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PRESIDENTIAL ADDRESS: ECOLOGY IN AN ADVOCATE'S AGE

Many of the Ecological Society's past Presidents have used the occasion of their Presidential Address to reflect upon the nature and execution of ecology or upon the role of the Society in promoting its study or application. Such an overview allows we Presidents to escape the humiliation of having to present results of increasingly fleeting snatches of fieldwork and so provide evidence of small sample sizes and poor scientific design. Also, by giving our addresses at the end of our constitutionally restricted tenure we never have to accept the political consequences should our addresses demonstrate an obvious lack of intellect or perception.

I, too, intend to escape presenting field data on blue ducks *(Hymenolaimus malacorhynchus),* my ecological obsession for most of the past decade, although I hasten to add the data are brilliant! I do so because my recent association with the Council of the Society - 3 years as Editor, 2 years as vice-President and 2 years as President - has coincided with far reaching changes in the management of ecological science, in the administration and operation of public science generally and in the public and (particularly) political perception of science. Indeed these changes have been more dramatic in magnitude and effect than at any time during my 23 years membership of the Ecological Society.

The economic reformation wrought by the 4th Labour Government has prompted structural rearrangements, fiscal constraints and policy changes that have forced unparallelled retrenchment in public science. Ecological science has not been spared and there is scarcely a Society member who has not felt the zephyrs of these winds of change. The public, assuming they are interested and aware, have been given some very strange signals in our particular field of interest. Despite this nation's wealth being derived almost exclusively from its thin soil mantle, retrenchment has reached deep into the soil sciences. Despite strong public support for the conservation ethic, the public message is that research on our national emblem, a declining species, is not even a modest priority, and wild animal management no longer an issue. Despite agricultural science, much of it very ecological in direction, servicing an industry that, now and in the future, provides the main source of this nation's economic wealth, whole research programmes considered essential yesterday have today been declared redundant. And, what I regard as especially alarming, we have seen the demise of the farm advisory service - that brilliant and functional conduit of knowledge and innovation between the researcher and the owner of the farm gate - now replaced by a system available only to those who are prepared to pay its inflated and arbitary charge-out rates.

The issues before us over the past two decades - issues such as natural resource use and management, the human impacts on a variety of biological systems, and the carving up of the national estate have not gone away. Indeed they have intensified. The present very public rape of our marine resources, for example, is testimony to the fact that the application of sustainable resource use concepts has yet to enter the national consciousness.

So why, in the face of these imperatives, in the face of mounting concern for the global environment, and with the knowledge of a strong green political lobby sweeping western democracies, has the perceived relevance of ecology, and science in general, receded?

I suggest to you that it can be distilled to a single word - advocacy - and this is the thesis I now wish to develop under the title 'ecology in an advocate's age'.

My approach will be briefly, and in a way pertinent to my theme, to characterise our national science representation, the structure and execution of our ecological science, and professional ecologists. I will then draw these characteristics together and offer some (hopefully) constructive suggestions about how we, as scientists and ecologists, can respond to the advocate's age.

The advocate's age

What do I mean by 'the advocate's age'? What are its characteristics? Strong and overt presentations of narrow partisan viewpoints are a feature of this age. In a world where 60-65% of the workforce process information, knowledge is stored, sorted, packaged, and presented in a multitude of forms and styles by a bewildering variety of means. Vested interest groups resort to strong self promotion to ensure that their viewpoint (and invariably their demand for resources of some kind) rises above and beyond that of their competitors.

The age is characterised by lobbyists - full time advocates backed by organisational structures and resources. Collective groupings arise to propound a viewpoint - witness the array of commerce-based federations (manufacturers, exporters, booksellers, business round table, labour unions), the welfare based groupings (health collectives, support services, etc), and resource use groupings (mining, timber, fisheries, recreation, conservation). All have developed strong organisational structures and employ articulate and forceful personalities as their advocates.

