INVENTORY - A THEME PAPER

WORKING PAPER #6

PROJECT 87

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FOREWORD

There follows a preliminary theme paper examining the pattern and development of innovative administration in inventory.

The paper is based on material found in Annual Reports of the Ministry and on interviews with Ministry staff. It is a working paper only. Your comments, suggestions and additions are welcome. Contact Doug Adderley, Project Co-ordinator, in Information Services (387-5965).
Prior to the formation of the Forest Branch in 1912, surveys were the responsibility of the office of the Surveyor-General in the Surveys Branch of the Department of Lands and Works. Most pre-1912 surveys were related to mapping and land classification. Even when the Forest Branch was established, a continuing and increasingly important function was land classification, that is, the designation of lands according to their suitability for settlement, agriculture or timber. This was part of the evolution of designating and preserving from alienation those lands that would find their best economic use under a forest crop.

Although reconnaissance to assess the extent and type of forest cover, particularly on Crown lands, was a priority of the newly formed Branch, for one reason or another, it took several years to firmly establish reconnaissance activities. Initially the delay was because of the limited manpower of the new Branch and the pressing duties connected with land classification. Then followed W.W.I., during which the newly formed Forest Branch suffered a curtailment of both staff and activities. Nonetheless, in 1917 the Dominion Commission of Conservation did publish the first comprehensive inventory of British Columbia's Forest resources. It was titled *Forest Resources in British Columbia* and was the first attempt to classify the extent and type of forest
cover in British Columbia. It would be twenty years before a more thoroughly researched assessment would be published based on the first provincial inventory by the Forest Branch. After the war ended, activities at the Forest Branch began to regain the momentum lost during the war years. By 1921, forest reconnaissance had resumed and land classification continued as an important Branch activity. In 1925, for the first time, reconnaissance was carried out in conjunction with a photo-topographic survey. It was the beginning of an approach to forest inventory that relied increasingly on air photos, initially to help plot maps (1934) for field parties and eventually in the 1960s, as interpretive skills increased, for volume and area studies (1961), disease identification (1966), and waste measurement (1965).

After re-establishing activities and increasing Forest Branch personnel following W.W.I., reductions were once again the order of the day as the impact of the Depression was felt in British Columbia. Nonetheless, the province-wide inventory initiated in 1927 was continued through the worst years of the Depression and finally concluded in 1935. The resulting report published in 1937 was F.D. Mulholland's *The Forest Resources of British Columbia*. Like its predecessor of 1917, it remained the only up-to-date reference tool on forest resources in British Columbia for another twenty years.
In the years between the Depression and the outbreak of W.W. II, the Forest Service again expanded its activities and staff. In 1936, the Forest Service completed a successful aerial survey of the E. and N. land grant. The following year, as aerial survey activities increased, the procedure was acknowledged as being cost-effective. The development of aerial photography as a survey tool was helped by the production, in 1938, of the Forest Service stereoscope, four years in the making. Its production is a typical example of the Forest Service's ingenious response to a peculiar need within the activities of the Branch.

Another related Forest Service achievement was the panoramic lookout photo technique pioneered by the Branch in 1938.

While survey techniques were advancing through the use of aerial photography, the requirement to process, store and retrieve data efficiently arose. In 1937, the Forest Branch took the initial step that would eventually see the Inventory Branch as an automated activity dominated by computers; they began in that year to use the Hollerith punch card system of recording forest inventory data.

In 1938, Forest Surveys and Research were amalgamated and became the Forest Economics Division.
Before W.W. II had an impact on the work of the Forest Branch, mapping facilities and techniques had been standardized and such improvements as a standard base grid had been introduced. As well, in 1939, the Branch experimented with the silkscreen process in the production of small-scale maps.

From 1941 to 1945, the programs of the Forest Economics Division were hard hit as technical specialists enlisted to serve overseas. With the exception of reforestation, all programs were put onto a maintenance basis. Before the war had ended, several activities, including air photos, forest surveys, lookout visibility mapping and panoramic photos, had to be totally suspended. Acute staff reductions placed enormous pressure on those who remained and it speaks highly of the dedication and energy of the Forest Service staff that programs continued at all despite staff shortages and the difficulty in obtaining supplies.

