Wings Over the Forests

Robert Chapman
Weyerhaeuser Company

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As the winter rains and snows subside and the sun rises higher in the Northern skies to shorten the long shadows, Weyerhaeuser’s flying foresters ready their steel horses and flex their wings, for a new season is about to be born.

A single-engine, high-wing Cessna 180 is the platform for their aerial sleuthing. The two Iowa State Foresters that compose the crew are Paul Lauterbach, Project Forester from the class of ’44 who does the mapping and the photography and Bob Chapman, Forester Pilot from the class of ’51. Their hunting grounds extend from Northern California through Oregon and Washington to within a few miles of the Canadian border. They begin on the shores of the Pacific and proceed eastward through the lush Douglas fir country in the coastal range and interior valleys, up the western slopes of the Cascades and into the pine country of Southern Oregon.

The coming of spring heralds the search for trees twisted, torn and downed by winter winds. Most windthrow deposited by normal winter storms occurs along cutting lines exposed to prevailing south-
westerly winds. Occasionally, however, fickle winds coursing over the land well in excess of a hundred miles an hour lay down hundreds of millions of board feet of timber throughout the forest. This damage is detected from the low flying forestry airplane and the location by species, volume and age class is reported to the land managers. Foresters and loggers often accompany Lauterbach and Chapman on these survey flights. Frequently, subsequent flights are made over these areas to take black and white aerial photographs which will be used to expedite salvage of the windthrown timber.

Typical windthrow photography is flown at altitudes ranging from 7920' to 12,000' above ground level. The use of a 12" lens on a vertically mounted 9" x 9" K-17B camera produces a scale of from 660' to 1000' per inch respectively. Super XX film, exposed for 1/225 of a second through a minus-blue filter and an aperture opening of f 8 normally gives the negative quality desired. Log-Etronic prints on double weight, semi-matte paper are preferred for most photo interpretation work. Additional equipment available includes 9" x 9" K-17B cameras with 6" and 24" lenses for vertical photography and a smaller aerial camera, 4" x 5" press cameras and 35 mm cameras for oblique photography. These cameras permit scales varying from 50'-3000' per inch. Since photography of high elevation areas requires flight altitudes in excess of 20,000' the Cessna is equipped with a large cabin heater and oxygen system to maintain crew comfort and efficiency in the thin, cold air high above the Cascades. Scales of 50' to 200' per inch are employed for intensive examination of small areas while the 1300' (plus) per inch photographs are used for forest type mapping and road locations on large areas. Intermediate scales ranging from 400' to 1000' per inch are the most common for general forestry purposes. Frequently, enlargements are produced from 400' per inch negatives for planning and intensive management of relatively small areas. All photography is taken with sufficient end and side lap to permit stereoscopic viewing. Either the naked eye or pocket stereoscope is used in the field, while magnifying, scanning, mirror stereoscopes are available for office interpretation.

In addition to windthrow, current logging is another type of photography that receives considerable attention. From these photos, new roads are easily located and acreage computations are made for logging depletion records. The photos are also valuable for subsequent activities. It is becoming standard practice to aerially seed current logging during November or December following logging. Up-to-date photos are the best possible guide for the helicopter pilots seeding these settings.

Decisions regarding mechanical scarification or chemical control of brush are often influenced by information obtained from aerial photographs. Occasionally, winter or early spring photography is desirable in that certain information is more readily available before hardwood species leaf-out. During the dormant season ground cover is visible under hardwoods and it is easier to distinguish between hardwoods and conifers. Planting areas, nurseries and mill sites are other targets for the aerial cameras to assist in planning, inventory and public relations activities. Photos are also used for planning access into areas and for land aquisition work, for research studies, for assessing fire damages and for log pond inventories. Company personnel in ever increasing numbers are turning to aerial photographs to raise their efficiency and to make their duties easier. The photo users include land managers, foresters, loggers, woods and plant engineers, cruisers and land agents and the research and public relations staffs.

