2 P. C. BULL
(Past-President, New Zealand Ecological Society) 131A Waterloo Road, Lower Hutt, New Zealand

GORDON WILLIAMS: AN APPRECIATION OF HIS CONTRIBUTION TO NEW ZEALAND ECOLOGY

The sudden death of Gordon Roy Williams on 19 June 1983 was a sad loss to New Zealand science and, in particular, to ecology and ecologists. Born in South Africa in 1920 and educated in Australia, Gordon joined what is now the New Zealand Wildlife Service in 1949. In this organisation, and later at Lincoln College, he made important contributions to New Zealand ecology as a research scientist, as an administrator and as an educator. Although his research was wide ranging, mostly within the broad field of ornithology, it centred on three main species - California quail, takahe and kakapo; in later years he also became very interested in island biogeography to which he made his own scholarly contributions. His research on quail stands out as his own, but with his later work on endangered species and with his administrative services to ecology, it is often difficult to separate his particular contributions from those of his colleagues; one can but try.

Gordon's studies on California quail, an important game species, began in 1949 and continued for some 15 years. He did much of the early field work himself, but later this was delegated progressively to others and Gordon, by then also involved in takahe research, concentrated on the analysis and publication of the accumulating data. He provided the rust major account of the population dynamics, food and habitat requirements of California quail in New Zealand, and this work has not yet been superseded. His finding that quality of habitat was more important in regulating quail numbers than predation, hunting or disease is perhaps commonplace today but, at the time, it was a relatively new concept, at least to many sportsmen.

Apart from its important implications for game management, Gordon's work contributed usefully to some of the more academic aspects of ecology. Although several species of introduced birds had been present in New Zealand for about 100 years, Gordon's work on California quail (and contemporaneous studies on pheasants and waterfowl by his colleagues) provided the first detailed information on how some of the introduced birds were interacting with a new and changing environment. These accounts, now already some 30 years old, will become increasingly valuable as historical documents for future ecologists.

Gordon's work also helped contemporary ecologists because he was often in the forefront of those introducing to the New Zealand scene ecological concepts and techniques from overseas. His early work reflects an interest in population dynamics and in cycles, acquired during a stay at the Bureau of Animal Population, University of Oxford. He later re-examined some of his data with the aid of what he was pleased to call "elegant" and "ingenious" statistical methods (seemingly acquired while on study leave at the University of Aberdeen) to provide more sophisticated population estimates, life tables and mortality rates. Gordon was among the first in New Zealand to appreciate the value of tape recorders for studying and teaching natural history, and he made what are now historic recordings of the calls of wild takahe at Lake Orbell (1954) and of Pitcairn Island sounds, both human and avian (1956). His paper on the relationships of the New Zealand wrens as indicated by DNA-DNA hybridization (1982, with C. G. Sibley and J. E. Ahlquist) is a further example of his interest in bringing overseas techniques to bear on New Zealand problems.

Although Gordon's research on takahe was wide ranging, it was more superficial than his work on quail, and understandably so when one considers the physical difficulties of the study area. Several scientists were involved in the early research on takahe and it is often difficult to identify the precise contributions made by each. Gordon, however, stands out in providing the very necessary service of collating and publishing well-documented information gleaned from widely scattered historical and contemporary sources. His predilection for historical research in museums and libraries is further evident in his papers on kakapo (1956 and 1960), laughing owl (1972, with M. Harrison) and wattlebirds (1976). These historical compilations provided a very useful information base, and contributed to the success of the substantial field studies undertaken later by some of his younger colleagues. Other historically valuable reports are his accounts of the spread of introduced birds to New Zealand's outlying islands (1953), and of the birdlife of the Pitcairn Islands (1960), the Kermadecs (1965, with

A. T. Edgar and F. C. Kinsky) and, on the South Island mainland, the Gouland Downs and the Cleddau River area near Milford (both 1960).

