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An annotated bibliography of Macquarie Island

D.R. Selkirk, P.M. Selkirk and R.D. Seppelt

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AN ANNOTATED BIBLIOGRAPHY OF MACQUARIE ISLAND

by

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ABSTRACT

An annotated bibliography with subject and author index of over six hundred references relevant to Macquarie Island is presented.

IN REPLY TO THE MEMORANDUM OF THE SECRETARY

1. The Secretary's memorandum of the 10th inst. is received and the following is in reply:

2. The Department is in receipt of the letter of the 10th inst. from the Secretary of the Department of the Interior, dated the 10th inst., and the following is in reply:

3. The Department is in receipt of the letter of the 10th inst. from the Secretary of the Department of the Interior, dated the 10th inst., and the following is in reply:

## 1. INTRODUCTION

Macquarie Island (158°55'E, 54°30'S) (Figure 1) is an exposed fragment of the crust of the Macquarie Ridge complex which runs south from New Zealand towards the Balleny Islands off Antarctica. The Island is 34 km long and up to 5 km wide and trends NNE. It consists of a series of plateaux, higher in the south than in the north, generally bordered by precipitous seaward slopes and cliffs. There are numerous lakes and streams.

The climate is extremely equable: cold, wet and windy. The climatic factor with the greatest annual variation is daylength. Rain, hail, sleet, snow and fog occur at any time of the year, often all on the same day.

A Nature Reserve under the control of the Tasmanian National Parks and Wildlife Service, Macquarie Island is a hauling-out and breeding ground for large populations of seals and sea-birds. The Island's wildlife was exploited for over a century from the time of discovery for skins from fur seals and oil from elephant seals and penguins.

The period of exploitation inevitably modified the original biota. The specific identity of the original island fur seal is not known as the population was rapidly exterminated. An endemic rail and parakeet became extinct and rats, mice, wekas, cats, rabbits, a slug and a mite became established. Predation by cats has probably affected bird populations. Burrowing and grazing by rabbits has modified vegetation to some extent and contributes locally to erosion.

The flora is limited in species composition. There are no woody plants. Several alien vascular plant species have been introduced and become locally abundant. As the Island has always been isolated from other land masses, the establishment of its non-marine biota must have been by long-distance trans-oceanic dispersal.

Macquarie Island is of considerable geological interest. Its rocks are now recognised as forming an almost unaltered ophiolite complex, upthrust on the margin of the Indian-Australian Plate. Sea floor and deeper crustal material are now exposed above sea level in the midst of the Southern Ocean. The rocks are mid-Tertiary in age.

The present mean position of the Antarctic Convergence is just south of Macquarie Island and any long-term change in position of the Convergence would probably have large effects on the Island and surrounding waters. The Island may thus be a sensitive indicator of climatic change over time. Macquarie Island is the furthest south subantarctic land mass without permanent snow and ice. The absence of such must, in part, be due to the generally low altitude. There is some debate as to whether or not the Island was glaciated during the last glacial maximum. It has been suggested that supposedly glacial features can be explained by structural control by faulting and rapid uplift.

The Australian National Antarctic Research Expedition has maintained a continually staffed scientific station on the Island since 1948. Research projects have concentrated on studying the disciplines of biology, geology, geomorphology, upper atmosphere physics, cosmic ray physics and meteorology. A considerable amount of literature on Macquarie Island now exists.

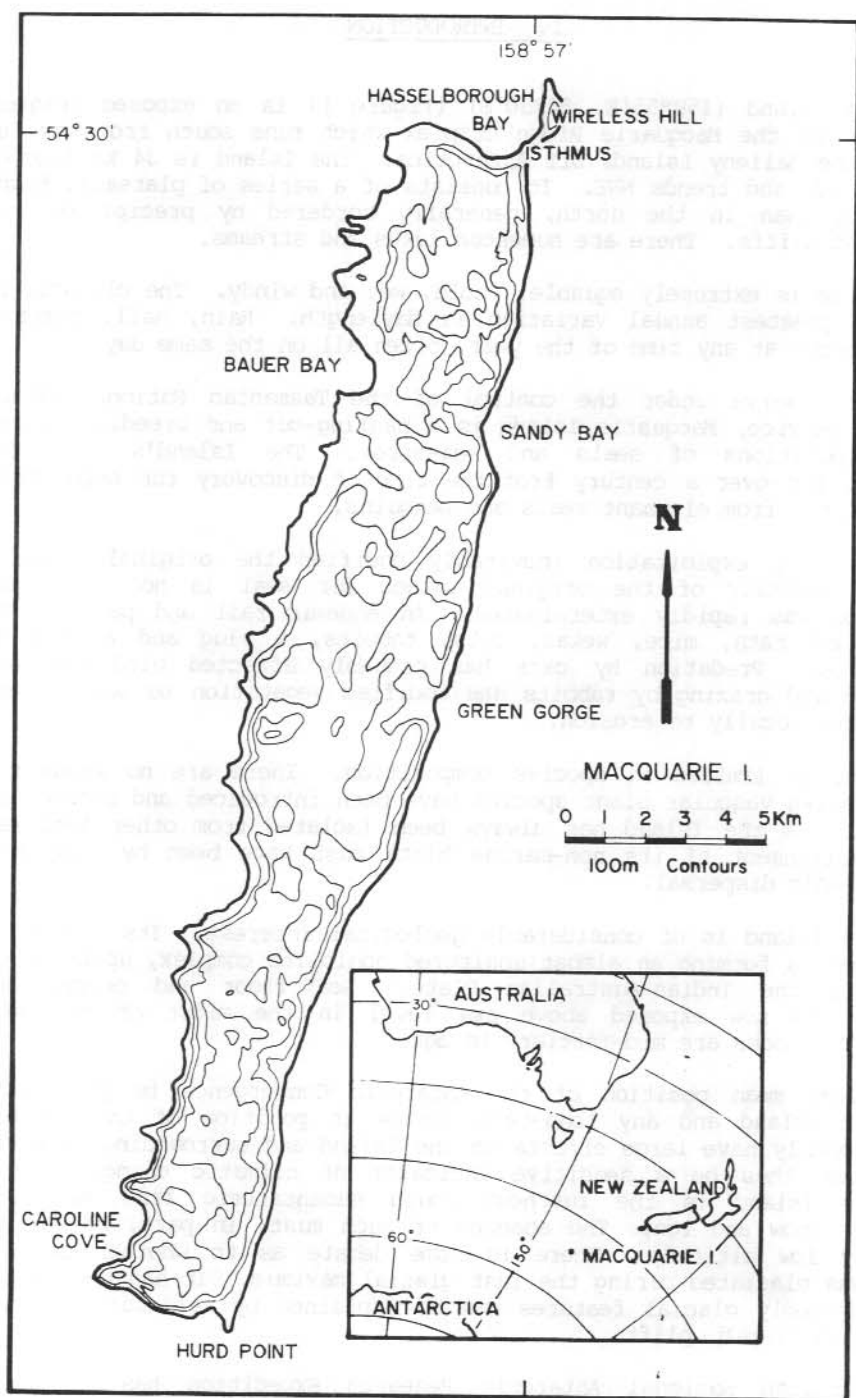


Figure 1. Macquarie Island.

Two bibliographies concerning Macquarie Island have already been published (Cumpston 1958 and 1968). Cumpston (1958) was prepared as a preliminary to publication in 1968 of the Island's history to 1933. Its emphasis is on sources which allowed a detailed exposition of the Island's discovery and exploitation. The bibliography and footnotes accompanying Cumpston (1968) Macquarie Island represent a development of the 1958 bibliography.

This bibliography grew out of the compilers' research interest in Macquarie Island's flora and Quaternary history. The compilers have made no attempt to search out and annotate the mass of historical sources covered by Cumpston. The sources of material relied upon by him in the course of his historical research are clearly indicated in his published works. The present location of items which he listed as in private hands has not been determined.

Cumpston was interested in historical research. The compilers' interests are primarily biological and this bibliography concentrates on works of scientific interest and of a general nature. Most of the items listed are available in scientific periodicals in academic and scientific institutions and public libraries. Others, such as theses, are available through the libraries of the institutions at which the work was done and these are indicated in the references. Australian National Antarctic Research Expedition publications are referred to throughout, by the abbreviation ANARE.

The compilers were unable to sight some references and such works have been included by title only. References with annotations have been seen. In the case of theses photocopies of tables of contents and summaries have been relied upon. Theses are generally not readily available through the interlibrary loan system. Where a particular work may be difficult to find through institutional libraries a source is indicated.

The compilers maintain a computerised database on articles relevant to Macquarie Island and will be grateful if omissions from the bibliography are brought to their attention.

It is surprising how much has been written about work done on Macquarie Island in the relatively short time scientists have been regular visitors there. A bibliography of this nature can never be complete, and some publications and reports may have been overlooked. Known publications to August 1986 have been included. The compilers believe, however, that the bibliography represents a reasonably comprehensive, up to date survey of the available literature relevant to Macquarie Island, its physical environment and biota.

## 2. ANNOTATED BIBLIOGRAPHY

Items are arranged alphabetically by surname and initial or initials used in the publication cited. Some authors with multiple given names have published under different sets of initials. In extreme cases, articles by the one author, published under different initials, may be separated by articles by a different author. Situations in which this has occurred are indicated in the author index.

References included without annotation have not been seen by the authors and are identified by 'NOT SEEN'.

001 **Ainsworth, G.F., Power, H. and Tulloch, A.C. (Recorders) (1929)** Tabulated and reduced records of the Macquarie Island Station. Australasian Antarctic Expedition 1911-1914, Scientific Reports, Series B, Volume III, Meteorology. 473pp. plus 4 plates.

Tabulation of observations, daily synopses. Earthquake shocks noted.

002 **Aleksandrova, V.D. (1974)** The Arctic and Antarctic: their division into geobotanical areas. Translated by D. Love. Cambridge University Press, Cambridge. 247pp.

Brief description of climate of Macquarie Island and other subantarctic islands with general notes on their floras.

003 **Alexander, C.P. (1962)** Insects of Macquarie Island: Diptera: Tupilidae. Pacific Insects, 4(4):939-944.

Original description of Erioptera (*Trimicra*) pilipes macquariensis, only species of crane fly known from Macquarie Island. Suggests that unusually high number of flies with abnormalities of wing venation may be due to inbreeding because of restricted area of habitat.

004 **Ananthakrishnan, R. and McDermid, E.M. (1971)** Two possible genetic variants of red cell acid phosphatase in seals. Animal Blood Groups and Biochemical Genetics, 2:113-114.

Normal and variant patterns of red cell acid phosphatase demonstrated in Elephant Seals from Macquarie Island. Plausible that two rare phenotypes observed represent genetic variants.

005 **Anonymous (1894)** Flora of Macquarie Island. Kew Gardens Bulletin of Miscellaneous Information, 95:401.

Report on collection of plants made by A. Hamilton on Macquarie Island in 1894.

006 **Anonymous (1984)** *Macquarie Island Nature Reserve. Tasmanian National Parks and Wildlife Service, Sandy Bay. 13pp. plus appendix and map.*

Brief history of island. Statement of regulations governing collection of specimens in Macquarie Island Nature Reserve. Checklist of birds as at June, 1977. List of mammals. Checklist of flora as at 1975. Rules for preservation of archaeological sites.

007 **Antarctic Division, Department of External Affairs, Australian Government (1965)** *Australian Antarctic activities, 1963-64. Polar Record, 12(80):595-598.*

Historical. Outline of activities on Macquarie Island.

008 **Antarctic Division, Department of External Affairs, Australian Government (1966)** *Australian activities in the Antarctic and sub-antarctic, 1964-65. Polar Record, 13(84):316-318.*

Historical. Outline of activities on Macquarie Island.

009 **Antarctic Division, Australian Government (1967)** *Australian activities in the Antarctic and sub-antarctic, 1965-66. Polar Record, 13(86):614-617.*

Historical. Outline of activities on Macquarie Island.

010 **Antarctic Division, Department of External Affairs, Australian Government (1968)** *Australian activities in the Antarctic and sub-antarctic. Polar Record, 14(89):198-200.*

Historical. Outline of work carried out on Macquarie Island.

011 **Antarctic Division, Australian Government (1969)** *Australian activities in the Antarctic and sub-antarctic, 1967-68. Polar Record, 14(93):820-823.*

Historical. Outline of activities on Macquarie Island.

012 **Armstrong, P. (1982)** *Rabbits (Oryctolagus cuniculus) on islands: a case study of successful colonization. Journal of Biogeography, 9:353-362.*

General discussion of effects of rabbits on island biotas. Brief mention of presence of rabbits on Macquarie Island and attempts to establish fleas as vectors of myxomatosis.

013 **Ashton, D.H. (1965)** *Regeneration pattern of Poa foliosa Hook f. on Macquarie Island. Proceedings of the Royal Society of Victoria, 79:215-233.*

Describes growth pattern of *Poa foliosa* tussocks and stages in cyclical regeneration.

014 Ashton, D.H. and Gill, A.M. (1965) Pattern and process in a Macquarie Island feldmark. *Proceedings of the Royal Society of Victoria*, 79:235-245.

Vegetation patterning in Macquarie Island feldmark partly associated with terrace formation. Study concentrates on windward slopes where terrace formation is slight and discontinuous.

015 Atyeo, W.T. (1963) New species and records of Bdellidae from Macquarie and Auckland Islands (Acarina). *Pacific Insects*, 5:445-450.

Original descriptions of two species of mite from Macquarie Island: *Bdellodes (Hoploscirus) macquariensis* and *Bdellodes (Hoploscirus) watsoni*.

016 Australian National Antarctic Research Expeditions (1985) Recent Australian Antarctic publications. *ANARE News*, September 1985:9-12.

List of publications. Many relevant to Macquarie Island.

017 Baldwin, J., Montague, T., Tomkins, R. and Jardel, J-P. (1983) Biochemical correlates of swimming and diving behaviour of penguins. *ANARE News*, Supplement 1, August 1983:79-80.

Brief description of studies on muscle samples from King, Rockhopper, Royal and Gentoo Penguins.

018 Ball, I.R. and Hay, D.A. (1977) Taxonomy and ecology of a new monacelid flatworm from Macquarie Island. (Platyhelminthes, Turbellaria). *Bijdragen tot de Dierkunde*, 47(2):205-214.

Freshwater planarians appear to be absent from Macquarie Island. The niche is filled by a flatworm which is a member of a predominantly marine group and is widespread on the island in fresh and brackish water. Original description of *Minona amnica*.

019 Banerjee, S.K., Butler, R.F. and Stout, J.H. (1974) Magnetic properties and mineralogy of exposed oceanic crust on Macquarie Island. *Zeitschrift fuer Geophysik*, 40:537-548.

Magnetic properties of pillow lava and dolerite dyke samples from Macquarie Island compared with those of pillow lavas dredged from the ocean floor. Rock-types exposed on Macquarie Island date at ca. 29My and are probably representative of Tertiary oceanic crustal material.

020 Barber, H.N., Dadswell, H.E. and Ingle, H.D. (1959) Transport of driftwood from South America to Tasmania and Macquarie Island. *Nature (London)*, 184(4681):203-204.



Description of driftwood from Macquarie Island. *Nothofagus*, *Picea*, *Pinus* and bamboo identified.

- 021 **Beardsmore, D. (1983)** Atmospheric carbon dioxide monitoring at Antarctic stations. ANARE News, Supplement 1, August 1983:97-98.

Brief description of equipment for monitoring atmospheric carbon dioxide concentration over Macquarie Island as part of worldwide monitoring program.

- 022 **Behn, F., Goodall, J.D., Johnson, A.W. and Philippi B, R.A. (1955)** The geographic distribution of the blue-eyed shags, *Phalacrocorax albiventer* and *Phalacrocorax atriceps*. Auk, 72:6-13.

Shag on Macquarie Island is *Phalacrocorax atriceps traversi*.

- 023 **Benham, W.B. (1922)** The Oligochaeta of Macquarie Island. Australasian Antarctic Expedition 1911-1914, Scientific Reports, Series C, 4(4):4-38.

Lists four species from Macquarie Island. General discussion of problem of dispersal of animals to Macquarie Island.

- 024 **Bennett, I. (1971)** Shores of Macquarie Island. Rigby, Adelaide. 69pp. plus references, index, illustrations.

Well-illustrated account for general reader of visits to Macquarie Island. Brief history of island to 1948. Description of intertidal animals and plants, penguins and seals.

- 025 **Bergstrom, D.M. (1985)** The Holocene vegetation history of Green Gorge, Macquarie Island. M.Sc. thesis, Macquarie University, Sydney. 119pp. plus appendix.

Palaeontological studies interpreted as indicating Green Gorge old ocean embayment, now uplifted. Fossil fur seal and Elephant Seal hair recorded.

- 026 **Bergstrom, D.M. and Selkirk, P.M. (1986)** Reproduction and dispersal of mosses on Macquarie Island. Acta Botanica (in press).

Describes reproductive strategies of several mosses from Macquarie Island and implications for capacity for long-distance dispersal.

- 027 **Berry, R.J. (1978)** Genetic variation in wild house mice: where natural selection and history meet. American Scientist, 66(1):52-60.

Biochemical variation in mouse population on Skokholm Island compared with populations in other areas, including Macquarie and Marion Islands.

On Macquarie and Marion Islands, mice breed throughout the year and there is no question of seasonal selection.

- 028 Berry, R.J. and Jakobson, M.E. (1975) Adaptation and adaptability in wild living house mice *Mus musculus*. *Journal of Zoology (London)*, 176(3):391-402.

Presents data from communities of feral and commensal mice in a range of habitats likely to be stressful: Macquarie Island, Faroes, Shetlands, Orkneys, Skokholm and localities in Britain.

- 029 Berry, R.J. and Peters, J. (1975) Macquarie Island house mice: a genetical isolate on a subantarctic island. *Journal of Zoology (London)*, 176(3):375-389.

Brief history of introduced animals on Macquarie Island. Distribution data and notes on diet of mice. Macquarie Island mice distinctive. Genetic variation within population described.

- 030 Berry, R.J., Peters, J., and Van Aarde, R.J. (1978) Subantarctic house mice: colonization, survival and selection. *Journal of Zoology (London)*, 184(1):127-141.

On Macquarie and Marion Islands there are significant changes in gene frequency between young and old animals from the same population. Indicates natural selection acting in opposite directions at different stages of life cycle. Macquarie and Marion Island populations genetically more distinct from each other than either is from most British samples. Detailed studies of subantarctic mouse populations are likely to reveal much about local adaptation.

- 031 Berry, S.S. (1917) Cephalopoda. Australasian Antarctic Expedition 1911-1914. *Scientific Reports, Series C, Zoology and Botany, Volume IV, Part 2*. 39pp. plus 5 plates.

Lists stations from which cephalopods taken. Mandibles belonging to several genera taken from stomach of Elephant Seal on Macquarie Island; decapod specimens from penguin ejecta.

- 032 Beu, A.G. (1978) The marine fauna of New Zealand. The molluscan genera *Cymatona* and *Fusitriton*. *Gastropoda Family Cymatiidae*. New Zealand Oceanographic Institute Memoirs, 65:1-43 plus index.

Lists *Cymatona kampyla tomlini* and *Fusitriton cancellatus laudandus* from Macquarie Island. Ecology of the genera discussed.

- 033 Bliss, L.C. (1979) Vascular plant vegetation of the Southern Circumpolar Region in relation to antarctic, alpine, and arctic vegetation. *Canadian Journal of Botany*, 57(20):2167-2178.

General description of vegetation of Macquarie Island and other subantarctic islands.

- 034 Block, W. (1984) Terrestrial microbiology, invertebrates and ecosystems. In: Laws, R.M. (ed.) Antarctic Ecology. Volume 1. Academic Press, London: 163-236.

General review of Antarctic and subantarctic. Huge reference list. Work on Macquarie Island referred to and species present listed.

- 035 Bond, F.R. (1960) Motion of the aurora and magnetic bays. Australian Journal of Physics, 13:477-483.

Development of auroral display at Macquarie Island characterised by slow northward drift, east-west longitudinal motion, and an associated positive bay in the horizontal component magnetogram in the evening. This is followed by a sudden change in structure of the aurora and the appearance of a negative bay, which persists for some hours and is accompanied by west-east longitudinal motion and slow southward drift of the aurora.

- 036 Bond, F.R. (1968) Magnetic and auroral conjugacy. Annales de Geophysique, 24:1-7.

Examples of instantaneous conjugacy of auroral forms at Macquarie Island and Kotzebue given and three hypotheses to explain conjugate behaviour put forward.

- 037 Bonner, W.N. (1984) Introduced mammals. In: Laws, R.M. (ed.) Antarctic Ecology. Volume 1. Academic Press, London: 237-278.

General review of introduced mammals on subantarctic islands. Species present on each island tabulated. Extensive treatment of rabbits and mice on Macquarie Island. Extensive reference list.

- 038 Bourne, W.R. (1981) The gadfly petrel skull and diving petrels from Macquarie Island, Australia. Notornis, 28(2):142-143.

Old records (based on skull material) of Mottled Petrels at Macquarie Island should be regarded as records of the Soft-plumaged Petrel. Two species of diving petrel on Macquarie Island.

- 039 Bourne, W.R.P. and Warham, J. (1966) Geographical variation in the giant petrels of the genus *Macronectes*. Ardea, 54:45-67.

Giant petrels of the Southern Ocean have small differences in appearance, proportions and behaviour and breeding seasons 6-8 weeks apart. Two forms breed alongside each other and remain separate on Macquarie Island. Differences in colour and marking of the face and bill

of the two forms are most marked on Macquarie Island and may provide interspecific recognition characters.

- 040 **Brady, G.S. (1918)** Cladocera and Halocypridae. Australasian Antarctic Expedition 1911-1914, Scientific Reports, Series C, Zoology and Botany, Volume V, Part 4. 11pp. plus 2 plates.

Lists species taken on or near Macquarie Island.

- 041 **Brady, G.S. (1918)** Copepoda. Australasian Antarctic Expedition 1911-1914, Scientific Reports, Series C, Zoology and Botany, Volume V, Part 3. 48pp. plus 15 photographs.

Lists species taken from seven stations on or near Macquarie Island.

- 042 **Brodie, J.W. and Dawson, E.W. (1965)** Morphology of North Macquarie Ridge. *Nature (London)*, 207:844-845.

Macquarie Ridge commonly depicted as a substantially continuous feature at least as far north as Macquarie Island, with crest at depths of 1-2 km.

- 043 **Brothers, N., Towney, G., Helleman, P. and Holdsworth, M. (1983)** Macquarie Island wildlife management. *ANARE News*, Supplement 1, August 1983:80.

Reports 90% elimination of rabbits in the northern half of the island. Changes in vegetation, attributed to removal of rabbit grazing, described. Feral cat and Weka populations appear to be declining. Suggests priority be given to control of scattered rabbit populations at southern end of island.

- 044 **Brothers, N.P. (1983)** Rabbit control on Macquarie Island. *Aurora*, 8:6-8.

General discussion of rabbit problem and control methods.

- 045 **Brothers, N.P. (1984)** Breeding, distribution and status of burrow-nesting petrels at Macquarie Island. *Australian Wildlife Research*, 11:113-131.

Breeding on Macquarie Island confirmed for: *Pterodroma lessoni*, *Halobaena caerulea*, *Pachyptila desolata*, *Pachyptila turtur*, *Puffinus griseus* and *Pelecanoides urinatrix*. Further six species recorded. Populations of all burrow-nesting petrels on island have been adversely affected by introduced animals. Populations of two species diminishing. Management may lead to recovery of populations of some species.

046 Brothers, N.P. (1985) Breeding, biology, diet and morphometrics of the King Shag, *Phalacrocorax albiventer purpurascens* at Macquarie Island. Australian Wildlife Research, 12:81-94.

Total population 1975-1979 about 660 breeding pairs. Most eggs laid second half of October. Most chicks hatch by late December and fledge from late January. Most shags do not breed until four or more years old. Faithful breeding pairs more successful. Males have stronger tendency to retain nest-site than females. Breakdown of breeding pairs and annual variation in breeding success probably due to food shortage.

047 Brothers, N.P., Eberhard, I.E., Copson, G.R. and Skira, I.J. (1982) Control of rabbits *Oryctolagus cuniculus* on Macquarie Island Australia by myxomatosis. Australian Wildlife Research, 9(3):477-485.

Myxomatosis introduced into rabbit population in 1978 with rabbit numbers declining in many areas during first year. Successful introduction over whole island not achieved by 1981 because of irregular distribution of rabbit fleas and occurrence of isolated, sedentary rabbit populations.

048 Brothers, N.P. and Skira, I.J. (1984) The weka on Macquarie Island. Notornis, 31:145-154.

History of introduction of Weka. Distribution and numbers on island described. Data on breeding time and success, diet.

049 Brothers, N.P., Skira, I.J. and Copson, G.R. (1985) Biology of the feral cat, *Felis catus* (L.), on Macquarie Island. Australian Wildlife Research, 12:425-436.

Between 1976 and 1981, cats collected on island showed overall sex ratio in favour of males and tabby colour most common. Breeding season October-March. Mean number of embryos 4.7 per female. Evidence of females producing two litters per year. Most cats live in tussock grassland or herbfield. Total population estimated at 169-252 adults. One adult male had home range of 41 ha., not maintained in winter.

050 Brown, M.J., Jenkin, J.F., Brothers, N.P. and Copson, G.R. (1978) *Corybas macranthus* (Hook.f.) Reichb.f. (Orchidaceae), a new record for Macquarie Island. New Zealand Journal of Botany, 16(3):405-407.

First record of an orchid from the subantarctic. Habitat and known distribution described.

051 Brown, R.R., Barcus, J.R. and Parsons, N.R. (1965) Balloon observations of auroral zone X rays in conjugate areas. 2. Microbursts and pulsations. Journal of Geophysical Research, 70(11):2599-2612.

Simultaneous balloon observations of X-ray pulsations in Alaska and at Macquarie Island show no detailed correlation in time or amplitude.

- 052 Brown, R.R., Barcus, J.R. and Parsons, N.R. (1965) Balloon observations of auroral zone X rays in conjugate regions. 1. Slow time variations. *Journal of Geophysical Research*, 70(11):2579-2598.

Conjugate aspects of auroral zone electron precipitation studied using data from simultaneous balloon flights of X-ray detectors in Alaska and Macquarie Island.

- 053 Brown, R.R., Barcus, J.R., Reid, J. and Parsons, N.R. (1965) Observations of long-period pulsations of electron precipitation in conjugate regions of the auroral zones. *Journal of Geophysical Research*, 70(5):1246-1249.

Summarises observations made on Macquarie Island and in Alaska of a long-period pulsation event in ionospheric absorption of cosmic radio noise.

- 054 Brundin, L. (1962) Insects of Macquarie Island: Diptera: Chironomidae. *Pacific Insects*, 4(4):945-954.

Midges. Original description of *Halirythus macquariensis*. Note on occurrence of *Smittia* sp.

- 055 Bryden, M.M. (1964) Insulating capacity of the subcutaneous fat of the southern elephant seal. *Nature (London)*, 203:1299-1300.

Subcutaneous fat constitutes greater part of blubber. Insulating properties important in helping maintain body temperature. Heat conductivity of subcutaneous fat comparable with that of widely used insulators such as asbestos fibre, and lower than that of whale blubber. During diving, subcutaneous fat layer probably acts as a true insulating layer. In a seal at rest in water, insulating effect is probably adequate to prevent any heat loss over temperature gradient of 36 degrees Celsius.

- 056 Bryden, M.M. (1966) Twin foetuses in the southern elephant seal, *Mirounga leonina* (L.). *Papers and Proceedings of the Royal Society of Tasmania*, 100:89-90.

Records presence in utero of twin foetuses in Elephant Seal. Apparent twin pups are rare and birth of such has not been described.

- 057 Bryden, M.M. (1967) Study of the biology of the Southern Elephant Seal, *Mirounga leonina* (Linn.): Development and growth. Ph.D. thesis, University of Sydney. 2 volumes. Volume 1, 157pp.; Volume 2, 95pp. plus appendix of 93pp.

Observations on lactation and suckling. Gross anatomy of mammary gland described. Milk analyses given. Growth rate of pups described. Comparison of general growth of Elephant Seals from Macquarie Island and Falklands. Phasic seasonal pattern of growth demonstrated. Changes in musculature with age described. Blood studies related to ability to stay submerged.

- 058 Bryden, M.M. (1967) Testicular temperature in the southern elephant seal, *Mirounga leonina* (Linn.). *Journal of Reproduction and Fertility*, 13:583-584.

Tabulates rectal, abdominal and testicular temperatures of seals on Macquarie Island.

- 059 Bryden, M.M. (1968) Development and growth of the southern elephant seal (*Mirounga leonina*) (Linn.). *Papers and Proceedings of the Royal Society of Tasmania*, 102:25-30. 3 plates.

Results of dissection of ninety six seals of both sexes and various ages into skin, fat, connective tissue, individual bones, muscles and organs.

- 060 Bryden, M.M. (1968) Growth and function of the subcutaneous fat of the elephant seal. *Nature (London)*, 220:597-599.

Fat deposition in Southern Elephant Seal more closely related to growth of fat-free body mass than in terrestrial mammals and sex differences in fat content of carcass do not occur. Body fat content greater during winter, with wide individual variation.

- 061 Bryden, M.M. (1968) Lactation and suckling in relation to early growth of the southern elephant seal, *Mirounga leonina* (L.). *Australian Journal of Zoology*, 16:739-747.

Growth rate of Elephant Seal pups during suckling period lower on Macquarie Island than in Falkland Island Dependencies. Analyses of milk samples at different stages of lactation given. Principal cause of depressed growth rate of pups on Macquarie Island is disturbance within harems.

- 062 Bryden, M.M. (1968) Control of growth in two populations of elephant seals. *Nature (London)*, 217:1106-1108.

Growth models explain differences in growth patterns and time of onset of puberty in Elephant Seal populations at Macquarie Island and Falkland Islands. Elephant Seals at Macquarie Island permanently stunted, possibly because of retarded growth during suckling period.

- 063 Bryden, M.M. (1969) Regulation of relative growth by functional demand: its importance in animal production. *Growth*, 33:143-156.



Relative growth of Elephant Seal studied by dissecting seals of different ages. Allometric relationships of blood, musculature and skeletal system alter dramatically as seal changes from terrestrial to aquatic mammal.

- 064 Bryden, M.M. (1969) Relative growth of the major body components of the southern elephant seal, *Mirounga leonina* (L.). *Australian Journal of Zoology*, 17:153-177.

Study of relative growth of fat, muscle, bone, viscera and skin in Elephant Seals, based mainly on pups. Developmental changes in skeleton and musculature occur in response to functional demands.

- 065 Bryden, M.M. (1969) Growth of the southern elephant seal, *Mirounga leonina* (Linn.). *Growth*, 33:69-82.

Observations on growth in length and weight of foetal and postnatal Elephant Seals. Growth curves for males and females differ after puberty. Seasonal changes in condition of adult female described.

- 066 Bryden, M.M. (1971) Myology of the Southern elephant seal *Mirounga leonina* (L.) In: Burt, W.H. (ed.) *Antarctic Pinnipedia*. American Geophysical Union, Antarctic Research Series, 10:109-140.

