year:

> Cyclical Features That Seem to Require Time: Some sediments contain what are described as tidal cycles (one lamina deposited with each high tide), and if this is correct, they may represent a time frame consistent with short-age geology. Discovery of these tidal cycles has changed interpreted time for deposition of some rocks from thousands or millions of years to a few years—in other words, three or four orders of magnitude than previously thought. This is still a challenge to explain within a one-year event but fits well if it occurred in a portion of the geological record that formed over hundreds or a few thousand years. (418–419)

The authors next discuss other laminated sediments that seem problematic, such as the "varves" of the Eocene Green River Formation in Wyoming. These are rejected as true varves based on scientific evidence. This is followed by a discussion of Milankovitch cycles that are rejected as having any valid imprint upon the geological record. Finally, in this section dealing with "Cyclical Features That Seem to Require Time," the authors respond to the challenge of ice-core laminations that seem to require 100,000 years (in Greenland) or hundreds of thousands of years (in Antarctica). These also are rejected as having valid time implications.

Postscript

Creationist research can no longer neglect major non-creationist studies of purported fossil forests completed in the last 25–30 years. The accompanying bibliography attempts to collect some of the more important studies to expedite creation research. These fossil forests are found in multiple places across every continent, including Antarctica. This paper is a two-fold call: first, a call for many more creationists trained in botany and its related fields to take up the study of fossil forests. This involves having botanists do additional training in geology, and it also involves supporting young creationists who wish to enter graduate-degree programs in paleobotany. Second, it is a call for creationists to re-visit all their research on fossil forests and supplement that research with extensive, credible field work.

Creationist research on fossil forests must be data driven. Mostly such research has been model-driven, which is a good starting point for research. But it is not the end point. Model-driven research is qualitative and more theoretical; data-driven research is quantitative and more practical. In terms of finding the truth about fossil forests, the preference should be given to quantitative over qualitative research at least in its incipient stages. The ultimate goal is to develop models and apply those models in a variety of situations utilizing both quantitative and qualitative approaches. The above study is an appeal not to neglect the quantitative aspects of fossil-forest research that provide a solid foundation for further pursuits.