

Preface

Stephanie Smith, an experienced librarian and Rhodes Scholar with specialist skills in the development of bibliographies, was a wonderful partner for Project Crimson in the production of this comprehensive bibliography of pohutukawa and rata. Several years ago the Project Crimson Trust recognized the need to bring together the many and diverse references to these national icons for the benefit of researchers, conservationists, students, schools and the interested public. We never imagined the project would lead to such a work of scholarship, such a labour of love. Stephanie, like others who embrace the cause rather than the job, has invested time and intellect far beyond what was ever expected, and provided us with this outstanding resource. I urge all users to read the short introduction and gain some of the flavour of Stephanie's enthusiasm.

Project Crimson would also like to acknowledge the contribution of Forest Research library staff, in particular Megan Gee, for their help and support throughout the duration of this project.

Gordon Hosking

Trustee, Project Crimson

February 2000

INTRODUCTION: THE LIVING LIBRARY

[The] world around us is a repository of information which we have only begun to delve into. Like any library, once parts are missing, it is incomplete but, unlike a library, once our books (in this instance biological species) are lost they cannot be replaced. - Catherine Wilson and David Given, *Threatened Plants of New Zealand*.

...right at their feet they [Wellingtonians] have one of the most wide-ranging and fascinating living textbooks of botany in the country. Well - selected pages anyway. Many of the pages were ripped out by zealous colonisers, and there are now some big gaps. - Isobel Gabites, *Wellington's Living Cloak*.

The pohutukawa and the ratas are some of New Zealand's most spectacular and memorable native plants. When they are in flower they are recognisable by even the most botanically dense of us. Their images, especially that of the pohutukawa, appear in paintings, drawings, carvings, linocuts, lithographs, photographs, Christmas cards, calendars, wrapping paper, logos, and so on. They are evoked in literature in poems of varying quality, plays, Christmas carols, and - extraordinarily enough - the titles of several Mills and Boon romances. Even for the unromantic, these trees can be part of what makes us homesick when we go away. They are bound up with emotion, identity, patriotism if you like - as is the oak tree to the English. To the Maori, of course, they are important, if not sacred. There is the tree at Cape Reinga, where spirits go when they die; there are legends that explain the origin of the plants, by the matings of Tane, and the colour of the flowers, by the blood of the hero Tawhaki; there are sayings that relate to the flowers and the habits of the trees; afterbirths were hung in certain sacred trees.

The trees are beautiful and impressive, but humans have also found them useful in an economic sense, apart from providing shelter and protection from erosion. Their decorative nature means that cultivars of various species have been raised for garden plants. Pohutukawa and rata timber was used by Maori for paddles, mauls, and small implements; by Pakeha for boatbuilding, firewood, woodturning, furniture, and for a brief and ultimately unsuccessful foray into parquet flooring. The juice, the honey, and the inner bark of several species have been used for medical purposes, by Maori and occasionally by Pakeha. Mother Suzanne Aubert used rata as part of a tonic called 'Natanata'. Parts of the plants contain active ingredients such as tannin, and ellagic and gallic acid. Dye can be made from dried pohutukawa stamens.

The trees have been studied and written about by botanists, ecologists, entomologists, ornithologists, horticulturalists, zoologists, biochemists, conservationists, silviculturalists, journalists, medical herbalists, anthropologists; and information about them is of interest to gardeners, historians, trampers, woodworkers, boatbuilders, farm foresters, schoolchildren, *tangata whenua*, writers, artists, photographers, beachgoers, New Zealanders.

Because of this, the bibliography is designed for a wide range of users. It relates to four *Metrosideros* species in New Zealand: *Metrosideros excelsa* (formerly *tomentosa*), pohutukawa; *M. robusta*, northern

rata; *M. umbellata* (formerly *lucida*), southern rata; and *M. bartlettii*, Bartlett's rata. It is arranged in two sequences. The first (I) consists of references to journal and magazine articles, theses, reports, bulletins, books or serials, and conference proceedings. The second (II) is a highly selected, annotated list of books.

Project Crimson is about conservation of the species themselves. This bibliography is about conservation of the knowledge about the species: support of the "living library" of trees and plants by the library of books and papers. In order to conserve the species, and the knowledge, for the future, it is important to have a perspective on the past. A past in which New Zealanders, it must be admitted, have been extraordinarily careless of these trees. They were cut down to build boats and for other less noble purposes, such as firewood. They were burned off in bush clearances. They were allowed to face without protection the ravages of browsing by introduced animals. Until recently, their basic biology, such as their reproductive mechanisms, was not studied in any great detail. And as late as the 1970s, there was still a species (*Metrosideros bartlettii*) left to discover, when the earliest were collected by Banks and Solander in 1769.

I. A Select Bibliography of Pohutukawa and Rata, 1788-1999

The starting date of 1788 is so early because the first publication of a species defines its name and nature, and citations for the first publication of all four species have been included: the earliest was *Metrosideros excelsa* in 1788, the latest *M. bartlettii* in 1985. The relationship between plants and books (between the library and the "living library") involves discovery, diagnosis, and publication. It is not enough to find a new plant in the bush. To make a plant into a species, it has to be named and described, a diagnosis written in botanical Latin, and this has to be published in an appropriate format, such as a scientific journal. The source of this first publication can be quoted thereafter as part of the reference to the Latin name (for instance "*Metrosideros* Banks ex Gaertn."). Publication is therefore an essential part of the scientific process. New discoveries and debates continue the process through journals and books. Keeping track of publications through bibliographies such as this is a way of keeping track of the state of scientific knowledge in an organised way. It is important that the bibliography has a historical perspective, so that ideas and their development can be traced over time. This is why nineteenth-century publications, ostensibly outdated, have been included in this bibliography. The plants have not changed, but what we know about them has changed, and their names, and in many cases their distribution and conservation status.

After these first publications, the intention has been to include any piece of work which has any or all of the relevant species as its primary subject matter. There are, however, many pieces of work which deal with *Metrosideros* species to a greater or lesser degree, and many of these will be relevant to readers. It is not always easy to draw the line between what is significant information and what is interesting but pointless. I have included publications where the species are mentioned as part of their ecosystem; I have included older publications which give pointers to the distribution of the species at the time of writing; I have included articles about such aspects of botany as pollen analysis which also cover other plant genera. Where *Metrosideros* species are only mentioned *passim* throughout the whole work, I have tended to omit.

Exclusion criteria Foreign-language material has been excluded: all publications are in English. Newspaper articles have been excluded, for reasons of bulk. Species lists which are not published as part of an article which gives more information have been excluded. With regard to unpublished material, that which has only general rather than specific relevance to the trees in question has been excluded. For instance, an unpublished report on the sawing, seasoning and utilisation of southern rata has been included; an unpublished botanical report on an area where southern rata happens to grow has been

excluded. This is because unpublished material can be difficult to obtain; often the information it contains is provisional and unverified; often similar information is available elsewhere in published form. Unpublished material therefore must relate closely to the topic in order to be worth pursuing.

Sources *Electronic sources searched*

STIX (NZ Science and Technology Index)

TREE CD - contemporary and archival

INNZ (Index New Zealand) - for more popular material

Also NZBN

Print sources searched

Boyd, Marleen. *Conservation and management of New Zealand's indigenous forests: a selected bibliography, 1848-1990*. Auckland: the author, 1993..

Hamilton, A. "List of papers and notices on botanical subjects in the Transactions of the New Zealand Institute and other publications." *Transactions and Proceedings of the New Zealand Institute* 36 (1904): 342-372..

Jackett, Lynne. *New Zealand native plants: with special reference to their identification and cultivation 1956-1976*. [A bibliography.] Wellington: New Zealand Library School/National Library, 1976.

Leamy, Kate, and Judith Hayward. *Indigenous forestry: a bibliography. Works by New Zealand Forest Service personnel*. Wellington: New Zealand Forest Service Head Office Library, 1986..

Orwin, Joanna. "Annotated bibliography on the ecology of New Zealand indigenous forest and scrub 1929-1970." *New Zealand Journal of Botany* 12 (1974): 45-113. .

Union list of theses of the University of New Zealand, and supplements.

The bibliographies of theses, books, and articles.

II. An Annotated Selection of Books, 1853-1999

There are many botany books, plant identification guides, natural history handbooks, and gardening books which have dealt with pohutukawa and rata in greater or lesser detail. The annotated section of this bibliography presents a selection of these. I have included the most obvious and important publications over the years - the Floras of Hooker, Cheeseman, and Allan; publications by Leonard Cockayne; Dr Lucy Moore's *Oxford Book of New Zealand Plants*; Geoff and Maurice Conly's celebration of pohutukawa; the lucid examinations of plant lifestyles by Professor John Dawson. Beyond these, however, the choice has been personal. I have included some texts which contain little relevant information, but that little is of very high quality: *Plants of the New Zealand Coast*, by Moore and Adams. Others vividly express the ideas (and prejudices) of their time: Marguerite Crookes' *Plant Life in Maoriland*. There are even some which I consider of dubious value in terms of the information they present (Eva Richards' *Our New Zealand Trees and Flowers*), but which provide a contrast to more illuminating publications. Although listing the available illustrations of pohutukawa and rata has not been part of my purpose, I have included a number of texts largely because of their illustrations: the nineteenth-century albums by Sarah Featon and Georgina Hetley, and the twentieth-century botanical paintings of Audrey Eagle. I have not included books which are solely plant identification guides, unless they have a considerable amount of extra information, or else some unusual feature, such as the leaf-shape key in Andrew Crowe's *Which Native Tree?* I have not included (though I have consulted) every edition of those popular works which went into numerous editions. Books such as *Plants of New Zealand* by Laing and Blackwell, or *The Trees of New Zealand* by Cockayne and Turner, are represented by one early and one late edition. The intention has been to provide the reader with a range of publications from the past 150 years, and to indicate in the annotations the quality and accessibility of information about pohutukawa and rata available in each work.

To be retrievable in a library subject catalogue under Pohutukawa or Skydiving or French Polishing or whatever, a book generally has about 20% of its content devoted to the relevant subject. This useful rule, which makes the devious and arcane profession of subject cataloguing actually practicable, nevertheless means that a lot of books that contain important bits of information don't show up when you search your library catalogue. I am ignoring the 20% rule in this bibliography. The books included vary considerably in the amount of material relevant to *Metrosideros* species which they contain. Some give detailed information on all the New Zealand species, others just give a representative selection (which almost always contains pohutukawa, though there is one which deals only with the climbing species). A few have only a nugget of information, but are included because that information is of high quality, or is particularly well expressed, or cannot be found easily anywhere else. Because of this variation in intensity of information, and because these books (at least the modern ones) are for the most part accessible to ordinary readers, I decided to annotate the references. Annotations act as a guide to help readers to decide how useful a book is likely to be for their own information needs. The annotations will tell you the scope of the book; its main purpose; its intended audience - language level, etc.; its arrangement; and most importantly how *Metrosideros* species are dealt with in the text. In some cases I have made comments on accuracy after checking information. Comparisons may be made between this book and others in the bibliography, on specific issues (eg whether northern rata strangles its host). There will usually be a note on the author and his/her qualifications for writing the book. Presence (and often quality) of illustrations, maps, index, glossary etc. are noted.

The floras, handbooks and botany books come in two basic formats: either a list or a narrative. There are many that combine both. Lists can be arranged in a natural or taxonomic arrangement, following the order of families that has been laid down by contemporary authorities. This order has changed substantially as the years have passed. Cheeseman's 1st ed. follows Hooker and Bentham and his 2nd follows Engler. Most contemporary NZ books follow H. H. Allan who in turn followed Hutchinson, *The Families of Flowering Plants*, 1926. Or there can be an artificial arrangement - alphabetically or by habit or habitat or size or geographical location or some other criterion which is significant to the author's intentions. Lists are mainly for identification purposes but often have more information.

Floras like Allan's or Cheeseman's identify species by botanical description using technical language, and the reader therefore needs to know that language well enough to visualise what the terms mean in order to make full use of the book. But we are living in a visual age, and in most modern handbooks the illustrations are paramount. Photographs, paintings or drawings are used to show important features for identification, and words are used to reinforce the illustration. This makes life easier for the amateur, who is apt to be distressed by descriptions which read 'Receptacle obconic; sepals deltoid to triangular, gland-tipped; petals oblong, pubescent, crimson. ...Ovary 3-celled, adnate to receptacle; capsules...distinctly exserted, woody, white-tomentose, loculicidally 3-valved.' (*Metrosideros kermadecensis*, Allan). Of course not only modern books are illustrated - the 19th century saw a flowering of botanical art and there are some very beautiful and informative illustrated books from that period. Bruce Sampson, in his *Early New Zealand Botanical Art*, gives an excellent overview of these.

There is considerable variation in the amount of technical language used in these books. Popular handbooks make deliberate concessions to the non-specialist reader by using everyday words as much as possible, and by providing a glossary for unavoidable technical terms.

The other variable is the completeness - the number of species covered. Anything called a flora or a handbook of the flora of a particular country will be attempting to be comprehensive. Other books just give you a sample - often a very good and informative sample, as in the *Oxford Book of New Zealand Plants*, or *Flowering Plants of New Zealand*. But if you are trying to track down particular information about a particular plant, the comprehensive list or flora is the most likely place to find it. Whether you can understand it when you find it is another matter.

The other form found in this kind of book is the narrative. I use the word narrative in its loosest sense because these books don't have a beginning, middle and end as such, but they do have titles like *New Zealand Plants and their Story*, or *Lifestyles of New Zealand Forest Plants*, or *New Zealand Pohutukawa*, and they are divided not into lists but into chapters. They tend to have an ecological approach - how plants relate to each other, to their environment, and how they have been modified by time, by other animals, and by us. (*New Zealand Pohutukawa* is perhaps an exception, with a more cultural and historical approach - as is the little book about Kawhia by Schnackenberg.) They tend to be well written by the standards of their time, although some of the older ones seem a bit flowery now. The best show clear readable prose and a real attempt to engage interest and promote understanding, the probably of a passionate involvement with the subject. To write about your specialist in everyday language, making your prose accessible without sacrificing scientific accuracy, is a great gift, and that so many of our great botanists have had it should be a cause for rejoicing among all of us non-scientists who are interested in science.



The selection in this section of the bibliography is highly personal. Any errors and omissions are entirely my own. I would like to acknowledge the help of the staff of the Forest Research Institute library, who most generously allowed me to use their resources; and the infinite patience of Dr Gordon Hosking and the members of the Board of Trustees of Project Crimson.