I have already alluded to Gordon's growing interest in island biogeography. In particular, his 1982 paper on species-area relationships of insects and plants on New Zealand's southern islands not only extends far beyond his usual field of ornithology, but is also valuable for its critical and stimulating assessment of current ideas in this field. Apart from the academic interest of this topic, Gordon was concerned to see that its implications for the design of reserves should be critically examined and, where appropriate, put to good use.

Finally in the field of research, Gordon's work on the ecology and distribution of New Zealand bats must be mentioned, not only for its own intrinsic value, but also as an example of effective co-operation with researchers in other government departments.

To sum up, I consider Gordon's main research contributions to ecology are his classical studies on California quail, his meticulous collation of information on takahe, kakapo, laughing owl, wattlebirds and local avaifaunas, and the good example he set in publishing scholarly papers on virtually all the research he did or was associated with.

As an administrator Gordon made important contributions to ecology during the period 1965 to 1979, first as head .of research and later as director of the Wildlife Service. Under his leadership the Research Section was greatly enlarged and earned an enviable reputation for the quality and relevance to management of its ecological research, often undertaken under extremely difficult field conditions. Management groups also prospered, and the Service became a world leader in developing techniques, largely ecological, for the successful management of threatened species. It seemed to me, however, that Gordon was rarely the real leader in these successes. Rather his contribution, which was vital, was to provide the resources and conditions of work which, despite criticism, have proved sufficient to attract and retain several ecologists and wildlife managers of exceptional ability and dedication, and this was no mean achievement.

Gordon served several years as chairman of the Fauna Protection Advisory Council, a body which provided a means for ecologists in other government departments, universities and as private individuals to contribute to the management policies of the Wildlife Service. Likewise, with Gordon's approval, members of the Ornithological Society of New Zealand were encouraged to help the Service with field surveys and, jointly with Ecology Division, DSIR, to produce New Zealand's first ornithological atlas. As a member of the Scientific Co-ordinating Committee for Beech Research, Gordon argued strongly for larger reserves, and New Zealand ecologists can be grateful to him for such success as he had in this area, and also for his strong advocacy for the conservation of wetlands. His influence on conservation was, however, not confined to New Zealand. He was a member of two commissions of the International Union for the Conservation of Nature and Natural Resources (the Species Survival Commission, and the Commission on Ecology) and was part of the official New Zealand delegation to the 14th General Assembly of IUCN held at Ashkhabad, USSR, in October 1978.

Gordon also served ecologists well in the field of voluntary administration. He was an officer of the Ornithological Society of New Zealand from 1957 to 1971 (successively as secretary, vice president and president) and presided over the successful amalgamation of the Society's national bird banding scheme with that of the Wildlife Service on game birds. He served as the New Zealand Ecological Society's editor from 1966 to 1970 and president from 1972 to 1974. During his time as president, the Ecological Society was urging moderation in the exploitation of beech forests and "an ecological approach to New Zealand's future" (Fordham and Ogden, 1974*). Some of the views expressed in this latter document were foreshadowed in Gordon's earlier papers on the role of the ecologist in national development (1970) and on the need for town planners to provide for the survival of natural communities (1971).

Gordon's contributions to the education of ecologists were made mainly during his two periods at Lincoln College, first as a lecturer in Agricultural Zoology (1960 to 1965) and later as Professor of Entomology (1979 until his death). One of his early achievements at Lincoln was the introduction, in 1962, of a full-unit course in animal ecology in the fourth year of the

.* Fordham, R. A.; Ogden, J. 1974. An ecological approach to New Zealand's future. *Proceedings of the New Zealand Ecological Society* 21 (supplement). 32pp.

agricultural science degree, the first such course in New Zealand. He was an able and stimulating lecturer and several of his students went on to do graduate work in animal ecology. On his return to Lincoln in 1979, he found that despite new courses in environmental science, his fourth year course in ecology still survived as a combination of plant and animal ecology. He resumed responsibility for this course and also reviewed for the College authorities all teaching at Lincoln in the field of ecology with a view to improving co-ordination between courses. The continued survival of his own course, initiated some 15 years earlier, and the subsequent introduction of yet other courses within the environmental field, are a testimony to Gordon's far-sightedness and pioneering influence.