Myology of Southern Elephant Seal described in detail and individual variations noted. Comparison with myology of other seals. Differences in musculature which are peculiar to *Mirounga leonina* discussed in relation to probable functional importance.

- 067 Bryden, M.M. (1971) Size and growth of viscera in the southern elephant seal, *Mirounga leonina* (L.). *Australian Journal of Zoology*, 19:103-119.

Study of relative size and relative growth of viscera from birth to age 16 years, based on measurements of individual organs. Many references.

- 068 Bryden, M.M. (1972) Body size and composition of elephant seals (*Mirounga leonina*): absolute measurements and estimates from bone dimensions. *Journal of Zoology (London)*, 167:265-276.

Southern Elephant Seals more than 10 weeks old have significantly more muscle and viscera and less blubber than seals of similar body weight less than 10 weeks old. Sexually mature males have relatively more muscle and less bone and viscera than females. Bone measurements can be used to estimate body size and occasionally sex.

- 069 Bryden, M.M. (1973) Growth patterns of individual muscles of the elephant seal, *Mirounga leonina* (L.). *Journal of Anatomy*, 116(1):121-133.



No differences in relative growth rate between growth phases demonstrated for forty one muscles. Twenty four muscles have increased growth rate during aquatic phase. Growth rates of eight muscles decrease during aquatic phase. Sexual differences in growth pattern of muscles demonstrated for only three muscles.

- 070 Bryden, M.M. and Felts, W.J.L. (1974) Quantitative anatomical observations on the skeletal and muscular systems of four species of Antarctic seals. *Journal of Anatomy*, 118(3):589-600.

Compares size of bone and muscle groups and individual bones and muscles in Ross Seal, Leopard Seal, Crabeater Seal and Elephant Seal. Musculoskeletal system of caudal lumbar region and pelvic limb relatively poorly developed in Elephant Seal. Bones and muscles of thorax particularly large in Elephant Seal.

- 071 Bryden, M.M. and Lim, G.H.K. (1969) Blood parameters of the southern elephant seal (*Mirounga leonina*, Linn.) in relation to diving. *Comparative Biochemistry and Physiology*, 28:139-148.

Blood volume increases from 11% of body weight in new-born pups to 16% in adults. Haemoglobin concentration same as that in man. Changes occur in blood volume, red cell count and haematocrit as young mature and go to sea.

- 072 Bryden, M.M. and Stokes, G.B. (1969) Metabolism of fatty acids in the southern elephant seal *Mirounga leonina* (L.). *Canadian Journal of Biochemistry*, 47(8):757-760.

Composition of blubber of Southern Elephant Seal similar to that of other marine mammals. Disappearance of long-chain polyunsaturated acids in both nursing cows and fasting pups suggests catabolism of these acids during non-feeding periods. Some fatty acids transferred intact from depot fat of seal cow to pup via milk.

- 073 Buckney, R.T. and Tyler, P.A. (1974) Reconnaissance limnology of sub-antarctic islands. II. Additional features of the chemistry of Macquarie Island lakes and tarns. *Australian Journal of Marine and Freshwater Research*, 25(1):89-95.

Oceanic spray a principal source of ions in water of lakes and tarns on Macquarie Island. Chemical analyses of nineteen lakes and tarns presented and compared with analyses of rain.

- 074 Budd, G.M., Hicks, K.E., Lugg, D.J., Murray, L.G. and Wigg, D.R. (1969) Thermal discomfort in the Antarctic and subantarctic. *The Medical Journal of Australia*, 2:1285-1288.

Thermal comfort, clothing, activity and environmental conditions noted by people working outdoors in Antarctica and on Macquarie Island.

Results very similar in dry-cold Antarctica and wet-cold Macquarie Island.

- 075 Bull, P.C. (1960) Parasites of the European rabbit, *Oryctolagus cuniculus* (L.) on some subantarctic islands. *New Zealand Journal of Science*, 3:258-273.

*Eimeria stiedae* oocysts occur in gall bladders of Macquarie Island rabbits. Study of rectal faeces indicates the presence of at least four other *Eimeria* spp. Nematode, *Trichostrongylus retortaeformis*, also occurs. Parasitic mites on island rabbits include *Listrophorus gibbus*, *Cheletiella parasitivorax*, *Entrombicula hirsti* and *Haemodipsus ventricosus*. Parasite fauna of rabbits on subantarctic islands similar to that in Australia and New Zealand.

- 076 Bunt, J. (1956) Living and fossil pollen from Macquarie Island. *Nature* (London), 177:339.

Recognises flora pre-dating last glacial maximum different from present flora. Deposits studied not dated. Evidence for conclusions unclear.

- 077 Bunt, J.S. (1954) The effect of freezing and thawing on the surface structure of certain soils at Macquarie Island. *Australian Journal of Science*, 17(1):36.

Describes corrugated nature of certain areas of plateau surface as caused by freezing and thawing of soil.

- 078 Bunt, J.S. (1954) The soil-inhabiting nematodes of Macquarie Island. *Australian Journal of Zoology*, 2:264-274.

Conditions affecting nematode populations discussed. Bacteria and algae in soil of major importance in determining nematode numbers. Attempt made to assess importance of nematodes in process of decomposition in Macquarie Island soils.

- 079 Bunt, J.S. (1954) A comparative account of the terrestrial diatoms of Macquarie Island. *Proceedings of the Linnean Society of New South Wales*, 79(1-2):34-57.

Systematic account of diatoms in soil, water and sediment samples.

- 080 Bunt, J.S. (1954) Notes on the bacteria belonging to the Rhodobacteriineae Breed, Murray and Hitchens, and the Chlamydobacteriales Buchanan occurring at Macquarie Island. *Proceedings of the Linnean Society of New South Wales*, 79(3-4):63-64.

Notes presence on Macquarie Island of purple photosynthetic bacteria, filamentous sulphur bacteria and "iron" bacteria.

081 Bunt, J.S. (1955) Microscopic and submacroscopic organisms in the soils of the Macquarie Island ecosystem. Ph.D. thesis, University of Sydney, Sydney. 225pp.

Attempt made to list genera and species of submacroscopic and microscopic organisms living in soils on Macquarie Island and acting as parasites and saprophytes on vascular flora. Diatoms and fungi studied in detail.

082 Bunt, J.S. (1955) The importance of bacteria and other micro-organisms in the sea-water at Macquarie Island. *Australian Journal of Marine and Freshwater Research*, 6(1):60-65.

Lists seven genera of bacteria obtained in plankton hauls. Discusses role of microorganisms and kelp flies in kelp decomposition.

083 Bunt, J.S. (1955) A note on the faecal flora of some Antarctic birds and mammals at Macquarie Island. *Proceedings of the Linnean Society of New South Wales*, 80(1):44-46.

Brief account of aerobic bacteria isolated from faeces of Elephant Seals and thirteen species of bird from Macquarie Island.

084 Bunt, J.S. (1965) Observations on the fungi of Macquarie Island. ANARE Scientific Reports, Series B (II) Botany. ANARE Publication No. 78. 22pp.

List of fungi collected from Macquarie Island (1951-1954). Data on numbers of fungi in soil samples and species occurring in samples. Soil temperature measurements given.

085 Bunt J.S. and Rovira, A.D. (1955) Microbiological studies of some subantarctic soils. *Journal of Soil Science*, 6(1):119-128.

Study of rhizosphere effect of four plant associations on Macquarie Island. Stimulation occurs in each case, even in *Azorella selago* and *Dicranowiesia antarctica* associations. No qualitative differences between rhizosphere and non-rhizosphere isolates.

086 Bunt, J.S. and Rovira, A.D. (1955) The effect of temperature and heat treatment on soil metabolism. *Journal of Soil Science*, 6(1):129-136.

Effects of temperature and heat treatment on oxygen uptake and carbon dioxide evolution of five soil samples from Macquarie Island compared with those in a subtropical soil.

087 Bureau of Meteorology, Melbourne. [Central Office, Meteorological Branch, Melbourne.] (1953) Meteorology: Heard and Macquarie Islands, 1949. ANARE Reports, Series D, Meteorology, Volume II. ANARE Publication No. 13. 135pp.

Results of observations.

088 Bureau of Meteorology, Melbourne. [Central Office, Meteorological Branch, Melbourne] (1953) Meteorology: Heard and Macquarie Islands, 1950. ANARE Reports, Series D, Meteorology, Volume III. ANARE Publication No. 14. 142pp.

Tabulation of data.

089 Bureau of Meteorology, Melbourne. [Central Office, Meteorological Branch, Melbourne] (1953) Meteorology: Heard and Macquarie Islands, 1951. ANARE Reports, Series D, Meteorology, Volume IV. ANARE Publication No. 15. 145pp.

Tabulation of data.

090 Bureau of Meteorology, Melbourne. (1955) Meteorology: Heard and Macquarie Islands, 1952. ANARE Reports, Series D, Meteorology, Volume V. ANARE Publication No. 20. 172pp.

Tabulation of data.

091 Bureau of Meteorology, Melbourne. (1955) Meteorology: Heard and Macquarie Islands, 1953. ANARE Reports, Series D, Meteorology, Volume VI. ANARE Publication No. 21. 169pp.

Climatological summary. Barometric pressure, temperature, wind, precipitation, sunshine.

092 Bureau of Meteorology, Melbourne. (1957) Meteorology: Mawson, Heard and Macquarie Island, 1954. ANARE Reports, Series D, Meteorology, Volume VII. ANARE Publication No. 38. 220pp.

Tabulation of data.

093 Bureau of Meteorology, Melbourne. (1958) Meteorology: Mawson and Macquarie Island, 1955. ANARE Reports, Series D, Meteorology, Volume VIII. ANARE Publication No. 44. 187pp.

Tabulation of data.

094 Bureau of Meteorology, Melbourne. (1959) Meteorology: Mawson and Macquarie Island, 1956. ANARE Reports, Series D, Meteorology, Volume IX. ANARE Publication No. 50. 203pp.

Tabulation of data.

095 Bureau of Meteorology, Melbourne. (1960) Meteorology: Mawson, Davis, Taylor and Macquarie Island, 1957. ANARE Reports, Series D, Meteorology, Volume X. ANARE Publication No. 54. 277pp.

Tabulation of data.

096 Bureau of Meteorology, Melbourne. (1961) Meteorology: Mawson, Davis, Taylor and Macquarie Island, 1958. ANARE Reports, Series D, Meteorology, Volume XI. ANARE Publication No. 60. 323pp.

Tabulation of data.

097 Bureau of Meteorology, Melbourne. (1963) Meteorology: Davis, Macquarie Island, Mawson and Wilkes, 1959. ANARE Reports, Series D, Volume XII. ANARE Publication No. 66. 409pp.

Climatological summary. Barometric pressure, temperature, wind, sunshine, precipitation.

098 Bureau of Meteorology, Melbourne. (1963) Meteorology: Davis, Macquarie Island, Mawson and Wilkes, 1960. ANARE Reports, Series D, Meteorology, Volume XIII. ANARE Publication No. 67. 434pp.

Tabulation of data.

099 Bureau of Meteorology, Melbourne. (1964) Meteorology: Davis, Macquarie Island, Mawson and Wilkes, 1961. ANARE Reports, Series D, Meteorology, Volume XIV. ANARE Publication No. 68. 440pp.

Tabulation of data.

100 Bureau of Meteorology, Melbourne. (1965) Meteorology: Davis, Macquarie Island, Mawson and Wilkes, 1962. ANARE Data Reports, Series D (XV) Meteorology. ANARE Publication No. 81. 456pp.

Tabulates observations on temperature, wind, sunshine, precipitation.

101 Bureau of Meteorology, Melbourne. (1966) Meteorology: Davis, Macquarie Island, Mawson and Wilkes, 1963. ANARE Data Reports, Series D (XVI) Meteorology. ANARE Publication No. 87. 420pp.

Tabulates observations on temperature, wind, sunshine, precipitation.

102 Bureau of Meteorology, Melbourne. (1967) Meteorology: Davis, Macquarie Island, Mawson and Wilkes, 1964. ANARE Data Reports, Series D (XVII) Meteorology. ANARE Publication No. 92. 424pp.

Tabulates observations on temperature, wind, sunshine, precipitation.

103 Bureau of Meteorology, Melbourne. (1968) Meteorology: Macquarie Island, Mawson and Wilkes, 1965. ANARE Data Reports, Series D (XVIII) Meteorology. ANARE Publication No. 98. 332pp.

Tabulates observations on temperature, wind, sunshine, precipitation.

104 Bureau of Meteorology, Melbourne. (1969) Meteorology: Macquarie Island, Mawson and Wilkes, 1966. ANARE Data Reports, Series D (XIX) Meteorology. ANARE Publication No. 109. 375pp.

Tabulates observations on temperature, wind, sunshine, precipitation.

105 Bureau of Meteorology, Melbourne. (1970) Meteorology: Macquarie Island, Mawson and Wilkes, 1967. ANARE Data Reports, Series D (XX) Meteorology. ANARE Publication No. 113. 435pp.

Tabulates observations on temperature, wind, sunshine, precipitation.

106 Bureau of Meteorology, Melbourne. (1972) Meteorology: Macquarie Island, Mawson and Wilkes, 1968. ANARE Data Reports, Series D (XXI) Meteorology. ANARE Publication No. 118. 377pp.

Tabulation of surface, radiosonde and upper wind observations. Details presented as listings, monthly summaries and "cumulative" frequency analyses.

107 Burling, R.W. (1960) Currents in the Southern New Zealand region. 1:3 394 000. New Zealand Oceanographic Institute Chart, Miscellaneous Series 1. (to accompany New Zealand Oceanographic Institute Memoir 10. Chart 1).

Chart. Shows Antarctic Convergence south of Macquarie Island.

108 Burn, R. (1973) Opisthobranch molluscs from the Australian sub-antarctic territories of Macquarie and Heard Islands. Proceedings of the Royal Society of Victoria, 86(1):39-46.

Two species of opisthobranch molluscs occur at Macquarie Island. Original description of *Trinchesia macquariensis*.

109 Burns, G. (1983) All sky auroral photography. ANARE News, Supplement 1, August 1983:100.

All-sky auroral camera operates at Macquarie Island.

110 Burns, G.B. (1978) An investigation of the relationship between the interplanetary magnetic field and atmospheric vorticity in the Southern Hemisphere. M.Sc. thesis, La Trobe University, Melbourne. 78pp.

Investigation of relationship between solar variations and weather. Northern hemisphere data show winter relationship between atmospheric vorticity and sector boundary crossings of the interplanetary magnetic field. Analysis on southern hemisphere data, much of which collected on Macquarie Island, shows any southern hemisphere winter effect is within noise level of data.

- 111 Burns, G.B. (1983) Pulsating aurora: photometer, riometer and micropulsation coil observations. Ph.D. thesis, La Trobe University, Melbourne. 381pp. plus 3 appendices.

Reports observations on pulsating auroras at Macquarie Island using photometer, micropulsation coil system and fast-response riometer.

- 112 Butler, R.F. and Banerjee, S.K. (1973) Magnetic properties of exposed oceanic crust on Macquarie Island. *Nature Physical Science*, 244:115-118.

Ability to produce marine magnetic anomalies not limited to pillow lava layer. Pillow lava contribution to observed anomalies would decrease with age. On magnetic evidence, rocks of Macquarie Island late Tertiary. Island belongs to Indian plate and its uplift is due to interaction of Indian and Pacific plates along the Macquarie Ridge complex.

- 113 Butler, R.F., Banerjee, S.K. and Stout, J.H. (1975) Magnetic properties of oceanic pillow basalts from Macquarie Island. *Nature (London)*, 257:302-303.

Palaeomagnetic, hysteresis, thermomagnetic and electron microprobe analyses of pillow basalts from Macquarie Island summarised. Difference in magnetic mineralogy between metamorphosed pillow basalts from Langdon Point and unmetamorphosed pillows from North Head.

- 114 Butler, R.F., Banerjee, S.K. and Stout, J.H. (1976) Magnetic properties of oceanic pillow basalts: evidence from Macquarie Island. *The Geophysical Journal of the Royal Astronomical Society*, 47:179-196.

Palaeomagnetic, hysteresis, thermomagnetic and electron microprobe study of pillow basalts from Macquarie Island. North Head samples representative of weathered zone of Late Tertiary oceanic crust. Langdon Point specimens representative of pillow basalts from more than 500 m into oceanic lithosphere. North Head samples have suffered high degree of low temperature oxidation. Langdon Point samples metamorphosed.

- 115 Calder, D.M. (1973) The effect of temperature on growth and dry weight distribution of populations of *Poa annua* L. UNESCO. Plant response to climatic factors. *Proceedings, Uppsala Symposium, 1970. (Ecology and Conservation, 5):145-152.*



Details experiments on *Poa annua* to determine relative growth rate, net assimilation rate, leaf weight ratio, distribution indices and growth indices. Seed from number of sources, including Macquarie Island, used.

- 116 Callow, D.R.L. (1956) Hourly measurements of ionospheric characteristics. Macquarie Island, 1955. ANARE Interim Reports, 13. ANARE Publication No. 13. 55 tables.

Tabulation of results.

- 117 Campbell, S. (1949) Australian aims in the Antarctic. *Polar Record*, 5:317-323.

Historical. Brief description of research program on Macquarie Island.

- 118 Campbell, S.A.C., Moyes, M.H., Oom, K.E. and the Ship's Officers (1939) Soundings. British, Australian and New Zealand Antarctic Research Expedition 1929-1931, Reports, Series A, Volume 3 (Oceanography), Part 1. 21pp.

Plot of soundings on the Hjort Rise to south of Macquarie Island (p.7), soundings tabulated (p.16).

- 119 Carrick, R. (1956) The Australian Bird-banding Scheme. *CSIRO Wildlife Research*, 1:26-30.

Macquarie Island bird-banding mentioned.

- 120 Carrick, R. (1957) The wildlife of Macquarie Island. *Australian Museum Magazine*, 12:255-260.

Brief description of early exploitation of seals and penguins. General description of birds and mammals and effect of man and introduced animals.

- 121 Carrick, R. (1959) The contribution of banding to Australian bird ecology. In: Keast, A., Crocker, R.L. and Christian, C.S. (eds.) *Biogeography and ecology in Australia*. Junk, The Hague: 369-382.

Mention of beginning of banding of sea birds at Macquarie Island in 1949. Mention of trials of aluminium flipper bands on Royal Penguins at Macquarie Island.

- 122 Carrick, R. (1964) Southern seals as subjects for ecological research. In: Carrick, R., Holdgate, M.W. and Prévost, J. (eds.) *Biologie Antarctique. Premier Symposium organisé par le S.C.A.R. Paris 2-8 Septembre 1962*. Hermann, Paris: 421-432.



Elephant Seal populations on Heard and Macquarie Islands stable. Long-term study underway on Macquarie Island. Survival rates of marked seals given. Outline of suggested research programs. Many references.

- 123 Carrick, R. (1964) Problems of conservation in and around the Southern Ocean. In: Carrick, R., Holdgate, M.W. and Prévost, J. (eds.) *Biologie Antarctique. Premier Symposium organisé par le S.C.A.R. Paris 2-8 Septembre 1962.* Hermann, Paris: 589-598.

General discussion. Deals briefly with background to conservation of Antarctic and subantarctic flora and fauna, current and future possible impairment of those resources, research essential as basis for legislative action, progress and action needed. Macquarie Island mentioned here and there.

- 124 Carrick, R. (1972) Population ecology of the Australian black-backed magpie, royal penguin and silver gull. In: *Population ecology of migratory birds: a symposium.* U.S. Department of the Interior. Wildlife Research Report 2:41-99.

Breeding and other population data on a seasonal basis for Royal Penguins. Breeding success in relation to age discussed. Detailed study of individuals in a colony at Bauer Bay.

- 125 Carrick, R., Csordas, S.E., and Ingham, S.E. (1962) Studies on the southern elephant seal, *Mirounga leonina* (L.), IV. Breeding and development. *CSIRO Wildlife Research*, 7:161-197.

Breeding process in Elephant Seals at Macquarie and Heard Islands described. Population compared with exploited population on South Georgia. On Macquarie Island, largest harems contain more than 1000 cows and are shared by strongest bulls. Activities of each male age class described, also establishment of harem by cows, parturition and pup growth. Male maturity occurs later on Macquarie Island than on South Georgia. Females become pregnant at earlier age on South Georgia. Suggested that pressures within population on Macquarie Island, at its natural limit, retard development and breeding.

- 126 Carrick, R., Csordas, S.E., Ingham, S.E. and Keith, K. (1962) Studies on the southern elephant seal, *Mirounga leonina* (L.). III. The annual cycle in relation to age and sex. *CSIRO Wildlife Research*, 7:119-160.

Annual cycle of Elephant Seals on Macquarie and Heard Islands described from records of branded animals up to nine years old. Each age and sex has regular sequence of seasonal activities. Moulting described and significance of autumn-winter haul-out discussed. Pupping period constant and well-synchronised annually and regionally. Environmental timer of implantation postulated as means of ensuring seasonal constancy of breeding. Food not limiting at any season and population movements confined to partial dispersal of immatures. Ten individuals known to

have moved from one island to the other and two from Heard to Antarctic continent. Seasonal cycle compared with that in other seals.

- 127 Carrick, R. and Ingham, S.E. (1960) Ecological studies of the southern elephant seal, *Mirounga leonina* (L.) at Macquarie Island and Heard Island. *Mammalia*, 24(3):325-342.

Results obtained since 1958 on Heard and Macquarie Islands as a result of studies on branded pups. Seasonal cycle, growth, maturity, dispersal and migration, survival rates described.

- 128 Carrick R. and Ingham, S.E. (1962) Studies on the Southern Elephant Seal, *Mirounga leonina* (L.). I. Introduction to the series. *CSIRO Wildlife Research*, 7:89-101.

Historical and geographical status of Elephant Seals discussed and effects of commercial sealing described. Outline of field techniques and ecological and related studies on Heard and Macquarie Islands, based on branding of pups during 1949-1961.

- 129 Carrick, R. and Ingham, S.E. (1962) Studies on the Southern Elephant Seal, *Mirounga leonina* (L.). II. Canine tooth structure in relation to function and age determination. *CSIRO Wildlife Research*, 7:102-118.

Gross structure of canine teeth discussed in relation to function as weapons of aggression. Staining of tooth sections of known age in each sex reveals bands of dentine deposited during pregnancy, foetal life, lactation, and autumn and winter periods ashore, as well as during moult and gonad activity. Wide range of endocrine stimuli involved. Winter haul-out is adaptation to form hard dentine during early years of immaturity.

- 130 Carrick, R. and Ingham, S.E. (1962) Studies on the Southern Elephant Seal, *Mirounga leonina* (L.). V. Population dynamics and utilization. *CSIRO Wildlife Research*, 7:198-206.

Breeding population at Macquarie Island stable at about 36 000 cows and 3500-4000 bulls. Annual maximum population of order of 110 000. Survival of branded weaned pups to fourth year of life is higher than 40% in both sexes. 20% of females survive to eight years. Few live more than twelve. 15% of males survive to eight. Small population of breeding males may contain individuals twenty years old.

- 131 Carrick, R. and Ingham, S.E. (1967) Antarctic sea-birds as subjects for ecological research. *JARE Scientific Reports, Special Issue Number 1. Proceedings of Symposium on Pacific-Antarctic Sciences, Tokyo: 151-184.*

Environment of Antarctic and subantarctic briefly described as it affects breeding of sea birds. Species breeding mainly in this region listed and feeding and nesting requirements discussed. Breeding

distribution and annual cycles analysed in relation to factors listed. Population studies on Wandering Albatross and Royal Penguin on Macquarie Island summarised.

- 132 Carrick, R. and Ingham, S.E. (1970) Ecology and population dynamics of Antarctic sea birds. In: Holdgate, M.W. (ed.) *Antarctic Ecology*. Academic Press, London: 505-525.

Taxonomic problems in diving petrels discussed. Systematics and ecology of giant petrels. Results of population study of Royal Penguins at Bauer Bay. Results of study of Wandering Albatross population. Table of birds breeding on subantarctic islands.

- 133 Carrick, R., Keith, K. and Gwynn, A.M. (1960) Fact and fiction on the breeding of the Wandering Albatross. *Nature* (London), 188:112-114.

History of ideas on parental feeding of chicks. Starvation hypothesis held that chick was not fed during winter. This theory untenable. On Macquarie Island, chicks show weight increase during winter and must be fed during this period. Wandering Albatross parents feed only own young. Successful pairs breed in alternate years and early nest failures enable further attempt at breeding the following summer.

- 134 Carrick, R. and Turnbull, N. (1956) First annual report of the Australian Bird-banding Scheme, October 1953 to June 1955. *CSIRO Wildlife Research*, 1:31-39.

Recovery data on birds banded on Macquarie Island included.

- 135 Chamberlain, N.G. (1952) Observations of terrestrial magnetism at Heard, Kerguelen and Macquarie Islands 1947-1948. (Carried out in co-operation with the Australian National Antarctic Research Expedition, 1947-1948). Bureau of Mineral Resources, Geology and Geophysics, Report, 5. 10pp. plus 5 plates.

Tabulations of results.

- 136 Cheeseman, T.F. (1919) The vascular flora of Macquarie Island. *Australasian Antarctic Expedition 1911-1914, Scientific Reports, Series C, Zoology and Botany, Volume VII Part 3*. 63pp.

List of island vascular flora as known at that time with descriptions of plants.

- 137 Chipman, E. (1978) *Australians in the Frozen South. Living and Working in Antarctica*. Thomas Nelson Australia Pty. Ltd., Melbourne. 90pp.

Contains brief description of island and its history. Chapter on flora and fauna of Antarctica and Macquarie Island.

138 Chree, C. (1925) Terrestrial magnetism. Part II Analysis and discussion of magnetograph curves. Australasian Antarctic Expedition 1911-1914, Scientific Reports, Series B, Volume I Terrestrial magnetism: 199-285.

Discussion of data.

139 Christodoulou, C. (1983) Macquarie Island: oceanic crust and upper mantle. ANARE News, Supplement 1:85.

Faulting common on Macquarie Island and accounts for disposition of different lithologic blocks in present positions. Short description of mineralogy of some rocks.

140 Christodoulou, C., Griffin, B.J. and Foden, J. (1984) The geology of Macquarie Island. ANARE Research Notes, 21:1-15.

Lithologies on Macquarie Island described in detail along with mode of occurrence and field relations. Four dominant rock types are pillow basalts, dolerite dykes, troctolites and gabbros and ultramafics (mainly harzburgite). Sequence represents section through oceanic crust. Dominant structural feature is faulting on all scales. Faulting also controls evolution of Macquarie Ridge complex. Rocks of Macquarie Island generated at Australian-Antarctic spreading ridge.

141 Clark, W.C. (1977) The genus *Tanystylum* Miers, 1879 (Pycnogonida) in the Southern Ocean. *Journal of the Royal Society of New Zealand*, 7(3):313-338.

*Tanystylum oedinotum* reported from Macquarie Island for the first time. *Tanystylum neorhetum* and *T. stylicerum* recorded for Macquarie Island.

142 Cleary, J.R. (1958) Geophysical work at Macquarie Island. December 1956 - December 1957. Bureau of Mineral Resources, Geology and Geophysics, Records, 1958/66. Canberra: Department of National Development.

Describes operation of observatory. Some results given.

143 Clifford, H.T. (1953) The mosses of Macquarie Island and Heard Island. ANARE Reports, Series B, II, Botany. ANARE Publication No. 11. 14pp.

List of mosses known to 1953 for both Macquarie and Heard Islands.

144 Cocker, J.D., Griffin, B.J. and Muehlenbachs, K. (1982) Oxygen and carbon isotope evidence for seawater-hydrothermal alteration of the Macquarie Island ophiolite. *Earth and Planetary Science Letters*, 61:112-122.

Rocks of Macquarie Island ophiolite have oxygen and carbon isotope compositions similar to those of seafloor rocks. Gabbros have exchanged

oxygen with a hydrothermal fluid to depth of 4.5 km. Evidence of two hydrothermal circulation regimes, one at low temperature the other at high.

145 Cohen, D.S. (1952) Hourly measurements of ionospheric characteristics, Macquarie Island, 1950. ANARE Interim Reports, 2. ANARE Publication No. 4. NOT SEEN.

146 Cole, K.D. (1960) A dynamo theory of the aurora and magnetic disturbance. *Australian Journal of Physics*, 13:484-497.

Theoretical discussion of auroral phenomena. At Macquarie Island when the magnetic K-index is 6 there is a magnetic disturbance of order 500 gamma and auroras typically fill the whole sky. Orientation of auroras at Macquarie Island generally east-west.

147 Cole, K.D. (1962) Magnetic bays at Macquarie Island. *Australian Journal of Physics*, 15:277-281.

Discusses positive and negative bays recorded during 1954. Likely existence of disturbance electric currents flowing along the geomagnetic field in the polar ionosphere presents difficulties to interpretation of bays in terms of horizontal current.

148 Colhoun, E.A. (1985) Radiocarbon dates for Tasmania, 1956-1984. *Papers and Proceedings of the Royal Society of Tasmania*, 119:39-54.

Lists forty radiocarbon dates of various materials from Macquarie Island.

149 Colhoun, E.A. and Goede, A. (1973) Fossil penguin bones, <sup>14</sup>C dates and the raised marine terrace of Macquarie Island: some comments. *Search*, 4(11-12):499-501.

Suggest that raised marine terrace of Macquarie Island is mid-to-late Holocene, elevated by tectonic movements with average uplift rate of 1.5-4.5 m/1000 years.

150 Colhoun, E.A. and Goede, A. (1974) A reconnaissance survey of the glaciation of Macquarie Island. *Papers and Proceedings of the Royal Society of Tasmania*, 108:1-19.

Field evidence suggests that Macquarie Island not overridden by ice sheet. Local plateau, valley and cirque glaciers accumulated on plateau and occupied ca. 40% of island at their maximum extent. Glaciation probably due to migration of Antarctic Convergence to position north of island. Majority of present biota survived in non-glaciated areas on island.

151 Colless, D.H. (1962) Insects of Macquarie Island. Diptera: Sciaridae. Pacific Insects, 4(4):955-957.

Original description of *Bradysia watsoni*. May be an immigrant.

152 Common, I.F.B. (1962) Insects of Macquarie Island. Lepidoptera: Pyralidae: Scopariinae. Pacific Insects, 4(4):975-978.

Description of *Eudoria mawsoni* (Womersley and Tindale). Only moth known to breed on island and appears to be endemic.

153 Condy, P.R. (1980) Postnatal development and growth in southern elephant seals (*Mirounga leonina*) at Marion Island. South African Journal of Wildlife Research, 10(3/4):118-122.

Comparison of development and growth of Elephant Seal pups on Marion, Signy, Macquarie and Kerguelen Islands shows that on colder, more southerly, islands, birth mass is greater, growth in mass faster and moulting delayed although age at weaning unchanged.

154 Connelly, J.B. (1971) Macquarie Island Geophysical Observatory, Annual Report, 1968. Bureau of Mineral Resources, Geology and Geophysics, Record 1971/87. Canberra: Department of National Development.

Describes instrumentation.

155 Conroy, J.W.H. (1975) Recent increases in penguin populations in Antarctica and the Subantarctic. In: Stonehouse, B. (ed.) The Biology of Penguins. Macmillan, London: 321-326.

Chinstrap Penguins have been recorded on Macquarie Island. Gentoos on Macquarie Island mentioned.

