



FHTET
Forest Health Technology Enterprise Team

DIGITAL AERIAL SKETCHMAPPING SYSTEM

PROVIDING TECHNOLOGY FOR FOREST HEALTH PROTECTION

Aerial sketchmapping is the geo-location of features on the ground as observed from an aerial platform and the subsequent recording of these features on maps or photographs. Forest health surveys are conducted each year over much of the U.S. by trained aerial observers to locate and map insect, disease, and other forest disturbance. Historically, the observer maps and attributes areas of disturbance on paper maps. The information is later transcribed and digitized for use by land managers in geographic information systems.

FHTET, in cooperation with the **Remote Sensing Applications Center (RSAC)**, and the Federal and State aerial survey communities have developed a **Digital Aerial Sketchmapping System** that provides for the direct recording of sketched features on a moving map display into a GIS environment.

System Overview

The Digital Aerial Sketchmapping System runs on a laptop computer which is connected to a sunlight readable touch screen display. The display acts as the input device both for issuing commands to the system through buttons and drop-down menus, and for sketching and attributing features. Features can be points, lines or polygons, and attributed through user-definable keypads with data such as the damage causing insect, host species, and severity of damage. The background map displayed on the screen can be any geo-referenced map base or imagery. The position of the aircraft is shown on the screen, and the current aircraft position and map base are refreshed based on input from a GPS unit attached to the system. Data files created during a survey flight are easily exported to ArcView® shape files.



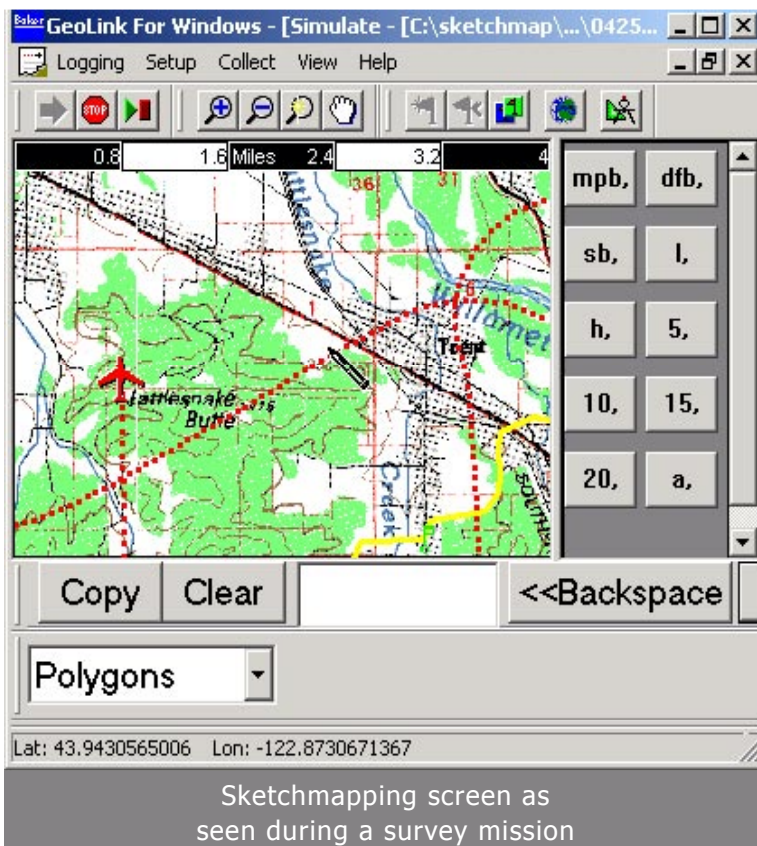
Digital Aerial Sketchmapping System
in single-engine Cessna aircraft

The Digital Aerial Sketchmapping System offers several advantages over conventional paper maps.

- Relieves the surveyor of having to track aircraft position, allowing more time to observe and map damage.
- Wide array of base map options that may lead to more accurate mapping of features.
- Data available for immediate use in a GIS environment
- Data easily downloaded to GPS units for field checking or management action.

Using the Digital Aerial Sketchmapping System requires:

- High-end PC notebook computer with a minimum of 16mb of video ram, 512mb memory, 20gb disk.
- GPS unit that will output an NMEA signal through an RS-232 connector.
- Sunlight readable touch screen display.
- **GeoLink**[®] software, including the Raster Background Map and Sketching modules.
- **ArcView**[®] GIS software, ver. 3.2 or higher is recommended for post-processing of data.
- A power distribution system for operating all components from aircraft power is recommended.



Sources for Information and Documentation

A Users Guide and additional information on the development of the Digital Aerial Sketchmapping System can be found at:

http://www.fs.fed.us/foresthealth/id/id_tech.html

Additional information on Forest Health Monitoring Aerial Survey Standards can be found at:

http://www.fs.fed.us/foresthealth/id/id_guidelines.html

SketchTools

RSAC has developed a series of ArcView[®] extensions, called **SketchTools**, to assist users in post-processing data. These tools provide the following:

1. Processing complex, overlapping polygon shapefiles – dissolving boundaries, union/merge, dissect polygons;
2. Create polygons from point data with a user-specified buffer radius;
3. Create a point shapefile of polygon centroids for downloading to GPS units;
4. Calculate acres.
5. Feature tables: Adds Forest Health Monitoring GIS Standard attributes; parses a comma-delimited field into separate fields.

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