

the south and overlaps it in the centre but is absent from the northern quarter of the range. Both are physiognomically important and with associated species enable natural areas to be distinguished in a north-south direction along the main backbone of the range.

There is also an east-west ecotone running from this main axis across the subsidiary ranges which run out on the western side. Mountain beech does not reach the western margin; its place is taken by cedar (*Libocedrus*) forest, an extension of the cedar forest which occurs in a broken pattern from the margin of the Waimarino Plain, round the western side of the volcanic plateau and across the south-western extremity of the Kaimanawa Ranges.

Thus the timber line, with or without a scrub line, shows several distinct patterns both from north to south and from east to west, and the presence or absence of red beech and kamahi at lower altitudes also shows patterns which correspond to some of these and together form a basis for a subdivision of the range into natural areas.

NATURAL AREAS (Map 2)

These may be listed in their simplest form as follows:

CENTRAL RUAHINE. Mountain beech dominant above 3,600ft, red beech below this.

NORTHERN RUAHINE. Mountain beech dominant or alternating with red tussock, red beech scarce.

WESTERN RUAHINE Cedar dominant above 3,600ft, red beech below.

SOUTHERN RUAHINE. Leatherwood dominant above 3,000ft, kamahi below this. Beeches absent.

The ecotone between Central and Southern Ruahine forms a belt about six miles wide which runs diagonally across the Ngamoko Range, and, though here included in the Western Ruahine, may be considered as a further subdivision. Though mountain beech is absent, it differs from the Western Ruahine in so far as *Dacrydium bifforme* tends to replace cedar at the timber line and dominates it on the eastern side.

The Central Ruahine is considered first as the basic pattern of which the surrounding areas are variants.

CENTRAL RUAHINE (Map 4)

On this basis the Central Ruahine includes all points on the divide exceeding 5,500ft and most of the diverging ranges to the west of it between the Mangatera and Pourangaki valleys, so that about a third of the area lies above the timber line and the only considerable areas of high country outside its boundaries are the Whanahuia and Ngamoko Ranges to the south, carrying a western type of vegetation.

The boundaries are on the whole fairly satisfactory. The northern boundary cuts off the plateau country which terminates at the head of the Makaroro valley; the southern boundary slanting across the Pourangaki and Oroua valleys marks fairly closely the replacement of mountain beech timber line by cedar. The western boundary also follows the change in timber line but is less satisfactory in that the