DISCUSSION

This project created an information-rich computer database for southeastern pines. Much tree data was quoted directly from non-copyrighted government documents (e.g., Burns and Honkala, 1990; Little, 1971). The advantage to this approach was the inclusion of large amounts of information without considerable rewriting. With additional data researched and compiled by me from other sources, each tree species Web page within the database contained informative descriptions. The quality and size of photographs and figures enhanced the program. My teaching experience indicates that people often have difficulty pronouncing scientific names and terms. Thus, audio of correctly pronounced names ends this problem and adds to the interactivity of the program, serving other learning pathways.

User-friendly pathways accessing this information were developed. A key to successfully creating these pathways was formatting the program for the World Wide Web. From a technical standpoint, HTML served as a user-friendly Web programming language and made creating and updating information pages simple. With networked computers, graphical and textual information created on one computer were easily transferred to other computers. From a user standpoint, the information could be accessed simply by pointing and clicking the cursor on desired information, avoiding the need to learn programming languages or commands. This information collected into one computer database has made a useful and convenient program for researching southeastern pines.

During early phases of the project, photographic problems plagued the creation of the GUI's. Some pictures were under-exposed and appeared too dark on the computer screen. Other photos were too large, too small, or not angled correctly. Thus, many photographs had to be retaken and rescanned into the database. Because of the numerous highlighted pathways within the program, occasionally one would be linked to an incorrect page or not linked at all. Further, when information was updated, each linked page had to be changed, and with the intricacy of the database structure, performing these modifications was tedious. To minimize these problems, links were constantly checked and all necessary information additions were performed at a single programming session to reduce inconsistencies in the database.

Some limitations in this program exist. Most pages display only one picture of a tree or characteristic. Ideally, all pages would contain multiple images that would load randomly, like the *Pinus palustris* title page. This way, users would be exposed to different views of the same species, and not memorize just one image. Currently, the interactive comparison tool does not allow for common or scientific name misspellings, but with programming modifications, this limitation could be addressed.

Finally, more information could be added to the database by future projects. For example, sections on silviculture, diseases, insects, and forest associates could be included. Additional species could be incorporated into the existing database, expanding it to include all naturally-occurring woody plants. The rapid technological changes that have occurred during the development of this program have allowed for easier data entry and Web page creation. Videos explaining tree identification and virtual walks through eastern

forests could also be included. Software, particularly image-enhancing software, has and

will continue to improve, allowing sharper images. The future holds great potential for

the expansion of this database.

CONCLUSIONS

This thesis has 2 conclusions:

     (1) the database provides an information-rich and convenient mechanism

 for researching southeastern pines, and

     (2) the database could be expanded to include many more species.