



## FOREST BIOMETRICS RESEARCH INSTITUTE

4033 SW Canyon Road  
Portland, Oregon 97221

A Non-Profit Research Corporation since 2002  
For the advancement of research, education, and service in forest biometrics

September 26, 2022

To FBRI Supporting Organizations:

The purpose of this letter is to give you an update on the Institute's activities. In all honesty, I'm very pleased with our progress over the past year. Brock Purvis has been doing an outstanding job providing technical support and training to FPS users. Halli Hemingway is continuing to work on new methodologies to produce wall-to-wall forest inventories with LiDAR and satellite imagery data. On the business side, Richard Zabel is making sure we think outside the box and continue to look for new opportunities to generate revenue. Yes we are a non-profit, but we need to think about expanding the range of our services and recruiting new members in the West and other regions in North America. And finally, a big thank you to Melinda Olsen for taking care of the office chores that keep the Institute functioning smoothly.

As for me, my number one priority is working on the FPS Fortran source code. Over the course of several years Brock Purvis (FPS Technical Support) and I have identified "bugs" and other issues with FPS that should be fixed. We have been assisted in this effort by many individuals who use FPS on a regular basis and have reported various problems encountered while using the software. It has been slow going, but I have been successful in fixing a few problems in the FPS source code:

- ✓ The Scribner board foot volume calculations have been updated and follow the official rules established by the western regional log scaling and grading bureaus.<sup>1</sup> I would like to thank Matt Lutes for bringing this problem to my attention back in September 2019.
- ✓ The whole-tree carbon metrics (e.g., the CarbTree and CO2Tree columns in the STAND table) have been updated and include the carbon and CO2 from the entire stem, bark, roots, and crown (branches and leaves). In prior versions of FPS, the CarbTree and CO2Tree columns did not include the bark, roots, or crown components thus significantly under-reporting whole-tree carbon and CO2. I would like to thank Rich Botto for making me aware of this problem in August 2021.

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<sup>1</sup> The Official Northwest Log Rules (January 1, 2011 Edition) are published by the Columbia River, Northern California, Pacific Rim, Southern Oregon, and Yamhill log scaling and grading bureaus.

- ✓ In the past there were instances, too often in fact, where the FPS cruise compiler produced Scribner volume entries in the STAND table that were not consistent with the Scribner volume information reported in the DBHCLS table. The problem was associated with cruise data that did not include at least one height measurement for each tree species. As a workaround, last year I developed a Microsoft Access macro to perform a “health check” on an FPS database to identify stands that have inconsistent volume totals among the STAND, STANDSRT, and DBHCLS tables. There is good news here as well. After significant time staring at the Fortran source code for the FPS cruise compiler and inserting dozens of debug statements, I was able to identify and fix the code responsible for generating the inconsistencies among the tables. The “health check” macro is no longer needed. Over the years I have had several conversations with Brian Kleinhenz regarding this problem, and I would like to thank him for his insights that helped me ultimately find and fix the bug.

My plan for the balance of the year is to continue fixing bugs and rigorously test the new FPS software (Version 7.60) with Brock’s assistance. My goal is to assemble the updated programs into an FPS Version 7.60 install package and make it available to FBRI supporting organizations by the end of the first quarter 2023. I plan to go over all the fixes at the Annual Meeting later this year in Portland, Oregon. (More details on the Annual Meeting are provided below.)

Thus far this year Brock has conducted three FPS user group meetings via Zoom: March 8, June 21, and July 21. The format typically involves a short presentation on a topic of interest and then ample time for participants to report on any issues they might be having using the FPS software. I have learned about a few new bugs during the discussions which will help me chip away at improving FPS. So, for me, Brock’s meetings have become an extremely important source of information. Brock also has had good turnouts—easily 25 or more folks are typically signed in. I urge you to take advantage of future Brock’s user group meetings (aka BUGS) and attend when your schedule allows.

At the July 21 BUGS meeting I provided participants with a PowerPoint summary of my work to develop a crosswalk table that shows how to convert King’s Douglas-fir site index to Jim’s system. In a nutshell, all that is needed are values for PctHt, SITE\_PHY, and SITE\_SHP for any given King’s site index curve (Table A).

