Airphoto Coverage Currently Used by Private Forest Industries

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ABSTRACT: *A mail questionnaire was sent to 227 private forest industries to determine the extent to which aerial photographs are being employed. A tabulation of replies revealed that many companies are using outdated prints of undesirable scale or quality. Severe limitations may thus be imposed on interpretation activities. Greater emphasis on photo-derived data will depend on a changeover from the use of existing negatives to new photography obtained through special aerial surveys.*

DURING the latter part of 1961, a mail canvass was made of 227 private forest industries in the United States[2] to determine the types of airphoto coverage currently in use. Questionnaires were sent only to corporations managing 25,000 acres of land or more; no public agencies were included in the survey. A total of 199 companies, or 88 per cent of those canvassed, responded to the inquiry.

The mail questionnaire was designed to determine approximate sizes of land holdings; type, extent, and age of available airphoto coverage; plans for obtaining new photography; and primary uses of photographs by company foresters. Significant findings of the survey are summarized in Tables 1 through 6. In all instances, tabulations were stratified according to four land-area classifications. Several obvious generalizations may be made on the basis of these summaries:

TABLE 1

Respondents are well-distributed geographically, with 61 companies in the north, 89 in the south, and 49 in western United States. More than half of the corporations own or manage more than 100,000 acres of land, and 27 of them administer over 500,000 acres. A majority of the largest forested holdings are in the south, a fact that may be of particular interest to aerial survey firms.

TABLE 2

Of 199 respondents, 158 have some type of photographic coverage for 70 per cent or more of their holdings. At the other end of the scale, 13 companies have aerial photographs for less than 10 per cent of their lands. As might be expected, larger areas are apt to have more complete coverage than smaller tracts.

TABLE 3

Nearly half of the corporations that returned questionnaires rely solely on photographic prints purchased from federal agencies. Only 34 companies (17%) have purchased new photography by special contract, and 26 of these were in the larger land-holding classifications. Four organizations have employed company personnel to take their own aerial photographs.

TABLE 1

GEOGRAPHIC LOCATION OF 199 PRIVATE FOREST INDUSTRIES

Size of Land Area	*Geographic Location*			*Totals*
	North[1]	*South*[2]	*West*[3]	
Thousands of acres	*Number of companies*			
25–50	10	9	6	23
50–100	12	19	19	50
100–500	29	49	19	97
500+	10	11	6	27
Totals	61	89	49	199

[1] Includes Virginia, West Virginia, Missouri, Iowa, Minnesota, North Dakota, and all States eastward and northward.

[2] Includes North Carolina, Tennessee, Arkansas, Oklahoma, and all States southward.

[3] Includes South Dakota, Nebraska, Kansas, and all States westward.

[2] Four Canadian corporations near the International border are included in this number. Alaska and Hawaii were not canvassed.

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TABLE 2

PER CENT OF FOREST INDUSTRY LANDS COVERED BY AERIAL PHOTOGRAPHY

Size of Land Area	*Per Cent of Land Covered by Photography*				*Totals*
	Less than 10	*10–39*	*40–69*	*70 or More*	
Thousands of acres	*Number of companies*				
25–50	6	1	6	12	25
50–100	3	1	3	43	50
100–500	4	3	12	78	97
500+	0	1	1	25	27
Totals	13	6	22	158	199

TABLE 4

More than three-fourths of the organizations (158 companies) utilize photo scales of 1:15,840 or smaller. To a large degree, this may be attributed to the fact that a high percentage of such prints are made from existing negatives held by the U. S. Department of Agriculture. Only 12 respondents use photographic scales of 1:10,000 or larger, and most of these were obtained through specially-planned flights.

TABLE 5

Less than one-third of the private forest industries canvassed (61 companies) now have aerial photography that is less than 5 years old, and 33 respondents use prints that are at least 10 years of age. From this tabulation, it is evident that many corporations possess photo coverage of limited value for detailed interpretation.

