TECHNICAL NOTES

SITE MAPPING FROM AERIAL PHOTOS

BY D. M. TREW¹

In the June issue of *The Chronicle*, Mr. A. B. Vincent discussed the question: "Is Height/Age a reliable index of site?" and pointed out some of the limiting factors that must be considered. It has always been my impression that site mapping, like cruising, was in the final analysis a matter of judgment, depending heavily on experience and common sense.

Thus, some years ago, when I was asked to site map a half million acres of forest land, most of which I had just finished typing on the aerial photos, I undertook the project without the slightest doubt that the job I would turn out would be as good as any produced by any other method. I was fortified in this belief by the fact that we had regeneration plots in many areas and in several cases the height and age of sample trees bore no relationship to the site as determined by residual seed-trees, snags or adjacent timber on identical sites. Furthermore, no field sampling method could provide answers, except laboriously, to the mixed sites in broken terrain of extreme variance, or the gradually changing sites of indistinguishable bounds.

The specifications for the project called for a practical breakdown into good, medium and poor sites, plus a scrub site of semi-alpine, rocky or bog-land types. Height and age were the key to the site quality, but potential density and yield were taken into consideration and did influence judgment towards a lower site label. However, it was later thought that this should have been an acreage adjustment.

The work proceeded very quickly in the timbered areas and required only a cursory photo inspection of each type to confirm that the species-height-density and volume label of the map was representative of mature timber. As soon as this was confirmed the type was colored in one of four colors.

Where thrifty mature or advanced immature types were involved, the site was determined by existing seed-trees or snags or by comparison with adjacent stands on similar sites. The areas of small immature types or those recently burnt or logged were appraised both by comparison with existing indicators of site quality and from the field samples. The latter served essentially to determine the probable species composition of the future forest and thus allowed judgement as to whether the site was good, medium or poor for that species.

It should be stated here that there were only three major species involved, one of which was a climax type whose presence on the better sites was disregarded in favor of an evaluation by indicators of the site value of the original stand.

There is no reason, if we really want site maps for closer rotation and yield calculations, that all our forest land could not be site typed by photo interpretation. However, there is one word of caution that can never

¹ Forestal Internacional Ltd., P.O. Box 459, Chittagong, East Pakistan.

be emphasized too much where aerial photos are used: there is more to photo interpretation than meets the eye; the miniature stereo image of a forest has a complex but fascinating story to tell to those who have the training, experience and mature judgment to read it and understand it, which is unfortunately not always the case with novice interpreters.

Many foresters remain skeptical of photo information because of exaggerated claims of accuracy made by over-enthusiastic novices. In advocating site-mapping from photos it should be understood that stereo-vision alone is not the only pre-requisite.

HIGH SOIL SURFACE TEMPERATURES RECORDED ON A MODERATELY WARM DAY

By F. W. VON ALTHEN¹

A practising forester can collect useful bits of field information as part of his daily work and without the use of special research facilities. As an example of such a small scale experiment, the writer recorded soil and soil surface temperatures on 25 July, 1959, in the MacKenzie-Cariboo Tree Farm Licence Number 5, which is situated between the towns of Quesnel and Prince George in the northern interior of British Columbia.

Temperature readings were taken in a six acre clearcut, logged in the summer of 1955 and broadcast burned in the autumn of 1956. The original forest stand consisted of 250 year old Douglas fir, with Engelmann spruce and alpine fir in the co-dominant and intermediate crown classes. The soil was a heavy clay loam with a moderate number of rocks throughout the profile and a fair to good drainage. The elevation of the site was 2,600 feet.

Three soil pits were dug to a depth of 16 inches in the following locations: Pits number 1 and 2 were established 20 feet apart near the center of the clearcut, exposed to full sunlight during the day. The ground at pit number 1 was covered with 2 inches of organic material, of which one and one-half inches had been heavily scorched during the slash-burning. The lowest one-half inch had not been affected by the fire. No regeneration and little ground vegetation was present in the vicinity of this pit. At soil pit number 2, the organic material had been removed during the logging operation and the mineral soil was fully exposed. Few Douglas fir and Engelmann spruce seedlings were present near the pit, but had grown mostly under the shade of ground vegetation. The third pit was dug fifty feet inside the timber stand, which was identical to the original stand. This pit was always shaded, with only an occasional sun ray passing over it for a short time.

All temperature readings were taken with standard 15 inch long "hot bed" soil thermometers. The range of these thermometers was 30°F. to 180°F. Temperatures were recorded at two hour intervals, from 10 a.m. to 4 p.m., and readings in all pits were taken at the surface and at depths of 1 inch, 2 inches, 5 inches and 12 inches. Additional readings of surface temperatures were taken at hourly intervals at pits 1 and 2, and also under the shade of ground vegetation in the vicinity of both pits. Air temperature was measured

¹ Since April 1961 the author has been employed by the Federal Department of Forestry. He now is working at the Ontario District Office, 4 Yonge St. South, Richmond Hill, Ont.