THE WEEDS OF MARLBOROUGH

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Under the environments and systems of farming that exist in Marlborough it is only natural that the local weeds of agricultural significance should be chiefly those associated with pastures and pastoral farming. Crop weeds are of secondary importance, though obviously significant in the more intensively cropped districts.

The more extensive weed infestations are composed of species common to many parts of New Zealand—gorse (*Ulex europaeus*), broom (*Cytisus scoparius*), manuka (*Leptospermum scoparium*), bracken fern (*Pteridium esculentum*), thistles, rushes (*Juncus* spp.), etc. There are, however, a number of weed species more common in Marlborough than elsewhere, and a few that are peculiar to the Province.

REGIONS

To try to clarify the position regarding the weed problems of Marlborough the Province has been subdivided into five "regions", a subdivision based broadly on various combinations of climate and topography that lead to differences in environments and farming practices.

These regions are:

- (1) The Sounds and Northern Hills.
- (2) The Wairau Plains and Valley.
- (3) The Seddon-Ward area.
- (4) Inland Marlborough.
- (5) The Kaikoura-Coastal districts.

SOUNDS AND NORTHERN HILLS

The sea encroached Sounds area is almost entirely hilly and rises to just over 2,000 ft. Rainfall varies between 40 and 80 in., being lightest over the outer Sounds and along the eastern sector. The summers are hot, the winters mild. This was, originally, high rainfall bush country. Many of the Sounds have water access only, though recently completed roads to French Pass and Port Underwood have improved the position. The outer Sounds and much of the eastern portions are, now, relatively clean, pastoral country, but much of the inner Sounds is heavily infested with manuka, gorse, broom, and bracken fern. Spanish heath (*Erica lusitanica*), favoured by low fertility, acid soils is well entrenched, especially in parts of Queen Charlotte. Its ingress and dominance has been encouraged by frequent burning off of other scrub weeds. The poisonous native tutu (*Coriaria* spp.) is fairly prevalent in parts and such commonly known weeds as blackberry (*Rubus* spp.), bidi bidi (*Acaena* spp.) and foxglove (*Digitaria purpurea*) are present but not prevalent. The purple flowered spiderwort (*Leycesteria formosa*) or Himalaya honeysuckle occurs as a roadside weed near Havelock.

One uncommon and highly poisonous weed of the Sounds region is Cape tulip (*Homeria collina*), which appears at Hamilton Bay, in the French Pass area. Another species peculiar to Marlborough is *Pennisetum alopecuroides* established at Ocean Bay in the Port Underwood district, but as yet, fortunately, localised.

The only appreciably sized valley area in the Sounds exists in the Link-water district between Picton and Havelock. The flats here are low lying and characterised by wet land weeds such as rushes, buttercups, and docks.

The northern hills, north of the Wairau River and adjoining the Sounds,

form a confused pattern of steep, rugged, often bush-capped hills, rising inland to over 4,000 ft. This country is characterised, in many parts, by steep, fern, manuka, and gorse infested hills confining narrow, fertile valleys. The transition from fertile valley pasture to steep scrubby hills is often very marked.

Rainfall is high, fogs and mists frequent, summer temperatures mild to warm, and winters rather more severe than in the Sounds.

Soils of the valley pastures, with their meandering streams, are in part low-lying and wet. In the Rai Valley dairying prevails. In other valleys such as Kaituna fat-lamb production and high yielding red clover seed crops are featured.

It has been past practice to control scrub growth on the hills by periodical burning. Though autumn burning still persists there has been some recent development wherein aerial topdressing and oversowing accompany a burn or spraying and closer subdivision gives better grazing management and more efficient control of reinvading weeds. The contrasts in different levels of management are well illustrated on the hills in several parts of this region. Where hill cultivation is feasible land is now being developed out of fern to productive pastures.

The Sounds and Northern Hills region possess serious weed problems, but with improving access, the establishment of air strips, and the adoption of modern farming techniques the agricultural potential of the region is being gradually improved.

WAIRAU PLAINS AND VALLEY

The plains and valleys of the Wairau River and its southern tributaries form the most extensive arable area in Marlborough. Rainfall on the plains is low (25 in.) but increases inland. Summers are warm and sunny, the winters relatively mild.

Some soils are heavy and slow draining, being originally swampy; others are light and in parts gravelly, especially in the upper plains and valley. Series of low hills in the middle sector rise to higher altitudes inland.

Much of the region is intensively farmed with mixed cash cropping/fat lamb production to the fore. Dairying, market gardening, and commercial orchards are also important features of the plains.

On the heavier soils pasture weeds are principally those associated with damp and fertile lands—thistles, buttercups (*Ranunculus* spp.), docks (*Rumex* spp.), flat weeds in general, and, in places, rushes. Gorse and broom are conspicuous on some of the lighter, stony soils and in riverbeds, and manuka is sometimes associated with them.