The message from the media-dominated times in which we now live is that if you have a product or a philosophy you hold dear, one you believe is deserving of support or resources, don't leave it unstated. Decision makers are now deluged with sectarian viewpoints and they appear to respond to the forcefulness of the advocacy, the adroitness of its timing, and the political implications of its content. In the carving up of the national cake, slices appear to be going to those who loudly, boldly and persistently articulate their needs. Crumbs fall to those who believe their philosophy or need is an inalienable right.

How is science represented in the advocate's age?

We do have an all-enveloping science body, The Royal Society of New Zealand. It operates under specified terms of reference enshrined in its own Act of Parliament, the most recent version of which went through the House of Representatives in 1965. The Royal Society is required to act as an umbrella organisation for New Zealand science organisations, to maintain international scientific links, to give due recognition to scientific eminence and to act as an advisor to Government on matters of science. For these functions it receives a modest annual grant from Government ($376,000 in 1987/88).

The formal operation of The Royal Society as a representative of OUR scientific views and endeavours lies firmly in the hands of the scientific eminents, the fellows. The governing council of The Royal Society comprises 14:4 officers who must be fellows, 6 fellows councillors and 4 representatives of the 50 or more affiliated member bodies and branches, provided that 2 of these representatives are themselves fellows. The clerical machinery of The Royal Society is small and dedicated to serving the internal needs of the organisation.

The structure and function of The Royal Society has undergone only modest change over the past four decades, a major modification being to ensure affiliation of the many scientific societies that now are such a feature of New Zealand's fragmented science scene.

How are ecological sciences organised and how is ecology pursued?

It is worth reminding ourselves that ecology was originally conceived in overtly holistic terms. Charles Elton (1927) defined it quite simply as 'scientific natural history', and my old university text, Odum's 'Fundamentals of Ecology' (1959) referred to it as 'environmental biology'.

The attraction of ecology as a defined sub-set of the biological sciences was that it was integrative - it focused on the relationships between an organism and its world, the world that shaped its evolutionary history both in form and function. It did not take long to appreciate that there were distinct associations of plants and animals, that there were characteristic communities of organisms associated with and dependant upon characteristic habitats. And, further, that these habitats could be modified, and to a greater or lesser extent created by the activities of those organisms. These two components evolve together in such a way as to develop a single system - this is what Tansley (1935) described when he coined the word 'ecosystem'.

To explore the workings and relationships of such a system, clearly one has to have some initial understanding of the constituent parts. Having said that, it seems to me, from over 20 years involvement in New Zealand field ecology, that the emphasis of our ecological research and ecological management still lies with the parts. Autecological studies remain to the fore, and a perusal of *New Zealand Journal of Ecology* - my barometer of the state and emphasis of our ecological research - may well lead to the conclusion that we have a policy of reductionist science in New Zealand. We seem not to have taken to heart the message of integration and holism which two prominent ecologists gave to us earlier this decade. I refer to Howard Odum at our 1979 conference reminding us of energy heirarchies and relationships, and Amyan Macfadyen's perspective the following year of the relationships of population dynamics to other sub-branches of ecology (Macfadyen, 1981). Their plea for integration was not for a swing to synecological studies but a move away from studies prefaced with 'The diet of . . . . . 'to a consideration of feeding as impacting on the

predators, its prey, their numbers, energy expenditure and requirements, and other relationships within the wider ecosystem. Perhaps there was also a plea for less of what I have heard rather uncharitably referred to as 'theory-free data collection'.

Is it too strong to suggest that we modern ecologists are so captured by our specialist subsets of ecology that we are a little scared or sceptical of holistic viewpoints or syntheses, and when faced by wonderful holistic perspectives like James Lovelock's 'Gaia' (Lovelock, 1988) we simply don't want to know?