156 Cook, B.G. (1957) Geophysical work at Macquarie Island, December, 1955 - December, 1956. Bureau of Mineral Resources, Geology and Geophysics, Records, 1957/105. Canberra: Department of National Development.

Results of orientation tests.

157 Cooke, R.J.S. (1963) Macquarie Island Geophysical Observatory work, 1962. Bureau of Mineral Resources, Geology and Geophysics, Record, 1963/126. Canberra: Department of National Development.

Report on operation of observatory.

158 Cooke, R.J.S. (1966) Some seismological features of the North Macquarie Ridge. Nature (London), 211:953-954.



Ridge connection between Macquarie Island and New Zealand. Seismicity definitely associated with ridge structure.

- 159 Cooke, R.J.S. (1967) Observations of the seismic T phase at Macquarie Island. *New Zealand Journal of Geology and Geophysics*, 10(5):1212-1225.

T phases originating in a number of regions, in particular from near the island itself, are recorded at Macquarie Island. Map of epicentres near Macquarie Island 1961-1962.

- 160 Copson, G.R. (1984) An annotated atlas of the vascular flora of Macquarie Island. *ANARE Research Notes*, 18:1-70.

Maps show known distribution and abundance of vascular species on Macquarie Island prior to start of rabbit control measures in 1978. Provide baseline against which changes in vegetation can be monitored. Effects of introduced vertebrates on vegetation discussed. Additional data given on habitat, gregarious performance and phenology of some species. Useful historical introduction to present knowledge of vascular flora. Brief geographical description with climatological section. Notes on recent vegetation changes.

- 161 Copson, G.R., Brothers, N.P. and Skira, I.J. (1981) Distribution and abundance of the rabbit, *Oryctolagus cuniculus* (L.), at subantarctic Macquarie Island. *Australian Wildlife Research*, 8:597-611.

Rabbits common on 50% of Macquarie Island and live mainly in herbfield. Descended from domestic stock, retain basic behaviour patterns of European rabbits and have a tendency towards diurnal grazing activity. In five years before December 1978 numbers peaked in 1977-1978 summer. Mortality of kittens was high in each year due to predation by cats, skuas and Wekas and flooding of burrows. Predators probably take similar numbers each year. Recruitment of young into population is mainly controlled by effect of wet burrows. After age one year, survival is high and longevity may be three or more years.

- 162 Copson, G.R. and Leaman, E.G. (1981) *Rumex crispus* L. (Polygonaceae) - a new record for Macquarie Island. *New Zealand Journal of Botany*, 19:401-404.

*Rumex crispus* reported on Macquarie Island. Habitat and known distribution described. Possible means by which species has extended its range to Macquarie Island discussed.

- 163 Costin, A.B. (1965) Long-distance dispersal to Macquarie Island. *Nature (London)*, 206(4981):317.

Notes discovery on shoreline of a seed of nickernut, *Caesalpinia bonduc* (L.) Roxb.

- 164 Costin, A.B. and Moore, D.M. (1960) The effects of rabbit grazing on the grasslands of Macquarie Island. *Journal of Ecology*, 48:729-732.

Describes catastrophic effects of rabbits on vegetation of Macquarie Island and suggests that rabbits cause severe erosional problems.

- 165 Cotton, B.C. (1937) Loricata. British, Australian and New Zealand Antarctic Research Expedition 1929-1931, Reports, Series B, 4(1):9-19.

Lists four species of chitons from littoral and sub-littoral zone of Macquarie Island. Original description of *Ischnochiton mawsoni*.

- 166 Cotton, B.C. (1937) Brachiopoda. British, Australian and New Zealand Antarctic Research Expedition 1929-1931, Reports, Series B, 4(1):20-22.

Lists one species of brachiopod from Macquarie Island.

- 167 Craven, T.M. (1984) Pulsating aurora and magnetic Pi(c) pulsations. M.Sc. thesis, University of Tasmania, Hobart. 226pp.

Presents data, collected on Macquarie Island in 1983, on pulsating aurora and geomagnetic Pi(c) micropulsations.

- 168 Croome, R. (1984) Limnological studies on Macquarie Island. *Tasmanian Naturalist*, 78:26-27.

Reviews earlier work on island lakes. Atmospheric precipitation is major supplier of ions to freshwater system. Salinities decrease across island from west to east, indicating that prevailing westerlies carry sea spray. Some lakes appear to be enriched in calcium and other ions from geological sources. Lakes are clear and oligotrophic.

- 169 Crowther, W.L. (1933) Macquarie Island and its animal life. *The Emu*, 33:14-17.

Contains short report by R.A. Falla of visit to Macquarie Island by British, Australian and New Zealand Antarctic Research Expedition, 2-4 December 1930.

- 170 Csordas, S. (1985) Domestic animals on Macquarie Island. *Aurora*, 18:23-26.

Anecdotal. Discusses domestic animals on island associated with expeditions.

- 171 Csordas, S.E. (1958) Breeding of the fur seal, *Arctocephalus forsteri* Lesson, at Macquarie Island. *Australian Journal of Science*, 21:87-88.



Fur seals wiped out on Macquarie Island soon after discovery. Until 1955 no records of them breeding again. Evidence presented for first fur seal birth on island for more than 134 years.

- 172 Csordas, S.E. (1962) The Kerguelen fur seal on Macquarie Island. Victorian Naturalist, 79:226-229.

Records presence of a Kerguelen Fur Seal as straggler on Macquarie Island. Discusses problems in taxonomy of fur seals and their bearing on discussion as to specific identity of original island fur seals which were exterminated.

- 173 Csordas, S.E. (1963) Sea Lions on Macquarie Island. Victorian Naturalist, 80:32-35.

Hooker's Sea Lion (*Phocarctos hookeri*) occasionally visits Macquarie Island. Visiting individuals prey on penguins.

- 174 Csordas, S.E. (1963) Leopard seals on Macquarie Island. Victorian Naturalist, 79:358-362.

Records of Leopard Seals on Macquarie Island 1949-1959.

- 175 Csordas, S.E. (1963) The history of Fur seals on Macquarie Island. Victorian Naturalist, 80:255-258.

History of extermination of island's fur seals. Species making up original stock not known. New Zealand Fur Seals started breeding on island in 1955.

- 176 Csordas, S.E. (1964) Wandering elephant seal. Victorian Naturalist, 80:336-338.

Branding of Elephant Seals on Macquarie Island began in 1951. Seals branded on Campbell Island recorded on Macquarie Island.

- 177 Csordas, S.E. (1964) Seal marking experiment at Macquarie Island. Victorian Naturalist, 80:318-320.

Describes marking experiments (using alcohol-soluble dyes) on Elephant Seals and Leopard Seals.

- 178 Csordas, S.E. (1965) A few facts about the Southern Elephant seal. Victorian Naturalist, 82(3):70-74.

General description of biology of Elephant Seals. Details of brands used in branding program.

179 Csordas, S.E. (1966) Congenital penis malformation in Southern Elephant seals (*Mirounga leonina* L.). *Journal of Mammalogy*, 47(4):731-733.

Describes penis malformations in four Elephant Seals. Such seals unable to copulate.

180 Csordas, S.E. and Ingham, S.E. (1965) The New Zealand Fur seal, *Arctocephalus forsteri* (Lesson), at Macquarie Island, 1949-1964. *CSIRO Wildlife Research*, 10:83-99.

Indigenous fur seal of Macquarie Island exterminated before 1820. Between 1919 and 1948 New Zealand Fur Seal began to visit the island in summer. At least four localities now have summer populations and a few seals remain through winter. Several pups born since 1955. Most seals arrive December-January and leave April-May when penguins they prey on leave.

181 Cullen, D.J. (1967) A note on the regional structure of the Southwest Pacific. *New Zealand Journal of Science*, 10:813-815.

Evidence of volcanicity on crest of Macquarie Ridge in Macquarie and Balleny Islands, together with other features, indicative of island arc structure.

182 Cullen, D.J. (1969) Macquarie Island, provisional bathymetry, scale 1:200 000. Island Series, New Zealand Oceanographic Institute, Wellington.

Chart.

183 Cumpston, J. (1958) Macquarie Island. A Bibliography. Studies in Australian Bibliography (General Editor - W.W. Stone), Number 6. The Stone Copying Company, 64 Young Street, Cremorne, New South Wales. 32pp.

Preliminary version of more extensive bibliography published in Cumpston, J.S. (1968). Emphasis on history. Includes many items held privately such as letters, diaries and photographs. Not annotated.

184 Cumpston, J.S. (1968) Macquarie Island. ANARE Scientific Reports, Series A (1), Narrative. ANARE Publication No. 93. Antarctic Division, Department of External Affairs, Melbourne. 380pp.

Superbly comprehensive history of the island and people associated with it to 1933. Very comprehensive bibliography. Historic photographs. Essential reference for anyone visiting the island.

185 Curtain, C.C., Wood, D.H. and Sobey, W.R. (1973) Distribution of immunoglobulin allotypes in rabbit populations in Australia and on Macquarie Island. *Animal Blood Groups and Biochemical Genetics*, 4(2):101-109.

Wild rabbit populations from several parts of south-eastern Australia, Tasmania and Macquarie Island tested for allotypic IgG markers. All markers except As6 present in Australian mainland and Tasmanian populations, and there appeared to be a significant increase in As1 frequency with decreasing rainfall. Macquarie Island samples virtually all homozygous As1 at the a locus and lacked As6 and As9 at the b locus. Results discussed against background of known history of introduction of rabbit into areas studied. "Founder effect" can account for observed distribution on Macquarie Island. The As1 cline in Australia warrants further study, particularly in relation to possible selective effects.

- 186 Dalenius, P. and Wilson, O. (1958) On the soil fauna of the Antarctic and of the sub-Antarctic islands. The Oribatidae (Acari). *Arkiv for Zoologi*, 11(23):393-425.

General survey of mites of Antarctica and subantarctic. Macquarie Island species included. Descriptions and figures of species and maps of distribution.

- 187 David, E. (1921) Report of Macquarie Island Research Committee. In: Sweet, G. and Rivett, D. (eds.) Report of the Fifteenth Meeting of the Australasian Association for the Advancement of Science. Hobart Meeting. Held in Melbourne, January, 1921:292-294.

Of historical interest. Report of discussions on re-establishing weather station on Macquarie Island.

- 188 David, T.W.E. (1913) Discovery by the Australasian Antarctic Expedition of important submarine banks. *The Geographical Journal*, 41:461-463.

Deep bank just north of Macquarie Island. Interpretation superseded.

- 189 Davies, P.M. (1981) Macquarie Island Geophysical Observatory Annual Report, 1978. Bureau of Mineral Resources, Geology and Geophysics, Record, 1981/18. Canberra.

Report on instrumentation and building.

- 190 Davies, P.M. (1983) Macquarie Island Geophysical Observatory Annual Report, 1980. Bureau of Mineral Resources, Geology and Geophysics, Record, 1983/2. Canberra.

Describes changes to observatory. Earthquake shocks noted.

- 191 Davis, J.K. (1962) *High Latitude*. Melbourne University Press, Melbourne. 292pp.

Contains narrative account of visit to island while Master of the Nimrod.

192 Debenham, F. (ed.) (1945) *The Voyage of Captain Bellingshausen to the Antarctic Seas 1819-1821*. Translated from the Russian. Hakluyt Society. Second series, Vols 91/92:364-372.

Contains account of visit to Macquarie Island in 1820 by Russian exploring expedition under Bellingshausen.

193 de Lisle, J.F. (1965) *The climate of the Auckland Islands, Campbell Island and Macquarie Island*. *Proceedings of the New Zealand Ecological Society*, 12:37-44.

Discussion of weather systems affecting subantarctic islands. Tabulations of data from islands, including Macquarie Island.

194 Dell, R.K. (1964) *Land snails from subantarctic islands*. *Transactions of the Royal Society of New Zealand, Zoology*, 4(11):167-173.

Lists *Phrixgnathus hamiltoni* from Macquarie Island. Only species of land snail known from island. European slug *Agriolimax reticularis* occurs on island, probably accidentally introduced by sealers.

195 Dell, R.K. (1964) *Marine Mollusca from Macquarie and Heard Islands*. *Records of the Dominion Museum*, 4(20):267-301.

Lists *Terenochiton fairchildi* (known only from Macquarie Island) and seventeen other species from Macquarie Island.

196 de Meillon, B. (1952) *The fleas of sea birds in the Southern Ocean*. ANARE Reports, Series B, I Zoology. ANARE Publication No. 6:1-11.

Lists hosts and localities of fleas of sea birds. *Parapsyllus magellanicus heardi* described from Macquarie Island but no collection data given. Discussion of fleas and penguin evolution.

197 Division of National Mapping. (1971) *Macquarie Island Tasmania*. Scale 1:50 000. Department of National Development, Canberra.

Official topographic map of island.

198 Dodge, C.W. (1948) *Lichens and lichen parasites*. British, Australian and New Zealand Antarctic Research Expedition 1929-1931. Reports, Series B, Zoology and Botany, 7. 276pp.

Lists thirty nine lichen species from Macquarie Island. Original descriptions of many species.

199 Dodge, C.W. (1968) Lichenological notes on the flora of the Antarctic continent and the subantarctic islands. VII. New taxa from Macquarie Island. *Nova Hedwigia*, 15:285-297.

Original descriptions of eleven species of lichen from Macquarie Island.

200 Dodge, C.W. and Rudolph, E.D. (1955) Lichenological notes on the flora of the Antarctic continent and the subantarctic islands. I-IV. II. Additions to the lichen flora of Macquarie Island. *Annals of the Missouri Botanical Garden*, 42:137-143.

Lists twenty eight species from Macquarie Island. Original descriptions of three species.

201 Doherty, R.L., Carley, J.G., Murray, M.D., Main, A.J., Kay, B.H. and Domrow, R. (1975) Isolation of arboviruses (Kemerovo group Sakhalin group) from *Ixodes uriae* collected at Macquarie Island, Southern Pacific Ocean. *American Journal of Tropical Medicine and Hygiene*, 24(3):521-526.

Ticks from Macquarie Island yielded sixteen strains of two viruses.

202 Douth, H.F. (1952) Rookery Island. *Geographical Magazine*, 25:224-231.

Popular account of island wildlife with emphasis on Elephant Seals and penguins.

203 Dowden, R.L. (1957) Hourly measurements of ionospheric characteristics Macquarie Island, 1956. ANARE Interim Reports, 18. ANARE Publication No. 41. (pages unnumbered) 37 tables.

Hourly values and graphs of ionospheric characteristics.

204 Dowden, R.L. (1961) Simultaneous observations of VLF noise ('hiss') at Hobart and Macquarie Island. *Journal of Geophysical Research*, 66(5):1587-1588.

Data given for stations at Hobart and Macquarie Island for two frequencies for 10 week period.

205 Downes, M.C. (1952) Arctic terns in the sub-Antarctic. *The Emu*, 52:306-310.

Heard and Macquarie Islands resting places for migrating Arctic terns (*Sterna macrura*). Details for observers on how to identify Arctic and Antarctic terns.

206 Downes, M.C. (1953) Ringed Giant petrels. *Notornis*, 5:184.

Ringling of Giant Petrels (*Macronectes giganteus*) and Southern Skuas (*Stercorarius skua lonnbergi*) carried out on Macquarie Island. Description of rings used.

- 207 Downes, M.C., Gwynn, A.M. and Howard, P.F. (1954) Banding of Giant petrels at Heard and Macquarie Islands. *The Emu*, 54(4): 257-262.

Description of bands used. Details of recoveries of banded birds.

- 208 Dunnet, G.M. (1961) Fleas from Macquarie Island, with a description of a new species of *Parapsyllus* Enderlein. *Proceedings of the Royal Entomological Society, B*, 30(3-4):43-49.

Lists nests of various bird species examined for fleas and fleas found. Original description of *Parapsyllus cardinis*. Other species present: *Notiopsylla enciari*; *N. kerguelensis*; *N. sp.*; *Nosopsyllus fasciatus*; *Parapsyllus magellanicus heardi*.

- 209 Dunnet, G.M. (1962) Insects of Macquarie Island. Siphonaptera. *Pacific Insects*, 4(4):972.

Lists five species of fleas and their hosts on Macquarie Island.

- 210 Dunnet, G.M. (1964) Distribution and host relationships of fleas in the Antarctic and Subantarctic. In: Carrick, R., Holdgate, M.W. and Prévost, J. (eds.) *Biologie Antarctique. Premier Symposium organisé par le S.C.A.R. Paris 2-8 Septembre 1962. Hermann, Paris*: 223-238 plus fold-out table.

Records fleas found on different hosts on Macquarie Island and other subantarctic islands.

- 211 Eastop, V.F. (1962) Insects of Macquarie Island. Hemiptera: Homoptera: Aphididae. *Pacific Insects*, 4(4):937-938.

Records localities of collection and host plants of two species of aphid.

- 212 Edgar, E. (1966) *Luzula* in New Zealand. *New Zealand Journal of Botany*, 4:159-184.

Lists *Luzula crinita* var. *crinita* from Macquarie Island.

- 213 Edmonds, S.J. (1955) *Acanthocephala* collected by the Australian National Antarctic Research Expedition on Heard Island and Macquarie Island during 1948-50. *Transactions of the Royal Society of South Australia*, 78:141-144.

Lists two species of parasites, one in Elephant Seals, one in Gentoo Penguins from Macquarie Island. Descriptions of parasites.

- 214 **Edmonds, S.J. (1957)** *Acanthocephala*. British, Australian and New Zealand Antarctic Research Expedition 1929-1931, Reports, Series B, 6(5):91-98.

Lists two species of parasite, one in fish and one in shags from Macquarie Island.

- 215 **Ervin, R.E. (1952)** Determination of differences in the magnetic elements between the absolute stations on the north end of Macquarie Island. Bureau of Mineral Resources, Geology and Geophysics, Record, 1952/52.

Gives differences between stations on island. Two maps show position of stations.

- 216 **Evans, A.J. (1965)** Some aspects of the ecology of a calanoid copepod, *Pseudoboeckella brevicaudata* Brady 1875, on a subantarctic island. M.Sc. thesis, University of Sydney. 275pp. plus 10 appendices.

See annotation to Evans, A.J. (1970).

- 217 **Evans, A.J. (1970)** Some aspects of the ecology of a calanoid copepod, *Pseudoboeckella brevicaudata* Brady 1875, on a subantarctic island. ANARE Scientific Reports, Series B, 1, Zoology. ANARE Publication No. 110. 100pp.

Dominant species of freshwater zooplankton in ponds and lakes on Macquarie Island is *Pseudoboeckella brevicaudata*, widely distributed in subantarctic. Reports differences in growth rate, morphology, reproductive activity and other life cycle phenomena between populations of *P. brevicaudata* in different water bodies.

- 218 **Fain, A. (1962)** Insects of Macquarie Island. Acarina: Trombidiformes: Ereyenetidae. Pacific Insects, 4(4):921-928.

Describes two species of ereynetid mites, one common in a number of localities and on a variety of substrates. Original descriptions of *Ereynetes macquariensis* and *Ereynetoides watsoni*.

- 219 **Falla, R.A. (1937)** Birds. British, Australian and New Zealand Antarctic Research Expedition 1929-1931, Reports, Series B, Zoology and Botany, 2. 304pp. Illustrated.

General treatment of birds of Antarctic and subantarctic. Lists twenty eight bird species on Macquarie Island (pp.23-24). Descriptions of King Penguins (pp.42-53), Gentoos (pp.59-60), Rockhoppers (pp.93-94), Sclater Penguin (p.95), Royal Penguin (pp.100-113). History of exploitation of wildlife on Macquarie Island. Numerous photographs.

220 Falla, R.A. (1960) Oceanic birds as dispersal agents. *Proceedings of the Royal Society, London, B*, 152:655-659.

Review. Macquarie Island mentioned here and there. *Myriophyllum* on Macquarie Island reproduces vegetatively.

221 Falla, R.A., Fleming, C.A. and Kinsky, F.C. (1971) Letter. *Notornis*, 18:61-66.

Part of a debate about whether Royal and Macaroni Penguins are distinct.

222 Farr, C.C. (1944) Terrestrial magnetism. *British, Australian and New Zealand Antarctic Research Expedition 1929-1931, Reports, Series A, Volume 4, Part 1*. 31pp.

Tabulation of measurements made at Macquarie Island (p.16).

223 Fenton, K.B. (1953) Directional studies in cosmic rays with particular reference to processes involving mesons. Ph.D. thesis, University of Tasmania. 175pp.

Analysis of results obtained on Macquarie Island.

224 Ferguson, I.J. (1985) Macquarie Island Geophysical Observatory Annual Report, 1982. Bureau of Mineral Resources, Geology and Geophysics, Record, 1985/18. Canberra.

Report.

225 Filson, R.B. (1981) Studies on Macquarie Island lichens 2: the genera *Hypogymnia*, *Menegazzia*, *Parmelia* and *Pseudocyphellaria*. *Muelleria*, 4(4):317-331.

Two species of *Parmelia* described. Keys to species and varieties given. Full descriptions of all species provided, together with discussion of affinities, chemical constituents and distribution.

226 Filson, R.B. (1981) Studies on Macquarie Island lichens 1: General. *Muelleria*, 4(4):305-315.

History of lichenological investigations on Macquarie Island. Brief description of principal vegetation formations. Key to lichen genera on island.

227 Firmstone, T.F. (1955) Hourly measurements of ionospheric characteristics. Macquarie Island, 1954. ANARE Interim Reports, 12. ANARE Publication No. 12. pages unnumbered. 60 tables.



Tabulation of data.

- 228 Fletcher, H. (1984) *Antarctic Days with Mawson. A personal account of the British, Australian and New Zealand Antarctic Research Expedition of 1929-31.* Angus and Robertson, London. 313pp.

Contains narrative account of visit to island together with brief island history.

- 229 Fletcher, L. and Shaughnessy, P. (1984) The current status of seal populations at Macquarie Island. *Tasmanian Naturalist*, 79:10-13.

Little known of population dynamics of seal species on Macquarie Island. Discusses what is known about Elephant Seals, Leopard Seals, fur seals, Hooker's Sea Lion and Crabeater Seals. Suggests need for census of populations.

- 230 Forster, R.R. (1962) Insects of Macquarie Island. *Araneida (Spiders)*. *Pacific Insects*, 4(4):917-919.

Lists previous records of four species of spider from Macquarie Island. Lists localities of collection and substrates of 400 specimens belonging to two of these species. Spider fauna of Macquarie Island less varied than that of other subantarctic islands and consists only of species which appear to have little difficulty in crossing wide water gaps. Record of *Oecobolus navus* probably based on collection of specimen brought in on stores from Australia.

- 231 Gardner, Z.N.C. (1977) Two floating islands on a subantarctic lake. *Antarctic Division Technical Memorandum, ANARE Publication No. 63*. 25pp. plus appendices.

Floating islands on small lake NE of Mt. Elder described. Comparison of 1947 and 1976 aerial photographs shows that islands move and observation of islands moving is reported. Discussion of mode of formation of islands and their vegetation.

- 232 Gibbs, W.J. (1950) *Meteorology at Heard and Macquarie Islands. The Meteorological Magazine*, 79:168-170.

Brief notes on establishment of weather station at Macquarie Island.

- 233 Gibbs, W.J., Gotley, A.V. and Martin, A.R. (1950) *Meteorology: Heard and Macquarie Islands, 1948. Part 1 (a) Results.* ANARE Reports, Series D, Meteorology. Volume 1. ANARE Publication No. 1. 109pp.

History of establishment of stations. Instruments used and observational methods. Discussion of results of observations. Synoptic analysis. Discussion of analysed charts.

234 Gibbs, W.J., Gotley, A.V. and Martin, A.R. (1951) *Meteorology: Heard and Macquarie Islands, 1948. Part 1 (b) Analysed charts.* ANARE Reports, Series D, *Meteorology. Volume 1.* ANARE Publication No. 2. 61pp.

Analysis of data collected.

235 Gibbs, W.J., Gotley, A.V. and Martin, A.R. (1952) *Meteorology: Heard and Macquarie Islands, 1948. Part 1 (c) Discussion.* ANARE Reports, Series D, *Meteorology. Volume 1.* ANARE Publication No. 5. 67pp.

Tabulation of data.

236 Gibson, J.D. (1959) Fork-tailed swift at Macquarie Island. *The Emu*, 59(1):64.

Straggler of *Apus pacificus* on Macquarie Island.

237 Gidley, P.R. (1981) *Macquarie Island Geophysical Observatory Annual Report, 1976.* Bureau of Mineral Resources, Geology and Geophysics, Record, 1981/26. Canberra.

Instrumentation described.

238 Gillham, M. E. (1961) Modification of sub-antarctic flora on Macquarie Island by sea birds and sea elephants. *Proceedings of the Royal Society of Victoria*, 74(1):1-12.

Bird and seal colonies on Macquarie Island show significant uniformity among plants which colonise disturbed areas after original vegetation has been suppressed or destroyed. Probable that trampling of vegetation is of greater importance than toxicity of manuring in modification of flora. Similarities between flora of Macquarie Island rookeries and rookeries in north temperate zone detailed.

239 Gillham, M.E. (1967) *Subantarctic sanctuary. Summertime on Macquarie Island.* Gollancz, London. 223pp.

For general reader. Narrative account of visit to Macquarie Island. Many observations on birds, animals and plants. General discussion of penguins of the world. Discussion of how Macquarie Island's flora became established. Species lists. Many references. Illustrated.

240 Given, D.R. (1978) Subantarctic pteridophyta: observations and new records. *New Zealand Journal of Botany*, 16(4):551-552.

Discussion of identity of Macquarie Island *Lycopodium*.

241 Gordon, I. (1944) Pycnogonida. British, Australian and New Zealand Antarctic Research Expedition 1929-1931, Reports, Series B, 5(1):1-72.

Lists three species from waters off Macquarie Island.

242 Greene, S.W. and Greene, D.M. (1963) Check-list of the sub-Antarctic and Antarctic vascular flora. *Polar Record*, 11:411-418.

Checklist and synonyms of subantarctic vascular plants. Many references.

243 Greene, S.W. and Walton, D.W.H. (1975) An annotated check list of the sub-antarctic and antarctic vascular flora. *Polar Record*, 17(110):473-484.

Annotated checklist. Synonyms given. Distribution of species tabulated.

244 Gregson, P.J. (1965) Macquarie Island Geophysical Observatory work, 1963. Bureau of Mineral Resources, Geology and Geophysics, Record, 1965/23. Canberra.

Description of instrumentation.

245 Gressitt, J.L. (1962) Insects of Macquarie Island. Introduction. *Pacific Insects*, 4(4):905-915.

Brief description of geography and environment of Macquarie Island as related to land arthropods. Summary of terrestrial arthropod fauna: spiders; ticks; mites; collembola; anoplura; mallophaga; aphids; thrips; Psocoptera; Diptera; fleas; Lepidoptera; Coleoptera; Hymenoptera. Suggests island may be relatively young biologically. Low percentage of wingless insects compared with other subantarctic islands.

246 Griffin, B.J. (1980) Erosion and rabbits on Macquarie Island: some comments. *Papers and Proceedings of the Royal Society of Tasmania*, 114:81-83.

Dominant erosion processes on island are mass erosion by landslips, soil creep, slumping and solifluction. Fluvial and aeolian erosion important in restricted areas only. Rabbit activity has had minimal effect on overall rates of erosion although appears significant in localised areas.

247 Griffin, B.J. (1982) Igneous and metamorphic petrology of lavas and dykes of the Macquarie Island ophiolite complex. Ph.D. thesis, University of Tasmania, Hobart. NOT SEEN.

248 Griffin, B.J. and Varne, R. (1980) The Macquarie Island ophiolite complex: mid-Tertiary oceanic lithosphere from a major ocean basin. *Chemical Geology*, 30:285-308.

Macquarie Island part of mid-Tertiary oceanic lithosphere from major ocean basin, probably created at Indian-Australian-Pacific spreading ridge. Upper parts of Macquarie Island lithosphere section regarded as vertical slice through a magma column, differentiating at shallow levels. Detailed analyses, including trace element analyses, of various rocks presented.

- 249 Griffin, B.J. and Varne, R. (1983) The Macquarie Island ophiolite complex: major and trace element geochemistry of the lavas and dykes. ABSTRACT ONLY. In: Oliver, R.L., James, P.R. and Jago, J.B. (eds.) Antarctic Earth Science. Proceedings of the Fourth International Symposium on Antarctic Earth Sciences, held at the University of Adelaide, South Australia, 16 to 20 August, 1982. Australian Academy of Science, Canberra: 659.

Macquarie Island unique among subantarctic islands in that it is part of Tertiary oceanic lithosphere from major ocean basin. Analysis of rocks shows a petrographic range from typical ocean floor basalt mineralogy to alkali olivine basalts.

- 250 Griffiths, D., Seemark, R.F. and Bryden, M.M. (1979) Summer and winter cycles in plasma melatonin levels in the Elephant seal (*Mirounga leonina*). Australian Journal of Biological Science, 32:581.

Plasma melatonin levels in immature male Elephant Seals shows marked circadian cycle in winter which is greatly modified in summer. In summer, sufficient ambient lighting during night hours to depress nocturnal rise in levels.

- 251 Griffiths, D.J. (1979) The Southern Elephant seal - changes in testicular histology over a 12 months' period. ABSTRACT. Journal of Anatomy, 128:651-652.

Males infertile during non-breeding season. With onset of breeding season, testicular mass/tonne of seal increases. Sperm appear in testis in August but not in epididymis until September. Sperm production finished by November.

- 252 Griffiths, D.J. (1980) The control of the annual reproductive cycle of male elephant seals (*Mirounga leonina*) at Macquarie Island. Ph.D. thesis, University of Queensland, Brisbane. NOT SEEN.

- 253 Griffiths, D.J. (1984) The annual cycle of the epididymis of the elephant seal (*Mirounga leonina*) at Macquarie Island. Journal of Zoology, London, 203:181-191.

Cyclical changes in epididymis described.

254 Griffiths, D.J. (1984) The annual cycle of the testis of the elephant seal (*Mirounga leonina*) at Macquarie Island. *Journal of Zoology, London*, 203:193-204.

Testis of Elephant Seal shows seasonal variation in weight. Weight highest in breeding season. Spermatogenesis begins in August and ceases in November. Seasonal changes less marked in Macquarie Island population than in Falkland Islands population.

255 Griffiths, D.J. and Bryden, M.M. (1981) The annual cycle of the pineal gland of the elephant seal (*Mirounga leonina*). In: Matthews, C.D. and Seamark, R.F. (eds.) *Pineal Function*. Elsevier/North Holland, Amsterdam: 57-66.

Pineal function in Macquarie Island Elephant Seals assessed at monthly intervals by studies of gland weight, quantitative histology and estimations of plasma melatonin levels by radioimmunoassay. Pineal gland activity varies with daylength. Increased daylength in spring inhibits pineal function and initiates breeding.

256 Griffiths, J.R. and Varne, R. (1972) Evolution of the Tasman Sea, Macquarie Ridge and Alpine Fault. *Nature Physical Science*, 235:83-86.

Brief description of Macquarie Ridge. Ridge crest exposed at Macquarie Island.

257 Grolier Society of Australia (1983) *The Australian Encyclopaedia*. 4th edition. Grolier Society of Australia Pty. Ltd., Sydney. 12 volumes.