Table A. This crosswalk table allows users to set up FPS so it will grow stands using King’s site index curves for Douglas-fir. It shows the PctHt, SITE\_PHY, and SITE\_SHP values that are needed to model a range of King’s site index curves from 55 feet up to 155 feet. Users can use interpolation to derive the FPS metrics for King’s site index values not specifically listed in the table.

| RowID | KingsSI | YrsToBH | PctHt  | SITE_PHY | SITE_SHP |
|-------|---------|---------|--------|----------|----------|
| 1     | 55      | 9       | 1.4105 | 2.0840   | 0.4310   |
| 2     | 65      | 8       | 1.1012 | 3.1577   | 0.4207   |
| 3     | 75      | 7       | 0.9478 | 4.2279   | 0.5094   |
| 4     | 85      | 6       | 0.8689 | 5.2673   | 0.6013   |
| 5     | 95      | 5       | 0.8159 | 6.3143   | 0.6685   |
| 6     | 105     | 4       | 0.8116 | 7.2426   | 0.7198   |
| 7     | 115     | 4       | 0.7649 | 8.2085   | 0.7499   |
| 8     | 125     | 3       | 0.7786 | 9.1263   | 0.7778   |
| 9     | 135     | 3       | 0.7419 | 10.0595  | 0.7894   |
| 10    | 145     | 2       | 0.7751 | 10.9181  | 0.8046   |
| 11    | 155     | 2       | 0.7704 | 11.8050  | 0.8167   |

The July 21 BUGS session was recorded. Here is the link if you are interested in listening to the presentation:

<https://fbrinstitute.org/home-page/brocks-user-group-bugs/>

The link will take you to an FBRI web page. Scroll down to the July 21, 2022, BUGS session. Click on the mp4 recording and the video will start up. For those of you located in Idaho, Montana, or eastern Washington, I have developed a similar crosswalk table for Monserud’s Douglas-fir site index curves. Contact Brock at [support@forestbiometrics.org](mailto:support@forestbiometrics.org) or call (406) 541-0054 if you are interested in obtaining either (or both!) of these crosswalk tables.

While working on these crosswalk tables I developed a method for calculating the site index of a tree given bitemporal LiDAR data or something technically equivalent.<sup>2</sup> I would like to test my calculations on a real data set, maybe 100,000 or more trees. If you are interested in a project like this, please do not hesitate to contact me. A significant benefit of this approach is that costly felled-tree studies may no longer be necessary to localize an FPS SiteGrid table. Rather, we localize a SiteGrid table using bitemporal LiDAR data.

I am excited to report that we have a rather unique opportunity to expand the Institute into the Eastern United States over the next several years. To explore this possibility the FBRI Board of Directors retained John Foppert and Neal Maker to prepare a feasibility study and business plan for an FBRI Eastern Regional Office. John and Neal are foresters with extensive

<sup>2</sup> Basically, I need two total height measurements on the same tree preferably at least 7 years apart.

experience in eastern hardwood silviculture, forest modeling, and economics. They see a critical need for better forest management tools in their region, and FBRI/FPS may be able to be part of the solution. Over the past several months they have been holding discussions with business, conservation, and academic leaders throughout the region to gauge their interest in establishing a new forest research organization. John and Neal will present their results at the FBRI Board of Directors meeting scheduled for Monday, November 7. They have also been invited to attend FBRI's Annual Meeting for supporting organizations on November 8.

I would like to personally thank the Board of Directors for all their efforts this year to stabilize the Institute following Jim's passing in 2021. They have met frequently, and are very passionate about moving the Institute and FPS forward for the benefit of our supporting organizations and the forest products industry. In fact, the Board has scheduled a two-day strategic planning session in January to put some serious thought into how we should change and adapt to our situation without Jim at the helm. If you have any suggestions, comments, and/or concerns that you want the Board to consider, please contact Chairman Ken Borchert or any other Director. See Attachment A to this letter for contact information.

We have decided to hold an in-person Annual Meeting this year. It will be held at the Lloyd Center DoubleTree in Portland from 10 am to 3 pm on Tuesday, November 8. I hope to see many of you in attendance. It is a great forum to catch up with old friends and to meet the new people just getting started with FPS. A lot of positive things are happening at FBRI so I am absolutely looking forward to seeing you at the meeting and getting your feedback on our progress at the Institute.

The last thing I want to bring to your attention is the FBRI scholarship fund to honor Jim's legacy. If you or your organization wish to contribute, please follow this link:

<https://fbrinstitute.org/forest-biometrics/passing-of-dr-james-arney/>

All of us at FBRI are looking forward to awarding scholarships to deserving students in Jim's name. This is a great way to celebrate Jim and his many contributions to the forestry profession!

Best regards,

*Dan...*

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## Attachment A

### FBRI Contact Information

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