Stephanie Smith

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I. A Selected Bibliography of Pohutukawa and Rata (1788-1999)

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Keywords: Pohutukawa/*Metrosideros tomentosa*/*Metrosideros excelsa*/Rata/*Metrosideros robusta*/Distribution/Moehau/Cape Colville.
- Allan, G. P. S. West Coast hill country soils - their potential for conversion of indigenous forest to exotic forest. New Zealand Journal of Forestry 17(2), 218-223. 1972.
Keywords: Soils/Southern rata/*Metrosideros umbellata*/Exotic forest/Indigenous forest.
- Allan, H. H. and Dalrymple, K. W. Ferns and flowering-plants of Mayor Island, New Zealand. Transactions and Proceedings of the New Zealand Institute 56, 34-36. 1924.
Keywords: Ferns/Mayor Island/*Metrosideros tomentosa*/*Metrosideros excelsa*/Pohutukawa.
- Allan, H. H. Vegetation of Mount Peel, Canterbury, N.Z. Part 1. - The forests and shrublands. Transactions and Proceedings of the New Zealand Institute 56, 37-51. 1924.
Keywords: Canterbury/*Metrosideros lucida*/*Metrosideros umbellata*/Southern rata.
- Allen, R. B. A forest succession in the Catlins Ecological Region, south east Otago, New Zealand. New Zealand Journal of Ecology 11, 21-29. 1988.
Keywords: Otago/Rata/*Metrosideros umbellata*/Ecology/Fires/Catlins.
- Allen, R. B. and Rose, A. B. Regeneration of southern rata (*Metrosideros umbellata*) and kamahi (*Weinmannia racemosa*) in areas of dieback. Pacific Science 37(4), 433-442. 1983.
Keywords: Regeneration/Southern rata/Rata-kamahi forest/*Metrosideros umbellata*/Westland/Possums/*Trichosurus vulpecula*/Dieback
Notes: In special symposium issue of *Pacific Science* edited by D. Mueller-Dombois. Paper presented at a symposium on canopy dieback and dynamic processes in Pacific forests, held in Dunedin, New Zealand, 1-12 Feb. 1983.
- Allen, R. B. Ecology of *Nothofagus menziesii* in the Catlins Ecological Region, south-east Otago, New Zealand. (II) Seedling establishment. New Zealand Journal of Botany 25(1), 11-16. 1987.
Keywords: Ecology/Catlins/Otago/*Metrosideros umbellata*/Southern rata/*Weinmannia racemosa*/Kamahi/Mycorrhizas/Regeneration/Site factors/Soils/Seedlings.
- Allen, R. B., Fitzgerald, A. E., and Efford, M. G. Long-term changes and seasonal patterns in possum (*Trichosurus vulpecula*) leaf diet, Orongorongo Valley, New Zealand. New Zealand Journal of Ecology 21(2), 181-186. 1997.
Keywords: *Trichosurus vulpecula*/Leaves/Diet/Orongorongo Valley/*Metrosideros robusta*/Northern rata/Seasonal variations.
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Keywords: *Metrosideros*/Anthocyanins/Chemotaxonomy/*Metrosideros excelsa*/*Metrosideros umbellata*/*Metrosideros robusta*/Myrtaceae/Chemistry.
- Anthony, Diana. Christmas in crimson. New Zealand Gardener 50(12), 58-61. 1994.
Keywords: Pohutukawa/*Metrosideros excelsa*/Project Crimson.

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Keywords: *Metrosideros robusta*/Northern rata/*Metrosideros lucida*/*Metrosideros umbellata*/Southern rata/Tannins.
- Aston, B. C. The vegetation of the Tarawera Mountains, New Zealand. Transactions and Proceedings of the New Zealand Institute 48, 304-314. 1915.
Keywords: Volcanism/Regeneration/*Metrosideros excelsa*/*Metrosideros tomentosa*/Pohutukawa/*Metrosideros robusta*/Northern rata/Tarawera/Rotorua.
- Astridge, S. The rain of pohutukawa seeds. Auckland Botanical Society Newsletter 31(2), 14-14. 1974.
Keywords: Pohutukawa/*Metrosideros excelsa*/Seed viability/Germination/Seed.
- Atkinson, I. A. E. A preliminary account of the vegetation of Motuhoropapa Island, Hauraki Gulf. Tane 8, 6-11. 1960.
Keywords: Pohutukawa/*Metrosideros excelsa*/Motuhoropapa Island/Hauraki Gulf/Ecology/Biological surveys.
- Atkinson, I. A. E. An ecological reconnaissance of Coppermine Island, Hen and Chicken Group. New Zealand Journal of Botany 6(3), 285-294. 1968.
Keywords: Pohutukawa/*Metrosideros excelsa*/Coppermine Island/Hen and Chickens Islands/Biological surveys.
- Atkinson, I. A. E. and Campbell, D. J. Habitat factors affecting saddlebacks on Hen Island. Proceedings of the New Zealand Ecological Society 13, 35-40. 1966.
Keywords: Pohutukawa/*Metrosideros excelsa*/Hen Island/Saddleback/Habitats.
- Atkinson, I. A. E. and Percy, C. A. An account of the vegetation of Mayor Island. Tane 7, 29-34. 1956.
Keywords: Mayor Island/*Metrosideros excelsa*/Pohutukawa/Communities.
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Keywords: Northern rata/Rata/*Metrosideros robusta*/Kapiti Island/Possums/Browsing damage/*Trichosurus vulpecula*
Notes: Unpublished Botany Division vegetation report no. 291.
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Keywords: Possums/1080/*Metrosideros bartlettii*/*Trichosurus vulpecula*/*Metrosideros excelsa*/Pohutukawa/Conservation.
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Keywords: Growth/Pohutukawa/*Metrosideros tomentosa*/*Metrosideros excelsa*/Timber.

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Keywords: Frost resistance/*Metrosideros umbellata*/Southern rata/*Metrosideros robusta*/Northern rata/Dunedin.
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Keywords: Distribution/*Metrosideros excelsa*/Pohutukawa/Hauraki Gulf/Hen and Chickens Islands/Poor Knights Islands/Mercury Islands/Pycroft's petrel.
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Keywords: Variable area sampling/Ecology/*Metrosideros umbellata*/Southern rata/Rata-kamahi forest.
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Keywords: Possums/*Trichosurus vulpecula*/*Metrosideros robusta*/Northern rata/Kamahi/Rata-kamahi forest/Westland/Ruahine Range/Dieback
Notes: In special symposium issue of *Pacific Science* edited by D. Mueller-Dombois. Paper presented at a symposium on canopy dieback and dynamic processes in Pacific forests, held in Dunedin, New Zealand, 1-12 Feb. 1983.
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Keywords: Great Island/Three Kings Islands/*Metrosideros excelsa*/Pohutukawa.
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Keywords: Roots/*Metrosideros*/*Metrosideros robusta*/Northern rata/*Metrosideros umbellata*/Southern rata/Aerial roots.
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Keywords: Auckland/Pohutukawa/*Metrosideros excelsa*/*Metrosideros robusta*/*Metrosideros kermadecensis*/Northern rata/Kermadec pohutukawa/Hybrids/Tamaki Drive.
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Keywords: Pohutukawa/*Metrosideros excelsa*/*Metrosideros kermadecensis*/Kermadec pohutukawa/Raoul Island/Hybrids/Flowering times.

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Keywords: Communities/Pohutukawa/Metrosideros excelsa/Regeneration/Cuvier Island.
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Keywords: Seed/Metrosideros excelsa/Metrosideros robusta/Metrosideros umbellata/Cultivars/Pohutukawa/Rata
Notes: Has information on where seed can be obtained.
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Keywords: Regeneration/Metrosideros excelsa/Pohutukawa/Lady Alice Island/Motumuka Island/Hen and Chickens Islands.
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Keywords: Pohutukawa/Conservation/Taranaki/Metrosideros excelsa/Distribution/Planted specimens.
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Keywords: Pohutukawa/Honey/Rangitoto Island/Beekeeping.
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Keywords: Rata/Northern rata/Metrosideros robusta/Epiphytes/Growth habit/Flowering/Medicinal use/Maori use/Ureweras.
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Keywords: Nelson/Metrosideros robusta/Northern rata/Rata/Growth habit/Leaf anatomy/Metrosideros lucida/Metrosideros umbellata/Southern rata.
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Keywords: Pohutukawa/Little Barrier Island/Metrosideros excelsa.
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Keywords: Metrosideros robusta/Northern rata/Trichosurus vulpecula/Possums/Orongorongo Valley.

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Keywords: Phytochemistry/*Metrosideros excelsa*/*Metrosideros robusta*/*Metrosideros umbellata*/Pohutukawa/Northern rata/Southern rata.
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Keywords: Rata/Northern rata/*Metrosideros robusta*/Dieback/Possums/Browsing damage.
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Keywords: White Island/Whakaari/*Metrosideros excelsa*/Pohutukawa.
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Keywords: Westland/*Metrosideros robusta*/Schulz Creek/Fossil flora/Interglacials/Climate.
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Keywords: Myrtaceae/*Metrosideros excelsa*/Pohutukawa/Phytochemistry.
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Keywords: *Metrosideros excelsa*/Chemistry/Flowers/Gallic acid/Ellagic acid/Anthocyanins.
- Cameron, E. K. and Taylor, G. A. Flora and fauna of Sentinel Rock, Mangawhai Heads, northern New Zealand. Tane 36, 15-25. 1997.
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Notes: "If a floral emblem had been chosen for the Manawatu in the early days northern rata would have been considered as a subject because of its abundance on the hills, terraces, and downlands, its enormous size, and its magnificence at flowering time....The last northern rata in the Manawatu County died about 1950." p.130.

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Notes: Bartlett's rata (*Metrosideros bartlettii*) as yet unnamed in this article. Listed as "?*Metrosideros* sp. (a large tree, known so far only from vegetative material, and tentatively identified by J. W. Dawson as an unnamed tropical or endemic species)" p.228.
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Keywords: *Metrosideros*/Cuttings/*Metrosideros excelsa*/Roots.

Ritchie, M. A. and Ritchie, I. M. An ecological survey of Whatupuke Island, Hen and Chickens Group. Proceedings of the New Zealand Ecological Society 17, 57-65. 1970.

Keywords: *Metrosideros excelsa*/Pohutukawa/Hen and Chickens Islands/Whatupuke Island/Coppermine Island/Biological surveys.

Rose, A. B., Pekelharing, C. J., and Platt, K. H. Magnitude of canopy dieback and implications for conservation of southern rata-kamahi (*Metrosideros umbellata*-*Weinmannia racemosa*) forests, central Westland, New Zealand. New Zealand Journal of Ecology 16(1), 23-32. 1992.

Keywords: Dieback/Conservation/Westland/Rata-kamahi forest/*Metrosideros umbellata*/Decline/*Trichosurus vulpecula*.

Salas, M. R. Long-distance pollen transport over the southern Tasman Sea: evidence from Macquarie Island. New Zealand Journal of Botany 21(3), 285-292. 1983.

Keywords: Pollen analysis/Pollen/Myrtaceae/*Metrosideros*/Australia/Macquarie Island.

Scanlan, A. B. Egmont: the story of a mountain. 1. 1961. Auckland, A.H. & A.W. Reed.

Keywords: Rimu/*Dacrydium cupressinum*/Northern rata/*Metrosideros robusta*/Strangulation

Notes: "In April 1927, after a short discussion, [the National Park Board] championed the 'noble rimu' in its struggle against the parasitical rata and passed a resolution: 'That rangers be instructed where practicable to cut through the ratas if they think the rimu can be saved.' Strong public reaction soon

changed the board's opinion..." p.177. This story cited in Philip Knightbridge's thesis, *The regeneration ecology of northern rata (Metrosideros robusta)*.

Simpson, G. and Thompson, J. S. Dunedin sub-district of the South Otago botanical district. Transactions and Proceedings of the New Zealand Institute 67(4), 430-442. 1938.

Keywords: Otago/Metrosideros umbellata/Metrosideros lucida/Southern rata.

Simpson, G. and Thompson, J. S. Notes on some New Zealand plants and descriptions of new species (no. 2). Transactions and Proceedings of the New Zealand Institute 72, 21-40. 1942.

Keywords: Metrosideros robusta/Northern rata/Strangulation/Epiphytes/Rata/Rimu/Dacrydium cupressinum

Notes: Suggests that rata throttles its host - distortion in rimu trunks given as evidence.

Simpson, P. G. Natural pohutukawa in Taranaki. Conservation Advisory Science Notes 150. 1997.

Keywords: Pohutukawa/Taranaki/Metrosideros excelsa/Conservation.

Simpson, P. G. Pohutukawa and biodiversity. Conservation Advisory Science Notes 100, 1-12. 1994.

Keywords: Pohutukawa/Metrosideros excelsa/Department of Conservation/Conservation/Biodiversity/Myrtaceae/Genetics/Hybrids/Coastal associations/Insects/Birds

Notes: Commissioned by Science and Research Division, Department of Conservation.

Skeates, J. K. The assessment of possum damage to pohutukawa. 1980. University of Auckland.

Keywords: Assessment/Pohutukawa/Metrosideros excelsa/Possums/Trichosurus vulpecula/Browsing damage/Mortality.

Sladden, B. Tuhua, or Mayor Island. New Zealand Journal of Science and Technology 8(4), 193-210. 1926.

Keywords: Metrosideros excelsa/Pohutukawa/Mayor Island/Metrosideros tomentosa/Tuhua.

Smale, M. C. Forest regeneration on Uretara Island, Ohiwa Harbour, Bay of Plenty. Tane 34, 145-153. 3-1992.

Keywords: Regeneration/Pohutukawa/Metrosideros excelsa/Fires/Landslides/Ohiwa Harbour/Uretara Island.

Smith, R. N. The effect on survival in dry site plantings on *Metrosideros excelsa* by the use of hydrogels in nursery potting media and at the transplant site. 1989. Royal New Zealand Institute of Horticulture.

Keywords: Metrosideros excelsa/Pohutukawa/Hydrogels/Transplanting/Propagation.

Sparrow, J. The plight of the pohutukawa (*Metrosideros excelsa*). New Zealand Gardener 46(6), 30-31. 1990.

Keywords: Pohutukawa/Metrosideros excelsa/Possums/Trichosurus vulpecula/Browsing damage.

Stein, Tom and Greene, Brenda. Evaluation of the effectiveness of possum control in Auckland Regional Parks using vegetation photopoints 1993-1995. 9. 1996. Auckland, ARC Parks Service. ARC Parks Technical Publication Series no. 9.

Keywords: Auckland/Possums/Trichosurus vulpecula/Regional parks/Browsing damage/Pohutukawa/Metrosideros excelsa/Northern rata/Metrosideros robusta/Vegetation photopoints/Pest control.

Stevenson, G. The three forest belts of Hauhungatahi. *Forest and Bird*, 7-10. 1975.

Keywords: Northern rata/*Metrosideros robusta*/Hauhungatahi.

Stewart, G. H. and Griffith, J. A. Ecological considerations of dieback in New Zealand's indigenous forests. *New Zealand Journal of Forestry Science* 19, 243-249. 1989.

Keywords: Dieback/Decline/Ecology/*Metrosideros*/Broad-leaved forests/Plant pathology/Myrtaceae/Beeches/Silviculture

Notes: Special issue: Workshop on forest health in the South Pacific, Rotorua, 30-31 May and 1 June 1989. Proceedings.

Stewart, G. H. and Rose, A. B. Factors predisposing rata-kamahi (*Metrosideros umbellata* - *Weinmannia racemosa*) forests to canopy dieback, Westland, New Zealand. *Geojournal* 17(2), 217-223. 1988.

Keywords: Dieback/Westland/Mortality/Floristics/Possums/*Metrosideros umbellata*/Southern rata/*Weinmannia racemosa*/Kamahi/Browsing damage/*Trichosurus vulpecula*/Forest structure/Landslides/Ecology/Rata-kamahi forest.

Stewart, G. H. and Veblen, T. T. A commentary on canopy tree mortality in Westland rata-kamahi protection forests. *New Zealand Journal of Forestry* 27(2), 168-188. 1982.

Keywords: Rata-kamahi forest/Westland/Possums/*Trichosurus vulpecula*/Mortality/Browsing damage/Wind damage/*Metrosideros umbellata*.

Stewart, G. H. and Veblen, T. T. A comparison of forest structure and regeneration on Stewart Island and Bench Island. *What's New in Forest Research* 78, 1-4. 1979.