TABLE 6

Of the 199 respondents, 116 expect to purchase additional photography during the next two years; however, only 36 companies are

TABLE 3

SOURCES OF PHOTOGRAPHIC COVERAGE ON FOREST INDUSTRY LANDS

Size of Land Area	*Sources of Photographic Coverage*					*Totals*
	Federal Prints	*Private Prints*	*Special Contract*	*Company Flights*	*Combined Sources*[1]	
Thousands of acres	*Number of companies*					
25–50	15	2	1	0	7	25
50–100	24	1	7	1	17	50
100–500	47	3	16	0	31	97
500+	4	1	10	3	9	27
Totals	90	7	34	4	64	199

[1] In most cases, this is a combination of photography obtained from federal and private sources.

TABLE 4

SCALES OF AERIAL PHOTOGRAPHY CURRENTLY USED ON FOREST INDUSTRY LANDS

Size of Land Area	*Photo Scale as a Representative Fraction*				*Totals*
	1:20,000 & Smaller	*1:15,840*	*1:12,000*	*1:10,000 & Larger*	
Thousands of acres	*Number of companies*				
25–50	14	5	3	3	25
50–100	26	13	9	2	50
100–500	46	32	14	5	97
500+	7	15	3	2	27
Totals	93	65	29	12	199

TABLE 5

APPROXIMATE AGE OF AERIAL PHOTOGRAPHY USED ON FOREST INDUSTRY LANDS

Size of Land Area	*Age of Aerial Photography*				*Totals*
	0–4 Yrs.	*5–9 Yrs.*	*1 –14 Yrs.*	*15+ Yrs.*	
Thousands of acres	*Number of companies*				
25–50	8	13	4	0	25
50–100	14	24	9	3	50
100–500	29	56	10	2	97
500+	10	12	5	0	27
Totals	61	105	28	5	199

TABLE 6

ADDITIONAL PHOTOGRAPHY TO BE PURCHASED WITHIN THE NEXT TWO YEARS FOR FOREST INDUSTRY LANDS

Size of Land Area	*Total Respondents*	*New Photos Planned*	*Expected Source of New Photography*	
			Existing Prints	*Special Flights*
Thousands of acres	*Number of companies*			
25–50	25	13	8	5
50–100	50	24	16	8
100–500	97	57	44	13
500+	27	22	12	10
Totals	199	116	80	36

planning special aerial surveys. The remaining 80 industries will continue to rely on existing negatives. This means that much of the added coverage is likely to be 2 to 4 years old at the time of purchase, and scales are likely to be 1:15,840 (1,320 feet per inch) or smaller.

USES OF PHOTOGRAPHY

At present, the primary uses of aerial photographs by private industries are (1) planning and forest administration, and (2) timber type-mapping. About 80 per cent of the respondents ranked these activities as first or second in relative importance. Secondary uses enumerated were, in order: measuring areas and boundaries, topographic mapping and road location, field plot location, and stand volume stratification. The first item of "planning and administration" partially overlaps other uses, but it still appears that many corporations are failing to take advantage of established photographic interpretation techniques. By the same token, nearly half of those responding felt that they were using airphotos to the maximum extent feasible—which may be true for the types of coverage currently available to them.

Several industrial foresters *did* cite factors that restricted greater usage of aerial photographs by their firms. Prominent reasons given were (1) existing prints are unsuitable, and funds are not available for purchasing new coverage, (2) lack of highly-skilled interpreters, and (3) certain types of photo-derived data are not readily accepted by administrative officers.

CONCLUSIONS

In the author's opinion, up-to-date aerial photographs of larger scales will be required by forest industries in the years ahead. Reputable aerial survey firms are the logical suppliers of this photography; the only question is "whether the twain shall meet at the bargaining table." Aerial survey companies whose activities are centered around topographic mapping often experience a "slack season" during summer months when vegetative foliage is fully developed—and this is the very period when most foresters want pictures taken. The combination appears to be a natural, and the photogrammetric sales manager primed with a convincing "soft sell" should discover a market that up to now has been virtually untapped.