"WHAT'S WRONG WITH WILDING TREES ?"

First of all - what are wilding trees? Wildings are the natural regeneration, or seedling spread, of introduced trees. The term is usually applied to members of the family *Coniferae* (pines, firs, larches etc) in which group most of the major spreading forestry species of concern occur. The majority of wildings grow close to the parent seed source and are termed *fringe* spread. Wildings further afield are termed *distant* spread and usually occur as scattered *outlier* trees. Often these have grown from seed originating from hilltops and exposed ridges and slopes, which are known as *take-off* sites.

Secondly - what are my credentials to write on this topic? As a scientist with Scion (trading name of the NZ Forest Research Institute) here in Christchurch, I have worked with trees in New Zealand's hill and high country for almost 40 years. Initially, the focus was on soil rehabilitation and erosion control, before I moved onto researching production potential and the environmental impacts of forestry. In the early 80's I organised a survey of introduced trees in the South Island high country, and in the course of two summers visited almost every stand or shelterbelt between Molesworth and the Lindis Pass, and most stands of any size in Central Otago. It was during this survey that I came to look at wildings more seriously, and decided that if the tremendous potential for trees in the high country was to be realised, then we had to know as much about the problems as we did about the prospects. Subsequently, I initiated a series of trials and case studies researching the ecology of wilding spread and strategies for its prevention and control. The results of this work have been written up in scientific papers and reports, and used in Regional and District plans, as well as in contracts recommending control strategies on sites as far apart as Mt Tarawera near Rotorua and Mid Dome, south of L. Wakatipu. Away from work, and together with a colleague, I manage 380 ha of wilding forest for both production and protection outcomes.

What is wrong with wilding trees? This would be the most frequent question I am asked. The people seeking an answer are increasingly aware that many forests (either planted or wildings) can be registered with the Emissions Trading Scheme (ETS) and gain carbon credits which can be sold for handsome sums. They may have seen, and been attracted by, the wildings backdroping Queenstown (Douglas-fir), framing superb views of Mt Cook on the road to the Hermitage (larch), and surrounding Castle Hill village and Naseby township (Lodgepole pine, larch, Corsican pine and Douglas-fir). They have also seen tourists buying place-mats and calendars of high country scenes which often feature wilding trees. Some may even be aware of the background to Glentanner's tourist accommodation success, where timber utilised from wilding larch grown on the station allowed building construction to be significantly cheaper than normally possible. These people conclude that if wildings can be worth money and look good, then why on earth are we trying to remove them and prevent their spread?

The common answer to this is that wilding control is needed due to their spread to areas where they are not wanted. However, before we proceed further, it must be pointed that, due to their location and the surrounding land-use (usually improved), some wilding trees and forests are not acting as a seed source to invade significant new areas. As long as this is the case, and they are not impacting negatively on important existing values (such as visual landscape, land-use and conservation (see below), then there is indeed no need to remove them. They can be managed for normal commercial purposes, plus their environmental benefits (such as shelter, soil stablisation and wildlife habitat). But unfortunately, for every wilding tree or forest that can regarded positively, I believe that there are many where the positive aspects are outweighed by the negative. As with the use of trees anywhere, it is all about the wise or informed use of the right species in the right site. And only too often, wildings are the wrong species in the wrong site.

Landscape values. From a landscape point of view, my concern is probably less than that of some others - as wildings can look more attractive than planted blocks of trees. They tend to grow best in certain sites and not in others, and this, combined with feathered edges of often uneven-sized trees, allows them to blend better into the natural topography. However, even in these situations, the dark green, conical shape of conifers can be very obvious in landscapes dominated by pastel-coloured, low stature tussock grasslands. In addition, they grow faster and taller than most of our native vegetation and can very effectively block off views and create icy road conditions. Those familiar with the wilding trees alongside the Mt Cook highway in the Mackenzie Basin would be well aware of this. However, visual landscape issues will always be a matter of value judgement, with beauty being in the eye of the beholder, and much variation in beholder viewpoint. Fortunately, our hill and high country is a large area, and as long as we do not let wildings get out of hand, there will always be enough variety and space to satisfy the tastes of most observers, whether they be wilding advocates or opponents.