Keywords: Forest structure/Regeneration/Stewart Island/Bench Island/Dieback/Browsing damage/Possums/*Trichosurus vulpecula*/*Metrosideros umbellata*/*Weinmannia racemosa*/Rata/Southern rata/Kamahi.

Stewart, G. H. and Veblen, T. T. Forest instability and canopy tree mortality in Westland, New Zealand. *Pacific Science* 37(4), 427-431. 1983.

Keywords: Rata-kamahi forest/Westland/Possums/*Trichosurus vulpecula*/Regeneration/Dieback/Southern rata/*Metrosideros umbellata*/*Weinmannia racemosa*/Browsing damage/Wind damage

Notes: In special symposium issue of *Pacific Science* edited by D. Mueller-Dombois. Paper presented at a symposium on canopy dieback and dynamic processes in Pacific forests, held in Dunedin, New Zealand, 1-12 Feb. 1983.

Stewart, G. H. and Veblen, T. T. On canopy tree mortality in Westland rata-kamahi protection forests. 1981.

Keywords: Mortality/Westland/Rata-kamahi forest/*Metrosideros umbellata*/Southern rata/*Weinmannia racemosa*/Kamahi/Regeneration

Notes: New Zealand Forest Service, Forest Research Institute, Protection Forestry Report no. 180, 1981 (unpublished).

Stewart, G. H. and Veblen, T. T. Pattern and process in rata-kamahi forest in central Westland. 1981.

Keywords: Rata-kamahi forest/Westland/*Metrosideros umbellata*/Southern rata/Mortality/Regeneration

Notes: New Zealand Forest Service, Forest Research Institute, Protection Forestry Report no. 180, 1981 (unpublished).

- Stewart, G. H. and Veblen, T. T. Regeneration patterns in southern rata (*Metrosideros umbellata*) - kamahi (*Weinmannia racemosa*) forest in central Westland, New Zealand. *New Zealand Journal of Botany* 20(1), 55-72. 1982.
Keywords: *Metrosideros umbellata*/Southern rata/Ecology/Westland/Regeneration/Wind damage/Landslides/Rata-kamahi forest.
- Taylor, G. A. and Lovegrove, T. G. Flora and vegetation of Stanley (Atiu) Island, Mercury Islands. *Tane* 36, 85-111. 1997.
Keywords: Islands/Mercury Islands/Pohutukawa/*Metrosideros excelsa*.
- Taylor, Graeme A. Flora and fauna of Needle Rock, Eastern Coromandel. *Tane* 35, 51-56. 1995.
Keywords: Pohutukawa/*Metrosideros excelsa*/Needle Rock/Coromandel Peninsula.
- Taylor, Graeme A. Flora and fauna of Plate (Motunau) Island, Bay of Plenty. *Tane* 33, 113-120. 1991.
Keywords: Pohutukawa/*Metrosideros excelsa*/Plate Island/Bay of Plenty.
- Taylor, R. H. Influence of man on vegetation and wildlife of Enderby and Rose Islands, Auckland Islands. *New Zealand Journal of Botany* 9(2), 224-268. 1971.
Keywords: Auckland Islands/Subantarctic islands/Enderby Island/Rose Island/Southern rata/*Metrosideros umbellata*/Browsing damage/Rats/Population dynamics/Tussock grassland.
- Tennyson, Alan J., Cameron, E. K., and Taylor, G. A. Fauna, flora and history of Moturekareka, Motutara and Kohatutara Islands, Hauraki Gulf. *Tane* 36, 27-56. 1997.
Keywords: History/Islands/Hauraki Gulf/Moturekareka/Motutara/Kohatutara/Pohutukawa/*Metrosideros excelsa*.
- The parent of Parnell. *Commercial Horticulture* (Jun), 30-31. 1990.
Keywords: *Metrosideros excelsa* 'Parnell'/Pohutukawa.
- Thomson, G. M. On the fertilization, etc., of New Zealand flowering plants. *Transactions and Proceedings of the New Zealand Institute* 13, 241-288. 1880.
Keywords: Myrtaceae/*Metrosideros lucida*/*Metrosideros umbellata*/Rata/Honey/Fertilisation.
- Thomson, G. M. The pollination of New Zealand flowers by birds and insects. *Transactions and Proceedings of the New Zealand Institute* 57, 106-125. 1925.
Keywords: Pollination/Flowers/Birds/Insects/Myrtaceae/*Metrosideros lucida*/*Metrosideros umbellata*/Southern rata/*Metrosideros robusta*/Northern rata/*Metrosideros tomentosa*/*Metrosideros excelsa*/Pohutukawa.
- Three new native plant releases. *Commercial Horticulture* (Mar), 36-37. 1990.
Keywords: *Metrosideros*/*Metrosideros* 'Lighthouse'/Cultivars.

- Timber for use in boatbuilding in New Zealand. 69. 1981. Rotorua, New Zealand Forest Service. Utilisation Development Division unpublished report no. 69.
Keywords: Timber/*Metrosideros robusta*/Northern rata/*Metrosideros umbellata*/Southern rata/Boatbuilding/Utilisation.
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Keywords: Mortality/Westland/Southern rata/*Metrosideros umbellata*/Kamahi/*Weinmannia racemosa*/Possums/*Trichosurus vulpecula*/Browsing damage/Ecology/Rata-kamahi forest
Notes: DSIR Ecology Division unpublished report no. 40, 1956.
- Uhe, G. A contribution to the ecology of vegetation on recent volcanic deposits. 1972. University of Auckland.
Keywords: Ecology/Volcanism/*Metrosideros*.
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Keywords: Beeches/*Nothofagus*/Southern rata/*Metrosideros umbellata*.
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Keywords: *Metrosideros umbellata*/Southern rata/Stewart Island/Bench Island/*Trichosurus vulpecula*/Possums/Regeneration.
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Keywords: *Metrosideros robusta*/Rata/Northern rata/Fires/Cattle/Browsing damage/Destruction/Cultivation.
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Keywords: Rata/Northern rata/*Metrosideros robusta*/Southern rata/*Metrosideros lucida*/*Metrosideros umbellata*/Destruction/Conservation/Cattle/Fires.
- Walsh, P. The effect of deer on the New Zealand bush: a plea for the protection of our forest reserves. Transactions and Proceedings of the New Zealand Institute 25, 435-439. 1892.
Keywords: Deer/Reserves/Browsing damage/Destruction/Conservation/Rata/Northern rata/*Metrosideros robusta*.

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Keywords: *Trichosurus vulpecula*/Possums/Orongorongo Valley/Telemetry/Northern rata/*Metrosideros robusta*.
- Ward, R. H. and Milne, J. M. A preliminary quantitative survey of the Awaroa Basin, Little Barrier Island. *Tane* 10, 88-112. 1964.
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Keywords: Southern rata/*Metrosideros umbellata*/Taramakau River/Browsing damage/Deer/Chamois/Regeneration.
- Wardle, J. Influence of introduced mammals on the forest and scrublands of the Grey River headwaters. *New Zealand Journal of Forestry Science* 4(3), 459-486. 1974.
Keywords: Rata-kamahi forest/Grey River/Browsing damage/Possums/Deer/Southern rata/*Metrosideros umbellata*.
- Wardle, J., Hayward, J., and Herbert, J. Influence of ungulates on the forests and scrublands of South Westland. *New Zealand Journal of Forestry Science* 3(1), 3-36. 1973.
Keywords: *Cervus elaphus*/Browsing damage/Communities/Southern rata/*Metrosideros umbellata*.
- Wardle, P. Biological flora of New Zealand. 6. *Metrosideros umbellata* (Myrtaceae) Southern rata. *New Zealand Journal of Botany* 9(4), 645-671. 1971.
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Keywords: Pohutukawa/Architecture/*Metrosideros excelsa*/Oak/Timber.
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Keywords: *Trichosurus vulpecula*/Dieback/Northern rata/Rata/*Metrosideros*/*Metrosideros robusta*/Westland/Browsing damage/Paparoa National Park.
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Keywords: Lizards/Reproduction/Pollen/Pollination/Pohutukawa/*Metrosideros excelsa*/Gecko/Pacific gecko/Giant gecko.
- Whitaker, A. H. The roles of lizards in New Zealand plant reproductive strategies. *New Zealand Journal of Botany* 25(2), 315-328. 1987.
Keywords: Pollination/Seed dispersal/Lizards/Gecko/Skink/*Metrosideros excelsa*/Pohutukawa/Pollen.

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Keywords: Rangitoto Island/Germination/Light/Seed viability/Site factors/Lava field vegetation/*Metrosideros excelsa*.
- Wilkin, F. E. Sparrows drinking nectar. *Notornis* 4(1), 1-13. 1950.
Keywords: Sparrows/Nectar/Pohutukawa/*Metrosideros excelsa*.
- Wilson, H. D. Vegetation of Stewart Island, New Zealand: a supplement to the New Zealand Journal of Botany. 1. 1987. Wellington, DSIR Science Information Publishing Centre.
Keywords: Stewart Island/*Metrosideros umbellata*/Southern rata/Communities/Ecology.
- Wilson, Hugh. Cantabrian rata. *New Zealand Science Monthly* 10(6), 10-10. 1999.
Keywords: Rata/*Metrosideros umbellata*/*Metrosideros robusta*/Canterbury/Growth habit/Planted specimens/Distribution.
- Wotherspoon, Sandra Helen. Regeneration ecology and restoration of pohutukawa (*Metrosideros excelsa*) in the Auckland region. 1993. University of Auckland.
Keywords: Regeneration/Ecology/Pohutukawa/*Metrosideros*/*Metrosideros excelsa*/Auckland/Seed viability/Germination/Site factors/Seedlings/Soils.
- Wright, A. E. and Cameron, E. K. Botanical features of northeastern Great Barrier Island, Hauraki Gulf, New Zealand. *Journal of the Royal Society of New Zealand* 15(3), 251-278. 1985.
Keywords: Hauraki Gulf/Great Barrier Island/Goats/Browsing damage/Pigs/Landslides/*Metrosideros excelsa*/Pohutukawa/*Metrosideros robusta*/Northern rata.
- Wright, A. E. New Zealand herbarium resources 1993. Wright, A. E. 1993. Auckland, New Zealand National Herbarium Network. *Auckland Botanical Society Bulletin* no.23.
Keywords: *Metrosideros*/Herbaria/Auckland
Notes: Information on herbarium resources in New Zealand.
- Wright, A. E. The vegetation of Great Mercury Island. *Tane* 22, 23-49. 1976.
Keywords: Mercury Islands/Pohutukawa/*Metrosideros excelsa*/Browsing damage/Water supply.
- Wright, A. E. The vegetation of the Mt Maungatawhiri area, Coromandel Peninsula. *Tane* 21, 3-14. 1975.
Keywords: *Metrosideros robusta*/Northern rata/Myrtaceae/Mount Maungatawhiri/Coromandel Peninsula.
- Wright, A. E. Vegetation and flora of Fanal Island, Mokohinau Group. *Tane* 26, 25-52. 1980.
Keywords: Pohutukawa/*Metrosideros excelsa*/Fanal Island/Mokohinau Islands.
- Young, Maureen et al. Field trip to North Cape, October 20-25 1995. *Auckland Botanical Society Journal* 51(1), 28-31. 1996.
Keywords: North Cape/Te Pahi/*Metrosideros bartlettii*/Bartlett's rata.
- Zondag, R. Entomological problems in New Zealand forests. *Proceedings of the New Zealand Ecological Society* 15, 10-14. 1968.
Keywords: *Metrosideros*/Insects.

Zotov, V. D. Rata the killer. Tuatara 1(3), 36-38. 1942.

Keywords: Rata/Metrosideros robusta/Northern rata/Epiphytes/Strangulation.

Zotov, V. D., Elder, N. L., Beddie, A. D., Sainsbury, G. O. K., and Hodgson, E. A. An outline of the vegetation and flora of the Tararua Mountains. Transactions of the Royal Society of New Zealand 68, 259-324. 1938.

Keywords: Metrosideros robusta/Northern rata/Epiphytes/Strangulation/Wind damage/Tararua Ranges.

II. An Annotated Selection of Books (1853-1999)

Allan, H. H. Flora of New Zealand. V.1: Indigenous Tracheophyta. 1(1), 1-1085. 1961. Wellington, Government Printer. Flora of New Zealand.

Keywords: *Metrosideros*/Myrtaceae/*Metrosideros excelsa*/*Metrosideros tomentosa*/*Metrosideros robusta*/*Metrosideros umbellata*/*Metrosideros lucida*/Distribution/History.

Notes: A compilation of taxonomic information on the indigenous flora of New Zealand. Few concessions to amateurs (except glossary). An essential reference tool to check what is found in other books: however *Metrosideros umbellata* is not found on the Snares Is. *Metrosideros*: exhaustive and technical descriptions of the 11 spp. then known; history of their names, accounts of mistakes in identification; note on distribution and places where important specimens found; other notes as necessary. NB supplementary notes at end of book. Arrangement according to Hutchinson's *The Families of Flowering Plants*, 1926. Dr Allan was Director of DSIR Botany Division: the Flora project was overseen by Lucy B. Moore after his death in 1957. Few ill. - b&w drawings, diagrams. Maps. Glossary, index. Annals of taxonomic research on New Zealand tracheophyta.

Baker, Richard St Barbe. Famous Trees of New Zealand. 1, 1-150. 1965. Wellington, Reed.

Keywords: *Metrosideros excelsa*/Pohutukawa/*Metrosideros robusta*/Northern rata/ *Metrosideros umbellata*/Southern rata/Rata/*Metrosideros*/Timber/Conservation/History.

Notes: Main purpose is to promote appreciation of New Zealand trees, both native and exotic. Not enough detail is provided for identification. It deals briefly with the general character of the New Zealand bush; Maori myth; and the history of botanical exploration in New Zealand. Short chapter on 'Rata, the Aristocrat', describing a smothering, strangling tree, producing durable timber. Another short chapter about 'Pohutukawa, the Christmas Tree', with detailed description of the flower. Three sections - native trees, softwood and hardwood; 'other' trees; introduced trees from various regions. The English author lived in New Zealand for some time and was a tireless worker for international forest conservation, advising United States presidents on the subject. A rather old-fashioned book, of limited usefulness now. Ill: b&w photos. Sketchy bibliography.

Bercusson, Linda and Torrance, Jacinda. Pohutukawa: tree of Aotearoa. 1, 1-87. 1998. Auckland, Tandem Press.

Keywords: Pohutukawa/Ecology/Conservation/Project Crimson/*Metrosideros excelsa*.

Notes: This attractively presented and illustrated book is full of facts about the ecology, botany, and conservation status of the pohutukawa. It deals with the way in which humans relate to these important trees - in legends, art, writing. It also tells of the efforts by the Project Crimson Trust, Carter Holt Harvey, and many ordinary New Zealanders to protect the threatened ecosystem in which pohutukawa thrives. Linda Bercusson is a journalist who specialises in conservation, Jacinda Torrance a graphic designer. Ill. (col. photos); diagrams; bibliography, glossary, index.

Brockie, Robert. A living New Zealand forest: a community of plants and animals. 1, 1-172. 1992. Auckland, David Bateman.

Keywords: Ecology/Northern rata/Possums/*Trichosurus vulpecula*/*Metrosideros robusta*/Orongorongo Valley.

Notes: This is the result of a 25-year DSIR study, written for the ordinary reader, in plain language but in wonderful detail. It deals with the ecology of the Orongorongo Valley - the interactions of plants, animals, soils, and climate. Northern rata and its predation by possums is an important part of the book. Exceptionally clear writing and detailed and attractive diagrams. The author is a well-known science writer. Ill. (col. photos, diagrams); graphs; appendices.

