“Digital aerial sketch-mapping in Alaska: bringing traditional aerial survey to the digital world”

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Poster Abstract: presentation highlights some of the products, systems, and training that have been developed to increase the level of safety of the overall aerial survey mission for collection of insect and disease activity information and how this is accomplished using current computer and Geographic Information System (GIS) technology.

The cooperative United States Forest Service and State of Alaska annual forest pest detection survey, primarily accomplished from aerial detection and sketch-mapping from fixed wing aircraft, is described in scope and techniques used. Aerial surveys are an effective and economical means of monitoring and mapping insect, disease, and other forest disturbance. This cooperative effort is responsible for conducting annual statewide surveys over approximately 25-30 million acres (10-12 million ha) of Alaska's 120 million acres (42-48 million ha) of productive forestlands in July and August. Some years this can be increased to approximately 35+ million acres when conditions (smoke, inclement weather) are minimized to observe the various forest damage "signatures" and record this information in sketch-map (point/polygon) form. The shortage of “people” resources needed to complete these annual cooperative surveys across multiple land ownerships over large areas within the short Alaska growing season has necessitated the movement to electronic vs. manual sketch mapping of forest damage data. In addition, the need for more rapid turnaround of this forest damage data into standardized user products—relational databases, data layers/flight lines with consistent metadata, creation of shape files in standardized Geographic Information System (GIS) formats, as well as publishing a variety of GIS and forestry mapping products from this computer-generated data—has driven the movement of forest health data capture in Alaska from paper maps to the digital desktop for archiving, decision-making, and more efficient “technology transfer” of the information generated.

To summarize: since the 2000 field season, the tools and techniques for acquiring and publishing the aerial survey forest damage information have moved from creation of hard copy sketch maps to computerized electronic mapping systems with moving map displays, Geographic Position System (GPS), and electronic flight-following systems. This migration from the plane maps to digital mapping “desktop”, while improving the reliability and accuracy of the forest damage mapping, has also enhanced the safety of the aerial survey missions and proficiency levels of the forest-mapping observers.

Key words: aerial survey, digital mapping, forest management, pest management, Geographic Information Systems