Entry on Macquarie Island (Volume 6). Brief general description and outline of history. Brief description of flora of Heard and Macquarie Islands by J.H. Willis (Volume 1). Macquarie Island mentioned in other volumes (see Index volume).

258 Grolle, R. and Seppelt, R.D. (1986) *Seppeltia*, a new leafy genus of Metzgeriales from Macquarie Island. *Journal of the Hattori Botanical Laboratory*, 60:275-282.

Original description of *Seppeltia succuba* Grolle.

259 Gur'yanova, E.F. (1964) Amphipod fauna (Amphipoda) of Macquarie Island. Soviet Antarctic Expedition Information Bulletin Volume 1:128-129. Elsevier, Amsterdam. Translated by Scripta Technica Inc.

Collection of interesting littoral amphipods from Macquarie Island leads to discussion of amphipod evolution and zoogeography.

- 260 Gwynn, A.M. (1953) The status of the Leopard seal at Heard Island and Macquarie Island, 1948-1950. ANARE Interim Reports, 3. ANARE Publication No. 7. 33pp.

Measurements of Leopard Seals killed on Macquarie Island. Tabulation of Leopard Seal sightings by sex and age. General discussion of Leopard Seal migration.

- 261 Gwynn, A.M. (1953) Some additions to the Macquarie Island list of birds. *The Emu*, 53:150-152.

Lists stragglers on Macquarie Island of *Pygoscelis adeliae*, *Eudyptes pachyrhynchus atratus*, *Gallinago* sp., *Anas platyrhynchos*, *Circus approximans*.

- 262 Gwynn, A.M. (1953) The egg-laying and incubation periods of Rockhopper, Macaroni and Gentoo penguins. ANARE Reports, Series B, 1, Zoology. ANARE Publication No. 16. 27pp.

Details of egg laying, eggs, incubation period of penguins. Observations on Rockhoppers based chiefly on Macquarie Island birds. Gentoo studies based on Heard Island but comparisons with Macquarie Island birds.

- 263 Gwynn, A.M. (1953) Notes on the fur seals at Macquarie Island and Heard Island. ANARE Interim Reports, 4. ANARE Publication No. 8. 16pp.

North Head visited annually after the breeding season by small community of fur seals. Table of numbers of fur seals recorded on island. Appendix on presence of Hooker's Sea Lion at Macquarie Island and description of behaviour.

- 264 Hajkowicz, L.A. (1968) Indirect evidence of daytime aurora at conjugate points. *Journal of Atmospheric and Terrestrial Physics*, 30:1649-1655.

The opposite solar illumination conditions, at two geomagnetically-conjugate points, permit a study of daytime cosmic noise absorption events associated with visual auroral displays. Data from Macquarie Island analysed.

- 265 Hajkowicz, L.A. (1969) The role of post-breakup pulsating aurora in conjugate point absorption increases. *Journal of Atmospheric and Terrestrial Physics*, 31:1365-1370.

On basis of available yearly riometer, photometer, magnetometer and all-sky camera records from Macquarie Island and the northern conjugate area, evident that typical development of auroral substorms similar at auroral zone conjugate stations.

266 Hajkowicz, L.A. (1969) Study of cosmic noise absorption and related phenomena at Macquarie Island and the northern conjugate area. Ph.D. thesis, University of Melbourne. 320pp. plus 2 attached papers.

Cosmic noise absorption data from Macquarie Island and two northern conjugate stations analysed and compared with corresponding all-sky camera, magnetometer and photometer records.

267 Hale, H.M. (1941) Decapod Crustacea. British, Australian and New Zealand Antarctic Research Expedition 1929-1931, Reports, Series B, 4(9):257-286.

Lists two species from Macquarie Island waters. Description and illustration of crab *Lithodes murrayi*.

268 Hamilton, A. (1895) Notes on a visit to Macquarie Island. Transactions and Proceedings of the New Zealand Institute 1894, 27:559-579.

Of historical interest. Hamilton was one of the earliest scientific visitors to Macquarie Island. General description of island. List of plants collected. List of birds.

269 Hamilton, H. (1926) Ecological notes and illustrations of the flora of Macquarie Island. Australasian Antarctic Expedition 1911-1914, Scientific Reports, Series C, Zoology and Botany, Volume VII, Part 5. 10pp. plus 19 plates.

Brief ecological notes on vascular species. Illustrations of species.

270 Hardy, D.E. (1962) Insects of Macquarie Island. Diptera: Coelopidae. Pacific Insects, 4(4):963-971.

Kelpflies. Three species on island. Original description of *Apetaenus watsoni*.

271 Harrison, L. (1937) Mallophaga and Siphunculata. Australasian Antarctic Expedition, Reports, Series C, Volume II Part 1:1-47 plus 3 plates

Original descriptions of *Austrogoniodes macquariensis*, *A. hamiltoni*, *Naubates heteroproctus*, *Pectinopygus* (*Philichthophaga*) *macquariensis*, *Docophoroides hunteri* from Macquarie Island. Lists twenty one louse species from birds and seals on Macquarie Island.

272 Hatherton, T. (1967) Total magnetic force measurements over the North Macquarie Ridge and Solander Trough. New Zealand Journal of Geology and Geophysics, 10(5):1204-1211.



North Macquarie Ridge an extension. near Macquarie Island. of the seismically active ridge which extends from the Pacific-Antarctic Ridge to Macquarie Island.

- 273 Hayes, D.E. and Talwani, M. (1972) Geophysical investigation of the Macquarie Ridge complex. In: Hayes, D.E. (ed.) Antarctic Oceanology II The Australian-New Zealand Sector. American Geophysical Union Antarctic Research Series 19:211-234.

Topographic map of Macquarie Ridge and adjacent areas. Ridge is complicated feature with three elements. Ridge bounded in places by pronounced deeps to east and west. Macquarie Ridge complex has evolved due to interaction of Pacific and Australian plates. Predominant motion has been right-lateral strike slip at about 4-5 cm/year. Underthrusting indicated for northern and perhaps southern ends of complex. Small amount of crustal extension may have occurred within central section but interpretation speculative.

- 274 Hayes, D.E., Talwani, M. and Christoffel, D.A. (1972) The Macquarie Ridge complex. In: Adie, R.J. (ed.) Antarctic geology and geophysics. Symposium on Antarctic Geology and Solid Earth Geophysics, Oslo, 6-15 August, 1970. Universitetsforlaget, Oslo: 767-771.

Macquarie Ridge-Trench complex and its intersection with Indian-Pacific-Antarctic Ridge provides a morphological connection between New Zealand and Antarctica. Seismically active Macquarie complex has been interpreted as a mid-ocean ridge, an island-arc trench system and a shear zone. Soundings show morphology of ridge is more complex than previously known. Trench-like depressions parallel ridge on east and west and appear to be connected by deep, narrow transverse passages through it. Relative plate motions along Macquarie complex suggest compressional, extensional and transcurrent tectonic features comprise discrete elements of complex.

- 275 Hays, J.D. (1983) Evolution of the Antarctic Ocean 18+/-2KA In: Proceedings of First CLIMANZ Conference, February, 1981. Department of Biogeography and Geomorphology, Research School of Pacific Studies, Australian National University, Canberra:55.

Antarctic Convergence north of Macquarie Island 18 000 years B.P. Map of probable sea surface temperatures at the time.

- 276 Heatwole, H. (1983) Community structure of the organisms in Antarctic and sub-Antarctic soils. ANARE News. Supplement 1, August 1983:81.

Describes collection and analysis of soil samples from Antarctica and Macquarie Island. No detailed results reported.



277 Hedley, C. (1916) Mollusca. Australasian Antarctic Expedition 1911-1914. Scientific Reports, Series C, Zoology and Botany, Volume IV, Part 1. 80pp. plus 9 plates.

Lists thirty six species from Macquarie Island (one - a slug - introduced) About one third of species occur elsewhere. Systematic account of species collected.

278 Hickman, V.V. (1939) Opiliones and Araneae. British, Australian and New Zealand Antarctic Research Expedition 1929-1931, Reports, Series B, Zoology and Botany, 4(5):157-188.

Lists five species of spiders from Macquarie Island.

279 Hill, P.J. (1974) Macquarie Island Geophysical Observatory, Annual Report 1973. Bureau of Mineral Resources, Geology and Geophysics, Record, 1974/60.

Description of instrumentation and investigation of 1973 earthquakes.

280 Hitchcock, W.B. and Carrick, R. (1958) Fourth annual report of the Australian Bird-banding Scheme, July 1957 to June 1958. CSIRO Wildlife Research, 3:115-117.

Details birds banded on Macquarie Island.

281 Hitchcock, W.B. and Carrick, R. (1958) First report of banded birds migrating between Australia and other parts of the world. CSIRO Wildlife Research, 3:54-70.

Recovery data for birds banded on Macquarie Island. Recovered in New Zealand, South America, South Africa and Australia. Birds banded on Heard Island included.

282 Hnatiuk, R.J. (1972) *Hymenophyllum peltatum* (Poiret) Desvaux, a new Macquarie Island record. New Zealand Journal of Botany, 10:701-704.

First record of this fern from Macquarie Island. Tabulation of Southern Hemisphere distribution.

283 Hnatiuk, R.J. (1972) Growth and macro-climate of evergrowing tussock grasses in equatorial alpine and sub-antarctic regions Ph.D. thesis, Australian National University. (Unpublished).

Five sites at northern end of island studied to provide data to evaluate relative importance to growth of *Poa foliosa* of degree of wind exposure, slope and aspect in relation to energy receipt and altitude.

284 Hnatiuk, R.J. (1978) Growth of tussock grasses on an equatorial high mountain and on two sub-antarctic islands. In: Troll, C. and Lauer, W. (eds.) *Geocological relations between the southern temperate zone and the tropical mountains. Symposium of the International Geographical Union Commission on High-Altitude Geocology*, Mainz, November 21-23, 1974. *Proceedings*. Franz Steiner, Wiesbaden, West Germany: 159-190 plus 4 plates and appendix.

Study of five sites on Macquarie Island in stands of *Poa foliosa*. Population structure, leaf area, leaf weight-length ratio, leaf and tiller density, biomass, net productivity studied. Results compared with sites in New Guinea and on Campbell Island.

285 Holdgate, M.W. (1966) The influence of introduced species on the ecosystems of temperate oceanic islands. In: *Towards a new relationship of man and nature in temperate lands. Proceedings of the 10th Technical Meeting*, I.U.C.N., Lucerne, 1966. IUCN Publications, New Series, 9:151-176.

General discussion. Information on many subantarctic islands tabulated. Macquarie Island included.

286 Holdgate, M.W. and Wace, N.M. (1961) The influence of man on the floras and faunas of Southern Islands. *Polar Record*, 10(67):475-493.

Discusses general features of island floras and faunas and why they are vulnerable. Brief treatment of introduced animals.

287 Hollin, J.T. and Schilling, D.H. (1981) Late Wisconsin-Weichselian mountain glaciers and small ice caps. In: Denton, G.H. and Hughes, T.J. (eds.) *The Last Great Ice Sheets*. John Wiley and Sons, New York: 200-201.

Accepts Colhoun and Goede's (1974) estimate that about 40% of island glaciated during last glacial maximum.

288 Hollingsworth, R.J.S. (1960) Macquarie Island geophysical observatory work, 1959. Bureau of Mineral Resources, Geology and Geophysics, Record, 1960/121.

Describes operation of observatory.

289 Horne, R.S.C. (1983) The distribution of penguin breeding colonies on the Australian Antarctic Territory, Heard Island, the McDonald Islands and Macquarie Island. *ANARE Research Notes*, 9. 82pp.

Collates information on numbers in, and location of, penguin colonies within Australian Antarctic Territory and subantarctic islands.

290 Horning, D. (1978) Exploring Macquarie Island. Part 1. Southern wildlife outpost. *Australian Natural History*, 19(7):236-242.

General description of island. Review of terrestrial biology of Macquarie Island for general reader. (See also Lowry, J. 1978).

- 291 **Horning, D.S. (1978)** *The Australian Museum Macquarie Island Expedition, 1977-78. Polar Record*, 19(119):175-176.

Brief account of expedition and results.

- 292 **Hosking, E. (1982)** *Antarctic Wildlife*. Text by B. Sage. Croom Helm, London. 160pp.

Photographs of Antarctic and subantarctic wildlife. Macquarie Island features prominently.

- 293 **Houtman, T.J. (1965)** *Temperature and salinity distribution south of New Zealand. (November 1958)*. 1:3 394 000. *New Zealand Oceanographic Institute Chart, Miscellaneous Series 10*. (to accompany *New Zealand Oceanographic Institute Memoir 36 Chart 1*.)

Chart. Shows Antarctic Convergence north of Macquarie Island.

- 294 **Howard, A. (1940)** *The programme of work and record of observations. British, Australian and New Zealand Antarctic Research Expedition 1929-1931, Reports, Series A, Volume 3 (Oceanography) Part 2 Hydrology. Introduction and appendices by D. Mawson. Section 1:29-86 plus plates.*

Description of equipment. Tabulation of analyses of surface samples taken near Macquarie Island (Table II, p.55). Surface sea temperatures at Macquarie Island (Appendix II, p.80).

- 295 **Howard, P.F. (1954)** *Banding of the Black-Browed Albatross at Heard Island and Macquarie Island. The Emu*, 54:256.

Gives numbers of birds banded and recovery data.

- 296 **Howard, P.F. (1954)** *ANARE bird banding and seal marking. Victorian Naturalist*, 71:73-82.

Description of techniques used for banding birds and marking seals on Macquarie and Heard Islands. Species of birds banded and numbers given. Numbers of seals marked given.

- 297 **Howard, P.F. (1956)** *Banding of Giant petrels at Heard and Macquarie Islands - II. The Emu*, 56:401-404.

Details of recoveries of Giant Petrels banded on each island.

298 Hutton, G. (ed.) (1981) Australia's Natural Heritage. Australian Conservation Foundation, 672B Glenferrie Rd., Hawthorn, Victoria.

Chapter on Macquarie Island (pp.184-187). Brief general description with emphasis on wildlife. Further mention of Macquarie Island in chapter on Australian Antarctic Territory.

299 Hyman, L.H. (1958) Turbellaria. British, Australian and New Zealand Antarctic Research Expedition 1929-1931, Reports, Series B, 6(12):277-291.

Lists two species of marine flat worm from Macquarie. Original description of *Miava ernesti*.

300 Ingham, S.E. (1959) Banding of Giant petrels by the Australian National Antarctic Research Expeditions, 1955-1958. *The Emu*, 59:189-200.

Recovery details of birds banded on Macquarie Island. General discussion of dispersal from breeding grounds.

301 Ingham, S.E. (1960) Wandering Albatross - fact and legend. *Victorian Naturalist*, 77:65-68.

Reports observations on Wandering Albatrosses on Macquarie Island and banding of birds there.

302 Ingham, S.E. (1960) The status of seals (Pinnipedia) at Australian Antarctic stations. *Mammalia*, 24(3):422-430.

Tabulation of presence/absence/occasional visitor status of various seal species at Antarctic stations. Macquarie Island included.

303 Ingham, S.E. (1967) Branding elephant seals for life-history studies. *Polar Record*, 13(85):447-449.

Describes seal-branding on Macquarie and Heard Islands. Technique described. Summary of findings. Young seals disperse widely; adults return to area of birth to breed. Survival rates tabulated.

304 Ingham, S.E. (1984) A history of Macquarie Island biological research up to 1971. *Tasmanian Naturalist*, 78:3-5.

Brief history of work carried out. Divides into early years (1948-1955), late fifties (birds and seals) and sixties.

305 Inoue, H. and Seppelt, R.D. (1985) Notes on the genus *Plagiochila* (Dum.) Dum. from subantarctic Macquarie Island. *Bulletin of the National Science Museum, Tokyo, Series B*, 11(4):119-126.

Records *Plagiochila banksiana*, *P. retrospectans*, *P. circinalis* and *P. ratkowskiana* from island.

- 306 Jacka, F. (1953) Magnetic observations at Heard, Kerguelen and Macquarie Islands, 1947-1951. ANARE Reports, Series C, I Terrestrial magnetism. ANARE Publication No. 17. 30pp.

Tabulates magnetic observations on Macquarie Island and other islands.

- 307 Jacka, F. (1954) Variations of intensity of the aurora at Macquarie Island. Australian Journal of Physics, 7:477-484.

Intensity of aurora at Macquarie Island found to be dependent on geomagnetic planetary disturbance index. Form of dependence differs for different auroral forms.

- 308 Jacka, F. and Ballantyne, J. (1955) Instruments and methods for auroral observations. ANARE Interim Reports, 11. ANARE Publication No. 23. 35pp.

Instruction manual on instruments and procedures used in auroral observations at Macquarie Island and Mawson.

- 309 Jacka, F., Parsons, N.R., Ford, P.W. and Jacklyn, R.M. (1959) Cosmic ray studies at Macquarie Island and Heard Island, 1948-51. ANARE Reports, Series C, II Cosmic rays. ANARE Publication No. 46. 100pp.

Describes equipment used; cosmic ray intensity variations of atmospheric origin; cosmic ray intensity variations associated with solar and geomagnetic disturbances; diurnal variation in intensity; air mass effects on cosmic rays at Macquarie Island.

- 310 Jacka, T.H., Christou, L. and Cook, B.J. (1984) A data bank of mean monthly and annual surface temperatures for Antarctica, the Southern Ocean and the South Pacific Ocean. ANARE Research Notes, 22. 97pp.

Tables of mean monthly surface temperature and plots of mean annual temperature given for most permanent Antarctic and Southern Ocean stations.

- 311 Jacklyn, R.M. (1954) The barometer coefficient and air mass effects on cosmic rays at Macquarie Island. Australian Journal of Physics, 7:315-321.

Changes in cosmic ray intensity associated with passage of weather fronts over the observing station investigated at Macquarie Island. Results indicate observed fluctuations in short-term barometer coefficients may be traceable to changes in air mass types.

- 312 Jacklyn, R.M. (1955) Cosmic rays and air mass effects at Macquarie Island. *Australian Journal of Physics*, 8:190-192.

Uses radiosonde data from Macquarie Island. General atmospheric warming of temperate air precedes the arrival of a low and is followed by atmospheric warming of polar air accompanied by increased surface pressure after the front has passed. Marked increases of cosmic ray intensities follow passage of cold fronts.

- 313 Jamieson, B.G.M. (1968) *Macquaridrilus*: a new genus of Tubificidae (Oligochaeta) from Macquarie Island. *University of Queensland Papers, Department of Zoology*, 3(5):55-69.

Original description of *Macquaridrilus bennettiae*. Table of water analyses. Distribution of species suggests that may only have very recently reached the island.

- 314 Jenkin, J.F. (1972) Studies on plant growth in a subantarctic environment. Ph.D. thesis, University of Melbourne. 297pp. plus 3 appendices.

Discussion of climate. Growth analyses. Studies on transpiration and assimilation.

- 315 Jenkin, J. F. (1975) Macquarie Island, Subantarctic. In: Rosswall, T. and Heal, O.W. (eds.) *Structure and function of tundra ecosystems. Ecological Bulletins (Stockholm) No. 20*:375-397.

Discusses climate, primary productivity, herbivores, carnivores, decomposition and soil processes, nutrient cycling within Macquarie Island ecosystem and gives overview of the ecosystem and man's influences on it.

- 316 Jenkin, J.F. and Ashton, D.H. (1970) Productivity studies on Macquarie Island vegetation. In: Holdgate, M.W. (ed.) *Antarctic Ecology. Volume 2*. Academic Press, London: 851-863.

Data on standing biomass of grassland and herbfield. Seasonal variation in plant dry weight. Growth characteristics of *Poa foliosa*. Chlorophyll contents. Calorific values and efficiency of energy utilisation. Compares Macquarie Island data with data from elsewhere in Australia and overseas.

- 317 Jenkin, J.F. and Ashton, D.H. (1979) Pattern in *Pleurophyllum* herbfields on Macquarie Island (sub-antarctic). *Australian Journal of Ecology*, 4:47-66.

Herbfields dominated by *Pleurophyllum* typically occur on water-logged peat soils from near sea-level to 340 m. Also occur on drained slopes, in sheltered sites at higher altitudes and at lower altitudes as seral communities on screes and landslips. Herbfields usually strongly

patterned, the type of patterning determined by influence of environment on morphology and performance of dominant and other species.

- 318 Jenkin, J.F., Johnstone, G.W. and Copson, G.R. (1981) Introduced animal and plant species on Macquarie Island. *Colloque sur les écosystèmes subantarctiques*. 1981. Paimpont, C.N.F.R.A., 51:301-313.

Describes introduction of cats, mice, black rats, rabbits and Wekas. Two endemic bird taxa became extinct, probably as a result of these introductions. Breeding populations of burrow-nesting petrels have declined due to predation by cats, Wekas and skuas. Rabbits have extensively modified much of the vegetation. Myxoma virus introduced to control rabbits. Three European bird species have become established. Various Australian and New Zealand birds recorded as vagrants. Alien invertebrates include seven arthropods, one mollusc. Three Northern Hemisphere vascular plant species now widely distributed but form minor component of vegetation. Additional species have been discovered and transient aliens reported. Unsuccessful attempts have been made to grow vegetables and trees. Reports results of trial plantings of numerous woody species.

- 319 Jenner, G.A., Griffin, B.J. and Varne, R. (1982) Macquarie Island basalts: geochemistry and nature of their source. Abstract only. In: Abstracts - Generation of major basalt types. IAVCEI - IAGC Scientific Assembly, Reykjavik, Iceland - August 15-22, 1982.

Trace element studies of Macquarie Island rocks show them to span range of compositions reported from mid-ocean ridge environments.

- 320 Johnston, G.C. (1966) Macquarie Island and its rabbits. *Tasmanian Journal of Agriculture*, 37:277-280.

Brief description of rabbit introduction, their effect on the island and attempts at control by poison baiting.

- 321 Johnston, G.C. (1973) Predation by southern skua on rabbits on Macquarie Island. *The Emu*, 73(1):25-26.

Skuas scavenge ill and injured rabbits. Juveniles preyed upon heavily when they first leave burrows. Healthy rabbits may be attacked. Skuas are probably an important pressure on rabbit population.

- 322 Johnston, T.H. (1937) Biological organization and station list. British, Australian and New Zealand Antarctic Research Expedition 1929-1931, Reports, Series B, Zoology and Botany, 1(1). 48pp.

Lists four stations where plankton samples taken, ashore and off the coast of Macquarie Island. Details of trawls.



323 Johnston, T.H. (1937) Parasitic Nematoda. Australasian Antarctic Expedition 1911-1914, Scientific Reports, Series C, Zoology and Botany, Volume X, Part 5. 31pp.

List four species of nematodes from seals and fish at Macquarie Island. Host lists. Description of species.

324 Johnston, T.H. (1937) Cestoda. Australasian Antarctic Expedition 1911-1914, Scientific Reports, Series C, Zoology and Botany, Volume X, Part 4. 74pp.

Records six species of Cestoda from Macquarie Island; two in Leopard Seals, two in Elephant Seals, one in a shark (detailed original description of species) and one from Black-backed Gull.

325 Johnston, T.H. and Angel, L.M. (1940) Endoprocta. British, Australian and New Zealand Antarctic Research Expedition 1929-1931, Reports, Series B, 4(7):213-232.

Lists one species from Macquarie. Original description of *Barentsia aggregata*.

326 Johnston, T.H. and Mawson, P.M. (1945) Parasitic nematodes. British, Australian and New Zealand Antarctic Research Expedition 1929-1931, Reports, Series B, 5(2):73-160.

Six species of parasites listed from fish and Elephant Seals from Macquarie Island. Nematodes in birds ingested, not parasitic. Original description of *Ascarophis nototheniae*.

327 Johnstone, G.W. (1971) Bird in the hand. Giant petrels. Australian Bird Bander, 9(4):86-87.

Guide to distinguishing between *Macronectes giganteus* and *M. halli* based on data from Macquarie Island birds.

328 Johnstone, G.W. (1972) A review of biological research by Australian National Antarctic Research Expeditions, 1947-71. *Polar Record*, 16:519-532.

Review. Many references. Work on Macquarie Island mentioned throughout.

329 Johnstone, G.W. (1974) Field characters and behaviour at sea of giant petrels in relation to their oceanic distribution. *The Emu*, 74(4):209-218.

The Giant Petrel *Macronectes giganteus* (Gmelin) constitutes two sibling species which breed sympatrically at Macquarie Island. The sibling species differ in their behaviour in relation to ships at sea. Suggested that this difference can be used as an aid to identification.



- 330 Johnstone, G.W. (1974) Plumage phases of Giant petrels. *Notornis*, 21(1):91.

To assume that all dark Giant Petrels seen at sea are *Macronectes halli* gives a false picture of distribution.

- 331 Johnstone, G.W. (1977) Comparative feeding ecology of the giant petrels *Macronectes giganteus* (Gmelin) and *M. halli* (Mathews). In: Llano, G. (ed.) Adaptations within Antarctic ecosystems. *Proceedings of the 3rd SCAR Symposium on Antarctic Biology*. Smithsonian Institution, Washington: 647-668.

Breeding ranges of *Macronectes giganteus* and *M. halli* overlap on Macquarie Island. Report of study to test hypothesis that differences in feeding ecology of the two species are associated with differences in breeding season. Stomach contents regurgitated by nestlings and adults analysed. Differences in feeding described. Timing of breeding cycle not explained by feeding ecology.

- 332 Johnstone, G.W. (1978) Interbreeding by *Macronectes halli* and *M. giganteus* at Macquarie Island. *The Emu*, 78(4):235.

At Macquarie Island the Northern Giant Petrel (*Macronectes halli*) lays from about August 11 to September 6 and the Southern Giant Petrel (*M. giganteus*) from September 17 to October 19. Incubation period of both is about sixty days. *M. halli* nests singly or in loose aggregations in sheltered sites. Most *M. giganteus* nest in larger colonies in exposed sites. Breeding populations on the island are approximately 1000 pairs of *M. halli* and 4000 pairs of *M. giganteus*. Strong evidence that interbreeding occurred on at least three occasions but there is no evidence that any egg resulting from these attempts at hybridisation hatched.

- 333 Johnstone, G.W. (1978) A world of birds at the end of the earth. *Habitat*, 5(5):16-21.

For the general reader. Brief outline of commercial exploitation of Macquarie Island. Illustrations.

- 334 Johnstone, G.W. (1979) Agonistic behaviour of the giant petrels *Macronectes giganteus* and *Macronectes halli* feeding at seal carcasses. *The Emu*, 79(3):129-132.

The two Giant Petrels derive only a small part of their diet from seals that die ashore. Both species behave similarly when feeding on seal carcasses on Macquarie Island. *M. halli* more frequently recorded at this source of food than *M. giganteus* yet, in disputes at carcasses, *M. giganteus* is more aggressive and successful.

- 335 Johnstone, G.W. (1980) Australian islands in the Southern Ocean. *The Bird Observer*, October 1980, Number 586:85-87.

- 336 Johnstone, G.W. (1985) Threats to birds on sub-antarctic islands. *International Council for Bird Preservation, Technical Publications* 33:101-121.

General discussion of problem. Populations of breeding birds on subantarctic islands vary greatly in size. Small populations are not necessarily endangered. Bird populations known to be endangered discussed. Chain of events on Macquarie Island outlined. Introduced predators, particularly cats, constitute the most serious threat. Alteration of vegetation structure by introduced herbivores can affect breeding numbers of some birds.

- 337 Johnstone, G.W. and Kerry, K.R. (1976) Ornithological observations in the Australian sector of the Southern Ocean. In: *Proceedings of the 16th International Ornithological Congress, Canberra, August 1974. Australian Academy of Science, Canberra*:725-737.

Records bird sightings during voyages and methods used. Macquarie Island mentioned in several places.

- 338 Jones, E. (1977) Ecology of the feral cat *Felis catus* (L.), (Carnivora: Felidae) on Macquarie Island. *Australian Wildlife Research*, 4(4):249-262.

Results of field study of feral cat ecology with emphasis on diet. Rabbit remains found in 82% of scats and 71% of gut samples. Antarctic and White-headed Petrels form second major component of diet. Rats, mice and Wekas eaten in small numbers. Cats scavenge dead Elephant Seals and penguins, particularly in winter. Cats occur over ca. 65% of island and are common in all habitats except plateau feldmark where they are sparse or absent. Adult population estimated at 250-500. Availability of food in winter seems to be an important limiting factor.

- 339 Jones, E. (1980) Survey of burrow-nesting petrels at Macquarie Island based upon remains left by predators. *Notornis*, 27(1):11-20.

From December 1973 to March 1975 the food of feral cats was studied at Macquarie Island. During the 1974-1975 and 1975-1976 summers food of Great Skuas was also partly studied. Data obtained on numbers, species and locations of remains of burrow-nesting petrels left by these two predators. Seven species of burrow-nesting petrels identified in remains found. Results, when considered with previous records of burrow-nesting petrels at Macquarie Island, indicate their status, relative abundance and distribution.

- 340 Jones, E. (1981) Age in relation to breeding status of the male southern elephant seal *Mirounga leonina* at Macquarie Island Southern Ocean. *Australian Wildlife Research*, 8(2):327-334.

Records of breeding status of known-age male Elephant Seals kept during five breeding seasons. Seven breeding status categories adopted. Progressive increase in breeding status with age. Beachmaster status may be attained at fourteen years. Most males do not breed and few breed for more than two seasons.

- 341 Jones, E. (1983) Elephant seals and sexual selection. *Aurora*, 10:4.

Brief discussion of physical and behavioural characteristics of male Elephant Seals on Macquarie Island.

- 342 Jones, E. (1984) The feral cat on Macquarie Island. *Tasmanian Naturalist*, 79:16-17.

Brief account of feral cat diet. Data on weights of rabbits eaten by cats. Ecological impact of cats on fauna difficult to assess due to major ecological changes which have also taken place.

- 343 Jones, E. and Skira, I.J. (1979) Breeding distribution of the Great Skua at Macquarie Island in relation to the numbers of rabbits. *The Emu*, 79(1):19-23.

During the 1974-1975 summer breeding success and distribution of Great Skuas (*Stercorarius skua*) in relation to numbers of rabbits studied on plateau and coastal terrace. On the plateau there was a strong correlation between occurrence of rabbits and of nestling skuas. On the coastal terrace no such relationship found. Skuas bred with similar success in both areas. Remains of food in skuas' territories indicated that skuas nesting on the plateau preyed heavily on small rabbits. Skuas nesting on the terrace took few rabbits and depended largely on killing and scavenging on penguins and Elephant Seals. Present relations between predators and prey on the island briefly discussed.

- 344 Kalnenas, K. (1952) Ascorbic acid levels in the plasma of some antarctic birds and mammals. *Nature (London)*, 169(4307):862-863.

Tabulates data on ascorbic acid levels in blood plasma in a number of species (including man) on Macquarie Island.

- 345 Keith, K. and Hines, M.P. (1958) New and rare species of birds at Macquarie Island during 1956 and 1957. *CSIRO Wildlife Research*, 3:50-53.

Number of bird species collected or reliably observed at Macquarie Island increased by ten. Details of observations given. Other species rarely seen on the island discussed.

- 346 Kelsey, P.J. (1985) Macquarie Island Geophysical Observatory Annual Report 1983. Bureau of Mineral Resources, Geology and Geophysics, Record 1985/19. Canberra.

