
TMR Release 1E - Steps Toward a Photogrammetry Solution and Digital Site Model
Released August 12, 2009

On of my stated ambitions for quite awhile now has been to make a fine digital model of the Bluff Creek Site for research use, ideally one of sufficient quality that the research community will rely upon it.

The single biggest challenge has been the apparent disconnect between the opening (early) sequence and the rest of the film (the Look Back middle sequence, and the final Walk Away sequence).

Several questions have persisted in the film research, because of the apparent disconnect between the beginning and middle sequences. How close or far away are the two locations? Are they both at Bluff Creek? Can the two locations be combined or reconciled in any reasonable way? If combined, do they coincide with the descriptions of the filming event?

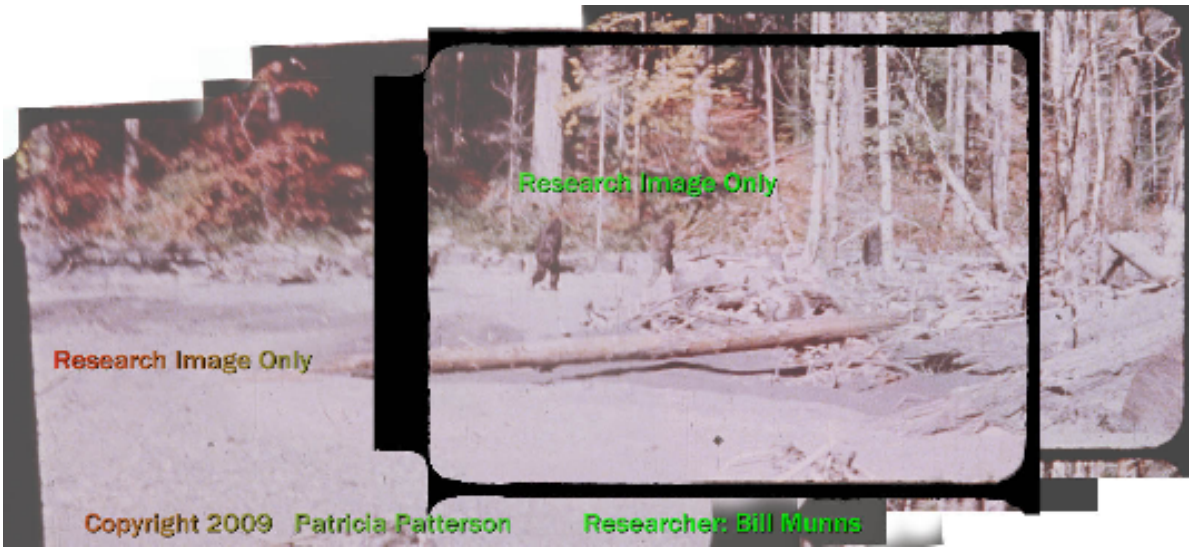
The first step to any answer to the above questions is to find a connection between the two landscapes, if possible, and if such can be found, see what new understanding of that connection might bring. People have been examining cropped image versions of the PGF for most of the near 42 years the film has been analyzed, but cropped versions have actually cut away the very landscape imagery needed for a solution to this particular problem.

I had hoped that by obtaining scans of true full frames, a connection might be found. It pleases me to say that such a connection has indeed been found, and this brings us one good step closer to a complete Digital Site Model, and a Photogrammetry Solution for the PGF.

Using a combination of multiple frames from the Middle Sequence, the following composite landscape has been assembled, as a first step:

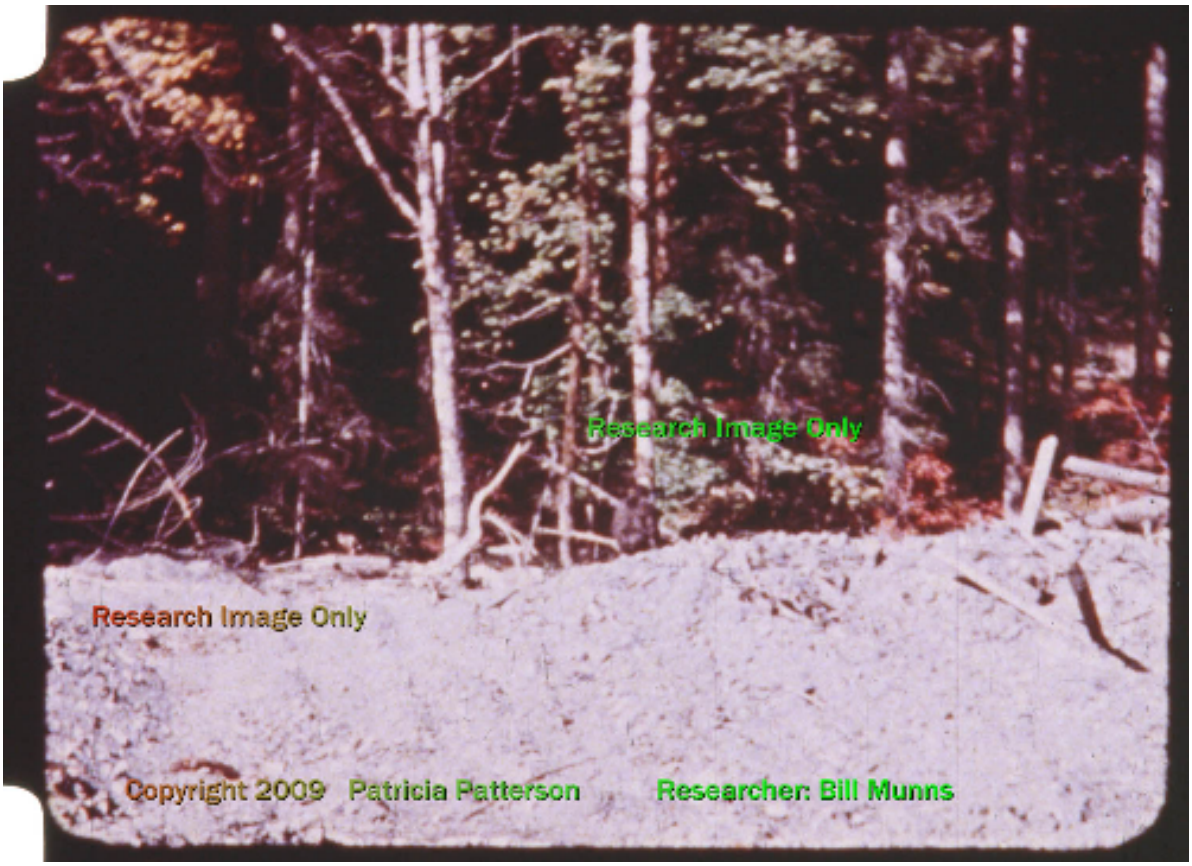

Note that for the farthest left image used, some rescaling had to be done, because Roger's camera was farther away for that frame than for the majority of the middle sequence (thus making the leaf objects appear smaller in frame).So this image could not be used for any precise measuration. It is more illustrative of the landscape.

For reference, the same composite shows a true camera frame size, so you can better appreciate how many frames were needed to make the composite:



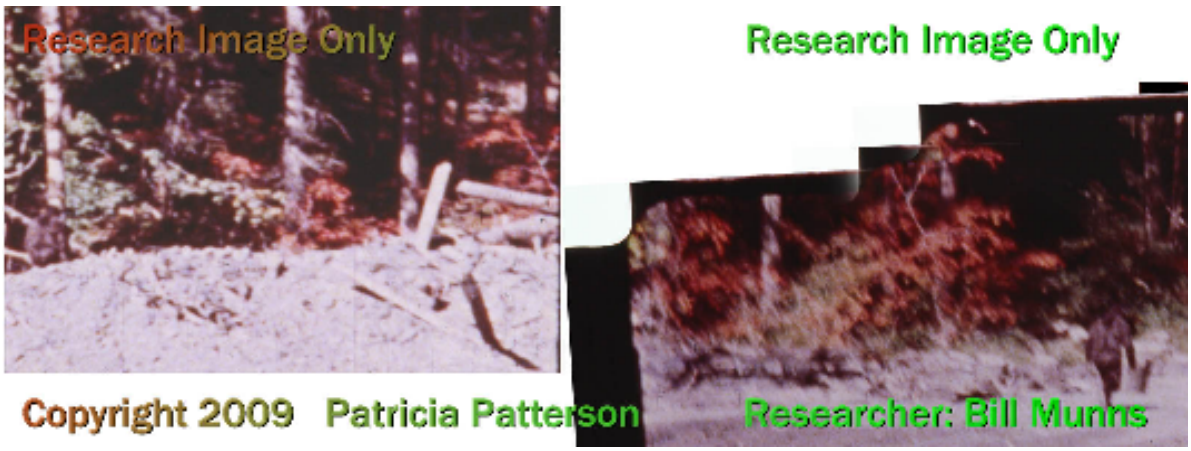

To match to the first sequence, the reddish foliage in the upper left becomes the key to the connection to the early sequences, so it is enlarged below,

Below is the beginning sequence frame I chose, to match the landscapes and connect the beginning and middle sequences. Patty, if you cannot find her, is about center, the pale embankment masking her legs, and she's directly in front of one of the whitish trees (right below the green word "research").

