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FOCUS ON FOREST HEALTH

Building Cooperative Partnerships in Aerial Forest Surveys

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Each year the Ohio Department of Natural Resources (ODNR) Division of Forestry teams up with the Ohio Department of Agriculture (ODA) Plant Pest Control section and the ODNR Division of Wildlife aviation section to perform a forest health aerial survey. This operation is a great example of cooperative partnerships. Professional volunteers are asked to be observers in the plane looking for anything unusual in the tree canopies by damage type, patterns, severity, and approximate area affected. The system is set up to have two observers, one looking out on each side of the plane, in addition to the pilot. The plane moves across the state on a flight line grid pattern traveling east to west across the state, then back west to east until the predetermined areas are covered. As the plane travels along, so do the real time maps on a tablet-based computer. When an area of note is observed, the observer documents the location on the computer screen and enters the categories that match what is seen. This was not the case in the earlier days of the aerial survey.

A bit of aerial survey history

Initially, some flights were set up in the mid to late 1980's to conduct a gypsy moth survey for the Department of Agriculture. As time progressed, grid patterns for flights and areas of interest were established. In the early days, gypsy moth quarantined areas and surrounding counties were flown in northern Ohio. At that point the planes were state owned, and piloted by ODNR.

In 1996, ODNR and ODA started conducting a combined forest health and gypsy moth survey. Over the years, the territory covered was expanded to include the entire eastern half of the state, and some northern portions, similar to the area that is currently covered. Early on, topographic maps were used and polygon shaped areas of interest were written directly on the maps. As technology advanced, a computer mapping system with integrated Geographic Positioning System was used. 2005 was the first year for using the computer instead of topographic maps in the aircraft. Last year, two computers were used, one for each observer.

Compiling and truthing the data

Actually, the flight is only one step in the mission of the aerial survey operations. The timing of the aerial surveys is often determined by the timing of gypsy moth defoliation. That is why the surveys are usually conducted around mid-June when the caterpillars are actively eating tree leaves. After flights are completed, maps are generated to determine noted areas of defoliation. The next step is ground verification (truthing). This requires personnel to visually locate these areas on the ground and try to determine what might be the cause of the defoliation, discoloration, or mortality. Once again, ODNR Division of Forestry and ODA personnel work together to verify the aerial observations.

After the information is collected and verified, a specialized database is generated. This database, linked by Geographical Information System to Ohio's state map, is provided to the USDA Forest Service. Each fall, the Forest Service compiles Ohio's annual survey as part of a national reporting system along with other regional states.

Aerial surveys are also conducted when specific calamities occur to determine the extent of damage to the forest. Examples of this may be ice storms, tornados, or wildfires.

This cooperative effort between ODNR and ODA has resulted in a compilation of years' worth of valuable data – information important to many different organizations. Whatever the mission, the agencies involved with the aerial surveys have forged strong collaborative partnerships and given us greater understanding of the health of Ohio's forest resource.

Side Bar:

Aerial forest surveys help foresters and other researchers to understand the extent of forest health issues in the state's woodlands. For instance, last year the aerial survey resulted in mapping the extent of damage that had occurred from a recent tornado. Also in 2010, it was noticed that large areas in southern Ohio had discolored trees. Ground-truthing efforts then confirmed that there was an outbreak of Jumping Oak gall in these areas. In addition, in the last few years an increasing spread of dead and dying ash trees from Emerald ash borer infestations has become more apparent while mapping northwest Ohio. Ash is commonly found in woodlots and along water ways in these areas. Even from 2,000 feet in the air, the forked branching habits of ash are recognizable.