The book The natural history of New Zealand (1973), edited by Gordon, remains a valuable reference for all ecologists - students and veterans alike. The editor's success in persuading so many prominent and busy ecologists to take time off to review the state of knowledge in their particular fields was indeed a notable achievement. Another milestone was the production (with D. R. Given) of the Red data book of New Zealand (1981). This further example of Gordon's diligence and skill in collating widely scattered information is an important document for anyone concerned with the management of lands containing endangered fauna and flora. In the field of popular education, Gordon's booklet 30 New Zealand birds in association with Kenneth and Jean Bigwood (1959) and his commentaries on the accompanying records of bird song constitute another notable first in New Zealand natural history. He also added his style to the airwaves, following Crosbie Morrison with a New Zealand nature notebook on radio.

This catalogue of achievements constitutes only a part of Gordon's contribution to ecology. It largely ignores the personality of the man but this, despite its importance, defies an objective. assessment. He had a certain air of authority and dignity which, though occasionally verging on the pompous, no doubt contributed to his success in persuading administrators to provide the resources so desperately needed by the Wildlife Service. Indeed, of all his many and varied achievements, I believe his success in building up the New Zealand Wildlife Service will prove to be his greatest contribution to ecology in New Zealand.

Acknowledgements

I am grateful to the following who have helped me with information and opinions about Gordon's contributions to New Zealand ecology: I. A. E. Atkinson, T. A. Caithness, G. T. Daly, R. M. Emberson, E. J. Godley, L. Gurr, K. H. Miers, K. E. Westerskov and M. J. Williams. I have, however, used my own judgement in selecting hom the available information, and none of my helpers is to be held responsible for the views expressed.

BIBLIOGRAPHY

A list of the scientific papers of Gordon Williams. Book reviews, forewords in Wildlife Service magazines and short conference summaries are not included.

1950 An almost extinct bird. *Discovery* 11: 216-9.
1950 Chukar *(Alectoris graeca)* in New Zealand. *New Zealand Science Review 8*: 2-6.
1951 Further notes on the chukar. *Notornis* 4: 151-7.
1952 The California quail in New Zealand. *Journal of Wildlife Management* 16: 460-83.
1952 *Notornis* in March 1951. *Notornis 4*: 151-7.
1953 The dispersal from New Zealand and Australia of some introduced European passerines. *Ibis 95*: 676-92.
1954 Population fluctuations in some northern hemisphere game birds (Tetraonidae). *Journal of Animal Ecology 23*: 1-37.
1954 Why do the numbers of game animals change. *New Zealand Outdoor 18 (6)*: 7-8, (7): 11-4.
1955 Life tables and the significance of aging and the age-structUre of populations. *Proceedings of the New Zealand Ecological Society 3*: 31-2.