By 1945, those who had enlisted began to return from overseas to resume their work in the Forest Service. Gradually the tempo of activities increased to make up for the interruption of W.W. II. By 1946, surveys and mapping had expanded, reconnaissance was increased and visibility mapping and panoramic photography had resumed. In 1946, all aerial survey operations became the responsibility of the Air Survey Division of the Surveyor-General Branch.
Two improvements introduced in 1947 were a new overlay (roamer) developed to assist in the accurate reading of angles in vertical air photos and a new book-type binding for related groups of panoramic photos.

At this point, the beginning of a gradual shift from broad, generalized activities to more limited and highly specialized work is discernible in the Division. This pattern was developed further in 1948 when Parks became a separate Branch and when it was decided that the Surveys Branch of the Department of Lands would provide all base maps for forest surveys.

Specialization was acknowledged in 1951 when the new Division of Forest Surveys and Inventory was established. With Federal assistance, the new Division plunged into five years of intensive inventory to revise and update available information in British Columbia's forests. It was during this period that aerial photo volume tables were devised, photo mensuration techniques were developed and the Division's use of punch card/computer systems increased. Inventory techniques and forest survey standards were developed and work on a library of stereograms began. Helicopters began to prove their usefulness in transporting forest survey parties to less accessible sites.
In 1957, as a result of several years of intensive work, the re-inventory of the forests was completed. On the basis of the inventory, a complete set of province-wide lithographed forest cover index maps were completed and in 1958 a set of 149 Forest Inventory summary maps was made available. Also in 1958 the new inventory results were published in *Continuous Forest Inventory of British Columbia - Initial Phase 1957*. From this point on, forest inventory would be an ongoing task and revisions would be published more frequently and regularly.

By the late 1950s, and through the 60s, the Forest Service was seeking improvements in transportation and communication to make surveying and reconnaissance work more efficient. Helicopters and radio facilities were instrumental in this improved efficiency. Computers and improved photographic facilities were other areas of improvements. Computer use increased through the 1960s beginning with the L.G.P. 30 and moving through the I.B.M. 650, the I.B.M. 1620 and the third generation I.B.M. 360.

In 1960, the Forest Service developed a double camera helicopter boom system for obtaining aerial photo from various flying heights. The following year they began tests with 70 mm low-elevation helicopter photography, acquiring in 1962, two new Linhof cameras. A further development, in 1960, was the use of the tape recorder on aerial reconnaissance or survey to record observations of the area below.
In 1962 the use of the wedge prism in aerial photography was initiated. There followed an ongoing refinement of aerial photography techniques and related interpretive skills that broadened the application of aerial photography to include volume/area studies, waste management and pest identification.

Parallel to the developments in aerial photography were important advances in mapping. In 1968, a Wild 40 autograph plotter and an E.K. 5 co-ordinated printer were purchased. Additional sophisticated equipment included, in 1970, the Xerox 1860 printer/reducer and in 1973, the Zeiss Jena Topocart B plotter and the Model 5305 Gradison Digitizer. Ultimately in 1977, the Division acquired a computerized mapping system, the Interactive Graphics Design System, or IGDS, which became operational the following year.

Meanwhile, in keeping with the policy of providing revised inventory statistics more regularly, the Forest Service published, in 1969, *Forest Inventory Statistics of British Columbia*. A further revised version was produced in 1972.

By 1977, the single purpose inventory had given way to an inventory that identified other resource values than timber. It was a recognition of the multiple use concept of Crown lands.
...8

From field parties trudging on foot through vast uncharted forests to the near magical imagery of the satellite and airborne multi-spectral scanner, from draughtsmen to the IGDS, and from clerks to the Mark IV Data Base, progress in forest inventory and surveys has been a steady onward march.