Brooker, S. G., Cambie, R. C., and Cooper, R. C. New Zealand Medicinal Plants. 3, 1-268. 1987. Wellington, Heinemann.

Keywords: *Metrosideros*/*Metrosideros excelsa*/*Pohutukawa*/*Metrosideros robusta*/*Rata*/Northern rata/Tannin/Ellagic acid/Gallic acid/Beta pinene/Alpha pinene/Osborne, Fanny/Botanical art/Medicinal use/Auckland.

Notes: Standard reference work on the medicinal use of New Zealand plants. 1st part: flora, economic plants, chemistry and pharmacology, Maori and missionary medicine, discussion of the literature on New Zealand medicinal plants. 2nd part: lists plants with the lower botanical orders first. Each entry has botanical notes, medical use, often note on chemistry or pharmacology. 4 spp. of *Metrosideros* are listed, each ill. Medical use and effects summarised from the literature and there are notes on nomenclature. Authors: S. Brooker an industrial chemist and lecturer; C. Cambie head of Auckland University's Chemistry Department; R. Cooper botanist at the Auckland Institute and Museum. Many ill. both col. and b&w. Extensive references. Glossary. Index. See also *New Zealand's Economic Native Plants*; cf Riley, *Maori Healing and Herbal*.

Burstall, S. W. and Sale, E. V. Great Trees of New Zealand. 1, 1-288. 1984. Wellington, Reed.

Keywords: *Pohutukawa*/Northern rata/*Rata*/Southern rata/*Metrosideros excelsa*/*Metrosideros robusta*/*Metrosideros umbellata*/*Te Reinga pohutukawa*/*Te Araroa pohutukawa*/*Te Waha-o-Rerekohu*/*Kawhia pohutukawa*/*Tangi te Korowhiti*/Islands/Rotorua/History.

Notes: For tree enthusiasts: about individual great and notable trees of New Zealand, both native and exotic, with details of location, history, size, and other interesting characteristics. First on the list is *Te Reinga pohutukawa*. Other significant *pohutukawa* at Butlers Bay, Tiritiri Matangi Island, Mayor Island, *Te Araroa*, etc. Northern rata at Bushy Park near Wanganui, and at Pukeiti. Southern rata at Fox Glacier. Numbered list of great trees is in geographical order, working southwards from Northland; notable trees also listed by region. Authors: Bob Burstall worked for Forest Service in Rotorua; E. V. Sale a writer and journalist. Ill.: b&w and some col. photos, reproductions of map and lithograph. No bibliography - publications referred to in the text, but not clearly identified. General index. Cf Flook's *An Introduction to the Notable Trees of New Zealand*.

Cheeseman, T. F. Manual of the New Zealand Flora. 1, 1-1199. 1906. Wellington, Government Printer.

Keywords: *Metrosideros*/*Metrosideros lucida*/*Metrosideros umbellata*/*Metrosideros robusta*/*Metrosideros tomentosa*/History/Auckland.

Notes: Aimed to provide comprehensive list and descriptions of indigenous plants, for the use of botanists. Note name changes since 1906: *Metrosideros lucida* is now *M. umbellata*; *M. tomentosa* is *M. excelsa*; also numerous changes in climbing species. Contents: preface; history of botanical discovery in New Zealand; manual, arranged in orders (later known as families) according to Hooker and Bentham; appendices including key to the orders, list of 528 naturalised plants; alphabetical list of Maori names; glossary; additions and corrections; index. Author an eminent botanist, responsible for many publications, and curator at the Auckland Institute and Museum.

Cheeseman, T. F. Manual of the New Zealand Flora. 2, 1-1163. 1925. Wellington, Government Printer.

Keywords: *Metrosideros*/*Metrosideros lucida*/*Metrosideros robusta*/*Metrosideros tomentosa*/Auckland/History.

Notes: First published 1906. This ed. published posthumously - Cheeseman died in 1923. Proofs corrected by W. R. B. Oliver, who also wrote new preface and history of botanical discovery in New Zealand 1905-1924. Describes 1,793 species, 192 more than first ed. Main aim to provide botanists with comprehensive list and descriptions of indigenous plant species. Descriptions detailed and technical. 2 historical introductions, foll. by list of

Cheeseman's published works. Taxonomic arrangement differs from first edition - follows Engler rather than Hooker and Bentham. Appendices: key to the families; list of 576 naturalised plants; alphabetical list of Maori plant names; glossary and index. Author was curator of the Auckland Museum, an eminent botanist, and responsible for many publications. No ill.

Clarkson, B. D., Smale, M., and Ecroyd, C. E. Botany of Rotorua. 1, 1-132. 1991. Rotorua, Forest Research Institute.

Keywords: Rotorua/Tarawera/Volcanism/Northern rata/*Metrosideros robusta*/Terrestrial habit/Pohutukawa/*Metrosideros excelsa*/Distribution/Rata/History/Southern rata.

Notes: For readers with an interest in botany and/or Rotorua. Very thorough, very clearly written. Topics dealt with include history of vegetation; native and exotic forest; pasture; vegetation of thermal areas; Mt Tarawera; coastal plants inland; etc. Pohutukawa grows inland around Rotorua, possibly from Maori cultivation; also its "overseas relatives are well known as colonisers of volcanic landscapes" (p.94). Pohutukawa cope well close to geysers. Northern rata on Mt Tarawera have terrestrial habit and are sometimes mistaken for southern rata. Ill.: col. and b&w photos, maps, diagrams. References. Index. Glossary.

Clifton, N. C. New Zealand Timbers: exotic and indigenous; the complete guide. 1, 1-170. 1990. Wellington, GP.

Keywords: Pohutukawa/Southern rata/Northern rata/*Metrosideros excelsa*/*Metrosideros umbellata*/*Metrosideros robusta*/Rata/Timber.

Notes: Practical, technical guide to timbers available in New Zealand. Contains general information about wood, its growth, density, and shrinkage when milled. Timbers arranged alphabetically by popular name, first natives then exotics. Each entry has information about tree, wood, uses, physical and mechanical properties, preservation, and availability. Pohutukawa - the dearth of long, straight pieces means that physical and mechanical tests are difficult on this timber. Southern rata - author's own researches into its use as parquet flooring. The author has had a long career in forestry utilisation (FRI and state sawmills). Ill.: maps; b&w photos and reproductions, drawings, diagrams; col. photos of artefacts made with relevant timbers and of wood grains. Appendix: table of physical and mechanical properties of timbers. References. Index.

Cockayne, L. and Turner, E. Phillips. The Trees of New Zealand. 1, 1-171. 1928. Wellington, Government Printer. New Zealand Forest Service Information Series no. 12.

Keywords: Pohutukawa/*Metrosideros tomentosa*/Northern rata/*Metrosideros robusta*/Strangulation/Southern rata/*Metrosideros lucida*/Timber/Shipbuilding/Teredo worm/Rata.

Notes: Written for delegates to 3rd British Empire Forestry Conference, 1928; and for school use. Provides a brief and clear introduction to New Zealand's forests and trees. Arranged in 3 parts: 1, the forests; 2, the trees - photos and descriptions; 3, the timber - description and use. Description of northern rata strangling its host, and transforming rimu forest into rata forest. Pohutukawa's use for shipbuilding discussed, and its alleged immunity to the teredo worm. Authors both worked for the State Forest Service. Ill.: b&w photos. Glossary. Index. See also *The Vegetation of New Zealand*, *New Zealand Plants and their Story*.

Cockayne, L. and Turner, E. Phillips. The Trees of New Zealand. 5. 1967. Wellington, Government Printer. New Zealand Forest Service Information Series no. 12.

Keywords: Northern rata/*Metrosideros robusta*/Rata/Pohutukawa/*Metrosideros excelsa*/Southern rata/*Metrosideros lucida*/Coastal forest/Epiphytes/Timber/*Metrosideros*.

Notes: Originally written for delegates to 3rd British Empire Forestry Conference, 1928; and for

school use. This is the 5th ed., nearly 40 years after the first. Still provides a brief and clear introduction to New Zealand's forests and trees. Arranged in 3 parts: 1, the forests; 2, the trees - photos and descriptions; 3, the timber - description and use. Description of northern rata strangling its host, and transforming rimu forest into rata forest. Pohutukawa's principal importance is as amenity tree; rata discussed as useful for parquet flooring (though it proved not to be - see Clifton, *New Zealand Timbers*). Nomenclature almost up-to-date, though still reference to *Metrosideros lucida*. Ill.: b&w photos. Glossary. Index. See also *The Vegetation of New Zealand, New Zealand Plants and their Story*.

Cockayne, L. *New Zealand Plants and their Story*. 2, 1-248. 1919. Wellington, Government Printer.

Keywords: Pohutukawa/*Metrosideros tomentosa*/Coastal forest/Myrtaceae/Southern rata/*Metrosideros lucida*/Northern rata/*Metrosideros robusta*/Islands.

Notes: Ecological approach to New Zealand plant-life. Aimed at the general reader, so plain language with some botanical names. Arranged by habitat - sea coast, rock vegetation, grasslands, high mountains, wetlands, outlying islands, etc. - in a narrative format. Pohutukawa treated as part of a coastal forest association. Rata's growth habits described, and its associated plants. Written in a simple, readable but now old-fashioned style. Compare with Dawson's *Forest Vines to Snow Tussocks*, similarly arranged but updated. See also *The Trees of New Zealand, The Vegetation of New Zealand*. Ill.: b&w photos; diagrams. Index.

Cockayne, L. *New Zealand Plants and their Story*. 4. 1967. Wellington, Government Printer.

Keywords: Myrtaceae/Pohutukawa/*Metrosideros excelsa*/Northern rata/*Metrosideros robusta*/Southern rata/*Metrosideros umbellata*/Coastal forest/Islands.

Notes: 4th ed., with up-to-date nomenclature (following Allan), footnotes, photos, new index. Ecological approach to New Zealand plant-life. Aimed at the general reader, so plain language with some botanical names. Arranged by habitat - sea coast, rock vegetation, grasslands, high mountains, wetlands, outlying islands, etc. - in a narrative format. Pohutukawa treated as part of a coastal forest association. Rata's growth habits described, and its associated plants. Written in a simple, readable but now old-fashioned style. Compare with Dawson's *Forest Vines to Snow Tussocks*, similarly arranged but updated. See also *The Trees of New Zealand, The Vegetation of New Zealand*. Ill.: b&w photos; diagrams. Index.

Cockayne, L. *The Vegetation of New Zealand*. 1-364. 1921. Leipzig, Engelmann. *Die Vegetation der Erde*.

Keywords: *Metrosideros tomentosa*/*Metrosideros lucida*/*Metrosideros robusta*/*Metrosideros excelsa*/*Metrosideros umbellata*/Epiphytes/Strangulation/Myrtaceae/*Metrosideros*/Coastal forest/Rangitoto/White Island/Distribution/History.

Notes: Aimed at an international audience: no popular names to confuse the presentation of a "vivid and accurate" picture of our plant life. Contents: history of botanical research and literature in New Zealand; geography and climate; vegetation of "primitive New Zealand" by habitat; effect of settlement on plants; flora and its distribution; history of flora. Extensive references to *Metrosideros excelsa* (*tomentosa*), *M. robusta* and *M. umbellata* (*lucida*) throughout text - growth habit, associations, distribution, etc. Remarkable ill. of *M. robusta* grown in an arch. Ill.: maps, plates, figures. Appendix. Corrections. Index.

Cometti, Ronald and Morton, John. *Margins of the Sea: exploring New Zealand's coastline*. 1, 1-163. 1985. Auckland, Hodder and Stoughton.

Keywords: Pohutukawa/*Metrosideros excelsa*/Kawhia/Coromandel Peninsula/Auckland/History.

Notes: This book's unusual layout presents 38 coastal locations around New Zealand, each with a shorescape painting by Ronald Cometti and accompanying detailed col. ill. Text deals with the area's

geology and its influence on life forms, and the species which make up its animal and plant communities. Pohutukawa is frequently mentioned and illustrated as part of coastal ecosystems. Compare with *A Natural History of Auckland*. Author Emeritus Professor of marine biology; illustrator a wildlife artist. Introduction - geology, shore life; 38 locations in detail. Bibliography. Glossary. Index.

Conly, Geoff and Conly, Maurice. New Zealand Pohutukawa. 1, 1-88. 1988. Wellington, Grantham House.
Keywords: Pohutukawa/*Metrosideros excelsa*/Maori legends/Maori use/Poetry/*Metrosideros tomentosa*/Te Reinga pohutukawa/Te Araroa pohutukawa/Te Waha-o-Rerekohu/Kawhia pohutukawa/Tangi te Korowhiti/Botanical art/History.
Notes: The only popular work (as opposed to thesis or report) devoted entirely to this well-known and much-loved tree. Very much for the general reader, though it reproduces a translation of Dr Daniel Solander's botanical Latin description of pohutukawa, and treats 19th century botanist William Colenso in some detail. Essentially about cultural responses to pohutukawa: Maori legends, early travellers' descriptions (a useful summary), famous specimens and their histories, and pohutukawa in poetry and drama, with appropriate quotations. A decorative book, written in a rather flowery style. Geoff Conly a journalist on well-known newspapers, author of several books; brother Maurice was official RNZAF artist and a coin and stamp designer. Ill.: many col. paintings and decorations. Appendices. References. Select bibliography. Index.

Cooper, R. C. and Cambie, R. C. New Zealand's Economic Native Plants. 1, 1-234. 1991. Auckland, Oxford University Press.
Keywords: *Metrosideros*/*Metrosideros excelsa*/Pohutukawa/Rata/*Metrosideros robusta*/Northern rata/*Metrosideros umbellata*/Southern rata/Cultivars/Honey/Essential oils/Economic use/Maori use/Timber/Auckland/History.
Notes: An account of "past, present, and possible future uses of many of New Zealand's plants". Aimed at teachers, students and professionals in many fields. Packed with solid information - history of plant utilisation in New Zealand; native plants in overseas and domestic gardens; plants used for fibres and paper; for food and beverages; etc. *Metrosideros* spp. treated reasonably extensively, both Maori and Pakeha uses being described. Ill.: incl. *M. excelsa* flowers; dye chart showing fabric samples dyed with dried pohutukawa stamens and different mordants. R. C. Cooper was for 23 years a botanist at the Auckland Institute and Museum; R. C. Cambie Professor of Organic Chemistry at Auckland University. See also *New Zealand Medicinal Plants*; cf *Maori Healing and Herbal*. Ill.: some col. - photos, paintings. Extensive refs to each chapter. Index of plant names; index of chemical names.

Cranwell, Lucy M. *The Botany of Auckland: a book for all seasons*. 1-156. 1981. Auckland, Auckland Institute and War Memorial Museum.

Keywords: Auckland/Pohutukawa/*Metrosideros excelsa*/Rata/*Metrosideros robusta*/Northern rata/Southern rata/*Metrosideros umbellata*/Rangitoto/Flowering times/Hybrids/Ecology/Epiphytes/Climbers/Islands/Distribution.

Notes: Incorporates much from earlier editions by Arnold Wall and Lucy M. Cranwell, but essentially rewritten and updated. Full of information for interested readers, especially Aucklanders. Contents: historical setting, chapters on various plant habitats eg coasts, islands, swamps, grasslands, cloud forest, etc.; useful and poisonous plants, catalogue of plants. Pohutukawa and rata population on Rangitoto given close attention - flowering times, growth habit, hybridism, seed-setting. Also distribution of southern rata. Many ill.: photos (some col.), drawings, diagrams. Maps. Catalogue of native plants of land and sea. Index of species illustrated under popular names.

