

## Applying Technology

### NA Leading the Shift from Paper to Digital-based Forest Health Monitoring

#### The Challenge

State and Federal forest health managers are constantly looking for more accurate, cost-effective ways to monitor forest health conditions. It is costly and labor intensive to survey forest health conditions either on the ground or by air, but surveys are necessary so that managers can respond adequately to forest health problems.

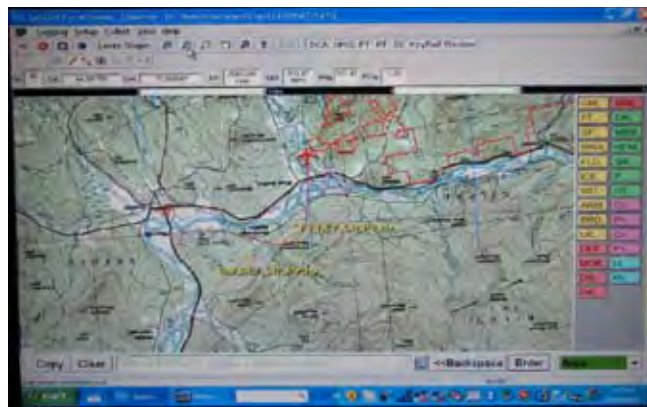
While aerial surveys cover much more area than ground surveys, the results are less accurate and dependent on the experience of the surveyor and his or her awareness of what's happening on the ground. Northeastern Area State and Private Forestry works with State agencies in the Northeast, Midwest, and Mid-Atlantic to conduct annual aerial surveys that provide a landscape-level view of forest health.

In traditional aerial surveys, trained observers fly in small aircraft over forested areas, looking for signs of forest health problems. These surveyors sketch the damage they see on a paper map while airborne, marking potential areas of concern in a process known as aerial sketchmapping. Once the aerial maps are complete, the surveyor converts the information to a digital format so the findings can be displayed on a computerized map.

#### The Solution

To reduce the time, labor, and potential for errors inherent in aerial sketchmapping, the U.S. Forest Service guided development of a digital aerial sketchmapping system, or DASM. The new system uses a pen-based tablet computer, software, and a GPS unit. The system automatically digitizes forest damage attributes being recorded by the surveyor while keeping constant track of the aircraft's position via GPS. The Northeastern Area has been using this system for about 8 years and has developed a detailed program to train State forest health managers how to use it. The system has been updated several times based on user feedback.

*The Northeastern Area is helping State and Federal forest health managers use digital aerial sketchmapping to more accurately and cost effectively monitor forest health conditions.*



*A digital computer sketchmapping display reveals the detailed, information-rich image of an area to be mapped. (U.S. Forest Service photo)*

#### Resulting Benefits

This DASM system allows aerial surveyors to quickly, accurately, and efficiently map and record forest health information directly into a digital record that can be displayed in a GIS format. It also eliminates the need for the aerial surveyor to keep track of the plane's position at all times. This helps reduce surveyor fatigue and greatly improves the accuracy of the data. Widespread use of the same DASM system means the collected data will be more standardized and processed more efficiently. This in turn helps forest health managers quickly prioritize those areas needing the most attention.

#### Sharing Success

The Northeastern Area has been providing hands-on DASM training for State forest health managers throughout the Northeast for several years. Training has been provided not only in New England and New York, but in Maryland, Delaware, Ohio, Minnesota, and Indiana as well. Training participants review the software, become familiar with the system, and review troubleshooting steps. Trainers also cover how to process the data after it is collected to make sure that State personnel summarize the data in the correct format, which will save time by reducing reporting errors. The Northeastern Area has also provided funds to purchase and set up DASM systems for most of the 20 Northeastern States. The Forest Service will continue to provide training and followup technical support.



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