School of Biological Sciences, University of Auckland, Auckland, New Zealand.

GUEST EDITORIAL: J. OGDEN

John Ogden's *interest in diverse ecosystems, and his first serious encounter with big trees, was when he did the fieldwork for his Master's degree in tropical rain forest in Guayana. The work was done from a base at Bangor, North Wales. Subsequently he worked for his doctorate with John Harper, on the reproductive strategy (energy allocation patterns) of various weeds in the family Compositae. Harper's influence, a demographic approach to plant ecology, has been a theme holding together much of John's otherwise diverse research fields.*

In 1968 John came to a lectureship in Botany at Massey University, and joined the New Zealand Ecological Society. Some key papers from that time, published in the Proceedings *of the Society, were on the ecology of red beech* (Nothofagus fusca) *in the Ruahine. John also dabbled in the demography of* Typha *at Pukepuke lagoon. From 1973 until 1978 John was a research fellow in the Department of Biogeography and Geomorphology, Research School of Pacific Studies, A.N.U., Canberra. Dendrochronology and climate reconstruction became a main research area. While in Australia he worked in alpine, semi-arid and forested ecosystems. John returned to New Zealand to take up the position he currently holds, senior lecturer in Botany (now in the School of Biological Science). His research over the past ten years has mainly been in the related fields of dendrochronology and forest dynamics, especially in kauri forest. He works on forest gap dynamics and beech forest die-back, subjossil forest composition and climatic interpretation, the date of the Taupo eruption and soil seed-banks in successional forest communities.*

COMMON PLANTS ARE NOT A SOFT OPTION

Certain pairs of adjectives go together as natural opposites: *rare/common, exciting/boring, important/ trivial, hard/soft or hard/easy.* Of course, each of these word pairs represents the extremes of a continuum of conditions, and it is a matter of opinion where the distinction is drawn.

I draw attention to the first of these false dichotomies, which seems to be linked to the others in attitudes towards the management and funding of ecological science in New Zealand. I am not alluding specifically to the Department of Conservation (which, after all, has no funding), but more generally, to the whole thrust of present research as revealed in papers presented and informal chin-wags at the Nelson conference.

During the last few years we have witnessed the emergence of a new ethical and scientific concern over the worldwide loss of species diversity. Some excellent TV documentaries have heightened public awareness of the unique and endangered nature of much of our native biota. New Zealanders (both Maori and Pakeha) are now aware of, and value, our indigenous plants, birds, reptiles and invertebrates more than ever before. Government agencies, publicly funded bodies, and even multi-national companies, have responded by directing the limited funds available to research and management towards rescuing some of these from the brink of extinction. Indeed, 'Conservation Science' is seen by some of its strongest proponents as a 'crisis discipline' which can thus justify expenditure which might otherwise be subject to more critical evaluation.

Some conservation scientists see the preservation of genetic diversity as the ultimate goal of their work. In practice this seems to often mean demonstrating non-obvious differences between isolated populations. Others emphasise magic numbers called 'viable population sizes'. Fewer are concerned directly with *rare/endangered* species. Of course the study of small isolated populations presents many interesting problems for the evolutionary geneticist and population biologist, who can throw new technologies and computer models at them, while habitat restoration (for rare species) is a hands-on thing which can involve the managers and the general public. I am not against any of this.

Rather, I want to make a case for the study of common things, especially big, long-lived, common plants. Contrary to popular opinion, widespread and abundant plant populations present greater theoretical (if not practical) sampling problems, and generally contain more genetic diversity than small localised populations. When they have been studied, common plant species have usually shown continuous and/or localised genetic ('ecotypic') differentiation, sometimes over distances measured in metres. More importantly, if we are concemed with habitat restoration, we can make a really strong case for the study of common species.

Most ecologists now believe that plant communities are more or less arbitrary aggregations of

plant species which currently have overlapping environmental tolerances. Almost invariably (even in tropical rain forest!) one or a few plant species dominate in terms of biomass, numbers, and longevity, while the majority are (locally) rare. The same structure - few common species, many rare species - applies also to other components of the biota. Commonness is actually rarer than rareness! Through time, the few dominant plant species create most of the physical structure of the community, gather most of the solar energy and cycle most of the nutrients. They largely form the habitat from which other plants and animals carve their niches. If the associations are maintained for long enough, evolution can adjust life-cycle features so that a degree of dependence (and hence, vulnerability) develops. As we know, it is the loss of habitat created by common species which often leads to the loss of dependent species with localised distributions. Introduced pests, both plant and animal, with the capacity to prevent or reduce regeneration of common canopy dominant trees, may not threaten these species with extinction - rather they threaten whole indigenous ecosystems.

Probably as a result of the formerly compartmentalised nature of ecological research in New Zealand, there have been few multidisciplinary studies of whole ecosystems, and few studies on common organisms throughout their range. Conservation research has concentrated on population studies of rare species. The Department of Conservation, welding for the first time scientists and managers from diverse areas of biology and other disciplines, and with limited funds, is attempting to prioritise this research across the biota. It must be frustrating work, because inevitably there are many rare species. Also, although the principles of genetics and demography can be applied to both plants and animals, measures of genetic diversity, rarity or commonness cannot be equated for different groups.

I conclude that population studies on a much shorter list of widespread and dominant plant species could yield results which would have *exciting, important* and widespread application in the conservation of many *rare* species which are, to a greater or lesser extent, dependent upon them. For example, studies on the demography of totara, tawa, mahoe, ponga, northern rata, kiekie, supplejack or *Gahnia* could offer us a prospect of understanding, even restoring, the much diminished and rapidly changing lowland forest ecosystems of the North Island. Is this sort of work regarded as too *soft* by those who fund, or too *hard* by those who work in the field?