Report on running of geophysical observatory and tabulation of data.

- 347 **Kenny, R. (1979)** Breathing and heart rates of the southern elephant seal, *Leonina mirounga* (L.). *Papers and Proceedings of the Royal Society of Tasmania*, 113:21-27.

Describes breathing pattern of pups and changes in pattern with age. Heart rate decreases with increasing age. Heart rate in cows increases at cessation of lactation and onset of breeding season. At other times male and female heart rates similar. Body temperature highest at onset of winter sea-going period. Histology of lungs and thyroid glands studied.

- 348 **Kenny, R. and Haysom, N. (1962)** Ecology of rocky shore organisms at Macquarie Island. *Pacific Science*, 16(3):245-263.

Major features of rocky shore zonation pattern at Macquarie Island described as comprising a lichen zone; a *Porphyra* zone; a "bare" zone dominated by *Siphonaria*; an upper red algal zone, predominantly *Rhodomenia*; a *Durvillea* zone; and a lower red algal zone of *Dellesteria*, *Iridea* and *Desmarestia*. Secondary organisms associated with the zones listed. Zonation pattern compared with similar ecological situations elsewhere. Algal domination of shore shows much in common with west coast of South Africa. Absence of barnacles and littorinids suggests that Macquarie Island shore more typically Antarctic than subantarctic. Island has closer biogeographic affinities with other subantarctic islands than with New Zealand area.

- 349 **Kerr, R.A. (1983)** Ophiolites: windows on which ocean crust? *Science*, 219:1307-1309.

General discussion of ophiolites. Macquarie Island mentioned as an example of a relatively unaltered ophiolite sequence.

- 350 **Kerry, E. (1984)** The fungal flora of Macquarie Island. *Tasmanian Naturalist*, 78:16-21.

All major fungal taxa represented on Macquarie Island. Twenty seven genera and nineteen species of Basidiomycetes recorded. Some Basidiomycetes may be endemic. Ascomycetes, Imperfect Fungi and lower fungi occur mostly as microscopic leaf spots. Fifty seven genera and forty eight species identified. Description of fungi on leaves and litter. Discussion of effects of temperature. Lists of species identified.

- 351 **Kerry, E.J. (1982)** Succession in the microflora of leaves and litter of three plants from subantarctic Macquarie Island. Ph.D. thesis, University of Melbourne, Melbourne.

Microbial ecology and succession studied on leaves and litter of *Poa foliosa*, *Stilbocarpa polaris* and *Pleurophyllum hookeri*. Patterns of microbial succession similar for all three species. On Macquarie Island most primary saprophytes become established on leaves before senescence.

- 352 Kerry, E.J. and Weste, G.M. (1985) Succession in the microflora of leaves and litter of three plants from subantarctic Macquarie Island. In: Siegfried, R., Condy, P.R. and Laws, R.M. (eds.) Antarctic Nutrient Cycles and Food Webs. Proceedings of the Fourth Symposium on Antarctic Biology, Wilderness, South Africa. Springer-Verlag, Heidelberg.

Microbial ecology and succession studied on leaves and litter of *Poa foliosa*, *Stilbocarpa polaris* and *Pleurophyllum hookeri* with special emphasis on filamentous fungi. Obvious differences between the three plant species in the fungal species involved reported.

- 353 Kerry, K.R. and Colback, G.C. (1972) Follow the band! Light-mantled Sooty albatrosses on Macquarie Island. Australian Bird Bander, 10(3):61-62.

Light-mantled Sooty Albatrosses have been banded on Macquarie since 1951. Recoveries show some birds over seventeen years old. No recoveries of banded birds away from island.

- 354 Kerry, K.R. and Garland, B.R. (1984) The breeding biology of the Light-mantled sooty albatross *Phoebastria palpebrata* on Macquarie Island. Tasmanian Naturalist, 79:21-23.

Breeding population 500-700 pairs. Birds banded for study. Courtship described. Usually pair for life. Hatching success data. Almost nothing known of movement of birds once they leave the island.

- 355 Kerry, K.R. and Messer, M. (1968) Intestinal glycosidases of three species of seals. Comparative Biochemistry and Physiology, 25:437-446.

Intestinal glycosidase activities investigated in seals, including Southern Elephant Seals, from Macquarie Island. Results tabulated.

- 356 Kidson, E. (1947) Daily weather charts. Extending from Australia and New Zealand to the Antarctic Continent. Australasian Antarctic Expedition 1911-1914, Scientific Reports, Series B, Volume VII Meteorology. 31pp. plus 4 text figures, 365 charts.

Meteorological observations made at three widely separated bases in Antarctica and on Macquarie Island. Work correlates weather in Antarctica with that in South temperate regions and studies general circulation of Southern Hemisphere. Daily charts prepared synthesising data from Antarctica, Macquarie Island, New Zealand, Australia and some ships at sea.

357 Kirk, T. (1891) On the botany of the Antarctic islands. Report of the Third Meeting of the Australasian Association for the Advancement of Science, 1891:213-231.

Report on J.H. Scott's plant collection from Macquarie Island. (see Scott, J.H. 1883).

358 Kirk, T. (1894) Description of new grasses from Macquarie Island. Transactions and Proceedings of the New Zealand Institute, 27:353-354.

Descriptions of *Festuca contracta*, *Poa hamiltoni* and *Deschampsia penicillata*.

359 Kirkwood, J.M. (1982) A guide to the Euphausiacea of the Southern Ocean. ANARE Research Notes, 1. 45pp.

Descriptions of Euphausiacea of subantarctic waters, including waters around Macquarie Island.

360 Knightley, R. (1951) Love dance of the Wanderer. Wild Life, 14(2):130-137.

Describes "dance" display of Wandering Albatross.

361 Knox, G.A. (1960) Littoral ecology and biogeography of the southern oceans. Proceedings of the Royal Society, London, B, 152:577-624.

General review with many references. Macquarie Island discussed.

362 Koehler, R. (1920) Echinodermata Asteroidea. Australasian Antarctic Expedition 1911-1914, Scientific Reports, Series C, Zoology and Botany, Volume VIII, Part 1. 308pp. plus 75 plates.

Records six species from Macquarie Island in three genera. Original descriptions of *Parastichaster mawsoni*, *P. directus*, *P. sphaerulatus* and *Cycethrus macquariensis*.

363 Koehler, R. (1926) Echinodermata Echinoidea. Australasian Antarctic Expedition 1911-1914, Scientific Reports, Series C, Zoology and Botany, Volume VIII, Part 3. 134pp. plus Plates 91-124.

Lists one species from Macquarie Island.

364 Kohn, M.A. (1962) Insects of Macquarie Island. Diptera: Dolichopodidae. Pacific Insects, 4(4):959-962.

Flies. Redescription of *Schoenophilus pedestris* Lamb.

365 Koltun, V.M. (1976) Porifera - Part I: Antarctic sponges. British, Australian and New Zealand Antarctic Research Expedition 1929-1931, Reports, Series B, 9(4):147-198 plus plates.

Lists ten sponge species from littoral zone and offshore waters of Macquarie Island.

366 Kott, P. (1954) Tunicata Ascidians. British, Australian and New Zealand Antarctic Research Expedition 1929-1931, Reports, Series B, Zoology and Botany, 1(4):121-182.

Lists five species of Molgula and eight other species from the shore or waters off Macquarie Island. Keys.

367 Kott, P. (1957) Some tunicates from Macquarie Island and Heard Island. ANARE Reports, Series B, Volume I Zoology. ANARE Publication No. 40. 3pp.

Lists following ascidians from Macquarie Island: Sycozoa quoyi, Didemnum studeri, Molgula novaezelandiae.

368 Kramp, P.L. (1957) Some jellyfish from Macquarie Island and Heard Island. ANARE Reports, Series B, Volume I Zoology. ANARE Publication No. 33. 6pp.

Lists Beroë cucumis and Periphylla periphylla from Macquarie Island.

369 Kuwahara, Y. (1980) Four new species of the Metzgeriaceae (Hepaticae) from the subantarctic region with an enumeration of previously reported taxa of the family. Hikobia, 8(3-4):274-296.

Lists Metzgeria furcata from Macquarie Island.

370 Laird, M. (1952) Protozoological studies at Macquarie Island. Transactions of the Royal Society of New Zealand, 79(3-4):583-588.

No evidence of haematozoa in samples of Elephant Seals, penguins or shags from Macquarie Island. Kelp flies heavily infested with a flagellate.

371 Laseron, C.F. (1947) South with Mawson. Reminiscences of the Australasian Antarctic Expedition, 1911-1914. Australasian Publishing Co. Pty. Ltd., Sydney. 223pp.

Includes chapter which is narrative account of visit to island and setting up of wireless station.

372 Law, P. (1983) Antarctic Odyssey. Heinemann, Melbourne. 284pp.



Chapter entitled Macquarie Island. Contains extracts from Law and Burstall (1956).

- 373 Law, P. and Béchervaise, J. (1957) ANARE. Australia's Antarctic Outposts. Oxford University Press, Melbourne. 152pp.

Chapter on Macquarie Island with brief general description (geological and geomorphological interpretations superseded) and illustrations.

- 374 Law, P.G. (1951) Australian National Antarctic Research Expedition, 1948-50. *Polar Record*, 6(41):80-84.

Historical. Brief description of research program on Macquarie Island.

- 375 Law, P.G. (1952) Developments in Antarctic Research. *Australian Journal of Science*, August 1952:5-8.

Describes radiophysics and magnetic research being carried out on Macquarie island. Mention of biological projects.

- 376 Law, P.G. (1953) Australian National Antarctic Research Expedition, 1950-51. *Polar Record*, 6(45):667-669.

Historical. Outline of work at Macquarie Island.

- 377 Law, P.G. (1955) Australian National Antarctic Research Expedition, 1952-54. *Polar Record*, 7(50):400-402.

Historical. Brief description of research program at Macquarie Island.

- 378 Law, P.G. (1956) Australian National Antarctic Research Expedition 1955-56. *Polar Record*, 8(54):258-259.

Historical. Mention of relief of Macquarie Island station.

- 379 Law, P.G. (1957) Australian National Antarctic Research Expedition, 1956-57. *Polar Record*, 8(57):533-534.

Historical. Relief of Macquarie Island station mentioned and instruments installed listed.

- 380 Law, P.G. (1958) Australian National Antarctic Research Expedition, 1957-58. *Polar Record*, 9(60):251-254.

Historical. Outline of work on Macquarie Island.



381 Law, P.G. (1960) Australian National Antarctic Research Expedition, 1958-59. Polar Record, 10(64):55-58.

Historical. Relief of Macquarie Island station mentioned.

382 Law, P.G. (1961) Australian National Antarctic Research Expedition, 1959-60. Polar Record, 10(67):397-401.

Historical. Outline of work at Macquarie Island.

383 Law, P.G. (1964) Australian National Antarctic Research Expeditions, 1961-63. Polar Record, 12(77):183-195.

Historical. Outline of work on Macquarie Island.

384 Law, P.G. and Burstall, T. (1956) Macquarie Island. ANARE Interim Reports, 14. ANARE Publication No. 29. 48pp.

General description of island. Sections on history, geology, flora, soils, seals, introduced mammals, birds, insects, snails, fish, littoral biology, meteorology, geomagnetism, seismology, cosmic rays, aurora, radiophysics. Interpretations of various aspects superseded.

385 Lawrence, P. (1967) New Zealand region, Bathymetry, 1:6 000 000. New Zealand Oceanographic Institute Chart, Miscellaneous Series, 15.

Chart.

386 Ledingham, R. (1978) A Macquarie earthquake. Aurora, Spring 1978:135-136.

Narrative of events on island during earthquake. Tectonic setting of island described.

387 Ledingham, R. (1981) Macquarie shakes again. Aurora, 2, October 1981:6-8.

Describes consequences of series of earthquake shocks. Rock falls and mudslides. Damage to wildlife. Suggests island may be rising rapidly.

388 Ledingham R. and Peterson, J.A. (1984) Raised beach deposits and the distribution of structural lineaments on Macquarie Island. Papers and Proceedings of the Royal Society of Tasmania, 118:223-235 plus maps.

Distribution of raised beaches on Macquarie Island makes it difficult to accept earlier interpretations of landform evolution. Raised beaches occur up to 270 m above sea level and in places previously thought to have been glaciated. The elevation of the beaches and the distribution

and shape of many of the island's plateau lakes and structural lineaments appear to be consistent with a history in which rapid uplift associated with block-faulting and other tectonic factors played a much more important role in landform evolution than recognised in the past. Suggest that uplift of most or all of the island to elevations close to glacial-stage snow lines may post-date the last glacial stage.

- 389 **Ledingham, R.B. (1978)** Report on some aspects of erosion on Macquarie Island - 1977. Antarctic Division Technical Memorandum 72.

Main erosion appears on east coast, on west slopes of the eastern hills and on the flat areas or gentle slopes, particularly above Bauer Bay on the Sandy Bay track. Geology, particularly faulting and fault zones, general island uplift and man can be blamed for many of the soil losses on Macquarie Island. Gadgets Gully, the most active area on the whole island, is also subject to most use. Removal of rabbits will slow process of erosion in some areas, but their contribution not as great as believed by some people. Records earthquake of force 7 (Richter scale) causing considerable rock falls and landslips on east coast. Heavy rain can also cause rockfalls, stream erosion and landslips. One or two heavy rain showers every ten years cause considerable scarring on hillsides.

- 390 **Ledingham, R.B. (1979)** The biology of the leopard seal, *Hydrurga leptonyx* (de Blainville) with special reference to Macquarie Island. Diploma of Polar Studies thesis, Scott Polar Research Institute, Cambridge. 107pp.

Detailed treatment of biology of Leopard Seal. Macquarie Island tagging program and results obtained from it described. Physiology of Leopard Seals discussed in detail.

- 391 **Lee, K.E. (1968)** Oligochaeta from subantarctic islands. British, Australian and New Zealand Antarctic Research Expedition. 1929-1931. Reports, Series B (Zoology and Botany), 8(8):149-165.

Lists *Microscolex macquariensis* from Macquarie Island. Description given.

- 392 **Lewis, D. (1979)** Voyage to the Ice. The Antarctic Expedition of Solo. Australian Broadcasting Commission, Sydney. 144pp.

Contains narrative account of visit to island.

- 393 **Lewis, V.J. (1977)** Bibliography of New Zealand submarine geology 1866-1969. New Zealand Oceanographic Institute Memoir 64. 32pp.

Annotated bibliography. Papers concerning seabed near Macquarie Island included.

- 394 Lindholm, E. (1952) Bar-tailed godwit at Macquarie Island. *The Emu*, 52:213.

Second record of this species on Macquarie Island; other record in 1912. Straggler.

- 395 Ling, J.K. (1965) Functional significance of sweat glands and sebaceous glands in seals. *Nature (London)*, 208:560-562.

Description of sweat and sebaceous glands. Morphology of glands may be related to adaptation of seals to aquatic environment. In Phocidae the need for water-proofing the skin is met by enlarged lipid-secreting sebaceous glands. Thermoregulation is achieved by blubber.

- 396 Ling, J.K. (1965) Hair growth and moulting in the Southern Elephant seal, *Mirounga leonina* (Linn.). In: *Biology of the Skin and Hair Growth. Proceedings of a symposium held at Canberra, Australia, 22-28 August, 1964.* Angus and Robertson, Sydney: 525-544.

Description of general morphology of skin and hair follicles in immature Elephant Seals with some comments on mature animals. Seasonal changes in these structures are related to the hair cycle which culminates in an almost unique form of annual moult. Suggests that growth of hair in cows inhibited during pregnancy and lactation and that androgen has inhibitory effect on hair growth in mature bulls.

- 397 Ling, J.K. (1965) The integument and moulting process of the Southern elephant seal *Mirounga leonina* (Linn.). Ph.D. thesis, Australian National University. 289pp.

Detailed study of hair and skin of Elephant Seals. Comparisons drawn with other species. Moult described in detail. Discussion of adaptations of Elephant Seal integument to Antarctic aquatic environment.

- 398 Ling, J.K. (1966) The skin and hair of the Southern Elephant seal, *Mirounga leonina* (Linn.). I. The facial vibrissae. *Australian Journal of Zoology*, 14:855-866.

Arrangement, number and anatomy of facial vibrissae follicles described. Vibrissae retained for at least two years and are not shed at moult. Histology of vibrissae follicles described.

- 399 Ling, J.K. (1968) The skin and hair of the southern elephant seal, *Mirounga leonina* (L.). III. Morphology of the adult integument. *Australian Journal of Zoology*, 16:629-645.

Histology and histochemical features of skin, hair follicles and associated glands described. Problems of thermoregulation arising from hair loss in such seals, and compensatory features in morphology of skin and hair discussed.

400 Ling, J.K. and Nicholls, D.G. (1963) Immobilization of Elephant seals using succinylcholine chloride. *Nature* (London), 200:1021-1022.

Reports use of drug to immobilise Elephant Seals. Ease with which animals of almost any size can be immobilised has considerably extended their use in field studies and as experimental animals.

401 Ling, J.K., Nicholls, D.G. and Thomas, C.D.B. (1967) Immobilization of Southern Elephant seals with succinylcholine chloride. *Journal of Wildlife Management*, 31(3):468-479.

Results of 114 immobilisation attempts tabulated. Working dose rate recommended. Muscle paralysis and recovery described.

402 Ling, J.K. and Thomas, C.D.B. (1967) The skin and hair of the Southern Elephant seal, *Mirounga leonina* (L.). II. Pre-natal and early post-natal development and moulting. *Australian Journal of Zoology*, 15:349-365.

Embryological development of hair follicles and emergence and growth of foetal pelage described. Histological development of first adult-type hair generation described. Post-natal moult starts one week after birth and takes three weeks.

403 Little, A.S. (1956) Hourly measurements of ionospheric characteristics. Macquarie Island, 1953. ANARE Interim Reports, 10. ANARE Publication No. 26. 446pp.

Tabulation of data.

404 Lloyd, D.G. and Horning, D.S. (1979) Distribution of sex in *Coprosma pumila* on Macquarie Island. *New Zealand Journal of Botany*, 17(1):5-7.

Of ten patches of turf containing *Coprosma pumila* during the 1977-1978 flowering season, three contained only male flowers, three contained only female flowers and fruit and four patches had male and female flowers and/or fruit. Single branches from all patches were invariably unisexual. Species is considered to be dioecious on Macquarie Island rather than monoecious as previously reported.

405 Lodwick, G.D. (1967) Macquarie Island Geophysical Observatory work, 1964. Bureau of Mineral Resources, Geology and Geophysics, Record, 1967/116.

Description of instrumentation. Data on local minor seismic events.

406 Löffler, E. (1983) Macquarie Island - eine vom Wind gepragte Naturlandschaft in der Sub-Antarktis. *Polarforschung*, 53(1):59-74.

Overview of basic geocological information concerning the island. Processes of slope dynamics seem to be an interplay of wind, plant

growth and solifluction. Points out that climatic data from station on isthmus not representative of island as a whole. Discussion of geomorphology, vegetation. Slope dynamics. Mass movements and gully erosion limited to steep slopes on plateau edge. Solifluction processes occur exclusively on the plateau. Terrace formation discussed.

- 407 Löffler, E. and Sullivan, M.E. (1980) The extent of former glaciation on Macquarie Island. *Search*, 11 (7-8):246-247.

Field work and aerial photo interpretation suggest that most of the northern part of the island was covered by ice or permanent snow and that only small areas, particularly in west and north escaped glaciation.

- 408 Löffler, E., Sullivan, M.E. and Gillison, A.N. (1983) Periglacial landforms on Macquarie Island, Subantarctic. *Zeitschrift für Geomorphologie N.F.*, 27(2):223-236.

Describes several landform features interpreted as due to periglacial solifluction. Giant terraces with steep vegetated risers and flat stony platforms occur on leeward slopes while on windward slopes poorly developed terraces consist largely of turf mats whose vegetative parts do not extend into the underlying material. Regular stone stripes common on unvegetated windward slopes. Stone polygons and nets are restricted. Large leeward terraces interpreted as relict solifluction landforms from a time when there was more severe frost, with either permafrost or deep-seated seasonal frost. Turf terraces differ in origin. Stone stripes and polygons are contemporary features resulting from freeze-thaw cycles.

- 409 Loewe, F. (1957) A note on the sea-water temperatures at Macquarie Island. *Australian Meteorological Magazine*, Number 19:60-61.

Tabulates mean monthly 9am sea temperatures at Macquarie Island.

- 410 Lofthouse, P. (1967) Cladocera, Ostracoda, and freshwater Copepoda. *British, Australian and New Zealand Antarctic Research Expedition, 1929-1931. Reports. Series B. (Zoology and Botany)*, 8(7):141-144.

Lists four species of Cladocera and four species of Ostracoda from Macquarie Island.

- 411 Lovering, J.F. and Prescott, J.R.V. (1979) *Last of Lands...Antarctica*. Melbourne University Press, Carlton. 212pp.

Brief discussion of Antarctic and subantarctic islands (pp.45-49). Brief description of flora and fauna of Macquarie Island and its geological setting.

- 412 Lowry, J. (1978) Exploring Macquarie Island. Part 2. Subantarctic refuge. Australian Natural History, 19(7):242-245.

Review of ecology of waters surrounding Macquarie Island. Marine plants and animals discussed in terms of their ecological niches on the island. Problem of how these species reached the island not yet solved. For species associated with algae, rafting from South America is a possible explanation for colonisation. Species that cannot travel in this manner are poorly represented on the island. (See also Horning, D., 1978).

- 413 Lowry, J.K., Horning, D.S., Poore, G.C.B. and Ricker, R.W. (1978) The Australian Museum Macquarie Island Expedition, Summer 1977-1978. Australian Museum Trust, Sydney. 152pp.

Narrative account of stay on island. Details of collections made. Extensive description of littoral and sublittoral plants and animals. First record of brittle stars from island. Extensive collecting of tardigrades.

- 414 Lugg, D.J., Johnstone, G.W. and Griffin, B.J. (1978) The outlying islands of Macquarie Island. The Geographical Journal, 144:277-287.

Report on geology and biology of Bishop and Clerk, Judge and Clerk and Anchor Rock. Rocks from the islands are very similar to those of main island. Vegetation occurs on Anchor Rock and Bishop Island. Invertebrates collected listed. Birds listed. New Zealand Fur Seals recorded on both groups of islands.

- 415 MacKenzie, D. (1968) The birds and seals of the Bishop and Clerk Islets, Macquarie Island. The Emu, 67(4):241-245.

Record of survey of Bishop and Clerk. Species observed listed and discussed. More Black-browed Albatrosses on these islets than on main island. Some petrels and prions may breed there.

- 416 Mackintosh, N.A. (1960) The pattern of distribution of the antarctic fauna. Proceedings of the Royal Society, London, B, 152:624-631.

Macquarie Island mentioned. Map of penguin distribution in subantarctic.

- 417 Madsen, F.J. (1967) Ophiuroidea. British, Australian and New Zealand Antarctic Research Expedition 1929-1934, Reports. Series B, 9(3):123-145.

Lists four species of brittle stars from waters off Lusitania Bay.

- 418 Major, G. (1954) The association of pulsating and flaming auroras with complete ionospheric absorption at Macquarie Island. Australian Journal of Physics, 7:471-476.



Records of simultaneous auroral observations and ionosphere soundings at Macquarie Island show that pulsating or flaming auroras are frequently accompanied by complete absorption of the vertically incident waves. Nocturnal variations of frequency of occurrence of the two phenomena are markedly different in form.

- 419 Major, G. (1955) D-layer ionospheric echoes at Macquarie Island. *Nature* (London), 175(4463):862-863.

The Macquarie Island echoes, at a minimum virtual height of about 40 km, are of the same type as observed at several other stations.

- 420 Major, J.A. (1971) Macquarie Island Geophysical Observatory, Annual Report, 1967. Bureau of Mineral Resources, Geology and Geophysics, Record, 1971/86.

Lists instruments in use.

- 421 Mallis, M. (1985) A qualitative investigation into scavenging of airborne sea salt over Macquarie Island. ANARE Research Notes, 26. 18pp.

Investigation of variation in sea salt deposition on various parts of island. Sea salt input substantial, even on plateau.

- 422 Mathews, G.M. and Iredale, T. (1935) untitled note on a penguin from Macquarie Island. *Bulletin of the British Ornithological Club*, 55:102.

Note on a subspecies of Macaroni Penguin (*Catadyptes chrysolophus redimitus*), probably breeding on Macquarie Island. Based on female bird in British Museum collected from Macquarie Island.

- 423 Mawson, D. (1919) Macquarie Island. A sanctuary for Australasian Sub-Antarctic fauna. *Proceedings of the Royal Geographical Society of Australasia, South Australian Branch* 1918-1919:71-85.

General description of island and status of flora and wildlife at that time. Suggestion of desirability of changing island's status to that of a sanctuary.

- 424 Mawson, D. (1922) Macquarie Island and its future. *Papers and Proceedings of the Royal Society of Tasmania*, 1922:40-54. Reprinted in *Australian Zoologist*, 3:92-102.

Plea for establishment of Macquarie Island as a sanctuary for wildlife. General description of the island and the status of its birds and animals at the time. Discussion of history of exploitation of island wildlife.

- 425 Mawson, D. (1930) *The Home of the Blizzard*. Abridged popular edition. Hodder and Stoughton, London: 334-398.

G.F. Ainsworth's narrative account of the stay of the Macquarie Island party of the Australasian Antarctic Expedition, 1911-1914. Description of the island as it then was.

- 426 Mawson, D. (1943) *Macquarie Island: its geography and geology*. Australasian Antarctic Expedition Scientific Reports, Series A, Volume V:1-193.

First comprehensive geographical, geomorphological and geological description of the island. Based on field notes of L.R. Blake. Puts forward idea that entire island glaciated by an over-riding ice sheet which originated on land to the west of the present island. Much of the interpretation superseded. Baseline paper for later studies.

- 427 Mawson, P.M. (1953) Parasitic nematoda collected by the Australian National Antarctic Research Expedition : Heard Island and Macquarie Island, 1948-51. *Parasitology*, 43:291-297.

Lists parasitic nematodes collected from seals, birds and fish on Macquarie Island. Descriptions of parasites.

- 428 Mawson, P.M. (1958) Free-living nematodes. Section 3: Enoploidea from subantarctic stations. *British, Australian and New Zealand Antarctic Research Expedition 1929-1934, Reports, Series B*, 6(14):307-358.

Lists thirty five species from the littoral and offshore zones of Macquarie Island. Original descriptions of *Halalaimus* (*Halalaimus*) *fletcheri*, *Halalaimus* (*Tychnodora*) *macquariensis*, *Mesacanthion kerguelense*, *Oxyonchus subantarcticus*, *Epicanthion brevispiculosum*, *Oncholaimus leptos*, *Oncholaimium paredron*, *Viscosia weiseri*, *Ledovitia fallae* and *Calyptronema* (*Dilaimus*) *mawsoni*.

- 429 McCann, T.S. (1980) Population structure and social organization of Southern Elephant Seals, *Mirounga leonina* (L.). In: Bonner, W.N. and Berry, R.J. (eds.) *Ecology in the Antarctic. Papers presented at a meeting held on 11 October 1979 organised by the Linnean Society of London*. Academic Press, London: 133-150.

Study of population structure and social organisation in Southern Elephant Seals at South Georgia. Comparison with Elephant Seal populations at Macquarie Island. Differences in growth, body size and population structure persist between the South Georgia and Macquarie Island populations and it is likely that most of these differences may reflect differences in food availability at the two locations.



430 McCue, K.F. (1971) Macquarie Island Geophysical Observatory, Annual Report, 1969. Bureau of Mineral Resources, Geology and Geophysics, Record, 1971/13.

Describes instrumentation and changes to it.

431 McDermid, E.M., Ananthakrishnan, R. and Agar, N.S. (1972) Electrophoretic investigation of plasma and red cell proteins and enzymes of Macquarie Island elephant seals. *Animal Blood Groups and Biochemical Genetics*, 3(2):85-94.

Electrophoretic investigations of protein and enzyme groups of eight plasma and eleven red cell systems in Elephant Seals. Variation was demonstrated in five systems:- phosphoglucomutase, red cell acid phosphatase, phosphohexose isomerase, albumin, pre-albumin.

432 McDowell, M. (1973) Macquarie Island Geophysical Observatory, Annual Report 1971. Bureau of Mineral Resources, Geology and Geophysics, Record, 1973/150.

Description of instrumentation.

433 McEvey, A.R. and Vestjens, W.J.M. (1973) Fossil penguin bones from Macquarie Island, southern ocean. *Proceedings of the Royal Society of Victoria*, 86(2):151-174.

Fossil bones of *Eudyptes chrysolophus schlegeli* Finch, ca. 6000 years old, and of *Aptenodytes patagonica* Miller, ca. 4000 years old, from Macquarie Island are compared with recent bones of these species to reveal no significant difference. Evidence of an early unrecorded colony of *Aptenodytes patagonica* at Bauer Bay established. Appendix on geology of the fossil penguin beds by E.D. Gill.

434 McGregor, P.M. (1953) Report on the sounding of Prion Lake, Macquarie Island, March 1953. Bureau of Mineral Resources, Geology and Geophysics, Record, 1953/110.

Tabulates depths along single profile. Map of lake and sounding profile.

435 McGregor, P.M. (1954) Geophysical work at Macquarie Island April 1952 - April 1953. Bureau of Mineral Resources, Geology and Geophysics, Record, 1954/32.

Tabulates absolute magnetic values and seismic phases recorded. Map shows location of various huts.

436 McGregor, P.M. (1956) Magnetic observations at Macquarie Island, 1952. ANARE Reports, Series C, Volume I Terrestrial magnetism. ANARE Publication No. 31. 9pp. plus 41 tables.

Also published as:

- 437 **McGregor, P.M. (1956)** Magnetic Results from Macquarie Island, 1952. Bureau of Mineral Resources, Geology and Geophysics. Report, 27. 9pp. plus 41 tables, 3 plates.

Describes Macquarie Island magnetic observatory and instruments. Tabulates results.

- 438 **McGregor, P.M. (1979)** Australian magnetic observatories. *BMR Journal of Australian Geology and Geophysics*, 4:361-371.

Brief description of Macquarie Island observatory and its significance.

- 439 **McInnes, B.A. (1961)** A study of ionospherics at Macquarie Island. *Australian Journal of Physics*, 14:218-233.

Very low frequency radio emissions of natural origin, recorded at Macquarie Island, grouped into classes. Diurnal variations of all classes show a non-uniform distribution with a peak shortly before noon. Role of Cerenkov radiation in their generation discussed. Suggested energy distributions put forward to explain various classes.

- 440 **McInnes, B.A., Stuart, W.J. and Munro, J. (1961)** Cosmic ray records, Macquarie Island. December 1956 to February 1959. *ANARE Reports, Series C, Volume II Cosmic Rays. ANARE Publication No. 61.* 1 page plus Tables 1-148.

Tabulates results of observations.

- 441 **McLachlan, J.S. (1974)** Macquarie Island: a sub-Antarctic wonderland. *Wildlife*, 16(12):556-563.

Describes populations of seals, penguins and other birds on the island. Discusses recovery of wildlife of the island since proclamation as sanctuary but warns that damage to birds by cats and erosion from vegetation destruction by rabbits are still a threat.