Crookes, Marguerite W. *Plant Life in Maoriland: a botanist's notebook*. 1, 1-190. 1926. Auckland, Whitcombe and Tombs.

Keywords: Rata/*Metrosideros tomentosa*/Pohutukawa/*Metrosideros lucida*/Southern rata/*Metrosideros robusta*/Strangulation/Northern rata/Auckland.

Notes: Compiled from articles about the lives of plants originally published in the *Auckland Star* and the *Lyttelton Times*. Written with charm and enthusiasm, and also with a high degree of now outdated anthropomorphism. Pohutukawa described as "A Lord of the Seashore"; northern rata portrayed as a much less noble character, indeed "A Forest Bandit". Easily the most dramatic and moralistic account of this tree's lifestyle: jocular, of course - but only partly. Ill. (b&w photos), incl. one of rata "developing its stranglehold on rimu."

Crowe, Andrew. *A Field Guide to the Native Edible Plants of New Zealand*. 1, 1-194. 1981. Auckland, Collins.

Keywords: *Metrosideros robusta*/Northern rata/*Metrosideros excelsa*/Pohutukawa/Nectar/Honey/Juice/Rata/Rata vine.

Notes: A book for those who have ever wondered how they would survive if lost in the bush. The author "went bush" on the Coromandel in February 1974 for 10 days without food supplies, so this handbook is backed by practical experience as well as research. Introduction cautions about eating unfamiliar plants. Contents: trees and shrubs with berries, and those with other edible parts; herbs, ferns, mushrooms, seaweed, lichen, food plants of Maori; about hangi; bush survival; poisonous plants. Pohutukawa and rata are in this book for their nectar and honey, also for juice of the rata vine. Ill.: col. photos, b&w sketches. Maps. Tables. Recommended reading. References. Addresses (possibly out of date now). Index.

Crowe, Andrew. *Which Native Tree?: a simple guide to the identification of New Zealand native trees*. 1, 1-64. 1992. Auckland, Viking Pacific.

Keywords: Rata/Pohutukawa/Epiphytes/Possums/*Metrosideros robusta*/Northern rata/*Metrosideros umbellata*/Southern rata/Tannin/Ellagic acid/Gallic acid.

Notes: This book is exactly what it says: a simple guide to identifying the commonest native trees (48 spp) using a key to leaf shape and other conspicuous features. Written for the novice in plain language. Small enough to take into the bush. Points out details which distinguish one plant from an apparently similar one. Eg rata leaves 'green underneath (unlike pohutukawa),' pohutukawa leaves 'opposite each other (unlike karo).' Concise summary in each entry of how Maori and Pakeha use the tree, and nature notes - rata often festooned with epiphytes; both trees toothsome to possums. Andrew Crowe has produced a number of books about native plants (see *Native Edible Plants of*

New Zealand). Ill.: col. photos, diagrams of tree/leaf/flower shapes, location maps, altitude keys. Selected references. Index.

Davies, William C. *New Zealand Native Plant Studies*. 1, 1-328. 1956. Wellington, A.H. & A.W. Reed.

Keywords: Northern rata/*Metrosideros robusta*/Strangulation/Epiphytes/Pohutukawa/*Metrosideros excelsa*/*Metrosideros tomentosa*/Southern rata/*Metrosideros umbellata*/*Metrosideros lucida*/Puriri/*Vitex lucens*/Rata.

Notes: Author a noted photographer and the black and white plant studies, which clearly show important taxonomic features, are significant in this book, which was aimed at the interested amateur. Ten chapters relate to different botanical districts of New Zealand, or to some aspect of flora, e.g. hybridism or juvenile forms. Plates relate to each chapter and have extensive comment. Northern rata described as strangling and crushing its victims: "Only one New Zealand tree - the puriri (*Vitex lucens*) is sufficiently robust to survive the fatal embrace of the rata's aerial roots" (p.84). Ill.: b&w plates. Maps (incl. mean annual rainfall of regions). References. Glossary. Index to plates.

Dawson, J. W. and Lucas, R. *Lifestyles of New Zealand Forest Plants*. 1, 1-176. 1993. Wellington, Victoria University Press.

Keywords: Ecology/Epiphytes/Climbers/*Metrosideros*/*Metrosideros robusta*/Northern rata/*Metrosideros umbellata*/Southern rata/*Metrosideros excelsa*/Pohutukawa/*Metrosideros bartlettii*/Bartlett's rata/Possums/Rata/Adventives.

Notes: A book for the interested non-specialist: makes reader think about how plants coexist, and about the uniqueness of New Zealand's flora. Deals with plants by habit and habitat - forest floor and roof; juvenile and adult forms of plants; vines, epiphytes, parasites; problems for plants - possums, adventives, exploitation. *Metrosideros* of interest here because of some unusual features, e.g. roots of pohutukawa, differing habits of rata species, spectacular flowers. Note photos of rata roots, and one of an originally epiphytic specimen of *M. bartlettii*. Text by John Dawson, professor of botany at Victoria University. See also *Forest Vines to Snow Tussocks*, *New Zealand Coast and Mountain Plants*, *Seasons in the Forest*. Ill.: a major feature - informative and beautiful col. photos by Rob Lucas. Map. References. Glossary of common names. Index.

Dawson, J. W. and Lucas, R. *New Zealand Coast and Mountain Plants: their communities and lifestyles*. 1, 1-176. 1996. Wellington, Victoria University Press.

Keywords: Pohutukawa/*Metrosideros excelsa*/Southern rata/*Metrosideros umbellata*/Auckland Islands/Coastal forest/Ecology/*Metrosideros*/Auckland/Islands/Rata.

Notes: Very small amount of *Metrosideros* information in this book, which mainly concentrates on other spp. and systems; but both text and photos of high quality - see ill. of gnarled Auckland Islands rata forest. Incl. story of German cargo ship *Erlangen*, in Otago Harbour in 1939 at the outset of war. Ordered to proceed to a neutral port, her captain took her to the Auckland Islands where the crew cut down rata trees to help fuel their way to Chile. Book arr. by habitat - sea forests (seaweeds), tussock herbfields, bogs, shingle screes, etc. John Dawson emeritus professor of botany. See also *Forest Vines to Snow Tussocks*, *Lifestyles of New Zealand Forest Plants*, *Seasons in the Forest*. Many col. photos. References. Glossary. Index.

Dawson, J. W. *Forest Vines to Snow Tussocks: the story of New Zealand plants*. 1, 1-264. 1988. Wellington, Victoria University Press.

Keywords: Myrtaceae/*Metrosideros*/Epiphytes/Northern rata/*Metrosideros robusta*/Strangulation/Pohutukawa/*Metrosideros excelsa*/Southern rata/*Metrosideros umbellata*/*Metrosideros bartlettii*/Rata/History.

Notes: A modern successor to Cockayne's *New Zealand Plants and their Story*, with narrative

format, aimed at the same interested but non-specialist reader. Assumes some knowledge of botany, using some technical terms and botanical names, but very clearly written. Presents a selection of species with their history and other interesting features and the way they live in their environment; also the unique characteristics of the New Zealand flora. Arrangement is by habitat or 'lifestyle'. An excellent clear section on epiphytes, in which northern rata (*Metrosideros robusta*) is acquitted of murdering other trees. Author is professor of botany at Victoria University. See also *Lifestyles of New Zealand Forest Plants*, *New Zealand Coast and Mountain Plants*, *Seasons in the Forest*. Ill.: b&w photos. Maps. Diagrams.

Eagle, Audrey. Eagle's 100 Trees of New Zealand: botanical paintings and notes by Audrey Eagle. 1, 1-159. 1978. Auckland, Collins.

Keywords: Myrtaceae/*Metrosideros*/*Metrosideros excelsa*/Pohutukawa/*Metrosideros robusta*/Northern rata/*Metrosideros umbellata*/Southern rata/Seed/Conservation/Botanical art/Distribution.

Notes: Identification guide for the general reader, with clear and concise notes to accompany botanical paintings. Among the hundred trees illustrated are *Metrosideros excelsa*, *M. robusta*, and *M. umbellata*, with details of flowers and seed capsules. Notes explain the Latin name, list popular names, describe tree in plain language, and comment on distribution and on where and when the illustrated specimen was taken. Author a well-known botanical illustrator and member of conservation groups. See also *Eagle's Trees and Shrubs of New Zealand in Colour* (1975), *Eagle's Trees and Shrubs of New Zealand, Second Series* (1982). Ill.: col. plates, details mostly actual size. Maps. Botanical notes. Glossary. List of books consulted. Index.

Eagle, Audrey. Eagle's Trees and Shrubs of New Zealand in Colour; two hundred and twenty-eight botanical paintings. 1, 1-311. 1975. Auckland, Collins.

Keywords: Myrtaceae/*Metrosideros*/*Metrosideros excelsa*/Pohutukawa/*Metrosideros robusta*/Northern rata/*Metrosideros umbellata*/Southern rata/Botanical art/Rata/Conservation/Distribution.

Notes: A handsome book - thick paper, beautiful botanical paintings. High-quality identification guide, with notes. 228 paintings of plant details, natural size and colour, from fresh specimens. Actual size colour details of *Metrosideros excelsa*, *M. robusta*, *M. umbellata*. Notes on: meaning of Latin name; growth - size, habit; habitat; distinguishing features (eg venation patterns); distribution; discovery and historical comment; notes on specimen illustrated. General contents: preface; introduction; plates; maps; botanical notes; glossary; bibliography; index of botanical and popular names. Author a well-known botanical artist and member of conservation groups. See also *Eagle's Trees and Shrubs of New Zealand, Second Series* (1982), *Eagle's 100 Trees of New Zealand*.

Eagle, Audrey. Eagle's Trees and Shrubs of New Zealand, Second Series: four hundred and five botanical paintings by Audrey Eagle. 1, 1-382. 1982. Auckland, Collins.

Keywords: Myrtaceae/*Metrosideros*/*Metrosideros excelsa*/Pohutukawa/*Metrosideros robusta*/*Metrosideros* sp.(a)/*Metrosideros bartlettii*/Botanical art/Distribution/Conservation.

Notes: Main aim is identification, with meticulous notes and illustrations. Detailed col. plates, separate plain-language botanical notes. Notes: Maori names; plant description; habitat; distribution; notes about specimen illustrated; comment - eg when plant was first recorded and by whom, related varieties. Plates show details rather than whole plants, actual size in all but a few cases; interesting details shown in separate enlargements. 6 spp. of *Metrosideros* illustrated, incl. '*Metrosideros* sp. (a)' which was to become *M. bartlettii*. Author: botanical artist with deep interest in conservation issues. See also *Eagle's Trees and Shrubs of New Zealand in Colour* (1975), *Eagle's 100 Trees of*

New Zealand. 405 col. plates. Maps. Botanical notes. List of name changes. Glossary. Dictionary of selected biographies. Bibliography. Index.

Enting, Brian and Dawson, J. W. *Seasons in the Forest: a New Zealand photographer's year*. 1, 1-128. 1990. Auckland, Random Century.

Keywords: *Metrosideros bartlettii*/Bartlett's rata/Pohutukawa/*Metrosideros excelsa*/Southern rata/*Metrosideros umbellata*/Pollination/Rata.

Notes: Shows up the seasonal variations often thought unimportant in the New Zealand forest. Changes on the forest floor, flowering, pollination, seeding, the lives of ferns and fungi - this book photographs the changes season by season. Beautiful, subtle, and intriguing col. photos, often in extreme close-up; a text that is both learned and clearly written. Pohutukawa, rata and their seeding and flowering habits dealt with briefly but comprehensively. Brian Enting a professional photographer; John Dawson professor of botany. See also *Forest Vines to Snow Tussocks*, *Lifestyles of New Zealand Forest Plants*, *New Zealand Coast and Mountain Plants*. Preface, introduction, text and photos arranged by season (Spring, Summer, Autumn, Winter). Glossary. Index.

Evans, Alison. *New Zealand in Flower: an illustrated guide to native flowering plants*. 1, 1-122. 1987. Auckland, Reed Methuen.

Keywords: Pohutukawa/*Metrosideros excelsa*/Southern rata/*Metrosideros umbellata*/Rata/Distribution/Islands.

Notes: About flowering plants of New Zealand, so automatically glamorous as well as useful. Aimed at general reader: clear writing, many attractive col. photos. Contains general botanical introduction, then arrangement of plants by habitat - islands, coasts, forest, wetlands etc. Each of these has substantial general comment, foll. by typical spp. arranged alphabetically by botanical name. Each sp. ill.; col. photos by various accomplished photographers. Pohutukawa and southern rata well dealt with - particularly good notes on distribution. Glossary. Further reading. Index.

Featon, E. H. and Featon, S. *The Art Album of New Zealand Flora: being a systematic and popular description of the native flowering plants of New Zealand and the adjacent islands*. 1(1), 1-180. 1889. Wellington, Bock and Cousins.

Keywords: Myrtaceae/*Metrosideros*/*Metrosideros lucida*/*Metrosideros umbellata*/*Metrosideros robusta*/*Metrosideros tomentosa*/*Metrosideros excelsa*/Epiphytes/Botanical art/Featon, Sarah/Climbers/Distribution/Islands.

Notes: Authors describe this book as "a publication of a popular character based on scientific and systematic principles." Popularity comes from clear layout, flowery writing style, and gorgeous chromolithographs by Sarah Featon. Scientific principles come from Hooker's *Handbook of the New Zealand Flora*, and from authors' consultations with Kirk, Colenso and Buchanan. Plates have extensive commentary about plants' distribution, habit, use, cultivation. *Metrosideros*: deals with all 11 spp. then known, illustrates 7. Epiphytic habit of *M. robusta* described (as strangler), dispelling common notion that it was a climber. Ill. (somewhat gaudy) the main feature of book. Glossary. List of "Systematic, Maori and settlers' names of plants", flowering seasons. List of subscribers to authors' edition. No index. Cf Mrs Hetley's *Native Flowers of New Zealand*.

Fisher, Muriel E. and Forde, Margaret L. *Growing New Zealand Plants, Shrubs and Trees*. 1, 1-224. 1994. Auckland, David Bateman.

Keywords: Gardening/*Metrosideros*/*Metrosideros excelsa*/*Metrosideros excelsa* 'Aurea'/*Metrosideros excelsa* 'Variegata'/*Metrosideros robusta*/Northern rata/*Metrosideros umbellata*/Southern rata/History.

Notes: Revised, updated version of *Gardening with New Zealand Plants, Shrubs and Trees*, reflecting changes in garden styles, plant nomenclature, and increased interest in native plants. For gardeners and native plant enthusiasts. Sections on ornamentals, planting in school grounds, climbing plants, hedges, rock/alpine gardens, plants in troughs, grasses and sedges, ferns, orchids. Several spp. of *Metrosideros* dealt with. Margaret Forde an editor and writer of natural history books; Muriel Fisher a lifelong native plant enthusiast and creator of Fernglen native garden, and Associate of Honour of the RNZIH. Col. photos incl. flower arrangements; landscape plans; maps. Bibliography. Glossary. Index.

Fisher, Muriel E., Satchell, E., and Watkins, Janet M. *Gardening with New Zealand Plants, Shrubs and Trees*. 2, 1-303. 1975. Auckland, Collins.