I proffer these comments because (a) they have decided relevance to how we advocate and articulate our ecology, and (b) because they are undeniably a product of the organisation of New Zealand ecological research. Leaving aside our universities for the moment (and surely their charmed life won't last forever!) New Zealand's present ecological research structure is based on the legacy of past events and rivalries, rivalries based mostly around the carving up of the national estate. Vested interests and perspectives demanded advice of a particular type developed within a well defined mindset. This resulted in ecological research units (and others with ecological research as an adjunct to a main mission) having decidedly limited perspectives and expertise and with 'strong impediments to inter-agency cooperation. Despite our Society acting as a neutral forum for personal contact, and despite the substantial efforts of some individuals at crossing institutional divides, examples of true inter-agency cooperation and joint research are hard to find.

Our research managers continue to be required to to operate within tightly defined limits and resources and on target orientated projects mostly for some immediate management need. As a result, I suggest, we continue to flirt with our understanding of ecology in a way that perpetuates studies of single factor influences on single species at single locations. The broader visions that were Cupola Basin and Orongorongo Valley seem, sadly, to belong to another age.

Attributes of ecologists

As ecologists we have two obvious perspectives - that of a pupil and that of a practitioner. The words used have their common meaning and it will be obvious that while there are elements of both perspectives in all of us, some have more of one than the other and our professional roles and activities are influenced by the relative balance of the two.

Those more to the pupil end of the spectrum may be referred to professionally under the collective term 'scientist'. Their *modus operandi* is characterised by intensive investigation of issues or events away from the public gaze, concern for detail and mechanism, and a clinical and restricted form of reporting.

Those toward the practitioner end of the spectrum are often professionally referred to as 'manager'. Their *modus operandi* is characterised by manipulative or 'hands on' activities often under intense public gaze, interest in cause and effect rather than mechanism, and a very visible form of public reporting and justification.

I note, as a generalisation, that ecology's pupils are usually conservative in the expression of their craft. As an inheritance of the scientific method, a method which sees the erection of hypotheses, which are then tested by the accuracy of their predictions, responses to issues or questions tend to be laced with equivocation, especially in formal settings or forums.

I note, as a generalisation, that ecology's practitioners are expansive in their communication especially in the informal settings where the majority of their activities take place, and I note that the need for public justification of their activities has, of necessity, developed a style of expression which is often (and mistakenly) considered to be over-generalisation.

I note, also as a generalisation, that ecologists of all perspectives are highly individualistic and embrace their craft as a life-long philosophy, absorbing its lessons and teaching into their lifestyle in a way that is utterly uncharacteristic of other scientific disciplines.

What are my conclusions from these observations?

There are several:

1. We live in an age of advocacy. If we have a viewpoint of value or importance we must articulate it; if we have a philosophy of value we must propound it; if we are serious about wanting to influence events, patterns of thought, or the distribution of resources, we have to indulge in concerted advocacy for our perspective. Quietness is taken as an admission of inconsequence. If science is truly a servant of the people and worthy of a slice of the national cake then this viewpoint has to be advocated amongst all other competing interests.
2. The present organisational structure and resources, and past operation of our premier

science body, The Royal Society of New Zealand, gives little confidence that it is able to act as a forceful advocate for science. Indeed its organisation appears still to reflect the halcyon days of science, the days of unquestioning political patronage, the days of the past. It is an open secret that many of the member bodies affiliated to The Royal Society are frustrated by it - by its lack of scientific leadership, by its lack of public advocacy for science, and by an inability to influence its operations and direction. And, in these days of accountability, they fundamentally object to it being controlled by the fellows, many of whom are no longer in close contact with the scientific workplace and who, collectively, appear unwilling to speak out on the principal issues facing science. Already one member body has disaffiliated and more may follow.

It is clear also that The Royal Society does not presently function as an effective or respected adviser to government on matters of science. Its influence has been usurped by partisan departments of state, by working groups providing specialist advice - the Beattie Committee on Science and Technology (Beattie, 1986) and the Science and Technology Advisory Committee (Arbuckle, 1988) are two recent examples - and now by a new policy body, the Ministry of Research, Science and Technology.