- 442 **McLean, A.L. (1919)** Bacteriological and other researches. *Australasian Antarctic Expedition 1911-14. Scientific Reports, Series C*, 7(4):1-130 plus 10 plates.

Bacteria from soil on top of Wireless Hill described (p.61).

- 443 **McLeod, I.R. (1970)** Bibliography of reports on geology, geomorphology and glacial geology resulting from Australian work in Antarctica. Bureau of Mineral Resources, Geology and Geophysics, Report, 146. 9pp.

Bibliography. Lists seven papers relevant to Macquarie (two unpublished).

444 McMullan, M.W. (1974) Macquarie Island Geophysical Observatory Annual Report 1972. Bureau of Mineral Resources, Geology and Geophysics, Record, 1974/115.

Description of instrumentation.

445 McQuillan, P.B. and Marker, P. (1984) The kelpflies (Diptera: Coelopidae) of Macquarie Island. *Tasmanian Naturalist*, 79:17-20.

Coelopids amongst the most abundant insects on Macquarie Island beaches. Three species listed. Discussion of kelp as an environment for kelpflies. Discussion of biology of kelpflies, including predators and other mortality factors. Description of interaction between species.

446 McRae, J.N. (1959) Air mass temperature in the troposphere over Macquarie Island. *Australian Meteorological Magazine*, No. 27:12-18.

At Macquarie Island, particularly in winter, more than one air mass occurs below 300 mb where, consequently, temperature distributions are skewed or double humped and not adequately defined by mean and standard deviation of the total observations.

447 Meath, J.R. (1971) Selection of a seismometer site, Macquarie Island. Bureau of Mineral Resources, Geology and Geophysics, Record, 1971/79.

Describes problems in selection of seismometer site.

448 Meath, J.R. (1971) Macquarie Island Geophysical Observatory, Annual Report 1970. Bureau of Mineral Resources, Geology and Geophysics, Record, 1971/129.

Describes instrumentation.

449 Merilees, W. (1984) Some notes on the foods of the Dominican gull at Macquarie Island. *Tasmanian Naturalist*, 79:5-6.

Dominican Gull competes with Giant Petrels and Southern Skuas. Scavenges behind these species. Table of food items identified in samples taken in late winter and late spring. Three major influences important to diet of Dominican Gulls: breeding chronologies of larger bird and mammal species; presence/absence of Southern Skua; physical factors and conditions such as day length, weather conditions and tidal cycles. Appears that Dominican Gull has overall preference for marine molluscs.

450 Merilees, W. (1984) On a mass mortality of lantern fish at Macquarie Island. *Tasmanian Naturalist*, 78:32.

Reports mass die-off of two species of lantern fish; *Electrona subaspera* and *Gymnoscopelus braueri*. Both species are associated with deep water.

Suggests that sudden drop in sea water temperature was responsible for die-off, due to northward extension of Antarctic Convergence for a short period.

- 451 Merilees, W. and Burn, R. (1969) *Archidoris kerguelensis* Bergh. the first record of a nudibranch from Macquarie Island. *Victorian Naturalist*, 86:137-138.

Records occurrence of a dorid nudibranch from Macquarie Island. Appears to be same species as occurs at Heard Island.

- 452 Merilees, W.J. (1969) Longevity of Dominican gulls. *The Australian Bird Bander*, September 1969:60-61.

Results of retraps of banded birds. Some adult gulls aged up to over thirteen years. Ages given must be considered minimal.

- 453 Merilees, W.J. (1970) A blue bottle in the sub-antarctic. *Victorian Naturalist*, 87:216-217.

Records *Physalia utriculus* from Macquarie.

- 454 Merilees, W.J. (1971) Bird observations - Macquarie Island, 1967. *Notornis*, 18:55-56.

Observations on Blue Petrels (sizeable population breeding), Grey Duck (breeding), Mallard (species probably resident, breeding status not known), European Starling (breeding). Lists following birds as collected for museums: Sooty Shearwater, Common Diving Petrel, Dominican Gull, Weka, Song Thrush, Goldfinch.

- 455 Merilees, W.J. (1971) Three song thrushes at Macquarie Island. *Notornis*, 18:87-89.

Records appearance of three individuals of *Turdus philomelos* on Macquarie Island. First record of the species on the island. Discussion of weather patterns at time in attempt to decide where birds came from.

- 456 Miller, J. (1983) Ecological relationships of tardigrades and other microfauna from sub-Antarctic islands and selected areas of the Antarctic. *ANARE News*, Supplement 1, August 1983:81.

Samples collected on Macquarie Island in 1978 and 1982 as part of a study of Antarctic and subantarctic cryptofauna. No detailed analysis of samples given.

457 Millett, M.R.O. (1965) List of publications resulting from the work of Australian National Antarctic Research Expeditions (to December 1964). ANARE Interim Reports, Series A, ANARE Publication No. 76. 48pp.

List of publications, many based on work done on Macquarie Island.

458 Millett, M.R.O. (1972) List of publications resulting from the work of Australian National Antarctic Research Expeditions (to December 1970). ANARE Interim Reports, Series A, ANARE Publication No. 121. 85pp.

List of publications, many based on work done on Macquarie Island.

459 Milne, P.J. (1962) Macquarie Island Geophysical Observatory work, 1961. Bureau of Mineral Resources, Geology and Geophysics. Record, 1962/151.

Report on operation of observatory.

460 Mitchener, E.A. (1976) Historical items of Macquarie Island. Antarctic Division Technical Memorandum, ANARE Publication No. 64. pages unnumbered.

179 historical items listed and described. Diagrams.

461 Monro, C.C.A. (1939) Polychaeta. British, Australian and New Zealand Antarctic Research Expedition 1929-1931. Reports, Series B, Zoology and Botany, 4(4):87-156.

Thirteen species from the littoral and offshore zones of Macquarie Island listed.

462 Moore, B.W. and Cameron, A.S. (1969) Chlamydia antibodies in Antarctic fauna. Avian Diseases, 13(3):681-684.

Serological survey shows Chlamydia present in Rockhopper, Royal and Gentoo Penguins on Macquarie Island.

463 Moore, D.M. (1960) Chromosome numbers of flowering plants from Macquarie Island. Botaniska Notiser, 113(2):185-191.

Lists chromosome numbers of twenty two angiosperm species from Macquarie Island and discusses their significance. The Macquarie Island Hydrocotyle sp. differs in chromosome number from similar forms in other regions and can be considered a distinct species. Relevance of chromosome data to understanding the history of the Macquarie Island flora briefly considered.

464 Moore, D.M. (1963) The subspecies of Montia fontana L. Botaniska Notiser, 116:16-30.

Seeds of *Montia fontana* ssp. *fontana* from Macquarie Island figured and subspecies listed as present on Macquarie Island. Chromosome count on Macquarie Island material.

- 465 Moore, D.M. (1964) Experimental taxonomic studies in Antarctic floras. In: Carrick, R., Holdgate, M.W. and Prévost, J. (eds.) *Biologie Antarctique. Premier Symposium organisé par le S.C.A.R. Paris 2-8 Septembre 1962.* Hermann, Paris: 195-202.

Many Macquarie Island species have chromosome numbers identical with material from other areas. *Hydrocotyle novae-zeelandiae* DC. has  $2n=48$  while an unnamed species from Macquarie Island has  $2n=ca.160$ . Evolution of other species endemic to Macquarie Island, such as *Puccinellia macquariensis* (Cheesem.) All and Jan., has occurred without change of chromosome number.

- 466 Moore, J.P. (1957) Hirudinea. British, Australian and New Zealand Antarctic Research Expedition 1929-1931, Reports, Series B, 6(6):99-106.

Unidentifiable leech (due to poor preservation) collected offshore at Macquarie Island.

- 467 Morgan, I. (1977) Viruses and penguins. *Aurora*, Spring 1977:153-155.

Four out of forty blood samples from Royal Penguins on Macquarie Island have antibodies to Newcastle Disease virus. Strain of virus not determined. Suggests that if few birds have antibodies there is need for stringent quarantine.

- 468 Morgan, I.R., Caple, I.W., Westbury, H.A., and Campbell, J. (1978) Disease investigations of penguins and Elephant seals on Macquarie Island. Research Project Series Number 47. Victoria, Department of Agriculture. 51pp. plus plates.

Swabs from Royal, King, Gentoo and Rockhopper Penguins, Southern Skuas, Northern Giant Petrels and Macquarie Island Cormorants processed for detection of Newcastle Disease virus, influenza A virus and other viruses. Six paramyxovirus isolates obtained. Serum samples show 6% of Royal Penguins have antibody to Newcastle Disease virus. Royals may contact Newcastle Disease virus during annual migration and virus shedding is completed before they return to the island. No evidence found of influenza A virus. Twenty three virus isolates obtained from ticks (*Ixodes uriae*). Tapeworms recorded in Elephant Seals.

- 469 Morgan, I.R., Westbury, H.A., Caple, I.W. and Campbell, J. (1981) Survey of virus infection in sub-antarctic penguins on Macquarie Island, Southern Ocean. *Australian Veterinary Journal*, 57(7):333-335.

Sera from 6% of Royal Penguins sampled gave positive reaction for Newcastle Disease virus. Antibodies to a flavivirus and unspecified

avian paramyxovirus detected in three penguin species. A paramyxovirus isolated from cloacal swabs of Royal and King Penguins.

- 470 Muir, E.J. (1968) Macquarie Island Geophysical Observatory, Annual Report 1966. Bureau of Mineral Resources, Geology and Geophysics, Record, 1968/41.

Details of instrumentation.

- 471 Murphy, R.C. (1960) Oceanic birds. *Proceedings of the Royal Society, London, B*, 152:642-654.

Review. Macquarie Island species included.

- 472 Murray, M.D. (1958) Ecology of the louse *Lepidophthirus macrorhini* on the elephant seal *Mirounga leonina* (L.). *Nature (London)*, 182:404-405.

When Elephant Seals moult the stratum corneum of the epidermis is shed intact with the hairs attached. Only the roof of lice burrows is lost, so many survive. Pup seals found to be most heavily infested. Appears likely that skin temperature of host is primary factor influencing growth of louse population.

- 473 Murray, M.D. (1962) The Wandering Albatross : a brief review of studies in progress. *Australian Natural History*, 14(3):75-78.

Less than thirty breeding pairs on Macquarie Island. Most of the birds banded and individual breeding history of many known accurately since 1954. Some pairs remain constant for many years, and return to same part of island to nest. Describes problems with metal bands used on long-lived birds.

- 474 Murray, M.D. (1964) Ecology of the ectoparasites of seals and penguins. In: Carrick, R., Holdgate, M.W. and Prévost, J. (eds.) *Biologie Antarctique. Premier Symposium organisé par le S.C.A.R. Paris, 2-8 Septembre 1962.* Hermann, Paris: 241-245.

Details on how *Lepidophthirus macrorhini* survives on Elephant Seals. Brief mention of ectoparasites (fleas and ticks) on Macquarie Island penguins.

- 475 Murray, M.D. (1967) Ectoparasites of Antarctic seals and birds. *JARE Scientific Reports, Special Issue No. 1. Proceedings of the Symposium on Pacific Antarctic Sciences.* Department of Polar Research, National Science Museum, Tokyo: 185-191.

Review. Penguins on Macquarie Island can be heavily infested with flea *Parapsyllus magellanicus heardi* and tick *Ixodes uriae*. Severity of



infestation largely determined by breeding and moulting pattern. Life history of ectoparasites of penguins summarised. Also describes lice on Elephant Seals.

- 476 Murray, M.D. and Nicholls, D.G. (1965) Studies on the ectoparasites of seals and penguins. I. The ecology of the louse *Lepidophthirus macrorhini* Enderlein on the Southern Elephant Seal, *Mirounga leonina* (L.). Australian Journal of Zoology, 13:437-454.

Hind flippers of most Southern Elephant Seals on Macquarie Island infested with *Lepidophthirus macrorhini*. The louse does not oviposit, nor do its eggs hatch, in water. Reproduction occurs when the Elephant Seals are ashore. The louse life cycle can be completed in about three weeks and multiplication can be rapid. Temperatures greater than 25 degrees Celsius are required for rapid multiplication and such temperatures occur on the hind flippers. Principal cause of louse mortality is failure to survive seals' prolonged stays at sea, seal moulting and transmission to unfavourable sites on the seal. Describes how louse population survives annual moulting cycle of seals.

- 477 Murray, M.D. and Vestjens, W.J.M. (1967) Studies on the ectoparasites of seals and penguins. III. The distribution of the tick *Ixodes uriae* White and the flea *Parapsyllus magellanicus heardi* de Meillon on Macquarie Island. Australian Journal of Zoology, 15:715-725.

Whether the habitat is flooded or not determines whether the tick *Ixodes uriae* and the flea *Parapsyllus magellanicus heardi* can survive and breed. Principal hosts are penguins. Degree of infestation of the four species of penguin on Macquarie Island differs because of differences in bird breeding and moulting behaviour. Details of the mechanisms by which the ectoparasites survive given.

- 478 Nelson, J.S. (1977) Fishes of the Southern Hemisphere genus *Neophrynychthys* (Scorpaeniformes, Cottoidei) with descriptions of two new species from New Zealand and Macquarie Island. Journal of the Royal Society of New Zealand, 7(4):485-511.

Review of the genus. New species, *Neophrynychthys magnicirrus* described from off the northeast coast of Macquarie Island. Toad fish.

- 479 Nicholls, D.G. (1970) Dispersal and dispersion in relation to the birthsite of the southern elephant seal, *Mirounga leonina* (L.) of Macquarie Island. Mammalia, 34(4):598-616.

Distribution of survivors of 7306 branded Southern Elephant Seals analysed in relation to birthsite for each season, age and sex category. The population genetic effect of the dispersal is to allow little differentiation as a result of "isolation by distance". Seals return to their birthsite except during activities, such as moulting, which require special conditions not found at the birthsite.



480 Nurse, F.R. (1964) Marine Tricladida from Macquarie Island. Memoirs of the National Museum, Melbourne, No. 26:157-166.

Original description of *Palombiella macquari*. Further five species recorded.

481 O'Sullivan, D. (1982) A guide to the Scyphomedusae of the Southern Ocean and adjacent waters. ANARE Research Notes, 4. 43pp.

Includes descriptions of jellyfish in waters near Macquarie Island.

482 O'Sullivan, D. (1982) A guide to the Hydromedusae of the Southern Ocean and adjacent waters. ANARE Research Notes, 5. 136pp.

Includes descriptions of Hydromedusae in waters near Macquarie Island.

483 O'Sullivan, D. (1982) A guide to the pelagic polychaetes of the Southern Ocean and adjacent waters. ANARE Research Notes, 3. 62pp.

Includes descriptions of polychaetes in waters near Macquarie Island.

484 O'Sullivan, D. (1982) A guide to the chaetognaths of the Southern Ocean and adjacent waters. ANARE Research Notes, 2. 57pp.

Includes descriptions of chaetognaths in waters around Macquarie Island.

485 O'Sullivan, D. (1983) Fisheries of the Southern Ocean. Australian Fisheries, July, 1983.

General discussion of fisheries of the Southern Ocean. Mentions early exploitation of seals on Macquarie Island. Lists a stone crab, *Lithodes murrayi* from island. Suggests crab population not suitable for exploitation.

486 O'Sullivan, D. (1983) A guide to the pelagic tunicates of the Southern Ocean and adjacent waters. ANARE Research Notes, 8. 98pp.

Includes descriptions of tunicates in waters near Macquarie Island.

487 O'Sullivan, D. (1984) Antarctic tourism - problems for management. In: Parks, Recreation and Tourism. Papers of the 57th National Conference of the Royal Australian Institute of Parks and Recreation. Launceston, 21-26 October, 1984:155-163.

General discussion of problems. Table lists private expeditions (involving Australians) which have called at Macquarie.

488 O'Sullivan, D.B., Johnstone, G.W., Kerry, K.R. and Imber, M.J. (1983) A mass stranding of squid *Martialia hyadesi* Rochebrunne & Mabilie (Teuthoidea: Ommastrephidae) at Macquarie Island. *Papers and Proceedings of the Royal Society of Tasmania*, 117:161-163.

Large number of squid stranded on beaches at the northern end of Macquarie Island in 1971. Suggests that sudden change in wind direction, coupled with rising tide, caused stranding. Species involved not previously recorded in the Pacific area.

489 Oldham, W.H. (1953) Report on work at Macquarie Island, 1951-1952. Bureau of Mineral Resources, Geology and Geophysics, Record, 1953/30.

Mainly about upkeep of huts and instrumentation. Three maps show location of huts.

490 Orchard, A.E. (1979) *Myriophyllum* (Haloragaceae) in Australasia. I. New Zealand: A revision of the genus and a synopsis of the family. *Brunonia*, 2:247-287.

Lists *Myriophyllum triphyllum* from Macquarie Island.

491 Parsons, N.R. (undated) Cosmic ray investigations at Macquarie Island. M.Sc. thesis, University of Melbourne. 188pp.

Records of eight different measurements of cosmic ray intensity obtained over period of twelve months. Brief account of auroral observations.

492 Parsons, N.R. and Fenton, K.B. (1953) Observations of the Aurora Australis Macquarie Island, May 1950 - April 1951. ANARE Interim Reports, 5. ANARE Publication No. 9. 338pp. NOT SEEN.

493 Pawson, D.L. (1962) A new sea cucumber from Macquarie Island. *Transactions of the Royal Society of New Zealand, (Zoology)*, 2(7):47-48.

Describes *Trachythone macphersonae* Pawson from the tidal zone of Macquarie Island.

494 Pawson, D.L. (1968) Some holothurians from Macquarie Island. *Transactions of the Royal Society of New Zealand, (Zoology)*, 10(15):141-150.

Holothurians collected from Macquarie Island described. *Pseudocnus laevigatus* is a new record for the island. Rediscovered type material of the species is described. *Pseudopsolus* Ludwig is referred to the family Cucumariidae and restricted to include only *P. macquariensis* (Dendy). The Macquarie Island holothurian fauna consists of six species. Two species are endemic.

- 495 Pegler, D.N., Spooner, B.M. and Smith, R.I.L. (1980) Higher fungi of Antarctica, the subantarctic zone and Falkland Islands. *Kew Bulletin*, 35(3):499-562.

Lists a number of fungal species recorded from Macquarie Island and their hosts where appropriate.

- 496 Peterson, J.A. (1975) The morphology of Major Lake, Macquarie Island. *Australian Society for Limnology Bulletin* No. 6:17-26.

Tests the proposition that Major Lake, Tiobunga Lake and Prion Lake are of glacial origin. Whereas Prion Lake is probably a glacial lake, the evidence for Major Lake is equivocal. Glacio-climatic implications of the contrast discussed.

- 497 Peterson, J.A., Scott, J.J. and Derbyshire, E. (1983) Australian landform example no. 43. Sorted stripes of periglacial origin. *Australian Geographer*, 15(5):325-328.

Describes sorted stone stripes on Macquarie Island.

- 498 Phillipot, H.R. (1964) The climate of the Antarctic. In: Carrick, R., Holdgate, M.W. and Prévost, J. (eds.) *Biologie Antarctique. Premier Symposium organisé par le S.C.A.R. Paris 2-8 Septembre 1962. Hermann, Paris: 73-79.*

General brief description of overall pattern of Antarctic and subantarctic. Lists extreme temperatures for Macquarie Island (1949-1958).

- 499 Pickard, J., Selkirk, P.M. and Selkirk, D.R. (1984) Holocene climates of the Vestfold Hills, Antarctica and Macquarie Island. In: Vogel, J.C. (ed.) *Late Cainozoic Palaeoclimates of the Southern Hemisphere. Proceedings of an International Symposium held by the South African Society for Quaternary Research, Swaziland, 29 August-2 September 1983. Balkema, Rotterdam: 173-182.*

Palynological studies of peat from three sites on island show plant remains had begun accumulating by 9500 years ago and suggest there have been no major climatic fluctuations on Macquarie Island during the Holocene.

- 500 Pickard, J. and Seppelt, R.D. (1984) Phytogeography of Antarctica. *Journal of Biogeography*, 11:83-102.

General discussion of phytogeographic subdivision of Antarctica and adjacent oceans. Macquarie Island recognised as forming the Macquarie Region of the Subantarctic Zone.

- 501 Pierrehumbert, C., Powell, F.A. and Oliver, S. (1984) Continental transport of particulate matter between Australia and Macquarie Island. In:

Hartmann, H.F., O'Heare, J.N., Chiodo, J. and Gillis, R. (eds.) *Proceedings of the Eighth International Clean Air Conference, Melbourne, May 1984, Volume 2:741-750.*

Air masses from continental Australia can move to Macquarie Island area within 2-3 days and may carry particulate matter.

502 Piper, C.S. (1938) *An examination of soils from Possession, Heard, Kerguelen, and Macquarie Islands. British, Australian and New Zealand Antarctic Research Expedition 1929-1931, Reports, Series A, Volume II (Geology), Part 7. Soils from subantarctic islands. Section I:119-124.*

Soil profile from Buckles Bay described. Mechanical analysis. Chemical analyses tabulated.

503 Powell, A.W.B. (1957) *Mollusca of Kerguelen and Macquarie Islands. British, Australian and New Zealand Antarctic Research Expedition 1929-1931, Reports, Series B, 6(7):107-150.*

Lists fifty two species from Macquarie Island. Five pteropod species common in surrounding ocean. Original descriptions of *Puncturella pseudanalogia*, *Ovirissoa nivosa*, *Prosipho tomlini*, *Trophon macquariensis* and *Admete harpovoluta*.

504 Powell, A.W.B. (1971) *Antarctic mollusca. Poirieria, 6(1):15-21.*

Includes Macquarie Island in the Kerguelenian biogeographic zone. Fifty four marine species known from island. Endemism high. Mollusc fauna shows New Zealand influence.

505 Prescott, G.W. (1979) *A contribution to a bibliography of Antarctic and subantarctic algae together with a checklist of freshwater taxa reported to 1977. Bibliotheca Phycologica, 45. 312pp. J. Cramer.*

Includes Macquarie Island species.

506 Price, A.G. (1962) *The Winning of Australian Antarctica. Mawson's B.A.N.Z.A.R.E. Voyages 1929-31. Based on the Mawson Papers. Being Volume I, the Geographical Report, of the B.A.N.Z. Antarctic Research Expedition, 1929-31, Reports - Series A. Angus and Robertson, Sydney. 241pp.*

also published as:

507 Price, A.G. (1963) *Geographical report based on the Mawson Papers. British, Australian and New Zealand Antarctic Research Expedition 1929-1931, Reports, Series A, 1. 241pp.*

Historical. Section on expedition's visit to Macquarie Island (pp.100-106). Based on log of *Discovery* and possible missing Mawson diary.

508 Prior, L.S. (1954) Statement of magnetic surveys in Australia and sub-Antarctic islands, 1951-1953 (as submitted to I.U.G.G.). Bureau of Mineral Resources, Geology and Geophysics, Record, 1954/21.

Mentions establishment of magnetic observatories on Heard and Macquarie Islands.

509 Purchase, D. (1980) Giant petrel records from Fiji. *Notornis*, 27:406-407.

Records three Giant Petrels, banded on Macquarie Island, from Fiji.

510 Pye, T. (1984) Biology of the house mouse (*Mus musculus*) on Macquarie Island. *Tasmanian Naturalist*, 79:6-10.

Description of distribution, habitat, food and feeding, reproduction and parasites and predators of mice on Macquarie Island.

511 Quate, L.W. (1962) Insects of Macquarie Island. *Diptera: Psychodidae*. *Pacific Insects*, 4(4):958.

Lists *Psychoda spatulata*, *P. severini* and *P. alternata* as occurring on Macquarie Island. Details of specimens taken.

512 Quilty, P.G., Rubenach, M. and Wilcoxon, J.A. (1973) Miocene ooze from Macquarie Island. *Search*, 4(5):163-164.

Planktonic foraminifera, radiolaria and pteropods occur in interstitial Globigerina ooze among pillow lavas at several localities on the island. The fossils suggest an Early (or possibly Middle) Miocene age for the ooze.

513 Rainbow, W.J. (1917) Arachnida from Macquarie Island. *Australasian Antarctic Expedition 1911-1914, Scientific Reports, Series C, Zoology and Botany, Volume V, Part 1*. 13pp.

Lists two species from Macquarie Island. Detailed descriptions.

514 Rathbun, M.J. (1918) Brachyura. *Australasian Antarctic Expedition 1911-1914, Scientific Reports, Series C, Zoology and Botany, Volume V, Part 2*. 5pp.

Lists two species from Macquarie Island. Original description of *Marestitia mawsoni*.

515 Reader's Digest Services (1985) Antarctica. Great stories from the frozen continent. *Reader's Digest*, Sydney. 320pp.

Many contributors. Short chapter on Macquarie Island. Island mentioned in several other chapters, particularly its fauna.

- 516 Reilly, P.N. and Kerle, J.A. (1981) A study of the gentoo penguin *Pygoscelis papua*. *Notornis*, 28:189-202.

Study of four separate colonies on Macquarie Island. No external characters were found for sexing and ageing adult birds. First-year birds could be distinguished by plumage. Breeding success varied between colonies. Chicks joined creches by five weeks of age and were fully feathered by eleven weeks. An unusual temporary partial retention of body feathers by moulting adults was observed. Weight loss of 3.3% per day during moult is similar to that of other penguin species.

- 517 Repenning, C.A., Peterson, R.S. and Hubbs, C.L. (1971) Contributions to the systematics of the southern fur seals, with special reference to the Juan Fernandez and Guadalupe species. In: Burt, W.H. (ed.) *Antarctic Pinnipedia*. American Geophysical Union, Washington DC. Antarctic Research Series 18:1-34.

Macquarie Island included in map of distribution of *Arctocephalus forsteri*. *A. tropicalis* recorded as wanderer on island (see Csordas, S.E. 1962). Original Macquarie Island fur seal may have been *A. tropicalis*.

- 518 Ricker, R.W. and Kraft, G.T. (1979) Morphology of the subantarctic red alga *Cenacrum subsutum*, new genus, new species (Rhodymeniales) from Macquarie Island Australia. *Journal of Phycology*, 15(4):434-444.

Original description of *Cenacrum subsutum* from Macquarie Island. Abundant in calm localities but seems rare in wave-beaten areas.

- 519 Ripper, I.D. and Green, R. (1967) Tasmanian examples of the influence of bathymetry and crustal structure upon seismic T-wave propagation. *New Zealand Journal of Geology and Geophysics*, 10:1226-1230.

Paths of the strong T-waves of earthquakes from Macquarie Island, Auckland Island and the South Island of New Zealand are associated with the deepest part of the Tasman Sea. T phase readily produced by mid-ocean-ridge shocks near Macquarie Island.

- 520 Robertson, C.S. (1957) Geophysical work at Macquarie Island, 1954. Bureau of Mineral Resources, Geology and Geophysics, Record, 1957/86.

Outline of work done.

- 521 Robertson, C.S. (1957) Magnetic results from Macquarie Island, 1954. Bureau of Mineral Resources, Geology and Geophysics, Report, 35. 7pp. plus 53 tables.

also published as:

- 522 Robertson, C.S. (1958) Magnetic observations at Macquarie Island, 1954. ANARE Reports, Series C (1) Terrestrial magnetism. ANARE Publication No. 43. 7pp. plus 53 tables.

Tabulates continuous recordings of variation in three components of earth's magnetic field.

- 523 Robertson, C.S. (1960) Magnetic bays at Macquarie Island. Australian Journal of Physics, 13:470-476.

Polar magnetic bays most striking feature of magnetic records at Macquarie Island. Negative bays more numerous than positive ones and have greater amplitudes and durations. Daily reversal in direction of bay-producing currents indicated and time of reversal appears to vary with season.

- 524 Robertson, E.I. (1965) Gravity base stations in the South-west Pacific Ocean. New Zealand Journal of Geology and Geophysics, 8(3):424-439.

Lists gravity base stations in area. Full details, including free-air and Bouguer anomalies tabulated for bases. Macquarie Island included.

- 525 Rounsevell, D. (1978) Populations of introduced arthropods at Australian Antarctic stations. Pacific Insects, 18(3-4):199-202.

The mite *Eulaelaps mawsoni* occurs on Macquarie Island. May have been introduced by sealers. Mite has not spread and is associated with human activity.

- 526 Rounsevell, D. and Copson, G.R. (1985) Southern Ocean sanctuary. UNESCO Review, No. 10:9-11.

Brief description of island wildlife and its history. Illustrated.

- 527 Rounsevell, D. and Eberhard, I. (1980) Leopard seals *Hydrurga leptonyx* (Pinnipedia), at Macquarie Island from 1949-1979. Australian Wildlife Research, 7(3):403-415.

Number of Leopard Seals recorded at Macquarie Island oscillates between a few and 100-200 individuals every 4-5 years. Seals are present between late June and early December with greatest numbers in early August. Results of tagging show that most are highly mobile. Each year a few seals tagged the preceding year have returned to the island. Periodic dispersal of large numbers of non-breeding Leopard Seals into subantarctic and temperate seas has produced the observed regular peaks in relative abundance. Possible causes of this dispersal are discussed.



- 528 Rounsevell, D.E. (1981) Leopard seals at Macquarie Island. *Aurora*, 2:19.

Brief comment on presence of these seals at Macquarie Island and tagging and measuring studies.

- 529 Rounsevell, D.E. (1983) The resources and management of Macquarie Island. *Aurora*, 3:1-3.

A symposium paper on general management of Macquarie Island. One aim is to ameliorate damage caused by introduced species.

- 530 Rounsevell, D.E. (1983) Macquarie Island Wildlife Sanctuary - 50th anniversary. *Aurora*, 9:1-3.

Summary of island history and exploitation of wildlife leading to establishment of Sanctuary status. Brief discussion of present status of native mammals and birds and of introduced species.

- 531 Rounsevell, D.E. (1984) King penguins. *Tasmanian Naturalist*, 79:4.

Estimates that island supported approximately 218 000 King Penguins in 1980. All available breeding space at Lusitania Bay taken and new breeding groups appeared on the east coast. Species fully recovered from exploitation in about eighty years.

- 532 Rounsevell, D.E. (1984) Leopard seals. *Tasmanian Naturalist*, 79:13-14.

Mentions tagging and measuring of Leopard Seals on Macquarie Island. Animal numbers leaving Antarctic waters seem to follow a 4-5 year cycle.

- 533 Rounsevell, D.E. (1984) Summary of biological research on Macquarie Island 1972-1982. *Tasmanian Naturalist*, 78:6-7.

Lists biological projects undertaken on Macquarie Island during the period 1972-1982. Useful references.

- 534 Rounsevell, D.E. and Copeston, G.R. (1982) Growth rate and recovery of a king penguin *Aptenodytes patagonicus*, population after exploitation. *Australian Wildlife Research*, 9:519-525.

Counts in a colony at Lusitania Bay demonstrate a seventy eight-fold increase in the number of chicks produced annually between 1930 and 1980. Minimum estimated size of population has increased from 3400 in 1930 to 218 000 in 1980. Third largest population of King Penguins in world, with 70 000 to 100 000 breeding pairs.



535 Rountree, P.M. (1938) Bacterial examination of soils from Macquarie Island. British, Australian and New Zealand Antarctic Research Expedition 1929-1931, Reports, Series A, Volume II (Geology), Part 7, Section II:125-126.