Keywords: Gardening/Auckland/*Metrosideros excelsa*/*Metrosideros excelsa* 'Variegata'/Pohutukawa/*Metrosideros kermadecensis*/*Metrosideros parkinsonii*/*Metrosideros robusta*/Northern rata/*Metrosideros umbellata*/Southern rata.

Notes: For gardeners and native plant enthusiasts. Practical suggestions for growing and landscaping natives, geared to Auckland climate. Sections on ornamental trees and shrubs, climbing plants, hedges, rock gardens and alpiners, ferns, orchids, garden plans. *Metrosideros*: *M. robusta* can take 15 years to flower in a garden; *M. umbellata* needs extra watering in Auckland. Author a lifelong native plant enthusiast, with a garden of 700 species. Ill.: b&w & col. photos; maps; plans. Numerous appendices. Bibliography. Metric conversion scales. Glossary. Index.

Flook, R. *An Introduction to the Notable Trees of New Zealand*. 1, 1-207. 1994. Nelson, Copy Press.

Keywords: Pohutukawa/*Metrosideros excelsa*/Rahui-kurii/Te Akau/Northern rata/*Metrosideros robusta*/Southern rata/*Metrosideros umbellata*/*Metrosideros*/Rata.

Notes: Notable trees of New Zealand registered by Royal New Zealand Institute of Horticulture in 14 years before publication. Full record housed in RNZIH Notable Tree Register in Lincoln University Library. This book to draw attention to this resource and elicit more information about trees. Criteria for listing: stature, historic significance, scientific/botanic interest, rarity. Entries arranged by region. Each entry has significance, year of origin if known, measurements, location, who registered tree as notable, other comments. Some trees mentioned in Burstall and Sale's *Great Trees of New Zealand*. Author a landscape architect and design consultant, chairman of Notable Trees committee of RNZIH. Maps. Some drawings/decorations. Spiral bound. No index so you cannot track trees by species or age etc., so *Metrosideros* references given here: pohutukawa 10,11,19,20,103,106,114,120,186,198; northern rata 84,117; southern rata 195,199,204.

Gabites, Isobel. *Wellington's Living Cloak: a guide to the natural plant communities*. 1, 1-120. 1993.

Wellington, Wellington Botanical Society and Victoria University Press.

Keywords: *Metrosideros excelsa*/Pohutukawa/*Metrosideros robusta*/Northern rata/Wellington/Kapiti Island/Otari Native Botanic Garden/Possums/Browsing damage/Ecology/Conservation/Planted specimens/Islands/*Metrosideros*/Rata.

Notes: Of particular interest to Wellington readers as a guide to plant life in the area, but it has a wider appeal because of its clear explanations of plant ecology and succession. Strong conservation message, especially in last chapter, and historical perspective, especially in first. Other chapters arranged by plant habitat - coastline, beech forest, above the treeline, island habitats, formal botanic gardens. *Metrosideros* species featured incl. pohutukawa, not a native to Wellington but much planted there. Northern rata an important part of the area's podocarp-broadleaved forest. Can be found in terrestrial, non-epiphytic form on a ridge above Days Bay. Author a botanist and writer. Ill.: col. photos, contributed by Wellington Botanical Society members, b&w archival photos, drawings. Maps. Bibliography. Glossary. Index.

- Goulding, Jeanne H. Fanny Osborne's Flower Paintings. 1, 1-84. 1983. Auckland, Heinemann.
Keywords: *Metrosideros excelsa*/Pohutukawa/Rata vine/Botanical art/Great Barrier Island/Osborne, Fanny/Auckland/*Metrosideros*/Islands/Distribution/History.
Notes: Fanny Osborne (1852-1933) was an accomplished botanical artist. Illustrations in this book reproduced from originals in the Auckland Museum and from some in private collections. They are all of plants found on Great Barrier Island where Fanny lived as a child and raised her own 13 children. Incl. 4 paintings of 3 *Metrosideros* spp. including a yellow form of *M. fulgens*. Each painting accompanied by brief 'descriptive and historical' notes on distribution, flowering, first discovery. Preceding text gives Fanny Osborne's life history, details of life on the island and of its plants. For readers interested in botanical art, New Zealand history and botany. Author: Botanist and Curator in the Botany Department of the Auckland Museum. 48 col. pl.; also b&w family photos. Checklist of known paintings. Maps. Bibliography and references. Index of plant names.
- Harrison, Richmond E. Handbook of Trees and Shrubs. 5, 1-409. 1974. Wellington, Reed.
Keywords: *Metrosideros*/*Metrosideros excelsa*/*Metrosideros excelsa* 'Aurea'/Pohutukawa/*Metrosideros robusta*/Northern rata/*Metrosideros umbellata*/Southern rata/*Metrosideros kermadecensis*/Cultivars/Propagation.
Notes: This is a gardener's book, a descriptive dictionary of trees and shrubs, with information on their propagation and cultivation. The introduction has a useful section on the concepts of families, genera, species, and cultivars. The author was a nurseryman and writer. Ill.: b&w photographs.
- Harvey, Norman B. and Godley, E. J. New Zealand Botanical Paintings. 1, 1-87. 1969. Christchurch, Whitcombe and Tombs.
Keywords: Pohutukawa/*Metrosideros excelsa*/Honey/Bees/Botanical art/Rangitoto.
Notes: A book for the enjoyment of those interested in botanical art or New Zealand plants. 40 col. plates with commentary on each. Pohutukawa plate gives informative detail, even to chunks taken out of the leaves by browsers. Commentary on the plate mentions pohutukawa as an important source of honey, and gives statistics on the prodigious output of 180 hives on Rangitoto over the summer of 1965-66, when the bees produced 11 tons of honey. Norman Harvey painted native flora and wildlife; Eric Godley was director of DSIR Botany Division. Ill.: reproductions of gouache paintings.
- Hayden, Peter and Morris, Rod. Wild South's Living Treasures of New Zealand. 1, 1-192. 1995. Auckland, HarperCollins.
Keywords: Pohutukawa/*Metrosideros*/Southern rata/Seed dispersal/Pollination/Ecology/Auckland Islands/Seed/History.
Notes: A sort of wildlife documentary in book form, crammed with well-presented information. Arranged to show the variety and the strangeness of New Zealand's natural history. Narrated in present tense for immediacy and vividness. 11 chapters on various aspects of plant and animal life and interaction. *Metrosideros*: useful information in an excellent chapter (Ch.7, "On a wing and a prayer") on seed dispersal and colonisation; note on pollination of pohutukawa by geckos. Both writer and photographer are veteran members of TVNZ's Natural History unit. Ill.: many spectacular and intriguing col. photos; index; bibliography.
- Hetley, Georgina Barne. The Native Flowers of New Zealand: illustrated in colours in the best style of modern chromo-litho art, from drawings coloured to nature by Mrs Charles Hetley. 1. 1888. London, Sampson Low, Marston, Searle and Rivington.
Keywords: Botanical art/Southern rata/*Metrosideros lucida*/*Metrosideros*

umbellata/Pohutukawa/Metrosideros tomentosa/Metrosideros excelsa/Rata/Hetley, Georgina/Metrosideros.

Notes: Author's intention was that "the flowers [of New Zealand] should be painted and made known before they were lost by burnings and the cultivation of the ground." Illustrations needed for ordinary people, not just botanists, to appreciate beauty of the flora. Mrs Hetley had Government assistance to travel and find flowers: she was an intrepid traveller, venturing over "rough and dangerous" roads. 6 weeks' work in the herbarium at Kew reinforced her observations in the wild. She was conscious of pohutukawa and rata wherever she saw them. Pohutukawa ("pohotokawa", pl.29), southern rata (pl.6) and *Metrosideros florida* (which she accused of killing its supporting trees!) ill. Preface - vivid and chatty account of her travels, 8p.; 36 very appealing col. plates, comments opp. each; b&w dissections of flowers. Cf the Featons' *Art Album of New Zealand Flora*.

Hooker, J. D. Handbook of the New Zealand Flora: a systematic description of the native plants of New Zealand and the Chatham, Kermadec's, Lord Auckland's, Campbell's, and Macquarie's Islands. 1, 1-798. 1867. London, Reeve and Co.

Keywords: *Metrosideros lucida*/*Metrosideros robusta*/*Metrosideros tomentosa*/*Metrosideros umbellata*/*Metrosideros excelsa*/*Metrosideros kermadecensis*/Myrtaceae/Islands.

Notes: Part 1 of this book (p.1-392) published 1864; part 2 (p. 393-798) 1867. This volume includes both parts. Aimed to update important botanical discoveries in the South (or "Middle") Island in the 10 years following Hooker's *Flora Novae Zealandiae*, and to meet demand for a "safe guide to the principal species" of New Zealand plants; also to be affordable and concise. Contents: preface, outline of botany from Bentham's *Flora Australiensis*; glossary; classifications of orders (=families) and genera; the handbook - arrangement according to Hooker and Bentham; additions and corrections; list of naturalised plants; alphabetical list of 'native and vernacular' names; index. 10 spp. of *Metrosideros* detailed, not incl. *M. parkinsonii* which was not described until 1883. No ill.

Hooker, J. D. The Botany of the Antarctic Voyage of H.M. Discovery Ships *Erebus* and *Terror* in the years 1839-1843, under the command of Captain Sir James Clark Ross. II *Flora Novae-Zelandiae* part I: Flowering Plants. 1, 1-312. 1853. London, Reeve.

Keywords: *Metrosideros lucida*/*Metrosideros umbellata*/*Metrosideros robusta*/*Metrosideros tomentosa*/*Metrosideros excelsa*/Distribution/History.

Notes: This Flora "was called for by professed Botanists, and is therefore much more scientific than a popular Flora should be." It does, however, contain English descriptions as well as Latin ones, though still technical. Prepared after the Great Exhibition of 1851, where vast numbers of imperfectly named specimens were displayed, making it clear that accurate information was needed.

Arrangement of this vol.: long introductory essay - history of New Zealand botany; limits of spp.; variation and dispersal of spp.; character of flora; plants restricted (or not) to New Zealand. Plants arranged "according to the Natural

System", ie Hooker's own taxonomic arrangement. *Metrosideros*: Latin (and English) descriptions of 9 spp.; notes on distribution. 2 climbing spp. ill., and *Metrosideros robusta* (Pl.17). 70 pl., col.

Hutching, Gerard. The Natural World of New Zealand. 1, 1-400. 1998. Auckland, Viking.

Keywords: Pohutukawa/Rata/*Metrosideros excelsa*/*Metrosideros robusta*/Project Crimson/Conservation/History.

Notes: An encyclopaedia of New Zealand natural history, designed for ease of use. Part I: outline of New Zealand life forms; people and the environment; habitats of plants and animals. Part II: natural world A-Z, by popular name. 3rd section of New Zealand facts and figures. Clear, informative, concise entries on pohutukawa and rata. Ill.: col. photos, artwork.

Kirk, Thomas. The Forest Flora of New Zealand. 1. 1889. Wellington, Government Printer.

Keywords: *Metrosideros*/*Metrosideros lucida*/*Metrosideros robusta*/*Metrosideros tomentosa*/Pohutukawa/Rata/Timber/Boatbuilding/Epiphytes/Puriri/Botanical art/Climbers/Distribution.

Notes: Thomas Kirk was Chief Conservator of State Forests: this is a handbook to a useful resource, so entries contain notes on timber use as well as botanical description, distribution and explanation of plates. Plates by different artists (see F. Bruce Sampson's *Early New Zealand Botanical Art*). Some difficulty of use, as the plates are not arranged in any systematic order, because it was intended to publish the work in parts. Entry on *Metrosideros robusta* differentiates between climber and epiphyte. Kirk comments that "it is difficult to conceive of any phenomenon connected with plant-life which is more directly suggestive of intelligence" than rata's habit of forming girdling roots. Appendices - list of woods with properties and uses, synopsis of characters of orders and genera of plants; glossary of derivations; glossary of botanical terms; general index.

Kirk, Thomas. The Students' Flora of New Zealand: and the outlying islands. 1, 1-408. 1899. Wellington, Government Printer.

Keywords: Myrtaceae/*Metrosideros*/*Metrosideros tomentosa*/*Metrosideros excelsa*/Pohutukawa/*Metrosideros robusta*/Northern rata/*Metrosideros lucida*/*Metrosideros umbellata*/Southern rata/Rata/Climbers/Islands/Auckland/Distribution.

Notes: For the student of botany: thorough indexing and clear though technical language make this book very easy to use by nineteenth-century standards. Introduction makes clear that Kirk's death cut the project short - there was to be material on geographical, biological and historical aspects to New Zealand botany, which is not there. Contents: catalogue of plants; glossary; synopsis of natural orders, following Hooker and Le Maout and Decaisne; index of natural orders (ie families); index of genera and spp.; index of native and popular names. Incl. naturalised spp., wattles etc.; incl. Kermadecs, Stewart Is., Auckland and Campbell Is. *Metrosideros* spp. entries incl. description, details on discovery, publication, distribution, names. Notes for *M. lucida* ie *umbellata*: single specimen with golden-yellow flowers at Arthur's Pass. No maps or ill.

Laing, R. M. and Blackwell, E. W. Plants of New Zealand. 2, 1-454. 1907. Christchurch, Whitcombe and Tombs.

Keywords: Pohutukawa/*Metrosideros tomentosa*/*Metrosideros excelsa*/*Metrosideros*/Rata/*Metrosideros robusta*/Northern rata/*Metrosideros lucida*/Southern rata/*Metrosideros umbellata*/Myrtaceae/Maori legends/Timber/Climbers/Strangulation/Te Reinga pohutukawa.

Notes: This book quotes Dante and Domett, Maori proverbs and legends, and notes the destruction of the forest. Deals with the way New Zealanders use and think about plants, rather than just describing them. Classified according to Engler, but very much for ordinary reader: Myrtaceae =

"Myrtle Family." Each entry notes plant use, for timber, medicine, etc. Cape Reinga pohutukawa featured (see Burstall and Sale, *Great Trees of New Zealand*, Orbell, *Natural World of the Maori*). The idea that *Metrosideros robusta* strangles its host is repeated, though with some scepticism: "...the details of the process have hitherto escaped observation". Ill.: b&w photos. Glossary. Index.

Laing, R. M. and Blackwell, E. W. *Plants of New Zealand*. 6, 1-499. 1957. Christchurch, Whitcombe and Tombs.

Keywords: Myrtaceae/Metrosideros/Southern rata/Metrosideros umbellata/Metrosideros lucida/Rata/Northern rata/Metrosideros robusta/Puriri/Vitex lucens/Timber/Pohutukawa/Maori legends/Strangulation/Te Reinga pohutukawa.

Notes: This book quotes Dante and Domett, Maori proverbs and legends, and notes the destruction of the forest. Deals with the way New Zealanders use and think about plants, rather than just describing them. Classified according to Engler, but very much for ordinary reader: Myrtaceae = "Myrtle Family." Each entry notes plant use, for timber, medicine, etc. Cape Reinga pohutukawa featured (see Burstall and Sale, *Great Trees of New Zealand*, Orbell, *Natural World of the Maori*). The idea that *M. robusta* strangles its host is repeated, though with some scepticism: "...the details of the process have hitherto escaped observation". This ed. has photo of northern rata "attempting to strangle" a puriri, and 8 colour plates by Tonkin, very splashily executed, incl. southern rata bloom. Nomenclature changes unclear. Ill.: col. plates, b&w photos. Glossary. Index. Prefaces to previous eds.

Macdonald, Christina. *Medicines of the Maori: from their trees, shrubs and other plants, together with foods from the same sources*. 1, 1-142. 1973. Auckland, Collins.

