

SCRUB WEEDS OF CENTRAL OTAGO

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THE object of this paper is to give you a brief account of the scrub weeds in Central Otago, with special and a more detailed reference to sweet brier. Other scrub weeds, matagouri, gorse, broom, manuka, tutu, and bracken fern, are of economic importance, but it could be conceded that tutu and bracken fern may not be strictly scrub weeds. Nevertheless they are worthy of mention.

Bracken fern, with varying concentrations of tutu in association, is largely confined to a belt of steep broken country in the regions of Lakes Wakatipu, Wanaka, and Hawea. In the more arid areas small patches have established, but have not expanded very extensively. Tutu alone can be found anywhere in Central Otago and dense areas are observable in the Lakes district. Under the usual management of periodically burning these weeds to reduce fire hazard, give access, and a very limited grazing from oversowing, there is no likelihood of ever eliminating them. Clearing and developing this country by mechanical means is limited.

Manuka is of considerable density in the regions of the Lakes. In the more arid parts, for example, parts of the Pisa Range and the western face of the Dunstons, manuka and tauhinu are present in reasonable density, but lack vigour relative to the other area. Odd patches have been noted in the Cromwell Gorge and can be found practically anywhere in Central Otago. Unfortunately it is slowly expanding.

Gorse and broom are increasing. Both are well established in the Lake Wakatipu, Shotover, Arrowtown, and Cromwell areas. Concentrations exist along roadsides, with considerable paddock invasion, and on hillsides. They are dense in the smaller riverbeds. Isolated patches and single bushes of both are present throughout Central Otago, creating a potential hazard.

Matagouri, next to sweet brier, is the most important scrub weed. It is spreading in all districts, and in areas of normal concentration very rapidly. Much country previously accessible is now impenetrable. From all accounts matagouri was confined to the better land or where moisture was adequate and to a limited extent on the hills where it is found to a height of approximately 3000 to 3500ft. The seed is contained in a berry and this fact may have an important bearing on the spread of this weed by birds. It is now found over a wide range of country. It is encroaching from gullies and expanding on shingle screes and on the toes of fans over much of Central Otago. I consider that matagouri, with its ability to provide shelter for birds, is becoming an important springboard for the further spread of sweet brier. There are also numerous other scrub species capable of providing adequate shelter, but I think this one is the more important.

Without attempting to define areas due to the limited time at my disposal, sweet brier is undoubtedly increasing at an alarming rate. Normally big bushes have become bigger and seedling bushes are springing up everywhere. Areas which previously were penetrable are now

impenetrable. In contrast to matagouri sweet brier was generally found on the drier stony country to a height of 2000 to 2500ft. approximately, up stony creek beds, along river beds, up rocky gullies, and on shingle fans. In cropping areas a considerable amount is found along fencelines. The position at present has altered somewhat. Brier is now extending and encroaching on to the better class soils. It is becoming more and more an associate of once dominant stands of matagouri and on the better soils it is growing vigorously. The production of limitless quantities of berries from uncontrolled brier capable of feeding innumerable birds through the winter will add to our problem. The incidence of brier is greatest where the bird population is large and where native scrub has provided natural shelter. Brier has also spread from seed carried down rivers and irrigation races.

From observations of conditions existing in Central Otago it appears that birds have played a major part in the distribution. Sheep, cattle, goats, horses, deer, pigs, and rabbits undoubtedly have done their share, but it is noticeable that where native and man-introduced shelter is present the brier is at its worst provided the bird population is relatively high. In areas where shelter is available, but where the bird population is relatively low, sweet brier is not of great consequence. Nevertheless, it is a potential springboard for further expansion.

The reason for its rapid spread over recent years is obvious. The spread can be attributed to the killer policy of the Rabbit Destruction Council. Let it be remembered that of all the scrub weeds other than brier, matagouri appears to be spreading the most rapidly and is creating shelter over larger areas, shelter for birds over a wider range, and is leading to the eventual spread of the brier.