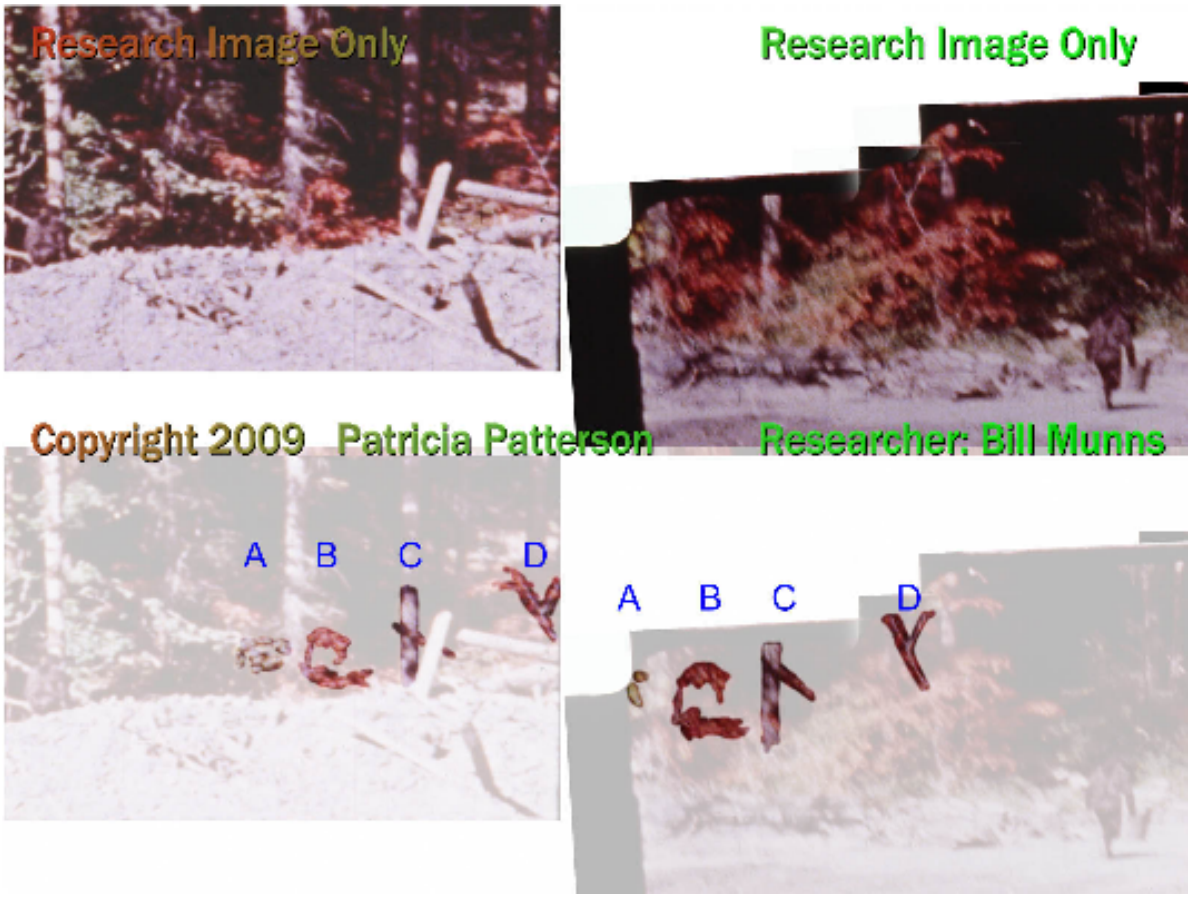



This next set of two images shows the area of landscape common to the two sequences.

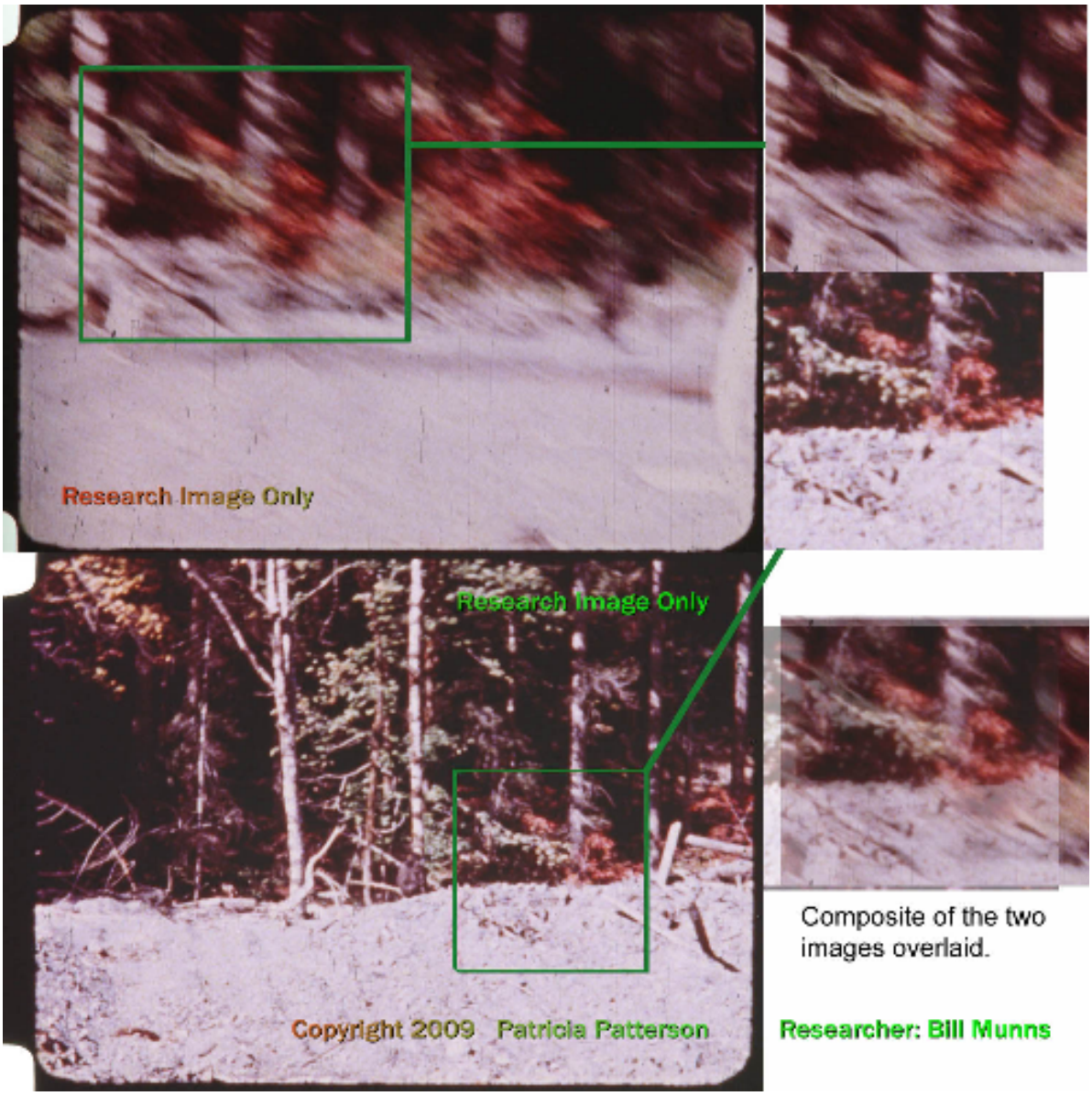
Now we compare the landscapes of the early and middle sequence.
Left is early sequence, and right is the middle sequence composite.