1955 *Some aspects of the life history and management of California quail in New Zealand*. Wildlife Publication No. 36. Government Printer. 31pp.
1955 A case of aspergillosis in the black-backed gull. *Notornis 6*: 166-7.
1955 Summary of takahe investigations for the 1953-54 study season. *Notornis 6:* 112-4.
1956 The kakapo *(Strigops habroptilus,* Gray): A review and re-appraisal of a near extinct species. *Notornis 7*: 29-56.
1957 (with K. H. Miers). A brief summary of takahe research for the 1955-56 season. *Notornis 7*: 69-71.
1957 Changes in sex ratio occuring with age in young California quail in Central Otago, New Zealand. *Bird Banding 28*: 145-50.
1957 Some preliminary data on the population dynamics of the takahe *(Notornis mantelli* Owen). *Notornis 7:* 165-71.
1958 (with K. H. Miers). A field method of sexing the swamp hen or pukeko. *Emu 58*: 125-7.
1958 (with K. H. Miers). A five-year banding study of the takahe. *Notornis 8*: 1-12.
1958 The myna, *Acridotheres tristis,* in the South Island. *Notornis 8*: 210.
1959 30 *New Zealand birds*. A. H. and A. W. Reed, Wellington 40pp. (Booklet accompanying Kiwi Record Company's three record set "A treasury of New Zealand bird song" recorded by K. and J. Bigwood. A fourth record with an accompanying booklet "Supplement No.1" by G. R. Williams was produced in 1960).
1959 Aging, growth-rate and breeding season phenology of wild populations of California quail in New Zealand. *Bird Banding 30*: 203-18.
1960 Distribution of specimens of the kakapo *(Strigops habroptilus* Gray) in some museums throughout the world. *Records of the Dominion Museum 3*: 219-27.
1960 The takahe *(Notornis mantelli* Owen 1848). A general survey. *Transactions of the Royal Society of New Zealand 88:* 235-58.
1960 Birds of the Pitcairn Islands, central South Pacific ocean. *Ibis 102*: 58-70.
1960 Birds of the Cleddau River area near Milford Sound, Fiordland. *Notornis 8*: 185-8.
1960 Birds of the Gouland Downs, N. W. Nelson. *Notornis 8*: 236-43.
1960 A preliminary account of a regular fluctuation in California quail in Central Otago. *Proceedings of the New Zealand Ecological Society 7*: 9-11.
1962 Extinction and the land- and freshwater-inhabiting birds of New Zealand. *Notornis 10*: 15-24, 29-32.
1962 The story of the New Zealand California quail populations. *Ammohouse Bulletin 1(12)*: 6-8.
1963 A four-year population cycle in California quail *Lophortyx californicus* (Shaw) in the South Island of New Zealand. *Journal of Animal Ecology 32:* 441-59.
1963 *Birds of New Zealand*. A. H. and A. W. Reed, Wellington. 124pp (revised editions printed 1966, 1973).
1964 The Anatidae of New Zealand. *Wildfowl Trust Annual Report 15*: 140-6.
1964 A new look at an old agriculture (The exploitation and conservation of game mammals). *Canterbury Chamber of Commerce Bulletin No. 424*.
1965 Mortality rates in two populations of California quail in Central Otago, New Zealand. *Proceedings of the New Zealand Ecological Society 12*: 30-36.
1965 (with A. T. Edgar and F. C. Kinsky). The Kermadecs expedition 17-23 November 1964. *Notornis 12*: 3-43.
1966 A study of California quail in New Zealand with particular reference to population ecology. Ph.D. thesis, Lincoln College, University of Canterbury.
1967 The breeding biology of California quail in New Zealand. *Proceedings of the New Zealand Ecological Society 14*: 88-99.
1968 The Cape Barren goose *(Cereopsis novaehollandiae* Latham) in New Zealand. *Notornis 15*: 66-9.
1968 (with M. J. Imber). Mortality rates of a Canada goose population in New Zealand. *Journal of Wildlife Management 32*: 256-67.

1969 (with M. R. Rudge). A population study of feral goats *(Capra hircus* 1.), Macauley Island, Kermadec group, New Zealand. *Proceedings of the New Zealand Ecological Society 16:* 17-28.

1969 Introduced birds. *In:* 'Knox, G. A. (Editor) *The natural history of Canterbury* pp 435-51. A. H. and A. W. Reed, Wellington.

1970 The ecologist's role in national development. *Proceedings of the New Zealand Geography Conference 6*: 58-62.

1970 Ecological, recreational and aesthetic uses of water. *Proceedings of the New Zealand Water Conference* Vol 1 pp 20.1-20.6. New Zealand Institution of Engineers (Auckland branch) and Royal Society of New Zealand.

1971 (with T. A. Caithness). Protecting wild birds from poisoned baits. *New Zealand journal of Agriculture 122:* 38-43.

1971 The city and natural communities. *Proceedings of the New Zealand Ecological Society 18*: 13-7.

1972 (with M. Harrison). The laughing owl *Sceloglaux albifacies* (Gray, 1844). A general study of a near extinct species. *Notornis* 19: 4-19.