The easy hills within the valley systems are relatively clean, except for occasional patches of gorse and manuka in gullies or on shady faces. Spanish heath appears on some of the low spurs between the Wairau and Waihope Valleys and on the hills near the north bank of the Wairau.

Sweet brier (*Rosa eglanteria*), seems, as yet, confined to a roadside weed in the valley.

Barley grass (*Hordeum murinum*) is becoming more prominent round gateways on the more fertile lower spurs and knolls and, occasionally, on the flats. Of rare occurrence in New Zealand, Kangaroo grass (*Themeda triandra*) is fairly aggressive on the sunny slopes of one property in the Wairau Valley.

In the upper valley the hills rise steeper and higher and manuka and bracken fern become more general.

Nodding thistles (*Carduus nutans*) have appeared on the plains and the bright flowered *Eschscholtzia californica*, though not a serious menace,

occurs on roadsides and in thin swards on the western outskirts of Blenheim.

The only known local infestation of Russian knapweed (*Centaurea repens*) is being gradually suppressed by chemical spraying.

The cash crops of wheat, barley and peas and the brassica forage crops can be plagued by a number of weeds common to most cropping districts. These include fat-hen (*Chenopodium album*), Prince of Wales feather or red root (*Amaranthus retroflexus*), chickweed (*Cerastium* spp.), speedwell (*Veronica* spp.), and *Poa annua*. Others, often especially troublesome in pea crops and market gardens, are fumitory (*Fumaria officinalis*), Curnow's curse (*Calandrinia caulescens*), Californian thistle (*Cirsium arvense*), docks, and couch (*Agropyron repens*).

The main commercial orchards are located on the south bank of the Wairau River near Renwicktown, whilst market gardening centres round Blenheim and in the Spring Creek-Tua Marina districts.

The orchards are not seriously troubled by weeds, but market gardens have, perhaps, more than their share of fat-hen, red root, wireweed (*Polygonum aviculare*), docks, black nightshade (*Solanum nigrum*), couch, and *Poa annua*.

Between the lower reaches of the Wairau and Awatere Rivers and separating the Wairau Plains from the Seddon district are series of dry hills including the Wither and Vernon hills.

The Wither hills soils, overlying deep unstable gravels, are particularly dry and their sunny aspects have difficulty in supporting any density of cover, even of weeds. These hills appear clean, though in shady gullies and on southern slopes occur manuka, fern, and tauhinu (*Cassinia leptophylla*), with odd patches of gorse. As such, most of these lend some stability to otherwise unstable slopes rather than create a weed problem.

There is, however, one very serious weed on this divide, nassella tussock (*Nassella trichotoma*). Fortunately, the main nucleus area, located on the Wrekin, has been largely brought under control by the Marlborough Nassella Tussock Board. The board is also very active in ranging some 300,000 acres of surrounding country and in cooperating with property owners in their efforts to confine and eventually eradicate this dominating invader.

SEDDON-WARD REGION

The Seddon-Ward region, including the terraces of the lower Awatere, is comprised mainly of downs and low hills with moderately steep hills along the coast. It is a low rainfall area (23 in.) with high summer temperatures and persistent winds causing excessive evaporation.

Fat-lamb production predominates, with some cash cropping and small seeds production. Barley and wheat, with some peas, are the main cash crops, while ryegrass, white and subterranean clovers, and lucerne contribute the principal small seeds.

This is all relatively clean country. Odd patches of gorse may be seen on the downs and in the stream valleys. The coastal hills are scrubby and ferny in patches, with manuka, gorse, matagouri (*Discaria toumatou*), tauhinu, and bracken fern. Nassella tussock threatens from the north-west, but has not and should not become strongly entrenched, if vigilance is maintained. Two other species which could become troublesome in this area if allowed to extend are hedge escapees, South African boxthorn (*Lycium ferocissimum*), and barberry (*Berberis vulgaris*). Both are to be seen, beyond their useful habitats, near Seddon, while South African boxthorn occurs along and beyond railway reserves extending from the Awatere to the Ure Rivers. There are some slopes near Grassmere where this plant is quite prevalent.

INLAND MARLBOROUGH

Inland Marlborough constitutes the middle and upper watersheds of the Clarence and Awatere Rivers and the southern watersheds of the Upper Wairau and Waihope. It is the high, fescue and silver tussock (*Poa caespitosa*) and snow grass (*Danthonia* spp.) country of Marlborough, and is a region of high mountains, rugged hills, upland basins, and river gorges and terraces.

The summers are short and winters long and severe. Rainfall is high on the Kaikoura Ranges, but becomes low in the upper reaches of the Clarence and Awatere Rivers, averaging 26 in. at Molesworth and being possibly lower in the Clarence Reserve. Access to and within the region is long and difficult.

Much of the original tussock cover of this hinterland became seriously depleted by periodical burning and by the invasion of rabbits. So much so that the large Molesworth and adjoining runs were taken over by the Crown from 1938 on. These runs have since been spelled or only moderately grazed by cattle. The rabbit problem has been strenuously tackled and with aerial distribution of poisoned bait is being overcome.