3. The present organisational structure supporting ecological research in New Zealand bears the legacy of history. As a consequence there is no eloquent advocacy for the wisdom and the relevance of the ecological perspective that emanates from a powerful scientific platform. Such advocacy that there is mostly comes from absurdly limited perspectives, well meaning in their intent, but acutely lacking the broader, dare I say holistic view. Such attempts that have been made, and this Society has been at the forefront of some, have been courageous and have assisted changes in consciousness - the population statement of 1974 (Fordham and Ogden, 1974) for which John Ogden and Robin Fordham were primarily responsible assisted the climate which saw the formation of the government-supported Demographic Society to provide advice on population matters; and the nuclear winter initiative (Anon, 1985) so strongly promoted by Wren Green assisted extensive government appraisal of the issues (Green *et al.,* 1987), perhaps even promoted it. There is ample evidence, if one is prepared to look, for the value and the influence of concerted, strong, well-researched, and broadly-based advocacy of the ecological perspective. But there is no evidence that the ecological imperative has an obvious scientific home base in New Zealand.

4. As a group, the pupils of ecology are poor advocates of their craft. With some notable exceptions, of course, there is a tendency to confine the written expression of their craft to the same mechanism as their immediate forebears and those before they. Conveying the results of our ecological observations within the pages of scientific journals is, of course, a proper thing to do. But we ought to see scientific journals for what they are - archives of our knowledge, a museum of our intellectual endeavours. There is a wider clientelle!

George Dunnet in his 1981 Presidential Address to the British Ecological Society (Dunnet, 1982) made some relevant comments about the way ecologists communicate with the taxon he called 'everyman'. He noted that the acceptance of ecological ideas and terms into everyday consciousness came as much if not more through spectacular and exotic films on television than from close to home events or from the word of ecologists. The blame for much of the imprecision in ecological terminology and thought he laid at the feet of ecologists and their poor communication, not at the feet of those who struggle to embrace a philosophy they know to be sensible but whose terms remain a mystery. Dunnet emphasised to his audience, as I do to you, the message that the media are omnipotent today and that communication in relevant ways is our responsibility. Again, if we have a message we must communicate it, we must advocate it. We can not expect a process of osmosis to act as if by the hand of divinity.

5. The most effective advocates of ecology at present are those ecologists at the public workface dispensing their craft in practical ways and in the public gaze. The necessity of justification hones communication and advocacy skills in an unforgiving environment.

How should we as scientists and ecologists respond to the advocate's age?

We could of course ignore it and allow ourselves to develop to the state identified as a possibility by Les Batcheler in his Presidential Address in 1977 (Batcheler, 1978), namely a grouping and philosophy that is quaint, interesting but unimportant. Frankly that is not an option. We ecologists are students of adaptability and, moreover, we hold a conviction about the intrinsic need of humankind for an ecological imperative. As practitioners of the scientific method we also hold a conviction of its ability to serve humankind. So how should we respond?

1. *A Science advocate:* There can be little dispute that science needs an effective and articulate advocate. Its relevance to human wellbeing on all fronts needs frequent, almost continuous, example. In the first instance this will require leadership and initiative from a science overlord.

   This will undoubtedly require a significant change in the role and structure of The Royal Society if it is to retain its present status as the overall body representing New Zealand science. It will require a structural evolution perhaps along the lines of a National Academy of Sciences, to become a true confederation of scientific bodies. This should not threaten the fellowship concept of eminence, for scientists delight in recognising the excellence of their peers, and the wisdom of our seniors will still be required and valued. However, it will require the removal of the fellowship's constitutional right of control and direction. It will demand an outward projection of science as never before by people whose primary skills are advocacy and communication, not science, and full organisational and financial support for the task.
2. *Ecological science:* There is a need for change on two fronts - institutional and individual.

