COLOR VIDEO TAPE TO RECORD FOREST DEFOLIATION

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Aerial surveys of forest insect damage conducted by the Forest Insect and Disease Survey in British Columbia utilize in-flight recording of the visual observations of trained observers directly onto field maps (sketch mapping) (Harris and Dawson 1979). Final maps are prepared in the office and complemented with additional information collected on the ground or by oblique color photography obtained during flight (Harris 1971).

Recent developments in video technology have made the use of video camera recording equipment for aerial forest insect surveys economically feasible. This note reports on the advantages and disadvantages of using video cameras for complementing aerial sketch information as observed furing a field test in 1983.

In July 1983, color video coverage was obtained of Douglas-fir, *Pseudotsuga menziesii* (Mirb.) Franco, stands defoliated by Douglas-fir tussock moth, *Orgyia pseudotsugata* (McDunnough), in the Kamloops area of British Columbia. The video was recorded using a Hitachi portable video recorder from a low-flying fixed-wing aircraft.

Several advantages of video tape coverage over conventional oblique aerial photography or sketch mapping alone became apparent. The large tape capacity allowed continuous running of the unit and hence the storage of large amounts of sequential images. This resulted in much greater coverage of damaged stands. The video tape could be reviewed in the plane through the camera's monitor to see if the desired coverage has been obtained. Also, the observer's comments could be recorded along with the video image. The tape could be viewed immediately after the flight and adjustments made to the sketch maps based on the visual record of geographic and pest damage information. The sweeping panoramas allowed the viewer to "get his bearings" which is difficult with individual still photographs. Also the film acts as a permanent record or can be reused. For demonstration purposes, the video tape system was useful; it provided a simulation of flight as the observers saw it, and could be edited to any desired length, omitting unnecessary detail. Zoom capability can be a positive factor, but at the higher zoom settings it was difficult to hold the camera steady enough to obtain good picture quality.

There are limitations to the video tape system. Equipment was bulky and complicated to handle in flight, although more compact units are now becoming available. The resolution was lower than that in aerial photographs, so edge distinctions between damaged and healthy stands were less defined and individual trees were harder to pick out. The angle of the sun was more critical to the resultant video image than for airphotos. Optimum image quality was produced when the operator had the sun behind him and was shooting down at roughly 45° - 90°, and relatively close to the area being recorded (300 - 1000 m). If the viewing angle allowed any of the horizon to show, an overall blue cast predominated in the imagery, which eliminated the visual distinction between healthy and damaged stands.

When the sun and the viewing angle were correct, damaged stands were fairly distinctive, especially those stands with a large component of dead (grey) and more intensely defoliated (reddish) trees. Smaller and lighter areas of damage were harder to delineate, especially when the viewing angle was not ideal (poor sun angle) or the target area was too distant.

We concluded that video recording could be a valuable complementary tool to sketch mapping of defoliation if used correctly.

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