Counts of bacteria present. List of bacteria identified.

536 Sabrosky, C.W. (1962) Insects of Macquarie Island. Diptera: Chloropidae, Milichiidae. *Pacific Insects*, 4(4):973.

Small flies. Lists two species from Macquarie Island: *Thyridula* (*Thyridula*) sp.; *Australimyza macquariensis* (Womersley).

537 Salas, M., Peterson, J. and Scott, J. (1983) Quaternary history of Macquarie Island. *ANARE News*, Supplement 1:83-84.

Outline of project on Quaternary history of Macquarie Island.

538 Salas, M. R. (1983) Long-distance pollen transport over the southern Tasman Sea: evidence from Macquarie Island. *New Zealand Journal of Botany*, 21:285-292.

Numerous exotic pollen and spore types occur in Holocene lake deposits on Macquarie Island. Most derived from sources in the south-east Australian region. New Zealand pollen sources relatively poorly represented.

539 Schaeffer, R.C. and Jacka, F. (1971) The  $\Lambda 6300\text{\AA}$  and  $\Lambda 5577\text{\AA}$  [OI] emissions at Macquarie Island. *Journal of Atmospheric and Terrestrial Physics*, 33:229-235.

Reports observations on oxygen emissions at  $\Lambda 6300\text{\AA}$  and  $\Lambda 5577\text{\AA}$  at Macquarie Island (L lat.  $64.2^\circ\text{S}$ ). In the absence of discrete aurora, significant N-S gradient of red line intensity always present. Intensity had positive magnetic dependence, and isophotes were aligned with parallels of geomagnetic L latitude. Green line emission had flat latitudinal distribution. Suggested that red line emission due to thermal electron excitation in F region to which heat is conducted from the magnetopause.

540 Schmidt, R.J. (1971) Studies of electron precipitation phenomena in the auroral zone. Ph.D. thesis, University of Melbourne. 333pp. plus 3 attached research reports.

Study of precipitation of electrons into the auroral zone ionosphere. Mainly concerned with electrons above the energy range associated with optical aurora. Based on Macquarie Island data.

- 541 Schuster, R.M. (1979) On the persistence and dispersal of transantarctic Hepaticae. *Canadian Journal of Botany*, 57(20):2179-2225.

Significant relict and disjunct distribution patterns of twenty one hepatic taxa mapped and discussed. Distribution on subantarctic islands tabulated. Three species of *Herzogobryum* listed for Macquarie Island.

- 542 Scott, J. (1984) Landslip-hunting on Macquarie Island. *Aurora*, 11:12-14.

Discussion of landslips, their causes and revegetation on Macquarie Island.

- 543 Scott, J.H. (1883) Macquarie Island. *Transactions and Proceedings of the New Zealand Institute* 1882, 15:484-493.

Of historical interest. Scott was one of the earliest scientific visitors to Macquarie Island. Describes flora (vascular plants, mosses, lichens, fungi), birds and Elephant Seals.

- 544 Scott, J.J. (1983) Landslip revegetation and rabbits, Subantarctic Macquarie Island. *Proceedings of the Ecological Society of Australia*, 12:170-171.

Quadrat data given for four landslips on the southern coastal slopes of Macquarie Island which indicate effects of rabbit grazing and digging activities on revegetation of slip surfaces.

- 545 Scott, J.J. (1985) Effects of feral rabbits on the revegetation of disturbed coastal slope sites, Macquarie Island. M.A. thesis, Monash University, Melbourne. 219pp.

Detailed study of revegetation of sixty sites disturbed by landslip, rabbit grazing or combination of both. Half sites had date of initial disturbance known. Revegetation pattern on landslips on coastal slopes depends on whether rabbits present or not. Revegetation on grazed sites not subject to slipping differs from that on slip sites and revegetation process differs between slips caused by heavy rainfall and those caused by seismic events.

- 546 Selkirk, D.R. and Selkirk, P.M. (1983) Preliminary report on some peats from Macquarie Island. In: *Proceedings of First CLIMANZ Conference*, February 1981. Department of Biogeography and Geomorphology, Research School of Pacific Studies, Australian National University, Canberra: 115-117.

Reports radiocarbon dates for peats from a number of sites on the island.

547 Selkirk, D.R., Selkirk, P.M. and Griffin, K. (1983) Palynological evidence for Holocene environmental change and uplift on Wireless Hill, Macquarie Island. *Proceedings of the Linnean Society of New South Wales*, 107:1-17.

Palaeontological study of deposit overlying raised beach at 100 m on Wireless Hill suggests that site was close to sea level 5500 years ago and that uplift to present altitude has been rapid.

548 Selkirk, P.M. (1981) Protonemal gemmae on *Amblystegium serpens* (Hedw.) B., S & G. from Macquarie Island. *Journal of Bryology*, 11(4):719-721.

*Amblystegium serpens* (moss) has not been observed to reproduce by means of spores on Macquarie Island. Forms protonemal gemmae in laboratory culture. These germinated to form leafy shoots. Presumed to be vegetative reproductive structures.

549 Selkirk, P.M. (1984) Vegetative reproduction and dispersal of bryophytes on subantarctic Macquarie Island and in Antarctica. *Journal of the Hattori Botanical Laboratory*, 55:105-111.

Lists bryophyte fragments trapped by various means on Macquarie Island. Observations of regrowth from bryophyte vegetative fragments at a number of sites.

550 Selkirk, P.M., Costin, A.B., Seppelt, R.D. and Scott, J.J. (1983) Rabbits, vegetation and erosion on Macquarie Island. *Proceedings of the Linnean Society of New South Wales*, 106(4):337-346.

Selective grazing by rabbits has been important in changing the floristic composition and structure of grassland and herbfield vegetation. Re-examination in 1980 of sites documented in 1958 shows increases in erosion at some sites and revegetation of some areas. Photographic documentation provided for both sets of observations. Role of rabbits in erosion of grassland sites difficult to assess and may in the past have been overestimated.

551 Selkirk, P.M., Edgecombe, A.J. and Seppelt, R.D. (1986) Distribution of bryophytes on subantarctic Macquarie Island. *Acta Botanica* (in press).

Pilot study on use of computer database to determine distribution patterns of bryophytes on Macquarie Island by substrate and vegetation association.

552 Selkirk, P.M. and Selkirk, D.R. (1982) Late Quaternary mosses from Macquarie Island. *Journal of the Hattori Botanical Laboratory*, 52:167-169.

Lacustrine deposit in cliff 30 m asl at The Nuggets contains fossil *Fissidens rigidulus*, *Drepanocladus aduncus* and the angiosperm *Myriophyllum*. Mosses date at about 9000 years BP.

- 553 Selkirk, P.M., Selkirk, D.R. and Bergstrom, D.M. (1984) Holocene vegetation history of Macquarie Island. *Tasmanian Naturalist*, 78:21-23.

Tabulates radiocarbon dates for some peats from the island and lists fossil plant material present in several dated samples.

- 554 Selkirk, P.M. and Seppelt, R.D. (1984) Fellfield on Macquarie Island. *Tasmanian Naturalist*, 78:24-26.

General description of fellfield community on Macquarie Island. Species occurring mentioned.

- 555 Seppelt, R.D. (1977) Studies on the bryoflora of Macquarie Island. I. Introduction and checklist of species. *The Bryologist*, 80:167-170.

Three mosses and five hepatics added to list of species known from Macquarie Island. Checklist of island bryophytes known at time.

- 556 Seppelt, R.D. (1978) A revision of *Ditrichum*, *Distichium* and *Pseudodistichium* (Musci : Ditrichaceae) in Australasia with a revision of the moss flora of Macquarie Island. Ph.D. thesis, University of Melbourne. 234pp. plus 4 appendices.

Lists two species of *Ditrichum* from Macquarie Island. Reports eleven other species from island for first time.

- 557 Seppelt, R.D. (1978) Studies on the bryoflora of Macquarie Island. II. *Ulota phyllantha* Brid. *New Zealand Journal of Botany*, 16:21-23.

Presence of *Ulota phyllantha* (Orthotrichaceae) on Macquarie Island confirmed and species illustrated. Represents the first record of the species from the New Zealand Botanical Zone.

- 558 Seppelt, R.D. (1980) Bryophytes and lichens collected by the visit of Australian Museum personnel to Macquarie Island, summer 1977-1978. Antarctic Division Technical Memorandum, ANARE Publication No. 94. 11pp.

Summary of collection locality data given and species of mosses, hepatics and lichens determined from each of the collections are tabulated.

- 559 Seppelt, R.D. (1980) A synoptic moss flora of Macquarie Island. II. *Sphagnum*. Antarctic Division Technical Memorandum, ANARE Publication No. 98. 9pp.

Records *Sphagnum falciculatum* from Macquarie Island. Distribution on island mapped and species illustrated.

560 Seppelt, R.D. (1980) A synoptic moss flora of Macquarie Island. Antarctic Division Technical Memorandum, ANARE Publication No. 93. 8pp.

Summary of major vegetation formations of Macquarie Island and an outline of associated bryophyte species. Checklist of species known to 1980.

561 Seppelt, R.D. (1981) A synoptic moss flora of Macquarie Island. III. Fissidens. Antarctic Division Technical Memorandum, ANARE Publication No. 100. 9pp.

*Fissidens rigidulus* Hook. f. et Wils. reported from Macquarie Island, its distribution mapped and relationships to other species of the genus and species of *Fissidens* on New Zealand subantarctic islands discussed.

562 Seppelt, R.D. (1981) Studies on the bryoflora of Macquarie Island. III. Collections, new moss additions and corrections and a revised checklist. *The Bryologist*, 84(2):249-252.

Chronological history of bryophyte collections from Macquarie Island, together with a revised checklist.

563 Seppelt, R.D. (1982) A monographic revision of the genus *Ditrichum* (Musci: Ditrichaceae). I. Australian and New Zealand species. *Journal of the Hattori Botanical Laboratory*, 51:99-150.

Following species of *Ditrichum* are recorded from Macquarie Island: *Ditrichum brevirostre* (R. Br. ter.) Broth.; *Ditrichum strictum* (Hook. f. et Wils.) Hampe.; *Ditrichum punctulatum* Mitt.

564 Seppelt, R.D. (1984) Lichens of Macquarie Island. *Tasmanian Naturalist*, 78:15-16.

History of studies of lichens from Macquarie Island. Description of communities in which lichens important, together with details of lichens occurring in them.

565 Seppelt, R.D. (1984) Bryoflora of Macquarie Island. *Tasmanian Naturalist*, 78:13-14.

History of studies on the bryoflora of Macquarie Island. Moss flora now known to include at least seventy seven species. Hepatic flora consists of at least forty species. Description of some communities on the island in which bryophytes are important.

566 Seppelt, R.D., Copson, G.R. and Brown, M.J. (1984) Vascular flora and vegetation of Macquarie Island. *Tasmanian Naturalist*, 78:7-12.

History of studies of flora of Macquarie Island. Vascular plant flora made up of forty five species. Description of vegetation types and component species. Discussion of ecological effects on flora of native and introduced animals.

- 567 Seppelt, R.D. and Selkirk, P.M. (1984) Effects of submersion on morphology and the implications of induced environmental modification on the taxonomic interpretation of selected Antarctic moss species. *Journal of the Hattori Botanical Laboratory*, 55:273-279.

Describes studies on growth of deciduous shoot tips of *Bryum argenteum* from Macquarie Island.

- 568 Serventy, D.L. (1952) White egret at Macquarie Island. *The Emu*, 52:66-67.

Report of presence of *Egretta alba*. Area of origin of bird discussed.

- 569 Sexton, M.J. (1981) Macquarie Island Geophysical Observatory Annual Report 1977. Bureau of Mineral Resources, Geology and Geophysics, Record, 1981/17.

Describes instrumentation. Records earthquake shock.

- 570 Shaughnessy, P.D. (1968) Genetical studies in sub-Antarctic and Antarctic fauna. M.Sc. thesis, University of Adelaide, Adelaide. 105pp. plus bibliography.

Serum proteins and haemoglobin of several species examined for polymorphisms. Includes studies of Southern Fur Seals, Southern Elephant Seals, Southern Giant Petrel and Royal Penguin from Macquarie Island.

- 571 Shaughnessy, P.D. (1970) Genetics of plumage phase dimorphism of the southern giant petrel *Macronectes giganteus*. *Heredity*, 25(4):501-506.

Two plumage phases of the Southern Giant Petrel recognised. Family data agree with hypothesis that the dimorphism is controlled by two autosomal allelic genes with white phase dominant to dark. Mating frequencies did not differ significantly from those expected with random mating. No evidence found of differential chick mortality.

- 572 Shaughnessy, P.D. (1970) Serum proteins of two sibling species of Giant petrel (*Macronectes* spp.). *Comparative Biochemistry and Physiology*, 33:721-723.

Blood samples collected from *M. giganteus* and *M. halli* on Macquarie Island. Serum protein studies indicate that the two giant petrel species are very similar genetically.

573 **Shaughnessy, P.D. (1970)** Ontogeny of haemoglobin in the Royal penguin *Eudyptes chrysolophus schlegeli*. *Journal of Embryology and Experimental Morphology*, 24(2):425-428.

Haemoglobins of chicks, yearlings and known-age sub-adult Royal Penguins investigated. Two haemoglobin components observed in yearlings and sub-adults. Another three haemoglobin components observed in 3-week old chicks. In some fledging chicks these chick haemoglobins had disappeared. Existence of other haemoglobin components in embryos predicted.

574 **Shaughnessy, P.D. (1970)** Serum protein variation in Southern Fur seals, *Arctocephalus* spp., in relation to their taxonomy. *Australian Journal of Zoology*, 18:331-343.

Examination of samples from *Arctocephalus* spp. from southern Australia, New Zealand and Macquarie Island reveals six transferrin types, assumed to be products of four allelic genes and two phenotypes of a haem-binding protein. Seals from other localities identical on these criteria. Transferrin types of New Zealand and Macquarie Island seals different from Australian *A. forsteri*.

575 **Shaughnessy, P.D. (1971)** Frequency of the white phase of the southern giant petrel *Macronectes giganteus* (Gmelin). *Australian Journal of Zoology*, 19:77-83.

Published data on frequencies of white-phase *M. giganteus* in breeding colonies and at sea reviewed and compared with observations made at colonies on Macquarie Island and at three locations in Antarctica. No relationship could be shown between plumage-phase frequency in breeding colonies and either their latitude or their position relative to the Antarctic Convergence. Several suggestions for control of plumage-phase frequency made.

576 **Shaughnessy, P.D. (1974)** An electrophoretic study of blood and milk proteins of the Southern Elephant seal, *Mirounga leonina*. *Journal of Mammalogy*, 55(4):796-808.

No electrophoretic variation found in transferrin, haemoglobin, LDH and caeruloplasmin in sample of Elephant Seals from Macquarie Island. Variation observed in two whey proteins in ten females from same population. On assumption that variation in whey proteins is genetic, 0.17 of loci examined are polymorphic and proportion of heterozygous loci per individual is 0.075.

577 **Shaughnessy, P.D. (1975)** Variation in facial colour of the Royal penguin. *The Emu*, 75(3):147-152.

Facial colour varied continuously from white to black and was independent of age. Higher frequency of dark-faced females than males at each colony. Distribution of classes of facial colour in different



colonies was heterogeneous. Overlap of facial colours of Royal and Macaroni *E. c. chrysolophus* Penguins is stressed and problems of distinguishing between the two taxa and of identifying stray *E. chrysolophus* are discussed.

- 578 Sheard, K. (1953) Taxonomy, distribution and development of the Euphausiacea (Crustacea). British, Australian and New Zealand Antarctic Research Expedition 1929-1931, Reports, Series B, 8(1):1-72.

General discussion of Euphausiacea. Macquarie Island falls within zone of distribution shown in Table 9, p.32.

- 579 Shellam, G.F., Jones, H.I. and Iveson, J. (1983) A study of viral, bacterial and protozoal infections in Macquarie Island penguins. ANARE News, Supplement 1, August 1983:79.

Fifteen isolations made of opportunistic human pathogen *Edwardsiella tarda* from three penguin species on Macquarie Island. First record of this organism from the subantarctic. Four *Pseudomonas* species isolated from rectal swabs. Other tests for bacteria and viruses described.

- 580 Shipp, E., Keith, K., Hughes, R.L. and Myers, K. (1963). Reproduction in a free-living population of domestic rabbits, *Oryctolagus cuniculus* (L.), on a sub-antarctic island. Nature (London), 200:858-860.

Tabulates data collected in 1950-1951 and 1956. Prominent feature of reproduction is the relatively long breeding season. Importance of nutrition to reproductive status stressed.

- 581 Silic, J. (1979) Macquarie Island Geophysical Observatory Annual Report 1975. Bureau of Mineral Resources, Geology and Geophysics, Record, 1979/11.

Describes instrumentation.

- 582 Simonow, G.V. (1965) Auroral parallactic photography. Part 2. Reduction of parallactic photographs. ANARE Scientific Reports, Series C (III) Upper atmospheric physics. ANARE Publication No. 80:17-41.

Formulae given for reduction of auroral photographs taken simultaneously from two bases. Pairs of photographs exposed simultaneously at two stations 30 km apart on Macquarie Island.

- 583 Simpson, K.G. (1965) First record of a grey plover at Macquarie Island. The Emu. 65(1):77-78.

Records *Pluvialis squatarola* from Macquarie Island. Straggler. Bird collected.



- 584 Simpson, K.G. (1965) The dispersal of regurgitated pumice gizzard-stones by the Southern skua at Macquarie Island. *The Emu*, 65(2):119-124.

Since June 1963 considerable quantities of pumice have washed up on Macquarie Island. The Southern Skua has largely adopted pumice as a gizzard-stone and also swallows pumice pebbles to digest the attached goose barnacles. Pumice regurgitated by skuas widely dispersed over the island.

- 585 Simpson, R.D. (1972) *The ecology and biology of molluscs in the littoral and sub-littoral zones at Macquarie Island, with special reference to Patinigera macquariensis (Finlay, 1927).* Ph.D. thesis, University of Adelaide, Adelaide. 360pp.

Examines shore environment and zonation patterns of rocky shores; possible limiting factors at upper margins of distribution of six mollusc species; behaviour, distribution, and morphological variation of *Patinigera macquariensis*.

- 586 Simpson, R.D. (1976) Physical and biotic factors limiting the distribution and abundance of littoral molluscs on Macquarie Island (sub-antarctic). *Journal of Experimental Marine Biology and Ecology*, 21(1):11-49.

Number of factors examined for influence on limits of distribution and abundance of six species of mollusc in the littoral zone. Habitat and zonal sequence of species are related to tolerances with notable exception of the heat resistance of chitons which, when compared with that of gastropods, is greater than their distribution would suggest. Biotic factors have considerable influence on the distribution and abundance of the species and may reflect the comparative stability of the physical environment. In all species studied, no single factor limits the upper distribution and factors vary in their importance for each species. Synergistic effects of factors are limiting and effective combinations differ for each species.

- 587 Simpson, R.D. (1976) The shore environment of Macquarie Island. ANARE Scientific Reports, Series B (1) Zoology. ANARE Publication No. 125. 41pp.

A number of aspects of the rocky shore environment of Macquarie Island recorded during studies on more specific topics of invertebrate biology and ecology. These aspects included climate, weather, and the topography of the rocky shores; of the zonation of organisms down the shore; measurements of wave action, temperature, salinity, pH, phosphate and chlorophyll. Local zonation plotted from five transects and related to universal, biologically-defined zonation scheme of Lewis (1961) on the basis of ecological characteristics of the common biota within zones.

- 588 Simpson, R.D. (1977) The reproduction of some littoral molluscs from Macquarie Island, subantarctic. *Marine Biology (Berlin)*, 44(2):125-142.

Reproduction of nine species examined. Mode of larval development reported for all species. Reproductive patterns for seven species described from collections taken monthly for 1 year. Features of reproduction important in any correlation between reproduction and habitat are discussed. Suggested that further data on modes of development of marine invertebrates of southern latitudes would enhance zoogeographical interpretations.

- 589 Simpson, R.D. (1982) The reproduction of some echinoderms from Macquarie Island. Australian Museum Memoir No. 16:39-52.

Three species of starfish and one holothurian collected. Study of preserved specimens showed that two starfish and the holothurian have brooding mode of reproduction and distinct reproductive cycles. Other species shows no cycle in reproductive pattern. Other echinoderms studied.

- 590 Simpson, R.D. (1982) Reproduction and lipids in the sub-antarctic limpet *Nacella (Patinigera) macquariensis* Finlay, 1927. *Journal of Experimental Marine Biology and Ecology*, 56(1):33-48.

Reproductive cycle of *Nacella (Patinigera) macquariensis* described. Two populations sampled. Breeding period sufficiently long to overlap in the two populations. Phase difference in reproductive cycles discussed with respect to possible genetic divergence and correlation between timing within the reproductive cycle and environmental factors.

- 591 Simpson, R.D. (1984) The shore ecology of Macquarie Island. *Tasmanian Naturalist*, 78:28-30.

History of studies on shore ecology of Macquarie Island. Comparison of zonation on shores of Macquarie Island with a universal zonation scheme. Description of the biology of some shore organisms.

- 592 Simpson, R.D. (1985) Relationship between allometric growth, with respect to shell height, and habitats for two patellid limpets, *Nacella (Patinigera) macquariensis* Finlay, 1927, and *Cellana tramoserica* (Holten, 1802). *The Veliger*, 28:18-27.

Study of relationship between shell growth and water turbulence and desiccation in *Nacella* from Macquarie Island.

- 593 Simpson, R.D. and Harrington, S.A. (1985) Egg masses of three gastropods, *Kerguelenella lateralis* (Siphonariidae), *Laevilitorina caliginosa* and *Macquariella hamiltoni* (Littorinidae), from Macquarie Island (sub-Antarctic). *Journal of the Malacological Society of Australia*, 7(1-2):17-18.

Egg masses of three species of mollusc described.

594 Sitnikova, L.G. and Andreychikova, YE.I. (1973) Oribatidae of the Macquarie and Kerguelen Islands. Soviet Antarctic Expedition Bulletin 83:77. American Geophysical Union translation 8(5):278-279.

Records four species of armoured mites from Macquarie Island. First record of Achipteriidae larvae on island. Ecological characteristics of Macquarie Island species discussed.

595 Skira, I. (1984) The rabbit on Macquarie Island. Tasmanian Naturalist, 79:14-15.

History of studies on rabbits on the island. Description of release of rabbit fleas. Summary of rabbit distribution and reproduction on the island. Effects of rabbits on island biota discussed.

596 Skira, I.J. (1978) Reproduction of the rabbit *Oryctolagus cuniculus* (L.), on Macquarie Island, subantarctic. Australian Wildlife Research, 5:317-326.

Reproduction of rabbits on Macquarie Island studied from December 1973 to February 1975. Breeding season extended from late August 1974 to mid-March 1975; both sexes showed annual cycle in development and regression of gonads. Between mid-October and mid-November 92% of females sampled were pregnant. Of all rabbit kittens produced in the 1974-1975 breeding season, 64% were born by mid-December 1974. Female rabbits in their first year of breeding bore the greatest number of kittens; natality decreased as females aged.

597 Skira, I.J. (1979) Studies of the rabbit population on Macquarie Island. M.Sc. thesis, University of Tasmania. 181pp.

Study of ecology of rabbits on island, predation of rabbits by skuas and distribution and spread of European rabbit flea.

598 Skira, I.J. (1980) Some population parameters and seasonal changes in the weights of internal organs of rabbits, *Oryctolagus cuniculus* (L.), at Macquarie Island. Australian Wildlife Research, 7:235-245.

Study of sex ratio, age distribution and seasonal variation in body weight and weight of internal organs. Second half of 1973-74 breeding season contained only 30% of births for the season but supplied 70% of young entering the population. Females weigh more than males in summer; situation reversed in winter. Mean weights of body organs in adult females higher in summer. Mean weights of body organs in males similar in winter and summer.

599 Skira, I.J., Brothers, N.P. and Copson, G.R. (1982) Coat colour and fitness of rabbits of Macquarie Island. Australian Wildlife Research, 9(1):121-123.

Agouti rabbits constituted 84% and black rabbits 16% of the 5137 rabbits shot on Macquarie Island between 1973 and 1977. Occurrence of other coat colours rare. No significant physical differences between agouti and black rabbits in body weight, litter size and eye-lens weight distribution. Hypothesis that black rabbits are more robust than agouti rabbits not substantiated.

- 600 Skira, I.J., Brothers, N.P. and Copson, G.R. (1983) Establishment of the European rabbit flea *Spilopsyllus cuniculi* on Macquarie Island, Australia. Australian Wildlife Research, 10(1):121-127.

Since December 1968, 241 600 European rabbit fleas have been released on Macquarie island. The flea is established but unevenly distributed. Number of rabbits infested greatest following the rabbit breeding season. Limits to spread and survival of rabbit fleas on Macquarie island are discussed.

- 601 Slack-Smith, R.J. (1962) A small collection of fish from Macquarie Island. Memoirs of the National Museum of Victoria, 25:13-16.

Description of a collection of fish from the island. All previously recorded from the island. Guide to relevant literature. Species recorded: *Myctophum subasperum*, *Zancylorhynchus spinifer*.

- 602 Smith, G.T. (1970) Studies on the behaviour and reproduction of the Royal penguin (*Eudyptes chrysolophus schlegeli*). Ph.D. thesis, Australian National University, Canberra. Unpublished. NOT SEEN.

- 603 Smith, G.T. (1974) An analysis of the function of some displays of the Royal penguin. The Emu, 74:27-34.

Analyses the function of six displays of the Royal Penguin *Eudyptes chrysolophus schlegeli*. The ecological significance of these displays is discussed.

- 604 Smithers, C.M. (1962) Insects of Macquarie Island. Psocoptera: Philotarsidae. Pacific Insects, 4(4):929-932.

Book lice/bark lice. Original descriptions of *Austropsocus* Smithers and type species *Austropsocus insularis*.

- 605 Sobey, W.R., Adams, K.M., Johnston, G.C., Gould, L.R., Simpson, K.N.G. and Keith, K. (1973) Macquarie Island: the introduction of the European rabbit flea *Spilopsyllus cuniculi* (Dale) as a possible vector for myxomatosis. Journal of Hygiene. (Cambridge), 71:299-308.

European rabbit flea first released on Macquarie Island in December 1968. The flea has survived and bred on the island and about 30% of the

rabbits sampled from the original release area in January 1972 were flea-infested.

- 606 Stannard, L.J. (1962) Insects of Macquarie Island. Thysanoptera: Thripidae. *Pacific Insects*, 4(4):933-936.

Thrips. Original description of *Physemothrips* Stannard and type species *Physemothrips chrysodermus* Stannard.

- 607 Strandtmann, R.W. (1982) Notes on *Nanorchestes* IV. Four new species from Macquarie Island, Australia. (Acari: Endeostigmatides: Nanorchestidae). *Pacific Insects*, 24(2):171-178.

Jumping mites. Original descriptions of *Nanorchestes macquariensis*; *N. marianae*; *N. watsoni*; *N. rounsevelli*. Also lists *N. bellus* as occurring on the island.

- 608 Summerhayes, C.P. (1967) Macquarie Bathymetry. New Zealand Oceanographic Institute Chart, Oceanic Series, 1:1 000 000.

Chart.

- 609 Summerhayes, C.P. (1969) Marine geology of the New Zealand subantarctic sea floor. New Zealand Department of Scientific and Industrial Research, Bulletin 190. 92pp. plus charts. (New Zealand Oceanographic Institute Memoir No. 50.)

Brief description of Macquarie Ridge and a summary of geology of Macquarie Island (based on Mawson, 1943). Tabulation of chemical analysis of Macquarie Island rocks (based on Mawson, 1943).

- 610 Summerhayes, C.P. (1974) Macquarie-Battery Ridge. In: Spencer, A. M. (ed.) Mesozoic-Cenozoic Orogenic Belts. Geological Society of London Special Publication 4. Scottish Academic Press, Edinburgh: 381-386.

Brief outline of tectonic setting of Macquarie Island as part of the Macquarie Ridge complex.

- 611 Sutton, R.G. (1969) Macquarie Island Geophysical Observatory, Annual Report 1965. Bureau of Mineral Resources, Geology and Geophysics, Record, 1969/84.

Describes instrumentation and buildings.

- 612 Swaine, D.J. (1957) The trace elements of some soils and rock from Macquarie Island, South Pacific Ocean. ANARE Reports, Series A (3) Geology. ANARE Publication No. 39. 10pp.

Reports trace element composition of four samples of peat, two samples of morainic material and one rock.

- 613 **Swan, R.A. (1961)** *Australia in the Antarctic. Interest, Activity and Endeavour.* Melbourne University Press, Melbourne. 432pp.

History of Australian involvement in Antarctica and subantarctic.  
Sections on Macquarie Island in context of overall history.

- 614 **Sykes, L.R. (1963)** Seismicity of the South Pacific Ocean. *Journal of Geophysical Research*, 68(21):5999-6006.

Earthquake epicentres occur on ridge near Macquarie Island.

- 615 **Tattersall, W.M. (1918)** *Euphausiacea and Mysidacea.* Australasian Antarctic Expedition 1911-1914, Scientific Reports, Series C, Zoology and Botany, Volume V, Part 5. 15pp. plus 1 plate.

One species caught in trawl off Macquarie.

- 616 **Taylor, B.W. (1954)** An example of long distance dispersal. *Ecology*, 35(4):569-572.

General discussion of long distance dispersal as a possible mechanism for the establishment of the flora of Macquarie Island.

- 617 **Taylor, B.W. (1955)** Terrace formation on Macquarie Island. *Journal of Ecology*, 43:133-137.

Leeward and windward terraces and stone lines are described and origin discussed. These structures are confined to highland areas carrying fieldmark vegetation.

- 618 **Taylor, B.W. (1955)** The flora, vegetation and soils of Macquarie Island. ANARE Reports, Series B, Volume II, Botany. ANARE Publication No. 19. 192pp.

First comprehensive description of the flora and vegetation of Macquarie Island. Baseline for all later vegetation and floristic studies. Sections on origin of the flora, description of vegetation, effects of animals and man, autecology of vascular species, transient species, soils. Describes wet tussock grassland, sub-glacial herbfield, fen, bog, fresh water communities and fellfield.

- 619 **Taylor, R.H. (1979)** How the Macquarie Island parakeet became extinct. *New Zealand Journal of Ecology*, 2:42-45.



For seventy years following the discovery of Macquarie Island the endemic parakeet *Cyanoramphus novaezelandiae erythrotis* remained plentiful, despite the introduction of cats and other predators. The crucial factor in the bird's rapid disappearance between 1881 and 1890 appears to have been the successful liberation of rabbits in 1879. This led to great increases of feral cats and introduced Wekas and presumably to greatly intensified predation on parakeets.

- 620 Tenni, P.B. (1954) Geophysical work at Macquarie Island, April 1953 - December 1953. Bureau of Mineral Resources, Geology and Geophysics, Record, 1954/33.

Results of absolute magnetic observations and initial earthquake phases.