   At the *institutional level,* the time for a collective grouping has come. The concept of an Institute of Ecology - to provide a central focus for this nation's ecological imperatives, to promote the holistic view that lies at the heart of ecology as a science, to integrate current limited perspectives, to promote and give impetus to multidisciplinary research and a wider perspective to natural resource use and management, is deserving of serious consideration and debate. The present fragmentation of research resources badly needs that recombination and it is regrettable that, when the Department of Conservation was established in 1987, an opportunity for some rationalisation was passed over. Presently it gives me little pleasure to view the parallel between continuing institutional retrenchment within Ministry of Forestry, Ministry of Agriculture and Fisheries and the DSIR, and ecological processes we know to affect small and isolated populations.

   While I know that agency amalgamations have many hurdles of vested interest, the establishment of the Ministry of Research, Science and Technology with its pot of contestible research funds could prove a catalyst for the first stage of this process. Competition has the effect of creating some strange bedfellows and I can visualise the emergence of a small umbrella administrative grouping which will promote interagency ecological research. From there it is a series of small steps to further structural integration.

   What I believe emerges at the *individual level* is a need to communicate our craft on a number of levels. Documentation as a record of knowledge in the journals of science is merely the first step. We need to go beyond and appraise other outlets for our knowledge. The targets will, of course, vary but we should always attempt an educative process be it directly to those within primary, secondary or tertiary education or via written or visual media to George Dunnet's 'everyman'. Certainly we should move well beyond the petty attitudes that is the all-too-often peer response to a successful communication with 'everyman'. Indeed we should laud the quite outstanding efforts of our colleagues Les Molloy, Graeme Stevens, John Morton, Alan Mark and Hugh Wilson and treat them as role models for these endeavours. We should not be frightened of the need to publicly justify our activities for that is what the advocate's age demands. The ecological practitioners in our midst do it, and successfully so, as part of their way of life. The more secretive squirrels of ecology should follow their example. As a first step, I believe managers of ecologists would advance the public perception of ecology, of science, and of their institutions a quantum leap if communication with the populace was placed on a footing equal in status to that which an archived report presently enjoys.

3. *The urban environment:* The issues of ecology are not confined to wildlands and offshore islands. Nor are they only about the use of our countryside and saving endangered birds. The principles of ecology and their application are equally relevant to the urban environment where two-thirds or more of New Zealanders now live. For the past two decades 'ecology action' has been conspicuous amongst the many issues of urban New Zealand but professional ecologists seem to have played little direct part in the raising of this consciousness. Yet our home and its immediate environs are where we spend most of our time and where we obtain most of our life skills and much of our learning. If we, as ecologists, expect the wider populace to have an appreciation for our countryside and wildlands and to sensitively exploit the resources of our land then fundamental ecological experiences need to be brought to people where they live. It would do professional ecology no harm to visit the urban environment and to more forcefully advocate there the relevance and the wisdom of the ecological perspective. I am aware of our Society's recent support for an initiative on urban ecology being taken by some of our members and others in the Christchurch area. I believe this initiative to be very timely and its expansion to other metropolitan areas a matter of priority for our Society.

The role of the Ecological Society

I shall conclude my address with a few remarks about the role of our Society in the advocate's age. I shall do this by revisiting a Presidential Address I should have revisited at the commencement of my presidential term. It is that presented by Les Batcheler in 1977 (Batcheler, 1978) when, in our 26th year, he sought to provide a perspective for the Society's future. He did so against a background swell within the Society for a very strong advocacy role, one that required an interventionist and scattergun approach to the issues of the day. Les argued that, whatever our individual feelings, and he acknowledged that some were rather strongly held, cooperatively our main role was educative rather than combative. He correctly pointed out the considerable impact of our more scholarly efforts, such as the 1973 critique of the South Island beech forest utilisation scheme (Molloy, 1973), the 1974 population statement (Fordham and Ogden, 1974) and Colin McLay's (1976) estuarine inventory (and I have earlier added a more recent example) and concluded their value would be long lasting and educative because of their widespread availability. At the risk of placing myself firmly in the camp of conservatism, I agree. In the intervening years we have rather lost sight of Les's sage advice and we have not really committed ourselves to that educative role, despite having 'Education' as an almost permanent item on Council agendas and in our annual reports.