Weyerhaeuser's flying foresters busy themselves during the summer and fall months flying insect and disease surveys, photography and fire patrols. To an experienced forester and aerial observer like Paul Lauterbach, a wealth of information concerning forest conditions is waiting to be uncovered by his trained eyes. Through shape and color, tree species can be identified from the air. Different insects, diseases and animals attack different age classes of different tree species in different patterns at different times of the year. Therefore, while not being able to actually see the destructive organism from the air, the results of its work are readily apparent. All of Weyerhaeuser's ownership in the Northwest (2.8
million acres) is flown, usually twice each year, to detect damage from insects, diseases and animals. Intensive re-flights are made wherever abnormal conditions are found and these observations are reported in the same manner as the windthrow surveys so that prompt salvage may be initiated.

Color photography has been particularly helpful in assessing damage from the above agencies. K-17B cameras are again used but this time the magazines are loaded with aerial ektachrome film which produces 9" x 9" positive color transparencies. Scales vary from 300' to 800' per inch. Emulsion filters are commonly used to obtain the correct color balance for the film and a series of haze filters compensate for atmospheric haze or smoke. For special purposes, high speed ansco-chrome, ektacolor or camouflage detection film may be used. Color photography is currently being used to assess the amount of mortality from a variety of causes; young Douglas fir killed by black bear, second and old-growth Douglas fir killed by bark beetles, ponderosa pine killed and damaged by pine beetles and porcupines, and sliver fir attacked by *Chermes*. Evaluations of the effectiveness of various herbicides are also being conducted with color film. Equipment for color interpretation includes a spectrophotometer and densitometer for critical wave length analysis plus the stereoscopes used for black and white photographs. Color photography is an efficient method for appraising the above conditions. It accurately reproduces the abnormal yellow, red, brown, gray and white colors associated with dead and dying foliage and requires a minimum amount of ground checking.

Fire patrol, which has priority over all other flying, is another important function of the forestry airplane. Company lands and adjacent ownerships are flown as soon as possible after all electrical storms to seek out lightning strikes. On going fires, the air crew is in constant radio communication with ground suppression crews and their close cooperation has been instrumental in containing potentially dangerous fires to small acreages.

Other miscellaneous tasks that fall to the forestry airplane are surveys to plan logging and rehabilitations, to locate research study areas, access routes and rock pits, for preliminary inspection of land acquisition areas, to inspect cone crops, or for any other purpose that will expedite forestry activities.

When weather restricts operation of the aircraft, its crew works with helicopter contractors seeding and spraying Company lands, with research and branch personnel to help activate the fruits of research efforts, and conducts ground evaluations of seeding, planting and brush control projects.

Like the eagles and buzzards with which they share their lonely vigil in the skies, Weyerhaeuser flying foresters seek out the dead, the dying and the weak. The analogy is appropriate in that their purpose is also much the same as these birds of prey. Through aerial survey findings, spawning grounds for the destructive agencies of fire, disease and insects are removed from the forest to help satisfy the ravenous appetites of the ever hungry mills.

The coming of the winter rains and snows bring to a close another season of aerial activities for Lauterbach and Chapman. Time has come for the flying foresters to review and assess the past years performance and to prepare for the year that lies ahead.

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**About the Author**

Mr. Chapman is a native Iowan and was graduated from West Waterloo High in June of 1943. In July of 1943, he went on active duty with the United States Navy where he earned his navy wings and served as a carrier-based fighter pilot with the Atlantic Fleet. After being released to inactive duty, Mr. Chapman attended Iowa State College and received his B.S. degree (Forestry Major) in 1951. For the next two years he was employed as a research assistant by a large eastern Iowa millwork manufacturing company. In 1953 Mr. Chapman joined the Weyerhaeuser Company in Springfield, Oregon where he was employed in the logging and the forestry departments. Since 1957 he has served Weyerhaeuser Company in his present capacity as Forester Pilot. Mrs. Chapman, the former Donna McIntosh from Hibbing, Minnesota, is also an I.S.C. alum having graduated from the Home Economics Division in 1948. The Chapmans and their three children now reside in Centralia, Washington.