- 621 Tenni, P.B. and Brooks, J.A. (1956) Magnetic results from Macquarie Island, 1953. Bureau of Mineral Resources, Geology and Geophysics, Report, 31. 3pp. plus 50 tables, 6 plates.

also published as:

- 622 Tenni, P.B. and Brooks, J.A. (1957) Magnetic observations at Macquarie Island, 1953. ANARE Reports, Series C (1) Terrestrial magnetism. ANARE Publication No. 37. 3pp. plus 50 Tables. Illustrations.

Brief description of Macquarie Island instruments and their calibration. Tabulates hourly values of declination, horizontal and vertical intensity. Details of magnetic storms.

- 623 Thomas, G.H.Y. (1982) Macquarie Island Geophysical Observatory October 1981 - January 1982. Bureau of Mineral Resources, Geology and Geophysics, Record, 1982/36.

Report.

- 624 Thomson, J.A. (1918) Brachiopoda. Australasian Antarctic Expedition 1911-1914. Scientific Reports, Series C, Zoology and Botany, Volume IV, Part 3. 76pp. plus 4 plates.

Lists two species from Macquarie Island (one based on beach-washed specimens). Original descriptions of *Magellania macquariensis* and *Gyrothyris mawsoni*.

- 625 Tillyard, R.J. (1920) The insects of Macquarie Island. With appendices by C.T. Brues and A.M. Lea. Australasian Antarctic Expedition 1911-1914. Scientific Reports, Series C, Zoology and Botany, Volume V, Part 8. 35pp.

List of species known from Macquarie Island prior to 1920. Treatment of Collembola, Hymenoptera, Coleoptera, Lepidoptera, Diptera.



626 Tomkins, B. (1985) Derivations of names of features on Macquarie Island - 158°55'E, 54°30'S. Aurora, 15:20-22.

Gives derivations or possible derivations of thirty six names applied to island features.

627 Tomkins, B. (1985) Derivations of names of features on Macquarie Island - 158°55'E, 54°30'S. Aurora, 16:8-10.

Gives derivations or possible derivations of thirty one names applied to island features.

628 Tomkins, R.J. (1983) Purple bill flushes and pink ear marks on Wandering albatross on Macquarie Island. Australian Seabird Group Newsletter, 18:11-15.

Describes quick colour changes in bill of albatrosses, probably caused by superficial capillaries dilating and allowing blood to move closer to the surface. Changes seem to result from man-related stress. Also describes pink colouration of feathers in ear region.

629 Tomkins, R.J. (1983) Fertilisation of Wandering Albatross eggs on Macquarie Island. Notornis, 30:244-246.

Records copulation frequency of breeding pairs on Macquarie Island and infers when egg is fertilised.

630 Tomkins, R.J. (1984) Some aspects of the morphology of Wandering Albatrosses on Macquarie Island. The Emu, 84:29-32.

Little published information to substantiate inclusion of Wandering Albatrosses of Macquarie Island in subspecies *Diomedea exulans chionoptera*. Paper provides data about Macquarie Island population that will assist assessment of its current taxonomic grouping.

631 Tomkins, R.J. (1984) It's great to be alive, especially on Macquarie Island. Tasmanian Naturalist, 79:24-32.

Idiosyncratic. Description of numerous observations on biology and reproduction of Wandering Albatross.

632 Tomkins, R.J. (1985) Reproduction and mortality of Wandering albatrosses on Macquarie Island. The Emu, 85:40-42.

Calculation of breeding success of Wandering Albatross on Macquarie Island from 1974-1978. Apparently high death rate of adults. Number of breeding pairs decreasing.

- 633 Tomkins, R.J. (1985) Attendance of Wandering Albatrosses (*Diomedea exulans*) at a small colony on Macquarie Island. ANARE Research Notes, 29. 20pp.

Tabulations of attendance of breeding and non-breeding birds at colony over two summers. Older non-breeders more frequent visitors than younger non-breeders.

- 634 Tomlin, J.R. Le B. (1948) The Mollusca of Macquarie Island. Gastropods and bivalves. British, Australian and New Zealand Antarctic Research Expedition 1929-1931, Reports, Series B, 5(5):221-232.

Lists thirty one species from Macquarie. Original description of *Maurea megaloprepes*. Land snails not dealt with.

- 635 Troll, C. (1960) The relationships between the climates, ecology and plant geography of the southern cold temperate zone and the tropical high mountains. Proceedings of the Royal Society of London, B, 152:529-532.

Short discussion of general nature. Macquarie Island vegetation compared with that of other areas.

- 636 Tulloch, A. (1916) Macquarie Island penguins. The Emu, 16:92-96.

General discussion of Macquarie Island penguins, written during phase of exploitation.

- 637 Tyler, P. (1978) Macquarie Island's lakes. Aurora, Spring 1978:131-134.

Complete absence on Macquarie Island of dragonflies, caddises and stoneflies. No shrimps. Structure of aquatic communities differs from that of similar lakes in Tasmania and New Zealand. Chemistry of island lake waters resembles that of seawater more or less closely. Brief mention of freshwater algae.

- 638 Tyler, P.A. (1972) Reconnaissance limnology of sub-Antarctic islands. I. Chemistry of lake waters from Macquarie Island and the Iles Kerguelen. International Revue der gesamten Hydrobiologie und Hydrographie, 57(5):759-778.

Plateau lakes of Macquarie Island and Kerguelen illustrate dominant role of the sea in chemistry of lakes on subantarctic islands. Salinity of waters depends on distance from coast in direction of prevailing winds, and ionic composition points to sea spray as major supplier of ions. Geochemical influence is slight. Lake waters are soft, slightly-coloured or colourless, and have a pH near neutrality or moderately acid.

- 639 van Zinderen Bakker, E.M. (1967) Some botanical problems of the southern end of the world. South African Journal of Science, 63:226-234.

Very brief section on flora of Macquarie.

- 640 van Zinderen Bakker, E.M. (1969) Quaternary pollen analytical studies in the Southern Hemisphere with special reference to the Sub-Antarctic. In: van Zinderen Bakker, E.M. (ed.) *Palaeoecology of Africa, the surrounding islands and Antarctica*, 5:175-212.

General review. Describes Bunt's (1956) recognition of a preglacial flora different to present flora of island.

- 641 van Zinderen Bakker, E.M. (1970) Quaternary climates and Antarctic biogeography. In: Holdgate, M.W. (ed.) *Antarctic Ecology*. Academic Press, London: 31-40.

General review. Accepts Bunt's (1956) description of a preglacial flora different to present one on Macquarie Island.

- 642 Varne, R., Gee, R.D. and Quilty, P.G.J. (1969) Macquarie Island and the cause of oceanic linear magnetic anomalies. *Science*, 166:230-232.

Macquarie Island formed of probably Pliocene oceanic crust. Intruded into pillow lavas is a belt of harzburgite and layered gabbro masses cut by dyke swarms. Similar belt-like structures may cause linear magnetic anomalies of the oceans.

- 643 Varne, R. and Rubenach, M.J. (1972) Geology of Macquarie Island and its relationship to oceanic crust. In: Hayes, D. E. (ed.) *Antarctic Oceanology II The Australian-New Zealand Sector*. American Geophysical Union Antarctic Research Series, 19:251-266.

Macquarie Island formed of fault-bounded blocks from different crustal levels. Northern part of the island composed of gabbro and serpentinized peridotite masses and dolerite dyke swarms metamorphosed under greenschist and amphibolite facies conditions. Northern part appears to have been derived from deeper crustal levels than the southern part of the island where the rocks are mainly fresh or slightly metamorphosed lavas and volcanic breccias cut by many dykes. Rocks could have been formed at a spreading zone in an oceanic environment. A hypothetical vertical section would probably consist of an upper layer of slightly metamorphosed extrusive rocks overlying a lower level of amphibolite facies dolerite dyke swarms, gabbros, and serpentinized peridotites.

- 644 Varne, R. and Rubenach, M.J. (1973) Geology of Macquarie Island in relation to tectonic environment. In: Coleman, P.J. (ed.) *The Western Pacific: Island arcs, marginal seas, geochemistry*. University of Western Australia Press, Perth: 535-541.

Macquarie Island an exposed part of crest of Macquarie Ridge. Island rocks may have formed at a slow-spreading mid-oceanic ridge. Rock association resembles an ophiolite complex. Although the ridge may be a

nascent island arc, rocks forming Macquarie Island differ chemically from island arc volcanics and could have been generated before the ridge was formed.

- 645 Vervoort, W. (1957) Copepods from Antarctic and subantarctic plankton samples. British, Australian and New Zealand Antarctic Research Expedition 1929-1931, Reports, Series B, Zoology and Botany, 3. 166pp. plus 138 figures.

Lists *Rhincalanus gigas* from sample taken off Lusitania Bay.

- 646 Vestjens, W.J.M. (1963) Remains of the extinct banded rail at Macquarie Island. *The Emu*, 62:249-250.

The Macquarie Island Rail (*Rallus philippensis macquariensis*) exterminated by introduced predators towards the end of the 19th century; only three museum specimens exist. Search among bone deposits in two caves formerly occupied by sealers or castaways has revealed one complete skull, two nearly complete skulls and one cranium of subspecies.

- 647 von Kéler, S. (1954) The Mallophaga from *Eudiptes chrysolophus* Brand and *E. cristatus* Miller. *Proceedings of the Royal Entomological Society, London*, B, 23(3-4):49-59.

Lists three species on penguins from Macquarie Island.

- 648 Wace, N.M. (1960) The botany of the southern oceanic islands. *Proceedings of the Royal Society of London*, B, 152:475-490. Illustrated.

General review. Macquarie Island included.

- 649 Wace, N.M. (1965) Vascular Plants. In: Mieghean J. van and Oye, P. van (eds.) *Biogeography and Ecology in Antarctica*. W. Junk, The Hague: 201-266.

General discussion of Antarctic and subantarctic floras. Composition of floras of subantarctic islands tabulated. Macquarie Island included in tables and discussion.

- 650 Waite, E.R. (1916) *Fishes*. Australasian Antarctic Expedition 1911-1914. Scientific Reports, Series C, Zoology and Botany, Volume III, Part 1. 92pp.

Lists ten species of fish in eight genera in waters off Macquarie Island. Original descriptions of *Idiacanthus aurora*, *Notosudis hamiltoni* and *Notothenia coriiceps* var. *macquariensis*. Table of distribution of fish in subantarctic zone.

- 651 Wake-Dyster, K.D. (1981) Macquarie Island Geophysical Observatory, Annual Report 1979. Bureau of Mineral Resources, Geology and Geophysics, Record, 1981/19.

Describes instrumentation. Vertical magnetic field intensity measured at various spots on island.

- 652 Wallwork, J.A. (1962) Notes on the genus *Pertorgunia* Dalenius, 1958 from Antarctica and Macquarie. *Pacific Insects*, 4(4):881-885.

Main characters of *Pertorgunia* re-defined in the light of information presented on development of immature forms of *P. colobanthi* Dalenius.

- 653 Wallwork, J.A. (1963) The Oribatei (Acari) of Macquarie Island. *Pacific Insects*, 5:721-769.

Taxonomic survey of Oribatei of Macquarie Island, based on collections of ANARE and Bishop Museum. Following species described or re-described: *Holonothus foliatus*; *Macquariella striata*; *Oppia crozetensis* (Richters); *Halozetes marinus* (Lohmann); *H. intermedius*; *H. crozetensis* (Richters); *H. macquariensis* (Dalenius); *H. belgicae* (Mich.) ssp. *brevipilis*; *Alaskozetes antarcticus* (Mich.) ssp. *Grandjeani* (Dalenius); *Cryptobothria monodactyla*; *Neomycobates tridentatus*; *Sandenia rotunda*; *Totobates anarensis* (Dalenius).

- 654 Walsh, J.J. (1976) Annual Report, Macquarie Island 1974. Bureau of Mineral Resources, Geology and Geophysics, Record, 1976/45.

Describes instrumentation and problems with it.

- 655 Warham, J. (1961) A spine-tailed swift at Macquarie Island. *The Emu*, 61:189-190.

Most southerly record of *Hirundapus caudacutus* to date. Specimen taken in 1960. Bird probably came from eastern Australia or New Zealand.

- 656 Warham, J. (1962) The biology of the giant petrel, *Macronectes giganteus*. *Auk*, 79:139-160.

Based on studies on Macquarie Island. In 1960-61 population estimated at 9000-10 000 breeding birds. Adult breeders do not migrate. Sites of large rookeries seem fairly permanent. Description of displays. Details of incubation and chick feeding. Variations in plumage colour and colour of soft parts described. Solitary breeders very old birds.

- 657 Warham, J. (1963) The rockhopper penguin, *Eudyptes chrysocome*, at Macquarie Island. *Auk*, 80:229-256.

Based on observations of banded birds. Details of breeding, incubation, chick feeding, creche formation, moulting. Rockhopper displays described. Birds exhibit strong tendency to return to same nest sites and mates from year to year.

- 658 Warham, J. (1964) Breeding behaviour in Procellariiformes. In: Carrick, R., Holdgate, M.W. and Prévost, J. (eds.) *Biologie Antarctique. Premier Symposium organisé par le S.C.A.R. Paris 2-8 Septembre 1962.* Hermann, Paris:389-394.

General discussion of breeding in this group of birds. Many species occur on Macquarie Island.

- 659 Warham, J. (1964) Marked Sooty shearwaters *Puffinus griseus* in the Northern Hemisphere. *Ibis*, 106:390-391.

Bird marked on Macquarie Island in 1961 drowned in fishing net off California in 1963.

- 660 Warham, J. (1967) The White-headed petrel, *Pterodroma lessoni* at Macquarie Island. *The Emu*, 67(1):1-22.

Breeding cycle and habits described. These birds are the commonest burrowing species on island. Numbers appear to be declining due to cat predation, competition with rabbits for burrows and loss of soil-cover because of rabbit-induced erosion. Breeding timetable and moulting described.

- 661 Warham, J. (1969) Notes on some Macquarie Island birds. *Notornis*, 16(3):190-197.

Lists following species from Macquarie: common - Antarctic Prion; Grey Duck, Australian Harrier, Southern Skua; rare - Erect-crested Penguin, Blue Petrel, Cape Pigeon, Grey Petrel; introduced - Starling, Redpoll. Notes previous records of Goldfinch, Eastern Silvereye.

- 662 Warham, J. (1971) Letter. *Notornis*, 18:61-64.

Part of a debate about whether Royal and Macaroni Penguins are distinct.

- 663 Warham, J. (1971) Aspects of breeding behaviour in the royal penguin *Eudyptes chrysolophus schlegeli*. *Notornis*, 18:91-115.

Breeding cycle begins in late September, when mature males come ashore after winter at sea to occupy nesting sites, and ends in early April, when breeders return to sea following annual moult. Cycle of nesting and moult is outlined and main patterns in a complex sign-language of display and posturing described.

- 664 Warham, J. (1972) Breeding seasons and sexual dimorphism in Rockhopper penguins. *Auk*, 89(1):86-105.

Study of Rockhopper Penguins on Campbell and Antipodes Islands.  
Comparisons made with Macquarie Island and Marion Island birds.

- 665 Warham, J. (1972) Letter. Black-faced penguins on the Snares. *Notornis*, 19:92-93.

Black-throated Royal Penguins rare on Macquarie Island.

- 666 Warham, J. (1975) The crested penguins. In: Stonehouse, B. (ed.) *The Biology of Penguins*. Macmillan, London: 189-269.

General review of biology of crested penguins. Nomenclature and taxonomy, sexual dimorphism, biogeography and distribution discussed. Annual cycles and breeding described. Extensive treatment of displays and calls. Macquarie Island populations of Rockhoppers and Royals mentioned throughout.

- 667 Warham, J. (1980) Remarks on the nomenclature and taxonomy of crested penguins. *The Emu*, 80:38

Revision of Rockhopper Penguins ought not to be attempted without a detailed comparison of all populations using a variety of characters and measuring techniques that are strictly comparable. Could be gene flow from outside source into Royal Penguins on Macquarie Island.

- 668 Watson, K.C. (1967) The terrestrial Arthropoda of Macquarie Island. ANARE Scientific Reports, Series B (1) Zoology. ANARE Publication No. 99. 90pp.

Covers free-living species of insects, spiders, mites and tardigrades. Checklists of Siphonaptera, Mallophaga, Anoplura and Ixodidae. Thirty four genera of insects; thirty seven genera of arachnids. Discusses total of 119 species. 28% associated with animals (nests, dung, carcasses, debris). 72% associated with vegetation.

- 669 Webb, E.N. (1925) Field survey and reduction of magnetograph curves. Australasian Antarctic Expedition 1911-1914, Scientific Reports, Series B, Volume I Terrestrial magnetism. Part 1:1-197.

Includes tables of data.

- 670 Weimerskirch, H., Jouventin, P., Mougín, J.L., Stahl, J.C. and van Beveren, M. (1985) Banding recoveries and the dispersal of seabirds breeding in French Austral and Antarctic Territories. *The Emu*. 85:22-33.



Tabulation of recovery data. Some birds banded recovered on Macquarie Island (King Penguin). Other recovery data given.

- 671 West, K.R. and Raven, P.H. (1977) Novelties in Australian *Epilobium* (Onagraceae). *New Zealand Journal of Botany*, 15:503-509.

Mentions *Epilobium brunnescens* as occurring on Macquarie Island.

- 672 Wheeler, J.F.G. (1940) Nemerteans of Kerguelen and the Southern Ocean. *British, Australian and New Zealand Antarctic Research Expedition 1929-1931, Reports, Series B*, 4(8):233-256.

Lists ten species at Macquarie Island and offshore. Original description of *Nemertopsella marri*.

- 673 Williams, A.J. (1980) Aspects of the breeding biology of the gentoo penguin, *Pygoscelis papua*. *Gerfaut*, 70(3):283-295.

Breeding biology of the Gentoo Penguin studied on Macquarie Island in 1974 and 1976. Egg laying starts in June but most clutches are laid in July and replacement clutches until October. Hatching interval is 1-2 days. First-hatched chicks are heavier. Chick-rearing period lasts 100-105 days. Each chick guarded by a parent for the first 25 days. Chicks fed daily. Chick growth fastest in the first 35 days. Main period of feather growth 40-80 days after hatching. Details of chick mortality. Estimated breeding success 21%. No pair raised more than one chick from a clutch. Suggested that low breeding success at the two northernmost localities is due to post-glacial southward shift of the Antarctic Convergence which has left these populations "marooned" in subantarctic waters where suitable prey is less readily available.

- 674 Williams, G.R. (1953) The dispersal from New Zealand and Australia of some introduced European Passerines. *Ibis*, 95:676-692.

Records Starlings and Redpolls from Macquarie Island. Redpoll breeding.

- 675 Williams, R. (1984) Inshore fishes of Macquarie Island. *Tasmanian Naturalist*, 78:30-31.

Only six fish species occur in inshore waters of Macquarie Island. Five species are common. The sixth species is a small scorpaenid, known only from four specimens trawled from 2 km off east coast.

- 676 Williams, W. (1982) Macquarie Island Geophysical Observatory, Annual Report, 1981. Bureau of Mineral Resources, Geology and Geophysics, Record, 1982/27.

Report.

- 677 Williamson, P. (1974) Recent studies of Macquarie Island and the Macquarie Ridge complex. *Bulletin of the Australian Society of Exploration Geophysicists*, 5:19-22.

Outline of project on palaeomagnetic and geological study of central region of the Macquarie Ridge Complex. In this part Macquarie Trench occurs to east of Ridge. Project used mainly marine magnetic data. Macquarie Island has geological and petrological characteristics of ocean floor formed at mid-ocean spreading ridges. Macquarie Ridge in Macquarie Island region is part of Indian plate, upbuckled. Present structural regime appears to have been in force for last 10 million years. No significant density contrast between island rocks and surrounding sea-floor rocks.

- 678 Williamson, P. (1974) The structural evolution of the Macquarie Island region and its relation to oceanic crust. Ph.D. thesis, University of New South Wales, Sydney. 265pp.

Study of magnetic anomaly pattern, gravity anomalies, bathymetry, sediment distribution and seismicity in Macquarie Island region and central part of the Macquarie Ridge complex shows compressional regime present. Macquarie Island composed of uplifted sea-floor rocks.

- 679 Williamson, P. (1978) The palaeomagnetism of outcropping oceanic crust on Macquarie Island. *Journal of the Geological Society of Australia*, 27(7):387-394.

Palaeomagnetic analyses give results consistent with Macquarie Island being formed as part of the Indian plate. Magnetic properties of the rocks are consistent with seafloor-spreading anomalies originating from the lavas, with a possible deeper contribution from the gabbros. The dolerite dykes which are palaeomagnetically stable appear to have natural remanent magnetizations which are too low to contribute significantly to seafloor-spreading anomalies.

- 680 Williamson, P. and Johnson, B.D. (1974) Crustal structure of the central region of the Macquarie Ridge complex from gravity studies. *Marine Geophysical Researches*, 2:127-132.

An iterative interpretation of a marine gravity profile across the Central Macquarie Ridge indicates crustal thickening associated with the Macquarie Ridge Complex together with incipient subduction of the Indian plate at the Macquarie Trench. Profile described is north of island.

- 681 Williamson, P. and Rubenach, M.J. (1972) Preliminary report on geophysical studies on Macquarie Island. In: Hayes, D.E. (ed.) *Antarctic Oceanology II. The Australian-New Zealand Sector*. American Geophysical Union Antarctic Research Series, 19:243-249

Bouguer gravity map of Macquarie Island shows a gradient of approximately +5 mgals/km in a westerly direction. Amplitudes and wave

lengths of magnetic anomalies on Macquarie Island similar to those observed near the ocean floor from deep-tow magnetometer studies. Correlations between magnetic profiles in central and southern parts of the island indicate a magnetic fabric striking northwest to north-northwest and this trend coincides with the dominant regional strike of geologic features. Results from the study do not support the hypothesis that Macquarie Island was formed by crustal extension at the Macquarie Ridge.

- 682 Winter, G. and Nunn, W.J. (1950) The component fatty acids of Elephant seal oil. *Journal of the Science of Food and Agriculture* Number 1:18-21.

Tabulates components of blubber fats of male and female Elephant Seals. Based on animals from Macquarie Island.

- 683 Winter, G. and Nunn, W.J. (1953) The component fatty acids of Elephant seal oil: variations and relationship to blubber fats of other seals. *Journal of the Science of Food and Agriculture* Number 9:442-448.

Deals with variation in composition of seal blubber-fats in general and that of Elephant Seal blubber in particular. Based on animals taken from Heard and Macquarie Islands.

- 684 Wirth, W.W. (1962) Insects of Macquarie Island. Diptera: Ephydriidae. *Pacific Insects*, 4(4):971.

Flies. Lists *Ephydrella macquariensis* (Womersley) comb. nov. from Macquarie Island.

- 685 Woehler, E. (1984) Morphology of the Royal penguin *Eudyptes schlegeli* at Macquarie Island. *Tasmanian Naturalist*, 79:2-4.

Royal Penguin endemic to Macquarie Island. Absence of valid morphological data has prevented clarification of its taxonomic status and relationship to Macaroni Penguin. Tabulates body measurements on Royals. Bill morphology is shown to demonstrate greatest sexual dimorphism of body measurements collected. Other measurements show little or no dimorphism and provide no basis for sexing an individual.

- 686 Woehler, E.J. (1981) A study of the phenotypic variation in the Royal Penguin, *Eudyptes schlegeli*, at Macquarie Island. Honours thesis, University of Tasmania. 110pp.

Strong sexual dimorphism in Royal Penguins. Facial colouring data does not support hypothesis of influx of genes into population. Phenotypic variation attributed to high nest site tenacity and mate fidelity, producing a highly isolated gene pool.

- 687 Womersley, H. (1937) Acarina. Australasian Antarctic Expedition 1911-1914, Scientific Reports, Series C, Zoology and Botany, Volume X, Part 6. 24pp. plus 11 plates.

Lists seventeen species of mites from Macquarie Island. Sixteen from tidal zone, one from fresh water.

- 688 Womersley, H. (1937) Coleoptera. British, Australian and New Zealand Antarctic Research Expedition 1929-1931, Reports, Series B, 4(1):23-36.

Lists two species of beetle from Macquarie. Original description of *Antarctophytosus macquariensis*.

- 689 Womersley, H. (1937) Collembola. British, Australian and New Zealand Antarctic Research Expedition 1929-1931, Reports, Series B, 4(1):1-7.

Lists seven species of springtails from Macquarie. Original description of *Lepidobrya mawsoni*.

- 690 Yoshimoto, C.M. (1962) Insects of Macquarie Island. Hymenoptera: Diapriidae. *Pacific Insects*, 4(4):973-974.

Bees and wasps. Lists *Antarctopria latigaster* from Macquarie Island. Notes that a single unidentifiable specimen of the family Scelionidae has been taken on Macquarie.

- 691 Zinova, A.D. (1963) Delesseriaceae apud Insulas Kerguelen et Macquarie. *Trudy Botanicheskogo Instituta. Akademii Nauk SSSR, Seriya 2*, 16:52-67. NOT SEEN.

- 692 Zinova, A.D. (1964) The composition and character of algal flora at the Antarctic coast and in the vicinity of Kerguelen and Macquarie Islands. *Soviet Antarctic Expedition Information Bulletin Volume 1*:123-125. Elsevier, Amsterdam. Translated by Scripta Technica Inc.

Lists twenty four species of algae collected near Macquarie Island. Algal flora of Macquarie Island waters similar to that of Kerguelen, South Georgia, Falklands and Tierra del Fuego.

- 693 Zumpt, F. (1952) The ticks of sea birds. ANARE Reports, Series B, 1, Zoology. ANARE Publication No. 6:12-20.

Lists ticks from following birds on Macquarie Island:- *Eudyptes chrysocome*, *Diomedea melanophris*, *Aptenodytes patagonica*. Tick species and host lists given.

## 2.1 ADDITIONS

The following items came to the compilers' attention after the main bibliography was completed and indexed. They are included in both subject index and author index.

- A01 **Anonymous (1986) The Antarctic and Australian Aviation.** *Aurora*. 5(4):29-31.

Historical. Mentions flight of Catalina to Macquarie in 1948.

- A02 **Antarctic Division, Department of Science (1986) A visitor's introduction to the Antarctic and its environment.** Australian Government Publishing Service. 33pp.

General introduction to Antarctica and the subantarctic. General description of subantarctic islands, including Macquarie. Summary of Antarctic Treaty provisions.

- A03 **Banghar, A.R. and Sykes, L.R. (1969) Focal mechanisms of earthquakes in the Indian Ocean and adjacent regions.** *Journal of Geophysical Research*, 74(2):632-649.

Earthquake mechanism solutions for earthquakes. Four earthquakes along Macquarie Ridge analysed (see Table 1, p.638).

- A04 **Circum-Pacific Council for Energy and Mineral Resources (1978) Geographic map of the the Circum-Pacific Region.** *Pacific Basin*. Scale 1:20 000 000. Lambert Azimuthal Equal Area projection. (Map center point: Equator, 160°W). American Association of Petroleum Geologists, Tulsa Oklahoma.

Geography of Pacific Basin with generalised bathymetry. Macquarie Island and Macquarie ridge complex shown.

- A05 **Circum-Pacific Council for Energy and Mineral Resources (1981) Circum-Pacific map project. Plate-tectonic map of the Circum-Pacific region. South-west quadrant.** Scale 1:10 000 000. Lambert Azimuthal Equal Area projection. (Map center point 35°S, 135°E). American Association of Petroleum Geologists, Tulsa, Oklahoma.

Map showing plate-tectonics in Australia-New Zealand-Antarctic area including Macquarie ridge complex.

- A06 **Circum-Pacific Council for Energy and Mineral Resources (1982) Circum-Pacific Map Project. Plate-tectonic map of the Circum-Pacific region. Antarctica sheet.** Scale 1:10 000 000. Lambert Azimuthal Equal Area

projection. (Map center point 20°S, 165°W). American Association of Petroleum Geologists, Tulsa, Oklahoma.

Map showing plate tectonics in Australia-New-Zealand-Antarctic area including Macquarie ridge complex.

A07 Copson, G.R. (1986) Rats and mice. Australian Wildlife Research, 13:441-445.

Discusses the diet of introduced rodents, *Mus musculus* and *Rattus rattus* on Macquarie Island. House mice eat mainly invertebrates. Ship rats eat mainly plant material. Seasonal variation in diet of ship rats is greater than in diet of house mice.

A08 Houtz, R.J., Ewing, J. and Embly, R. (1971) Profiler data from the Macquarie Ridge area. In: Reid, J.L. (ed.) Antarctic Oceanology I. American Geophysical Union, Antarctic Research Series, 15:239-245.

Seismic profiler data of sediments and topography of parts of Macquarie ridge complex.

A09 Hughes, J.M.R. (1986) The relations between aquatic plant communities and lake characteristics on Macquarie Island. New Zealand Journal of Botany (in press).

Five lakes sampled for water quality, substrate and vegetation. Two of them have nutrient-rich water and organic substrates. The other three are oligotrophic. *Myriophyllum triphyllum*, aquatic bryophytes and algae common in nutrient-rich lakes. Aquatic angiosperms mostly absent from oligotrophic lakes.

A10 Johnson, T. and Molnar, P. (1972) Focal mechanisms and plate tectonics of the Southwest Pacific. Journal of Geophysical Research, 77(26):5000-5032.

Studies of first motions of earthquakes along Macquarie ridge complex. Table 3, p.5005 gives details of six earthquakes along Macquarie Ridge complex.

A11 Lachal, B. (1986) Wooden keel re-discovered. ANARE News, June 1986.

Mentions various items washed ashore on Macquarie Island and discovery of part of wooden keel of old vessel.

A12 Lambert, M., Jacklyn, P. and Cohen, E.A. (in press) Total electron content of the ionosphere north of Macquarie Island. ANARE Research Notes, 34. NOT SEEN.

A13 McLeod, I. (informant) (1986) Macquarie Island and domestic animals. Aurora, 5(4):33

Illustration of horses on Macquarie Island. Mention of pigs present in 1961.

A14 Moore, G.W. (1982) Plate-tectonic map of the Circum-Pacific region. Explanatory notes. American Association of Petroleum Geologists, Tulsa, Oklahoma. 14pp.

Explanatory notes to accompany plate tectonic map sheets of Circum-Pacific region.

A15 Robertson, G.R. (1986) Population size and breeding success of the gentoo penguin *Pygoscelis papua* at Macquarie Island. Australian Wildlife Research, 13(4) (in press). NOT SEEN.

A16 Sykes, L.R. (1967) Mechanism of earthquakes and nature of faulting on the mid-oceanic ridges. Journal of Geophysical Research, 72(8):2133-2153.

Includes analysis of earthquake mechanism on Macquarie Ridge.

A17 Williams, S. and Murthy, V. Rama (1977) Sr-isotopic and trace element geochemistry of the Macquarie Ridge ophiolite complex. Transactions American Geophysical Union, 58:536. ABSTRACT ONLY.

Sr isotope ratios in accord with origin of Macquarie Island ophiolite at oceanic spreading zone.



### 3. SUBJECT INDEX

The categories below are intended as a guide. Many works cited in the bibliography overlap categories. In the biological section, works which are primarily taxonomic have been included under the group concerned. Primarily ecological works may include discussions of many organisms but no attempt has been made to ensure that all references to a particular type of organism occur in the taxonomic section. Numbers beginning with A refer to items in Section 2.1, pp. 115-117.

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