Matagouri, prior to this policy, was definitely controlled by the rabbit. Fresh seedlings, if not entirely eliminated, were checked and a stunted growth developed and a state of stability existed. On the high country, and even on the low, rabbits destroyed many areas of this weed. Under snowfall the supply of feed was cut off and rabbits were forced to these plants, and under heavy snow the tops of many were checked. The skeletons of starved rabbits are noticeable in the upper portion of this weed following a thaw.

The control of brier was on a greater scale. The berries are favoured by most birds and animals. In addition, the fresh young shoots are succulent and are grazed by all animals in these areas of brier. On one hand there is the rapid spread of seed by birds and to a less extent by animals. On the other hand you have the destruction of plants by animals. The rabbit was the major factor of control. Seedling growth was destroyed as it appeared, established bushes were reduced in activity by the ravages of the rabbits scratching, barking the main stem, exposing roots, and generally dehydrating the areas around these bushes, and eliminating suckering shoots as they appeared. Larger animals played their part in pruning bushes. Control of rabbits has now allowed these bushes to become bigger.

With the advent of the killer policy of the Rabbit Destruction Council the position has changed. If the spread of brier at its present rate is maintained, then it is inevitable that in the not too distant future much of the marginal land will go out of production.

I mentioned previously that matagouri was important to the spread of brier. Up to the present time this has been borne out. Some areas once straight matagouri have been invaded with sweet brier, undoubtedly from seed dropped by birds which appear numerous in these areas, from raids on nearby brier bushes.

Probably the most important infected area of sweet brier is in the upper catchment of the Shotover River. Considerable numbers of cattle, goats, rabbits, deer, and birds existed in this region and this gives a good example of what has happened over a considerable area of Central Otago. Both rabbits and goats check the brier and matagouri, but with the control of the rabbit and some 47,000 goats killed in the period 1949-53 the brier is rampant. Shelter is plentiful and birds could be counted in millions. Many hundreds of acres of St. John's wort exist and brier is now coming up in this. In this region more bushes mean more berries and seed for distribution. An increased number of seeds could be transported by the Shotover River to the Kawarau and Clutha and over a period of time strike on the banks to an increasing extent and eventually provide food for a greater bird population. There is adequate shelter along these rivers.

While the picture presented is not a rosy one, there are one or two redeeming features. Reports indicate that the seed is not particularly viable. If this is so, we can congratulate ourselves that brier is not so extensive as it could be. Secondly, there has been the thought that aerial poisoning for rabbit control is having its effect, particularly on the quail and chukor population. There may be something in this, as at the present time considerable numbers of berries are still on the bushes. However, I am not in a position to express an opinion. The reports by sportsmen on this aspect are conflicting. If the report is accurate, then the rate of spread may be checked in some areas.

Along the roadsides between the Lindis Crossing near Tarras and the Lowburn bridge, an area which could be conveniently inspected, there is a considerable number of brier bushes showing a very unhealthy condition and in some cases have died. The bushes show a stunted and diseased condition and while not much control may come of it I consider it worth while to investigate. Perhaps the condition has been observed and investigated in other areas.

In the following paper a statement will be read to the effect that "being a member of the rose family, any attempt at biological control would be fraught with undesirable possibilities".

I often wonder whether biological control is undesirable to the degree of impracticability. We are, of course, concerned with our commercial roses. Should we not investigate this possibility of biological control thoroughly. My argument against a negative attitude on biological control is this: Over New Zealand there is a vigorous spraying schedule required to keep our roses productive. In my garden I start the season with an application of DDT to the soil to control the grass-grubs which play havoc with roots and check their growth. In November and earlier we apply dusts to check the grass-grub beetle. Shortly afterwards, and once a fortnight for the season, we apply sprays to check aphides, mildew, and other diseases. By that token spraying another two or three times a year if that was the form required to control a biological introduction, would not be unduly irksome. Therefore I consider it necessary to investigate thoroughly biological control, as the longer we delay our approach to this problem the greater our problem will become.