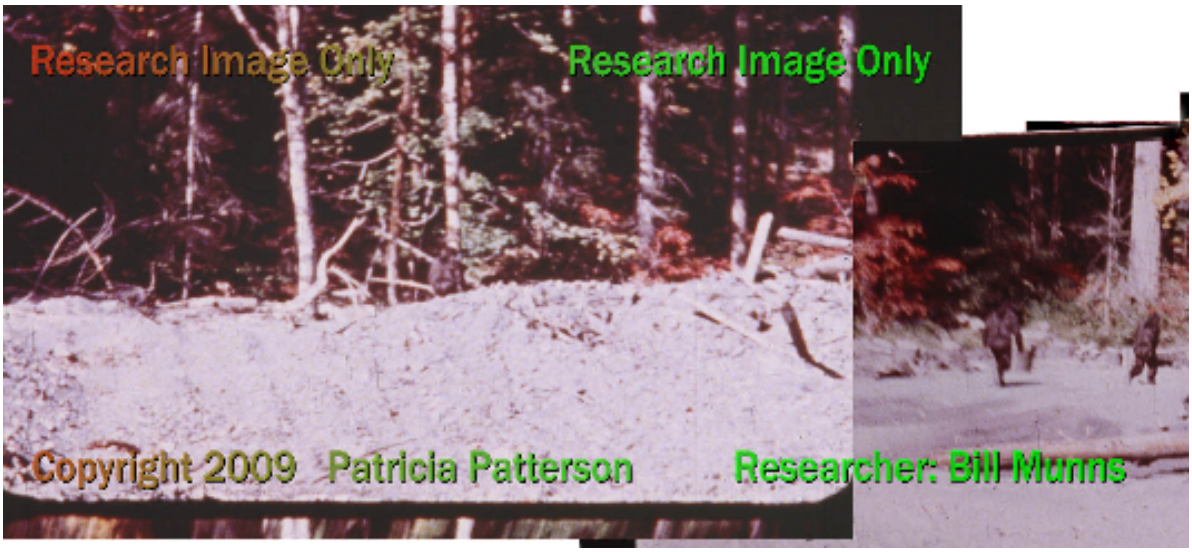

The following comparisons are made, with the images at the bottom having most of the landscape faded so I could emphasize the common shapes, four in particular, labeled A-D on each image. If you look directly above each letter, you see the same things in full image context:



Additionally, I used another middle sequence image to show more similarity. It is blurred, but the leaf color patterns are still very distinctive and match well. The pair of diagonal red leaf clusters (on each side of the tree trunk), and the one long green leaf cluster make a very distinctive pattern, even when blurred.



Finally, I scaled and composited the early scene to the composite middle sequence, as follows:




For the early sequence (the left portion), Roger was at a lower point in the creek bed, filming at an up angle to the embankment (and further back, of course, compared to his middle sequence positions, at right). He then stopped the camera and ran up that embankment, once Patty disappeared, to get to the creek area where we can see the log, the big tree, and Patty again.