So it is not with the visual aspects of wildings that I take real issue. It is with their influence on conservation values, future land use options and their perceived commercial value – along with their ability to spread insidiously til they reach a stage where control is not possible.

Reduced conservation values and land use options. Once wildings invade an area their relatively fast growth can soon dominate the site. Most rare or threatened native plants and animals find it difficult to compete and must try to survive in a very modified habitat. Even where no such conservation values are threatened, future land use options are reduced, as the sheer bulk of wilding trees means considerable extra cost if they have to be removed for pasture development or plantation forestry. I have personally experienced the frustration and time delays involved in having to remove rogue outlier wildings in order to establish a more useful crop.

Commercial value – timber and fibre. It is largely a myth that most wildings can fetch good money in timber or fibre sales. To be sure, profitable sales have been made from some wilding stands. Such stands are nearly always fringe spread within a hundred meters or less of the parent trees. Within this distance seedlings establish densely and therefore grow up straight, with small branches and little taper. Some species can be harvested at a relatively young age (20-30) for roundwood (posts and poles), or left for some decades longer til natural suppression favours the better trees which can yield good sawlogs. However, of the estimated 1 million plus hectares of land affected by wilding spread in NZ, only a small fraction contains fringe spread. Most is distant spread growing well away from the parent trees. These outlier wildings are often malformed, have large branches and pronounced taper. At best, they will fetch firewood prices – to quote one commentator "the equivalent of growing sheep for dags". In addition, approximately two thirds of the area affected by spread involves contorta or Lodgepole pine (*Pinus contorta*). This species may be valuable in its native N. American home range, but it has yet to attract a ready market in New Zealand. So, when one is considering the commercial worth of wildings for timber and fibre, please acknowledge that in most cases they are the wrong species, on the wrong site, widely scattered, of poor form and often far from markets.

Commercial value – sale of carbon credits. This is the 'new boy on the block', and has significantly altered the traditional view of a forest's worth and the time-frame associated with that income. Forests established after 1989 can now be registered with the ETS, after which there is an allocation of carbon credits, acknowledging the amount of CO_2 taken out of the atmosphere and stored in the trees. Credits can then be sold on an increasingly viable national and international market. The ETS is not quite as simple as that, but the point at issue here is that some wilding forests (not all) can qualify for ETS registration.

To be sure, there are some wilding forests where ETS registration is not a problem – those in the right site with little risk of significant further spread. Or it may be that a risk of further spread is present, and that the profits made from carbon credit sales can be used for wilding management, so that unwanted wildings can be controlled and the seed-source trees eventually replaced with a less spread-prone species. I know of one high country station where management is doing exactly this.

But, there are other wilding forests where I believe that registration with the ETS is a retrograde step, due to the likelihood of further spread on to neighbouring lands where they will impose a value loss or a cost to the owners of that land. In such cases, the 'polluter pays' principle should be enforced. This is particularly so where the most vigorous of the spread-prone introduced conifers, contorta pine, is involved. Hence, owners of high spread risk forests who register with the ETS and accept the economic benefits of having wilding trees on their land must also accept liability for the any further unwanted spread from those trees. In most spread-prone parts of the country, landowners who wish to establish a forest plantation have to apply for a resource consent from the local Council. This is only granted if the Council is satisfied that wilding spread can be avoided or controlled. Why should it be different for anyone seeking to gain commercial profit from wilding trees?

Retaining control. So the answer to the "What's wrong with wilding trees?" question is that there is nothing wrong with wildings in situations where they can be easily contained. *However, we must always be in a position to retain control at a practical cost.* Otherwise, whether we like it or not, wilding conifers could dominate many of our hill and high country landscapes, at the expense of a range of other values which we currently treasure.

Forestry prospects. Finally, I would not want the above writings to make any reader think that I am against all use of introduced trees in our hill and high country. This is not so. Hill and high country farmers must diversify to remain viable custodians of their land, as it is very difficult to 'be green if you are in the red'. Forestry is one of the few long-term sustainable diversification options available to them, especially now that they have the carbon storage option - which can bring about a commercial return over a relatively short time-frame. In addition, from an ecosystem point of view there is ample proof that trees can play an important role relative to healthy and stable soils and diverse fauna and flora populations. I fully support the wise use of trees in the appropriate places.

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