

Are we failing on weeds?

Humans have only lived in New Zealand since about 1280. Our impact on the land, species, and ecosystems during the intervening 730 years has been dramatic resulting in the loss of at least 34 species including several species of moa, the Haast Eagle, Huia, and the South Island Kokako. Plenty more bird, reptile and invertebrate species are threatened by loss of habitat and by vertebrate pests including cats, rats, mustelids, possums. Vertebrate pests are high profile villains in New Zealand, and attract large amounts of expenditure aimed at reducing their impacts on agriculture and threatened species.

Invasive plant species are not exactly forgotten but do not attract such attention, or opprobrium except amongst a minority, some of whom can become near fanatical about weeds. I may well be one of those people. I certainly note the spread of woody weeds such as gorse, broom, briar, and wilding pines across grassy slopes and the ability of shade tolerant tree species to survive under the canopy of native forests. Observation out the car window, extrapolation of current trends in weed numbers and areas leads me to the pessimistic conclusion that we are indeed slowly wrecking the place.

Introduction of plant species has been going on quite a while in New Zealand. Maori introduced six crop species (kumara, taro, hue gourd, aute, yam and ti pore), early explorers planted potatoes and vegetable gardens (Rahman and Popay 2001). The expansion of agriculture following European colonisation in the nineteenth century brought plenty more new crops and seeds, including our first weeds. Weeds were introduced both as contaminants and as deliberately introduced species. Gorse and docks were amongst the first of those deliberately introduced species, and have been succeeded by 25,000 more species of which about 2,000 are now growing wild.

New Zealand has several systems in place to prevent entry, eradicate, contain, provide surveillance of weeds. The success of those efforts is far less than some of us hope for and the numbers of naturalised weedy plants, and the areas they occupy, are in almost all cases still increasing.

Should we care? On agricultural land weeds impose costs for most landowners either through reduced yields of crop, pasture or logs or through increased weed control costs (Bourdot et al 2007). Both effects reduce profitability and provide an incentive to landowners to prevent weeds becoming established and to remove them if they are established. Those incentives are clearly not strong enough to result in successful weed prevention, removal or control in many areas of privately owned land. In many cases no weed control effort is applied and weeds prosper untouched by herbicide or machinery. A similar situation seems to occur on much government (local and national) owned land.

There are reasons why financial incentives to control weeds do not call forth effective, or even any weed prevention, removal or control. Weed control action is most likely to occur where the problem is clearly visible, control is readily achievable, control costs are low, and profit loss due to weediness large. If those circumstances do not occur landowners and managers may conclude weed control is not justifiable at present and weeds will bloom - often colourfully. Decisions about weed control can have long term consequences, and discount rates implicitly or explicitly enter calculations of whether it's worthwhile preventing, removing, or controlling weeds. Some basic calculations indicate that even for low productivity land, low cost annual weed removal that prevents weeds taking over

land will generate a higher NPV than a 'let weeds go' stance, or a 'remove weeds in 25 years time' approach. Decisions by individual landowners can also affect neighbouring properties. My conclusion following the NPV calculations would be reinforced if I had included an external cost for my model property of spreading seeds to neighbouring properties. DoC staff comment that for wilding conifers the problem escalates every 6 years if uncontrolled (and until some land limit is reached). Myopia due to high discount rates, lack of knowledge of the ecology of weeds, overconfidence in the likelihood of new controls being developed, and overlooking of external effects can all lead to faulty decision making about the merit of weed prevention, removal or control today.

Are the current approaches to weeds by regional councils correctly targeted at those underlying issues? Are more prescriptive policies justified to prevent the spread of weeds? Should we reintroduce subsidies for weed control? Or will only a fusillade of silver bullets – effective biological controls - deal to the problem? Comments welcomed.

References

Rahman, A and Popay, I (2001). Review of emerging weed problems in hill country pastures. <http://www.maf.govt.nz/mafnet/rural-nz/sustainable-resource-use/land-management/emerging-weeds/emerging-weeds-08.htm>

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