1973 Birds. *In:* Williams, G. R. (Editor). *The natural history of New Zealand*. pp 304-33. A. H. and A. W. Reed, Wellington.

1974 (with M. W. Weller). An unsuccessful search for the Auckland Islands merganser. *Notornis 21*: 247-9.

1975 (with B. E. Reid). The kiwi. *In:* Kuschel, G. (Editor). *The biogeography and ecology of New Zealand*. pp 301-30. Junk, Holland.

1976 The New Zealand wattlebirds (Callaeitidae). *In;* Frith, H. J.; Calaby, J. H. (Editors) *Proceedings of the 16th International Ornithological Congress*. pp 161-70. Australian Academy of Science.

1976 Survey of insular habitats. *Wildlife - a review 7*: 12-14.
Conservation of marine birds in New Zealand. *In:* Bartonek, J.e.; Nettleship, D. N. (Editors). *Conservation of marine birds of northern North America*. pp 261-66. United States Department of the Interior, Fish and Wildlife Service. Wildlife Research Report No. 11.

1977 Marooning - a technique for saving threatened species from extinction. *International Zoo Yearbook 17*: 103-6.

1978 (with J. A. Mills). The status of endangered New Zealand birds. *In:* Tyler, M. J. (Editor). *The status of endangered Australasian wildlife*. pp 147-68. Royal Zoological Society of South Australia, Adelaide. (revised version in Archer, M.; Clayton, G. (Editors). *Vertebrate zoogeography and evolution* in *Australasia*. Hesperion Press, Perth. 1983).

1978 Hawaii - La Jolla - Ashkhabad - Singapore. *Wildlife - a review 9*: 59-66.

1979 The conservation of New Zealand's high mountain fauna. *In;* Robertson, B. T.; O'Connor, K. F.; Molloy, B. J. P. (Editors). *Prospects for New Zealand biosphere reserves*. pp 67-70. New Zealand Man and the Biosphere Report No.2, Tussock Grasslands and Mountain Lands Institute, Lincoln College. 78pp.

1981 Aspects of avian island biogeography in New Zealand. *journal of Biogeography* 8: 439-56

1981 (with D. R. Given). *The red data book of New Zealand* Nature Conservation Council, Wellington. 175pp.

1981 (with M. J. Daniel). Long-tailed bats *(Chalinolobus tuberculatus)* hibernating in farm buildings near Geraldine, South Canterbury. *New Zealand journal of Zoology 8*: 425-30.

1982 Species-area and similar relationships of insects and vascular plants on the southern outlying islands of New Zealand. *New Zealand journal of Ecology 5*: 86-96.

1982 (with C. G. Sibley and J. E. Ahlquist). Relationships of New Zealand wrens as indicated by DNA-DNA hybridisation. *Notornis 29*: 113-30.

1983 (with M. J. Daniel). Observations on a cave colony of the long-tailed bat *(Chalinolobus tuberculatus)* in North Island, New Zealand. *Mammalia 47*: 71-80.

1984 (with M. J. Daniel). A survey of the distribution, seasonal activity and roost sites of New Zealand bats. *New Zealand journal of Ecology 7*: 9-25.

1984	(with R. East). Island biogeography and the conservation of New Zealand's indigenous forest-dwelling avifauna. *New Zealand Journal of Ecology* 7: 27-35.
1984	Has island biogeography theory any relevance to the design of biological reserves in New Zealand? *Journal of the Royal Society of New Zealand* 14: 7-10.
In press	(with P. R. Millener). The origins and evolution of New Zealand's birds. *In: Reader's Digest complete book of New Zealand birds*. Reader's Digest Services Pty Ltd, Sydney.
In press	Some criticisms of generally accepted island biogeography theory. *In:* Beever, R. E.; Wright, A. E. (Editors). *The offshore islands of northern New Zealand*. Proceedings of a symposium held in Auckland 10-13 May 1983.
In press	?? paper presented at the Jean Delacour/lnternational Foundation for the Conservation of Birds Symposium on Breeding Birds in Captivity, Los Angeles, 24-27 February, 1983.