I would like to think that we are developing a new perspective on this and a new and very real committment. We may never have the resources to be a big player in this field but if we pick our targets carefully and seek an association with like-minded allies, I have no doubt about our impact. We did not have a great deal of resources when our population initiative was launched. And the nuclear winter initiative was essentially a Wren Green solo effort. But both proved to be significant initiatives.

Les Batcheler saw our journal as continuing to be 'by far the most important function of the council and the society'. Here I disagree, not with the production of the journal, but with the emphasis. I remain disappointed that so much of our financial resource is allocated to the NZ Journal of Ecology at a time when I consider the communication imperatives lie elsewhere. But our newsletter is evolving and may yet be a platform for conveying ecology outwith to George Dunnet's 'everyman'.

In the end, however, the Society's strength as an ecological advocate will be derived from two levels:

1. The individual advocacy of each ecologist. The Society can support and coerce each of us into accepting the need for and the wisdom of public justification and explanation of our role and activities as ecologists. Furthermore, it can provide a collective stimulus for each of us to more boldly project our individual ecological philosophy. As I noted earlier, ecologists tend to absorb the lessons and teachings of their craft into their lifestyle and this provides an especially strong platform for articulating ecological concerns and advocating greater environmental awareness.
2. The disparate nature of its membership. The Society has moved a long way from its inception as an aggregation of researchers who assembled annually to hear of new findings and to discuss new theories. While I am personally a little sad that theoretical debate and good-hearted intellectual thrust and parry seem no longer to feature at our conferences, I am delighted that we

are developing a true marriage of ecology's pupils and practitioners and discussing topics of genuine common interest. It is a healthy emphasis which I hope we shall continue, for it is entirely in agreement with ecology being an integrative discipline. It is also the first and vital step in adapting to 'the advocate's age'.

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References

Anon. 1985. The environmental consequences to New Zealand of nuclear warfare in the northern hemisphere. *New Zealand Journal of Ecology 8*: 163-174.

Arbuckle, R.H. 1988. Science and technology review: a new deal. Science and Technology Advisory Committee. 66 pp.

Batcheler, C.L 1978. Presidential address: a perspective at year 25. *New Zealand Journal of Ecology 1*:2-6.

Beattie, D.S. 1986. Key to prosperity, science and technology. Report of the Ministerial Working Party on Science and Technology. 147 pp.

Dunnett, G.M. 1982. Ecology and everyman. *Journal of Animal Ecology 51*: 1-14.

Elton, C. 1927. *Animal ecology*. Sidgwick and Jackson, London.

Fordham, R.A., Ogden, J. 1974. An ecological approach to New Zealand's future. *Proceedings of the New Zealand Ecological Society 21 (Supplement):* 1-32.

Green, W.Q., Cairns, T., Wright, J. 1987. New Zealand after nuclear war. New Zealand Planning Council. 166 pp.

Lovelock, J. 1988. *The ages of Gaia: a biography of our living earth*. Oxford University Press. 252 pp.

Macfadyen, A. 1981. The relation of population dynamics to some other areas of ecology. *New Zealand Journal of Ecology 4*: 37-44.

McLay, C.L 1976. An inventory of the status and origin of New Zealand estuarine systems. *Proceedings of the New Zealand Ecological Society 23*: 8-26.

Molloy, LF. (compiler), 1973. A critique of the environmental impact report on the proposed utilisation of South Island beech forests: report to the Officials Committee for the Environment. New Zealand Ecological Society (see also Proceedings of the New Zealand Ecological Society 20: 155-6).

Odum, E.P. 1959. *Fundamentals of ecology*. 2nd edition. W.B. Saunders Company, Philadelphia. 546 pp.

Tansley, A.G. 1935. The use and abuse of vegetational concepts and terms. *Ecology 16*: 284-307.