Keywords: Pohutukawa/Metrosideros excelsa/Northern rata/Metrosideros robusta/Southern rata/Metrosideros umbellata/Medicinal use/Maori use/Rata.

Notes: A pleasantly readable account of Maori medicinal use of native trees, shrubs and other plants. Pohutukawa, northern and southern rata incl. Contains a somewhat wayward account of the growth of northern rata. Ill.: rather clumsy sketches. Cf Stark's *Maori Herbal Remedies*. For much more thorough treatment of the topic, see *New Zealand Medicinal Plants* (Brooker, Cambie and Cooper), *New Zealand's Economic Native Plants* (Cooper and Cambie), *Maori Healing and Herbal* (Riley).

Matthews, James William. *New Zealand Trees: a popular guide to identification of the principal species*. 1. 1952. Wellington, Reed.

Keywords: Metrosideros/Metrosideros tomentosa/Pohutukawa.

Notes: An attractive but not very useful book - misspells throughout *Metrosideros* as '*Meterosideros*'. It is intended for gardeners and as well as identification notes it contains advice on cultivation and on conditions the tree will tolerate. Arrangement is alphabetical by genus name. Author edited the *New Zealand Gardener* magazine for many years. Ill.: b&w lithographs by a number of hands. Preface. Glossary. List of Maori names of trees. List of common names. Index.

Matthews, Julian. *AA Trees in New Zealand*. 1, 1-176. 1983. Auckland, Lansdowne Press.

Keywords: Metrosideros excelsa/Pohutukawa/Metrosideros excelsa 'Aurea'/Metrosideros robusta/Northern rata/Rata/Metrosideros umbellata/Southern rata/Cultivars/Metrosideros kermadecensis/Kermadec pohutukawa/Maori use/Medicinal use/Te Araroa pohutukawa.

Notes: Main purpose of book to describe and depict common and interesting New Zealand trees, both native and exotic, for the interested amateur. Historical section on how trees were used by both Maori and Pakeha; trees arranged by habitats; tree selection for urban areas and commercial purposes. Entries for pohutukawa and rata mention medicinal use by Maori. The large pohutukawa

tree at Te Araroa (see Burstall and Sale, *Great Trees of New Zealand*) is pictured, and also a yellow cultivar. Kermadec pohutukawa's irregular flowering habits noted. Author has horticulture and journalism experience. Ill.: col. photos. Index of common names. Index of botanical names. Bibliography.

Metcalfe, L. J. *The Cultivation of New Zealand Trees and Shrubs*. 3, 1-346. 1987. Auckland, Reed Methuen.

Keywords: Cultivars/*Metrosideros excelsa*/Pohutukawa/*Metrosideros excelsa* 'Aurea'/*Metrosideros excelsa* 'Maori Princess'/*Metrosideros excelsa* 'Scarlet Pimpernel'/*Metrosideros excelsa* 'Sunglow'/*Metrosideros excelsa* 'Variegata'/*Metrosideros robusta*/Rata/*Metrosideros umbellata*/Southern rata/Propagation/*Metrosideros*.

Notes: A resource for gardeners who need a wide range of in-depth botanical information. Part 1: 9 chapters on New Zealand plants, nomenclature, use of natives in gardens, propagation, cultivation, plants for special purposes and situations, pests and diseases, New Zealand climate. Part 2: descriptive list of genera and spp. in alphabetical order. *Metrosideros* spp.: collection of descriptions of cultivars of *M. excelsa* and other spp.; original observations of the author looking at species in the wild, eg *M. robusta* at Takaka creeping out over the rocks; cultivation notes for garden use. Author has been head of parks and botanic gardens in New Zealand and overseas. Ill.: photos, b&w and col.; line drawings. Appendix - authorities for botanical and cultivar names. Bibliography. Glossary. Index.

Metcalfe, L. J. *The Cultivation of New Zealand Trees and Shrubs*. 4, 1-354. 1991. Auckland, Reed.

Keywords: Gardening/Propagation/*Metrosideros excelsa*/Pohutukawa/Cultivars/*Metrosideros excelsa* 'Maungapiko'/*Metrosideros excelsa* 'Centennial'/*Metrosideros excelsa* 'Lighthouse'/*Metrosideros excelsa* 'Parnell'/*Metrosideros excelsa* 'Vibrance'/*Metrosideros excelsa* 'Scarlet Pimpernel'/*Metrosideros excelsa* 'Aurea'/*Metrosideros excelsa* 'Maori Princess'/*Metrosideros excelsa* 'Sunglow'/*Metrosideros excelsa* 'Variegata'/*Metrosideros umbellata*/Southern rata/*Metrosideros robusta*/Northern rata/*Metrosideros*.

Notes: A resource for gardeners who need a wide range of in-depth botanical information. Part 1: 9 chapters on New Zealand plants, nomenclature, use of natives in gardens, propagation, cultivation, plants for special purposes and situations, pests and diseases, New Zealand climate. Part 2: descriptive list of genera and spp. in alphabetical order. *Metrosideros* spp.: collection of descriptions of cultivars of *M. excelsa* and other spp.; original observations of the author looking at species in the wild, eg *M. robusta* at Takaka creeping out over the rocks; cultivation notes for garden use. This ed. has 8-p. supplement of additional cultivars and name changes, incl. 5 new cultivars of *M. excelsa* raised by Terry Hatch and Graeme Platt. Author has been head of parks and botanic gardens in New Zealand and overseas. Ill.: photos, b&w and col.; line drawings. Appendix - authorities for botanical and cultivar names. Bibliography. Glossary. Index.

Metcalfe, L. J. *The Propagation of New Zealand Native Plants*. 1, 1-87. 1995. Auckland, Godwit.

Keywords: Propagation/Seed/Cuttings/*Metrosideros*/Grafting/*Metrosideros umbellata*/*Metrosideros robusta*/*Metrosideros excelsa*/*Metrosideros kermadecensis*/Rata/Pohutukawa/Gardening.

Notes: For the practical gardener who is interested in propagating a wide range of New Zealand native plants. Arrangement: chapters on equipment, propagation from seed, from cuttings, from other techniques; harvesting and storing seed; diseases and pests. Alphabetical listing of species of plants with individual notes. *Metrosideros* species dealt with: *M. umbellata*, *M. excelsa*, *M. robusta*, *M. kermadecensis*. Information on when to gather seed, when to take cuttings, grafting, and the likelihood of success from these different techniques. Ill.: col. photos, b&w drawings. Glossary. Bibliography. Index.

Moar, Neville T. Pollen Grains of New Zealand Dicotyledenous Plants. 1. 1993. Lincoln, Manaaki Whenua Press.

Keywords: *Metrosideros*/Myrtaceae/*Metrosideros excelsa*/*Metrosideros robusta*/*Metrosideros bartlettii*/*Metrosideros umbellata*/Pollen morphology/Distribution.

Notes: This pollen atlas is a companion to the Flora of New Zealand series. For use by pollen analysts as an aid to identification, and for plant taxonomists, as pollen classification is useful at a generic and family level. Taxonomy based on Allan, 1961, and terminology of pollen morphology on Faegri and Iversen, 1964. *Metrosideros* grains similar, with some minor exceptions: this book takes *M. excelsa* as the standard on which descriptions are based. Each entry contains description of pollen grain incl. measurements in microns, and account of distribution. Illustrations of major *Metrosideros* spp. except *M. bartlettii* which is described. Ill.: b&w bright field and scanning electron micrographs, diagrams; maps. Keys/descriptions. References. Glossary. Voucher list. Index.

Moore, L. B. and Adams, N. M. Plants of the New Zealand Coast. 1, 1-113. 1963. Auckland and Hamilton, Paul's Book Arcade.

Keywords: Pohutukawa/*Metrosideros excelsa*/Southern rata/*Metrosideros umbellata*/Coastal forest/Rata/Nectar.

Notes: A deceptively simple little book, supposed to be for parents to answer children's questions at the beach, about seaweeds and other plants. Most of book devoted to seaweeds, the rest to coastal plant associations. Reference to pohutukawa is brief, noting that most of the original pohutukawa forest gone, though species itself still common. Comparison with southern rata, not confined to coastal and lakeside habitats. Drawing of the tree. This book is beautifully written, clear and accurate. Lucy Moore a leading New Zealand botanist, who worked for many years for DSIR Botany Division; Nancy Adams a well-known botanical illustrator and researcher on marine algae. Ill.: b&w line drawings. Systematic grouping of genera. Index.

Moore, L. B. and Irwin, J. B. The Oxford Book of New Zealand Plants. 1, 1-234. 1978. Wellington, Oxford University Press.

Keywords: Myrtaceae/*Metrosideros*/Pohutukawa/*Metrosideros excelsa*/Southern rata/*Metrosideros umbellata*/Northern rata/*Metrosideros robusta*/*Metrosideros kermadecensis*/*Metrosideros parkinsonii*/Rata.

Notes: Promotes knowledge and understanding of plant families and relationships, and helps with identification. For interested amateurs, so it is, according to the author, 'a mixture of technical material and very simple explanations.' Contents: introduction; general material on plants of different kinds. Plates and descriptions in following order: algae, fungi, lichens, monocots, dicots, gymnosperms, pteridophyta, bryophyta. Emphasis on looking at family characteristics of plants as a way of learning about them. Pohutukawa (ill.) and southern rata (ill.) placed in context of Myrtaceae - family characteristics clearly described. Ill.: watercolour/pencil plates; diagrams; tables. Dictionary. Index. Select bibliography. List of native families and genera. Guide to dicotyledons, monocotyledons,

gymnosperms. Author a distinguished botanist who worked for DSIR's Botany Division; illustrator in Illustration Department of Otago Medical School, pursued interest in botanical and landscape painting.

Mortimer, John and Mortimer, Bunny. *Trees for the New Zealand Countryside: a planter's guide*. 1, 1-272. 1984. Auckland, Silverfish.

Keywords: Pohutukawa/*Metrosideros excelsa*/Bees/Northern rata/*Metrosideros robusta*/Southern rata/*Metrosideros umbellata*/Timber/Propagation/Seed/Cuttings.

Notes: Practical guide for farm foresters: advice on planting, propagation and favoured habitats of trees suitable for use as timber, ornament and shelter for open spaces in New Zealand. Includes planting design notes, trees for different purposes, handling and planting, native and exotic species arranged alphabetically, table of wood properties, and tree selection guide. Brief but useful entry on pohutukawa, with col. ill., describing conditions tree will accept when young and in maturity. Suggests propagation from seed or hardwood cuttings. Both are easy, but tree flowers more quickly if grown from cutting. Authors are well-known farm foresters, responsible for planting farms and golf courses. Ill.: col. photos, diagrams. Tables. Appendices on forestry regulations and guidelines, trees and power lines, herbicides, forestry encouragement grants. Index.

Morton, John. *A Natural History of Auckland*. Morton, John. 1, 1-131. 1993. Auckland, David Bateman/Auckland Regional Council.

Keywords: Auckland/Pohutukawa/Northern rata/Southern rata/*Metrosideros excelsa*/*Metrosideros robusta*/*Metrosideros umbellata*/Ecology/Conservation/*Metrosideros*/History.

Notes: Accessible natural history, attractively set out, but with a great deal of scholarly detail. Paintings by Ronald Cometti a major feature - see also *Margins of the Sea*. Contains chapters on geological history and structure of Auckland, marine life, plant and animal life by habitats. Strong conservation message. References to *Metrosideros* spp. *passim* throughout text. Many ill.: col. artwork, b&w diagrams, maps. Appendices (Maori names of trees and shrubs; bird list). Further reading. Index. Editor Emeritus Professor of marine biology; illustrator a wildlife artist.

Newhook, Frank. *Our Trees: a New Zealand guide*. 1, 1-56. 1982. Auckland, Bateman.

Keywords: Pohutukawa/*Metrosideros excelsa*/Northern rata/*Metrosideros robusta*/Southern rata/*Metrosideros umbellata*/Botanical art/Distribution/Auckland.

Notes: Very much for the ordinary reader. Scholarly basis but simply written, and attractive format. Each tree has col. painting by Elaine Power showing detail and growth habit. Text often includes quotations, along with quite detailed information about distribution, flowering, relatives, and a non-technical description for laymen. Author was Professor of Plant Pathology in Auckland University's Botany Department. Illustrator has been a librarian and cartographer as well as artist. Contains note on growing native trees. Glossary. Map.

Offshore and Outlying Islands of New Zealand. 1, 1-64. 1979. Auckland, Collins. Collins Nature Heritage Series.

Keywords: *Metrosideros excelsa*/Pohutukawa/*Metrosideros umbellata*/Southern rata/Islands/Hauraki Gulf/Rangitoto/Auckland Islands/*Metrosideros*/Rata/History.

Notes: The natural history and history of outlying islands, written for the ordinary reader by various well-qualified authors. Arranged in chapters, by different writers, on islands or island groups. A workmanlike and useful book, though not as spectacular as more modern publications. *Metrosideros*: rata forests; Rangitoto pohutukawa. Ill.: col. and b&w photos.

- Orbell, Margaret and Moon, Geoff. *The Natural World of the Maori*. 1, 1-230. 1985. Auckland, Collins.
Keywords: Maori legends/Rata/Pohutukawa/Poetry/Te Reinga pohutukawa/History.
Notes: For the general reader interested in New Zealand and Maori cultural history. Deals with the relationship between Maori and natural world: landforms, birds, trees, sea. Describes the practical responses to a new land of a people who had to learn to survive, and the legends and literature which arose from the struggle. Rata and pohutukawa both have legends and proverbs attached to them. The spirits of the dying travel on their journey down the root of the Te Reinga pohutukawa; 'Don't keep plucking the flowers of the rata' means 'Don't get angry' (red in the face); etc. Margaret Orbell an anthropologist and expert on Maori mythology and poetry, Geoff Moon a well-known wildlife photographer. Ill.: b&w and col. photos. Maps. Notes. References. Index.
- Palmer, Stanley J. *Palmer's Manual of Trees, Shrubs and Climbers*. 3, 1-340. 1990. Queensland, Lancewood.
Keywords: Cultivars/*Metrosideros*/Pohutukawa/*Metrosideros excelsa*/Northern rata/*Metrosideros robusta*/Southern rata/*Metrosideros umbellata*/Kermadec pohutukawa/*Metrosideros kermadecensis*/Climbers/Gardening.
Notes: Practical and easy-to-use guide for gardeners - gives gardener's rather than botanist's perspective on wide range of exotic and native plants. *Metrosideros*: describes different species and cultivars and how to grow them - degree of frost-tolerance, etc. 2 sections - Trees/Shrubs, and Climbers. *Metrosideros* spp. appear in both. Within these sections, plants are listed alphabetically under genus. Separate index of common names. Author the son of founder of New Zealand nursery organisation Palmer's. Ill.: b&w and col. photos. Index of common names. List of changed names. Guide to plant selection.
- Peat, Neville and Patrick, Brian. *Wild Dunedin: enjoying the natural history of New Zealand's wildlife capital*. 1, 1-144. 1995. Dunedin, University of Otago Press.
Keywords: *Metrosideros excelsa*/Pohutukawa/*Metrosideros umbellata*/Southern rata/Distribution/Rata/Conservation/Planted specimens/Dunedin/History/Wellington.
Notes: For people enthusiastic about natural history and/or Dunedin. A thorough examination of the area's natural history, incl. geological history, arranged by habitat. Neither pohutukawa nor southern rata are natural inhabitants of the area, but they thrive as planted specimens, so are of interest. Cf pohutukawa in Wellington in Gabites, *Wellington's Living Cloak*. The book has a strong conservation message. Ill.: col. photos, artwork, maps. Bibliography. Index.
- Poole, A. L. and Adams, N. M. *Trees and Shrubs of New Zealand*. 1-256. 1990. Wellington, DSIR Publishing.
Keywords: Myrtaceae/*Metrosideros*/Bartlett's rata/*Metrosideros bartlettii*/Pohutukawa/*Metrosideros excelsa*/Northern rata/*Metrosideros robusta*/Southern rata/*Metrosideros umbellata*/Ecology/Timber/Rata/Conservation/Climbers.
Notes: Native plant identification guide, with additional information. Extensive introduction - discussion of species variation, ecology, affinities of New Zealand flora to other Southern Hemisphere flora because of Gondwanaland origins. Impact of humans and introduced animals on native plants, use of native timber, survival of native bush. *Metrosideros*: thorough - all 12 species including Bartlett's rata described with distinguishing features. All ill. except for *M. bartlettii*. Authors: Lindsay Poole's positions include Director of DSIR Botany Division and Director-General of Forests; Nancy Adams

botanical illustrator and researcher on marine algae. Ill.: clear b&w line drawings, some of whole plant, mostly of selected parts of plant. Diagrams of leaf shapes. Glossary. Index. Map. References.