The early sequence is scaled up in the above composite, just for illustrative purposes, so this particular composite image is not for any specific measuration, photogrammetry, or scaling purposes.

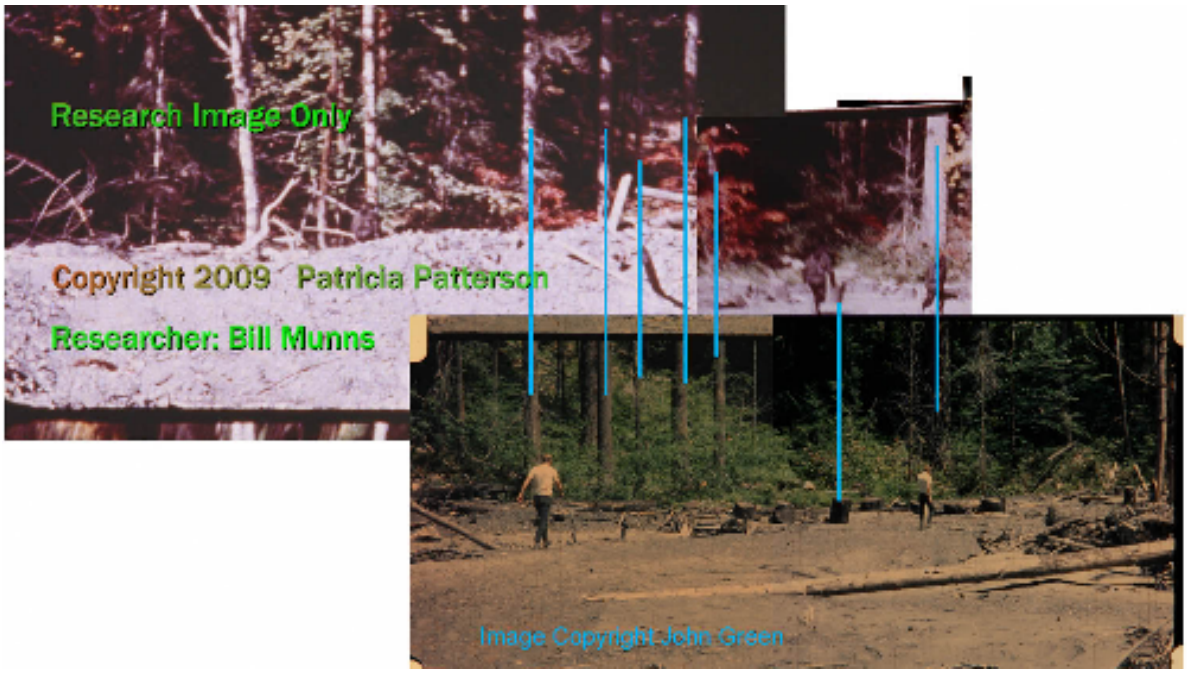
In future analysis, scaling the foliage elements between the various frames should give us a proximate distance of Roger's early sequence camera position as compared to his middle sequence first camera position.This scaling is further data which can be integrated into a future photogrammetry solution.

An additional comparison is with some of John Green's footage of the McClarin walk re-enactment. I have stated that there are some discrepancies in camera position, questions about degree of equivalency between Green's and Patterson's lenses, and some issues of image distortion still under evaluation. And there will be slight positional differences in the below tree comparison because John's camera position is not exactly the same as any of Roger's camera positions in the PGF composite image.

The point of the comparison is simply to identify the trees, from Green's filming to Pattersons's, and set up a prospect of future use of Green's images to assist in the Photogrammetry solution and site model construction.