Spelling, coupled with rabbit eradication, controlled cattle grazing, and aerial oversowing and topdressing, is gradually reconverting once seriously depleted, bare ground, scabweed (*Raoulia* spp.) country, back to protective, vegetative cover.

Native species such as matagouri, manuka, and tauhinu occur, more or less extensively, throughout the area, while other, sometimes troublesome natives such as speargrass (*Aciphylla squarrosa*), mountain tutu, and lawyer (*Rubus* spp.) and *Acaenia* species occur in parts of the region.

By far the most serious exotic invader is sweet brier. As in Central Otago and the Mackenzie Country, sweet brier had obtained a footing in Inland Marlborough and once the rabbit had been effectively controlled the establishment of this weed became progressively more rapid.

St. John's wort (*Hypericum perforatum*), which causes photosensitivity if eaten by sheep, is established in the Upper Awatere, but has been largely controlled by Chrysomella beetles.

Other exotics of much less importance as weeds in the area include woolly mullein (*Verbascum thapsus*), sorrel (*Rumex acetosella*), and browntop (*Agrostis tenuis*).

KAIKOURA-COASTAL REGION

The fifth and final sector of the Marlborough Province is a long narrow coastal belt extending from the Conway to the Ure River and lying between the Seaward Kaikouras and the coast. It expands somewhat at both ends to include the Kaikoura delta, Hundalee Hills, and some uplands in the southern extremity and the near coastal hills, downs, and valleys of the Kekerengu and Ure Rivers to the north.

Rainfall is high to the south and bordering the ranges, but tapers off to about 30 in. toward the northern Ure River end. Except at the higher altitudes the summers and winters are relatively mild.

From the Ure River southward to the Clarence is a belt of relatively clean coastal hills and highdowns, much of which appears to have been originally silver tussock country. Some of the common scrubweeds and fern infest the rougher gullies. Tall fescue (*Festuca arundinacea*) is a common weed of roadsides and railway reserves. Between the Clarence River and Kaikoura the steep and more rugged hills carry more extensive scrub and fern.

The Kaikoura delta and plains vary from light, gravelly fan soils to low

lying, heavy, slow-draining ones. Dairying and fat-lamb production are features of the area. Manuka, gorse, broom, bracken fern, and yarrow (*Achillea millefolium*) and, occasionally, ragwort (*Senecio jacobaea*), blackberry, foxglove, and sweet brier are conspicuous on the light soils, especially on the higher portions of the fan. Low land pastures carry the usual wet land species: rushes, buttercups, docks, thistles, fat-hen, and flat weeds.

Odd patches of variegated thistle (*Silybum marianum*) and stands of at least one rare weed, *Pennisetum macrourum*, also occur in the Kaikoura district.

Drains in the area are often overgrown with cocksfoot (*Dactylis glomerata*), tall fescue, sedges (*Carex* spp.), buttercups, docks, and floating sweetgrass (*Glyceria maxima*). South of Kaikoura the coastal hills at Oaro are fairly high and steep. They are relatively clean, considering their topography, but some gullies and steep, shady faces are densely covered with manuka and bracken fern, and the steep, foreshore slopes with coastal bush.

Further south, on the Hundalee Hills, manuka, gorse, broom, bracken fern, and tutu are prevalent with sweet brier also invading. Nassella tussock has crossed the Conway from North Canterbury to invade this southernmost part of Marlborough Province.

MISCELLANEOUS WEEDS

In addition, Marlborough possesses many other weed species, mostly less significant. Some occur fairly commonly throughout Marlborough; others only rarely.

Perhaps the most serious is hemlock (*Conium maculatum*), a poisonous plant widely distributed along roadsides, around buildings and yards, and in waste places. Hemlock should not be confused with the coastal plant fennel (*Foeniculum vulgare*), nor with wild carrot (*Daucus carota*), and wild parsnip (*Pastinaca sativa*), all of which also occur in a number of localities. Vipers bugloss (*Echium vulgare*), appearing as a roadside and riverbed weed mainly in coastal areas, has also spread to some lightland pastures. Devil's thorn apple (*Datura stramonium*) and prickly lettuce (*Lactuca serriola*) are recorded as being on roadsides and in gardens round Blenheim.

Winged thistle (*Carduus tenuiflorus*) and hore-hound (*Marrubium vulgare*) occur in several hill and high country areas but do not appear to be very prevalent. Both star thistle (*Centaurea calcitrapa*) and saffron thistle (*Carthamus lanatus*) are encountered on rare occasions, and in towns and round homesteads convolvulus (*Calystegia sepium*) and periwinkle (*Vinca major*) are not uncommon.

That unusual parasitic plant broom rape (*Orobanche minor*) is prevalent, at times, in red clover seed crops in the northern districts.

Thus some 68 species and doubtlessly many others go to make up the cosmopolitan populations of innumerable small and large communities that represent the weeds of Marlborough.