Poole, A. L. and Adams, N. M. *Trees and Shrubs of New Zealand*. 4, 1-257. 1980. Wellington, Government Printer.

Keywords: Myrtaceae/*Metrosideros*/*Metrosideros excelsa*/*Pohutukawa*/*Metrosideros umbellata*/*Southern rata*/*Metrosideros robusta*/*Northern rata*/Ecology/Timber/*Metrosideros bartlettii*.
Notes: Native plant identification guide, with additional information. Extensive introduction - discussion of species variation, ecology, affinities of New Zealand flora to other Southern Hemisphere flora because of Gondwanaland origins. Impact of humans and introduced animals on native plants, use of native timber, survival of native bush. *Metrosideros*: thorough - 11 New Zealand species described and ill. with distinguishing features. This ed. does not include a reference to *Metrosideros bartlettii*.
Authors: Lindsay Poole's positions include Director of DSIR Botany Division and Director-General of Forests; Nancy Adams well-known botanical illustrator and researcher on marine algae. Ill.: clear b&w line drawings, some of whole plant, mostly of selected parts of plant. Diagrams of leaf shapes. Glossary. Index. Map. References.

Richards, Eva C. *Our New Zealand Trees and Flowers*. 3, 1-297. 1956. Christchurch, Simpson and Williams.

Keywords: *Southern rata*/*Metrosideros lucida*/*Metrosideros umbellata*/*Northern rata*/*Metrosideros robusta*/*Pohutukawa*/*Metrosideros excelsa*/*Metrosideros tomentosa*/*Metrosideros*/*Rata*/*Puriri*/*Climbers*/History.
Notes: Popular botany, written for ordinary reader, by a writer who found botany texts unsympathetic. Caution advisable with information in this book. Some potentially useful cultivation notes. The book is arranged in Mrs Richards' own way, in sections headed Trees, Shrubs, Climbers, Flowers: an artificial separation which does not take into account that trees, shrubs and climbers can have flowers! Brief history of botanical exploration in New Zealand; attempt to explain botanical nomenclature; lists of plants. Illustrations include "*Metrosideros robusta* strangling its host, a rimu tree" (compare Laing and Blackwell's northern rata "attempting to strangle" a puriri). Ill.: b&w photos, drawings. Index: Latin, Maori and common names. Glossary. List of books consulted.

Riley, Murdoch. *Maori Healing and Herbal: New Zealand ethnobotanical sourcebook*. 1, 1-528. 1994. Paraparaumu, Viking Sevenses.

Keywords: *Pohutukawa*/*Metrosideros excelsa*/*Northern rata*/*Rata*/*Metrosideros robusta*/*Maori legends*/*Metrosideros*/*Honey*/*Medicinal use*/*Tannin*.
Notes: Exhaustive treatment of this topic, with original sources quoted. Riley believes that Maori always used herbal medicine, both internally and externally, but secrecy prevented revelation to Europeans: a less cautious view than that taken in *New Zealand's Economic Native Plants* (Cooper and Cambie) or *New Zealand Medicinal Plants* (Brooker, Cambie and Cooper). Part 1 - Maori healing and health topics listed alphabetically; Part 2 - Maori herbal remedies listed alphabetically. Entries give legends about plant's origins; proverbs; overseas use of related spp. *Metrosideros excelsa*'s inner bark stopped bleeding, diarrhoea; honey for sore throats. *M. robusta* for ringworm, sores, broken bones, bruises, diarrhoea, toothache, sexually transmitted diseases, and in Mother Aubert's "Natanata" stomach medicine. Author an expert on various New Zealand and Maori topics. Ill.: col. photos of plants by Brian Enting. Glossary of Maori terms. Extensive bibliography. Index.

Sale, E. V. *Forest on Sand: the story of Aupouri State Forest*. 1, 1-79. 1985. Wellington, New Zealand Forest Service.

Keywords: Ecology/*Pohutukawa*/*Metrosideros excelsa*/*Te Arai pohutukawa*/*Aupouri*

Peninsula/History/Archaeology.

Notes: An individual view of the history of the Aupouri State Forest - focusses on the impact on the community, and what it was like to work in the forest (dodging quicksand), rather than on planting statistics. Deals with ecology of the area: native plants, sea life, wild horses, the encroachment of the sand. Has photo of a group of pohutukawa trees (p.6) buried in the sand, and describes a flax mill fuelled from a small local forest of pohutukawa. Written in a very readable style. Ill.: col. and b&w photos; map. Bibliography.

Salmon, J. T. *Native New Zealand Flowering Plants*. 1, 1-254. 1991. Auckland, Reed.

Keywords: *Metrosideros excelsa*/*Pohutukawa*/*Metrosideros robusta*/Northern rata/*Metrosideros umbellata*/Southern rata/*Metrosideros kermadecensis*/*Metrosideros*/Rata/Bartlett's rata.

Notes: Main purpose of this book is plant identification. Arrangement by habitat adds extra information in itself. Also a page on plant associations, too brief to be really useful. Arrangement by habitat - coastal plants, plants of lowland scrub, etc. 10 spp. of *Metrosideros* are featured (not including Bartlett's rata), with col. photos of every one, which is unusual. Photographs small but very clear, usually a close-up of flower rather than showing whole plant, and not to scale with each other (size of plant given in the accompanying description). Author: Professor Emeritus of Victoria University, Fellow of the Royal Society of New Zealand and the Royal Photographic Society. Ill.: maps; col. photos of plant flowers. Glossary. Bibliography. Index.

Salmon, J. T. *New Zealand Flowers and Plants in Colour*. 2, 1-235. 1967. Wellington, A.H. & A.W. Reed.

Keywords: *Metrosideros excelsa*/*Metrosideros robusta*/*Metrosideros umbellata*/Ecology/Browsing damage/Photography/*Pohutukawa*/*Metrosideros*.

Notes: Written in ordinary language for the ordinary reader, this is an account of flowering plants in their habitats. Large clear photos for identification; also extensive ecological, photographic, medical, commercial, horticultural and ethnological information. Captions to photographs are not botanical descriptions but amplify the plates. *Pohutukawa*, as a coastal tree, is the first entry in the book and is described as 'one of the most spectacular trees of the world.' 9 spp. of *Metrosideros* photographed in full flower. This ed. has additional section of colour plates, and confusion over name changes has been cleared up. Names follow Allan's *Flora*. Cf the same author's *Native New Zealand Flowering Plants*. Maps. Ill.: col. photos by author. Index. Selected reference works.

Salmon, J. T. *The Native Trees of New Zealand*. 2, 1-384. 1980. Wellington, Heinemann Reed.

Keywords: Myrtaceae/*Metrosideros*/*Pohutukawa*/*Metrosideros excelsa*/Northern rata/*Metrosideros robusta*/Southern rata/*Metrosideros umbellata*/Kermadec pohutukawa/*Metrosideros kermadecensis*/Shrubby rata/*Metrosideros parkinsonii*/Ecology.

Notes: To inform general reader about tree biology and individual native trees. Species clearly described using both botanical terms and common language. Excellent identification guide because of detailed photos of every aspect of trees: bark, leaves, flowers, tree as a whole in mature and juvenile forms. Also much general information about trees in ecosystem, the living forest and tree biology - photosynthesis, leaf and stem structure, reproduction, growth, longevity. Section on individual trees arranged in families, eg *Metrosideros* under Myrtaceae, with details about overseas relatives. Author is Emeritus Professor of Victoria University and Fellow of the Royal Society of New Zealand and the Royal Photographic Society. Ill.: col. photos; diagrams; maps. Glossary. Bibliography. Index of common names. General index.

Sampson, F. Bruce. *Early New Zealand Botanical Art*. 1, 1-142. 1985. Auckland, Reed Methuen.

Keywords: *Metrosideros robusta*/Northern rata/*Metrosideros umbellata*/Southern rata/Smith, Matilda/Parkinson, Sydney/Featon, Sarah/Hetley, Georgina/Harris, Emily/Osborne, Fanny/Bo

tanical art/Hooker, Joseph Dalton/Kirk, Thomas/Cheeseman, Thomas F./*Metrosideros*/History.

Notes: Many early New Zealand botany books are rare and hard to find. This book gives a selection of illustrations from books published up to 1925, plus comments on botanical aspects and biographical details of the artists and botanists involved. Brings together in accessible form valuable information about Matilda Smith, the Featons, Mrs Hetley, Sydney Parkinson, Hooker, Kirk etc. Dates are noted of Parkinson's first drawings of *Metrosideros fulgens* (Tolaga Bay, Oct. 1769) and *M. umbellata* (Queen Charlotte Sound, Jan. 1770), though plates not shown. Enjoyable history, art and botany for interested readers. Author a Reader in Botany at Victoria University. Ill.: major feature - 48 pl. (col., b&w) from early sources. Selected references. Index.

Schnackenberg, E. H. The Pohutukawas of Kawhia: tales, traditions and legends relating to Kawhia's famous Christmas trees, as collected and compiled by E. H. S. 1. 1935. Kawhia, Kawhia Settler Print.

Keywords: Pohutukawa/*Metrosideros excelsa*/Maori legends/Kawhia pohutukawa/Karewa/Poureterete/Papa-o-Karewa/Tangi te Korowhiti/Rei-ao/Kawhia/History/Distribution.

Notes: Rare little book written to preserve some stories of Kawhia which relate to the ancient pohutukawa trees around the harbour. A quite remarkable introductory poem about pohutukawa! Not academic or scientific, but describes trees and their history, much of it legendary; also shows distribution of species in Kawhia in 1930's. Stories include the mooring of Tainui canoe; exploits of the seeress Te Karakara (whose 'powers of penetration were particularly potent'); the story of a slighted first wife, Ruaputahanga, escaping from her husband and leaving her son under one of the old pohutukawa, Rei-ao; etc. Activities of tohunga, and the practice of hanging the placenta in pohutukawa branches after a child's birth, also discussed. Frontispiece illustrating Papa-o-karewa, the mooring-place of Tainui canoe.

Stark, Raymond. Maori Herbal Remedies. 1, 1-116. 1979. Wellington, Viking Sevenses.

Keywords: Pohutukawa/Rata/Medicinal use/Maori use/Climbers/Juice/*Metrosideros*/*Metrosideros robusta*.

Notes: An attractive little book which summarises standard information for each plant dealt with, without giving sources of information. Perhaps some confusion about rata spp. - climber or tree: "the juice of the vine" comes under *Metrosideros robusta*. Col. photos. Cf Macdonald, *Medicines of the Maori*. For much more thorough treatment of the topic, see *New Zealand Medicinal Plants* (Brooker, Cambie and Cooper), *New Zealand's Economic Native Plants* (Cooper and Cambie), *Maori Healing and Herbal* (Riley).

Wall, Arnold and Cranwell, Lucy M. The Botany of Auckland. 2, 1-48. 1943. Auckland, Wilson and Horton.

Keywords: *Metrosideros excelsa*/Pohutukawa/*Metrosideros tomentosa*/*Metrosideros umbellata*/Southern rata/*Metrosideros lucida*/*Metrosideros robusta*/Northern rata/Rangitoto/Hybrids/Auckland/Browsing damage/Possums/Deer/Wallabies/Flowering times/Rata/Conservation.

Notes: Reprint of series of articles which appeared in *New Zealand Herald* in 1936. A small book which aimed at gaining converts to conservation by arousing interest in Auckland's flora. Contents: historical outline; sections on different habitats, eg dunes, lava fields, Rangitoto; ferns, useful native plants; catalogue of native plants found in the region. Pohutukawa described as part of coastal cliff community; northern rata said to be killing its host. Rangitoto's unique environment described, with its synchronous flowering times of rata and pohutukawa, and abundance of rata-pohutukawa hybrids. Arnold Wall was professor of English and keeper of the Canterbury Museum herbarium; Lucy Cranwell botanist at the Auckland War Memorial Museum. Ill: b&w photo (incl.rata, pohutukawa), drawings; map. Catalogue of native plants (botanical name/popular name/habitat).

Webb, Colin, Johnson, Peter, and Sykes, W. R. Flowering Plants of New Zealand. 1, 1-146. 1990. Christchurch, DSIR Botany.

Keywords: Myrtaceae/Manuka family/Pohutukawa/Metrosideros excelsa/Southern rata/Metrosideros umbellata/Rata/History.

Notes: Prepared for New Zealand's 1990 celebrations: for ordinary reader. Clear, everyday language: eg heading on Myrtaceae is "Manuka Family". Emphasis on families and classification as means to understanding and identification - see also Lucy Moore's *Oxford Book of New Zealand Plants*. Introduction: basic information about features of flowering plants; brief history of New Zealand plants. Deals with common exotics as well as natives. Plant lists arranged in families, dicotyledons followed by monocotyledons. Myrtaceae get double-page spread, so entry on pohutukawa and rata is brief. Connections made with Myrtaceae relatives in New Zealand and overseas, eg *Kunzea ericoides* and the clove tree; statistics on number of species and genera worldwide, and on botanical character of Myrtaceae flowers. Authors all DSIR botanists with different areas of specialisation. Ill.: col. photos, diagrams. Index. Glossary. Further reading.

Wilson, Catherine M. and Given, David R. Threatened Plants of New Zealand. 1, 1-152. 1989. Wellington, DSIR Publishing. DSIR field guide - DSIR information series, no. 166, ISSN 0077 9636.

Keywords: *Metrosideros bartlettii*/Bartlett's rata/Conservation/Distribution/*Metrosideros*/Rata/Seed.

Notes: Aim of this book to help ensure protection of plants at risk by educating the public. Clearly written - minimum technical language. Introduction: reasons for writing guide, threats to plants, conservation strategies, categories of threat, codes of conduct. Contents: habitat index; list of plants, one to a page, arranged by habit or habitat. Incl. *Metrosideros bartlettii*, rare rata tree discovered in 1975. Entry for this gives general location map, photo of flowering branches, description (except for seed), notes on distribution, habitat, conservation. Also comparison between *M. bartlettii* and *M. oreomyrtus* from New Caledonia; name origin noted. Catherine Wilson worked for DSIR's Botany Division; David Given also at DSIR Botany Division, member of IUCN's Species Survival Commission. Ill.: col. photos, maps. Glossary. Diagrams. References/sources of advice. General index.