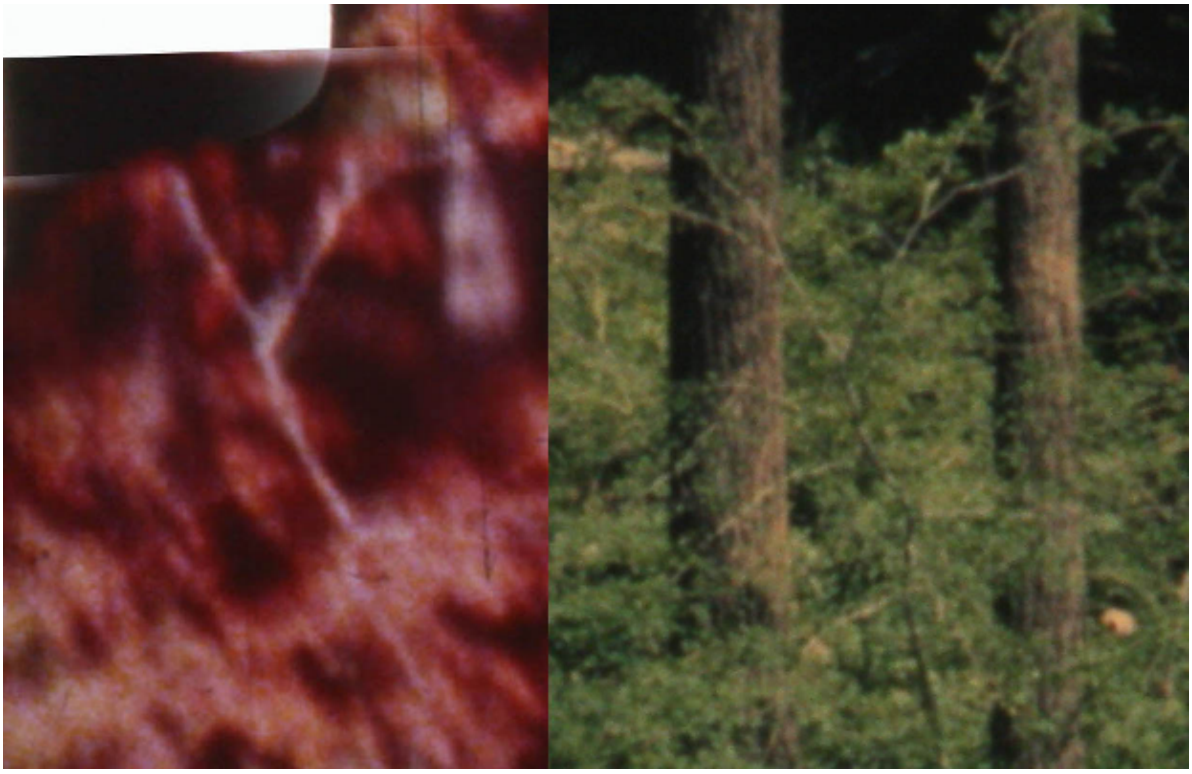
So in the image below, the blue lines connect the tree or treestump in Green's image composite (made from two frames of the walk re-enactment footage scanned) with the composite of PGF, which is acknowledged to be a composite of several PGF frames, scaled to a proximate match, considering the camera positions among the component images do vary.

The connection is made simply for tree identification purposes, at this point in the analysis.




Under close inspection, the "Y" shaped branch (noted above as "D" in the four point comparison of early and middle PGF frames) is also apparently still there when Green filmed his footage the next summer (as reported).

Below compares the PGF and Green's frames, zoomed in on the "Y" shaped branch.

