Can a cheeky visitor have anything worthwhile to say about South Island plants after a mere 7 weeks stay?

[Dr Andrew D.Q. Agnew, a botanist at the University College of Wales, recently spent 2 months working in Dunedin. BSO Newsletter asked him for his retrospective thoughts on N.Z. Botany.]

Firstly I must say that to see New Zealand's flora was a marvellous experience. It is morphologically much more diverse than any other I have seen, and it has a fascinating mixture of "primitive" and "derived" botanical forms for me, although we are taught not to use those sorts of words any more when discussing plants! Visiting the South Island has improved my knowledge of Botany and given me a friendlier acquaintance with so many New Zealand plants which are found in British gardens. I would like to thank Dr Bastow Wilson for making my visit possible, and all those who ever kindly told me a plant name. Alison Evans and Brent McKenzie very kindly took us around the Dunedin Botanic Garden, which was a great treat.

The New Zealand native flora

I should mention some of my impressions of the New Zealand native flora: the large number of dioecious species and the large percentage with fleshy fruits. I have not yet been through the floras with a tally of each, and perhaps my impression is weighted by the large number of Coprosmas. But to find berries of Lobeliaceae and Polygonaceae must be uncommon in a world sense. Is this an effect of oceanicity, as perhaps is the evergreen habit of your trees? Am I right in saying I saw no bulbous plant? All your Liliaceae are members of the asphodel group, and I saw no Oxalidaceae or other frequently bulbous family. I have plenty of rather negative questions like that but they are too easy and probably not based on adequate knowledge.

Replacement of natives by exotics

I suppose every botanical visitor has a shock when he sees the extent to which the indigenous New Zealand flora has been replaced by that of Europe. This was accentuated in our case because our first long journey was by bus from Christchurch to Dunedin, and we saw not a native plant it seemed until the outskirts of that great city. The thoroughness of Europeanisation is quite amazing: plants of every habitat have been brought in; there is no habitat so unique to New Zealand that foreigners have been unable to take over after disturbance. The last point is interesting, for there must be disturbance to allow the foreigners in, and yet disturbance cannot be a new feature in a landscape including such enormous braided rivers. We are not the first and will not be the last to comment on this.

Conserving exotics?

Now that there is a significant flora from overseas we may ask what the next phase will be. At present it is a special subset of alien plants which have gained a foothold, and these are rather generally distributed, or so it seems to us. Perhaps we may predict that the current subset will start to be in turn replaced by newer invaders and some will become as rare as true natives, only to be found in small areas in which, say, older agricultural methods prevail. What will be the response of botanical societies then? After all, these novel rarities may be the only representatives in the southern hemisphere!

Of course the situation has been experienced before, in Europe, where our field weeds first invaded (mostly from the Mediterranean, most probably in Neolithic times, 4000 years ago), then became intrusive and dominant in some crops. New agricultural methods have drastically reduced the wild flower weeds of cultivation, and now some are rare (many poppies, some daisy arable weeds) some extinct (notably the corncockle, Agrostemma githago). They can be kept going in museums of agricultural practice, such as the

increasing numbers of country parks in the U.K. where there is a display of prehistoric agriculture and settlement, but this kind of preservation seems to be a bit forced. The habitat needs to be reconstructed, not merely conserved, and in any case we are trying to retain a species which is not basically native. Why do we even consider conserving it? Surely the answer lies in our yearning for a diversity of plants around us? Is this not the reason we delight in gardens of all sorts, especially botanic or specimen gardens? So why is the presence of a plant in a garden not enough that we must try artificially to create conditions in which not just specimens but populations of a species can thrive?

I must say that I do not know the answers to these questions, but I am sure that they must be discussed in the next century or so as temperate plants continue to invade some areas, fade away in others.

The plants of new landscapes

The dominance of alien plants in disturbed areas is due to their faster growth rates and ability to take advantage of the increased nutrient flux which accompanies man's exploitation of a landscape. It is clear that the native plants cannot keep up with the invaders, and yet the landscape of New Zealand is barely 150 years old!

As I return to the land of the origin of most of the plants, Europe, I wonder whether our flora is but a residuum of the faster growing plants available to the Neolithic invaders of our western countries. Surely 4000 years of disturbance, cultivation and exploitation of every corner of our continent must have replaced an earlier, slower-growing set of plant communities? By the example of New Zealand this must have been so, and yet our pollen record tells us otherwise; there is no pollen type found in deposits over 100 thousand years old that cannot be identified from contemporary plants. To be sure the relative abundance of species must be very different, but it is difficult to find any example of extinction in pollen analysis. It is assumed that the rate of

disappearance of species is currently speeding up with the new agribusiness of chemically controlled land exploitation.

Post-agricultural landscape

I conclude, then, that in the field of flowering plant conservation there is room for hope but none for complacency. Native species, especially the larger, widely distributed ones, are difficult to remove entirely from a landscape (after all the ice ages didn't succeed in doing this). On the other hand our new agricultural techniques allow a much more efficient management of weeds and plant communities, so that small pockets of survivors become rarer and their chance of maintenance becomes smaller.

That brings me to my last topic in conservation: why is there no discussion of post-agricultural landscape use in New Zealand? It is clear to us in Europe that the "green revolution" has succeeded only too well. It has produced a food surplus which is an embarrassment because the only way to save the expense of its continual production and storage is to cut back on agricultural employment even more.

The potential that a less utilised landscape has for conservation is immense. Our [U.K.] foresters, who for years have tried to make us believe that forestry was good for conservation, now plan their "second rotation" around landscape and conservation values, although their opinion has hardened as to which crop tree to plant (Sitka spruce). Our university schools of agriculture are busy devising schemes where reduced production allows some monetary offtake from a "conservation area" on the farm. But I heard no mention of this great debate while I was in New Zealand. Perhaps I just missed it.