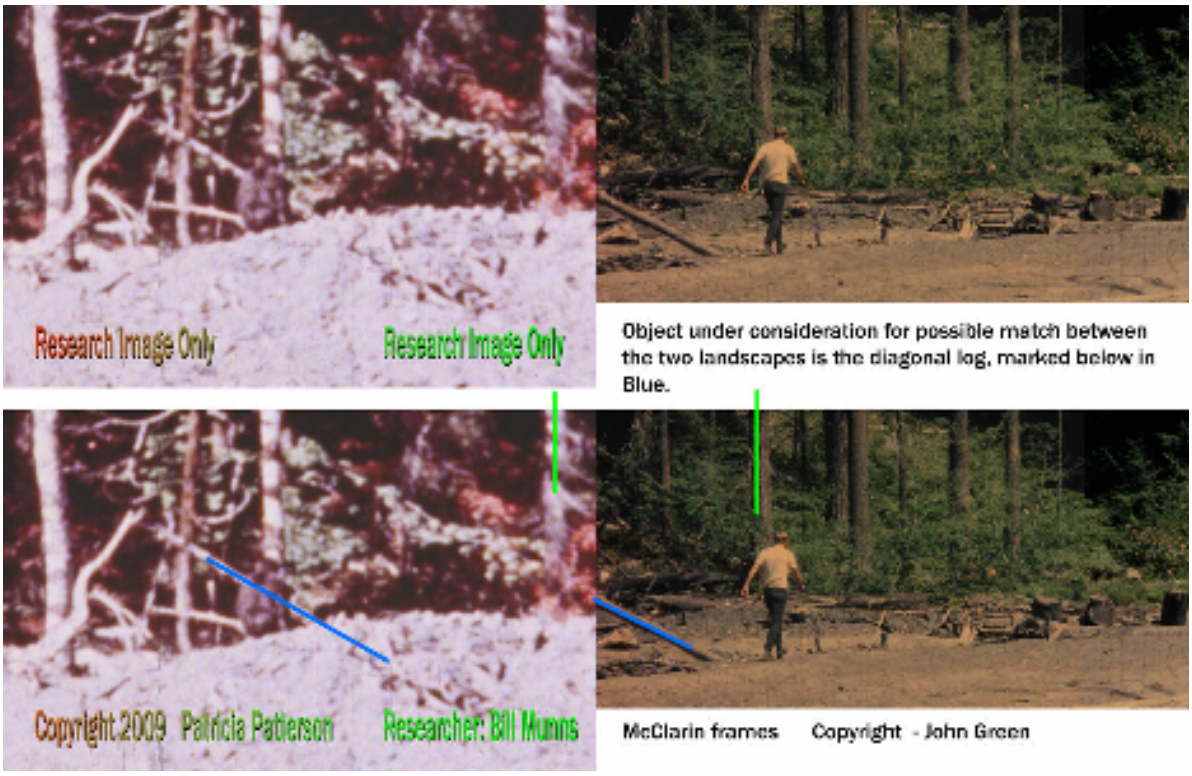


Another feature of the landscapes is under consideration and it is shown here, inviting comments by other researchers, as to whether or not the object highlighted is the same one in the PGF frame and the Green frame.

There is a diagonal tree trunk, fallen or cut, seen in the early PGF frames, and Patty walks in front of it as she walks away. A diagonal shape is seen in some early middle sequence frames, but blurred. In Green's frames of McClarin, however, the diagonal branch is sharp and clear.

The following image comparison is showing the the diagonal tree trunk in both images, and has a green line identifying a tree already positively identified as the same, in the material above, in this report segment. So the diagonal objects in the two images are certainly in proximity, similar location, similar diagonal orientation, similar size.

The upper set of images (in the picture below) show just the film frames (cropped for emphasis on the tree log). The lower set of photos below have the same tree marked with a vertical green line, and the diagonal log marked with a diagonal blue line.




Additional analysis will be done, but if this does prove to be the same object, in both photos, it adds yet another key to the object inventory which will strengthen the final site model and photogrammetry solution.

In conclusion, the Photogrammetry analysis does have far more work needed to be done, but this analysis does bring us closer to a solution, by connecting the beginning and middle PGF sequences with identifiable landscape objects common to both, and connecting landscape elements common to both with John Green's footage, which depicts that crossover group of trees in a better light than the PGF does.

A comprehensive analysis often proceeds in many small steps instead of a few big leaps. This material is a small step, but a valuable one none the less. It helps unify the early and middle landscapes of the Bluff Creek Site, and makes a valuable contribution to the final Digital Site model goal, and a Photogrammetry solution to the film.

Bill Munns
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