

## The New Zealand Species of *Metrosideros* with a Note on *Metrosideros collina* (Forst) Gray.

By W. R. B. OLIVER, M.Sc., F.N.Z. Inst., Director Dominion Museum, Wellington.

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PLATE 67.

THE purpose of the present paper is merely to revise the nomenclature of the New Zealand species of *Metrosideros*. Discussions on affinities and distributions are therefore included only so far as they have a bearing on the name to be applied to the species. Investigations into the nomenclature of the genus revealed an amazing state of confusion, for, as will be seen by what follows, no fewer than seven of the eleven names used in Cheeseman's *Manual of the New Zealand Flora* will require to be changed. Unfortunately, in two cases the names are transferred to different species within the genus.

It will be convenient to compare in tabular form the names herein proposed with those in Cheeseman's *Flora*.

Cheeseman's <i>Manual</i> .	Present Paper.
<i>M. florida</i>	<i>M. scandens</i>
<i>M. lucida</i>	<i>M. umbellata</i>
<i>M. Parkinsonii</i>	<i>M. Parkinsonii</i>
<i>M. albiflora</i>	<i>M. albiflora</i>
<i>M. diffusa</i>	<i>M. carminea</i>
<i>M. hypericifolia</i>	<i>M. diffusa</i>
<i>M. Colensoi</i>	<i>M. Colensoi</i>
<i>M. scandens</i>	<i>M. perforata</i>
<i>M. robusta</i>	<i>M. robusta</i>
<i>M. robusta</i> var. <i>intermedia</i>	× <i>M. subtomentosa</i>
<i>M. tomentosa</i>	<i>M. excelsa</i>
<i>M. villosa</i>	<i>M. kermadecensis</i>

Of the above changes *M. perforata* has already been noticed recently by the author and by Cockayne and Allan (*Trans. N.Z. Inst.*, vol. 56, pp. 5, 27, 1926), while *M. scandens* (= *M. florida*) was recorded by Druce in 1917. In the case of the hybrid, *M. subtomentosa*, this name is adopted instead of *intermedia* under the authority of a rule which states that the first name used in a specific sense must stand. The rule is obviously not in harmony with the law of priority.

In order to verify the results of my researches, I applied to the Department of Botany of the British Museum where the types of the Forsters are preserved. Mr. A. W. Exell kindly took the matter up, fully investigated the problems I placed before him, and drew up a synonymy which not only confirmed mine but added several references not available to me. Thanks to Mr. Exell, therefore, I believe the names now put forward are in accordance with the International Rules of Botanical Nomenclature, and the authori-

ties given are correctly stated. Mr. Exell kindly examined the type specimens in the British Museum and in the Linnean herbarium.

***Metrosideros scandens* (Forst.) Druce.**

*Leptospermum scandens* Forst. *Char. Gen.* 72, pl. 36, 1776.

*Melaleuca florida* Forst. *Fl. Ins. Austr. Prodr.* 37, 1786.

*Metrosideros fulgens* Sol. ex Gaertn. *Fruct. Sem. Pl.* 1, 172, pl. 34, f. 7, 1788.

*M. florida* Smith, *Trans. Linn. Soc.* 3, 269, 1797.

*M. speciosa* Colenso, *Trans. N.Z. Inst.*, 22, 463, 1890.

*M. aurata* Colenso, *Trans. N.Z. Inst.*, 23, 385, 1891.

*M. scandens* Druce, *Rep. Bot. Exch. Cl. Br. Isles*, 1916, 635, 1917.

Not *M. scandens* Sol. ex Gaertn. *Fruct. Sem.*, pl. 1, 172, 1788.

The Forsters introduced *Leptospermum scandens* twelve years before Gaertner founded *Metrosideros scandens* for a different species. As Gaertner's specific name is not valid, being pre-occupied by Forster's earlier *perforatum*, Forster's name *scandens* becomes available for the present species.

***Metrosideros umbellata* Cav.**

*Melaleuca lucida* Forst. *Fl. Ins. Austr. Prodr.* 38, 1786.

*Metrosideros umbellata* Cav.  *Ic. Desc. Pl.* 4, 20, pl. 337, 1795.

*Melaleuca umbellata* Raeusch, *Nomencl. Bot.* ed. 3, 143, 1797.

*Metrosideros lucida* A. Rich. *Voy. Astrol. Bot.* 333, 1832.

*Agalmanthus umbellatus* Hombr. & Jaeq. ex Decne. *Voy. Astrol. et Zel.* 78, 1853.

Not *Melaleuca lucida* Linne. f. *Suppe.* 342, 1781.

Forster's specific name *lucida* is not valid for this species on account of an earlier homonym of Linne f. (= *M. collina*). Cavanille's name *umbellata* therefore comes into use.

***Metrosideros Parkinsonii* Buch.**

*Metrosideros Parkinsonii* Buchanan, *Trans. N.Z. Inst.*, 15, 339, 1883.

***Metrosideros albiflora* Sol. ex Gaertn.**

*Metrosideros albiflora* Sol. ex Gaertn. *Fruct. Sem. Pl.* 1, 72, pl. 34, f. 11, 1788.

*Melaleuca albiflora* Raeunch, *Nomencl. Bot.* ed. 3, 143, 1797.

*Metrosideros diffusa* A. Cunn., *Ann. Nat. Hist.* 3, 114, 1839. Hook f. *Ic. Pl.* pl. 569, 1843. Not *M. diffusa* Smith. *Trans. Linn. Soc.* 3, 268, 1797.

***Metrosideros carminea* W. R. Oliv. new name.**

*Metrosideros diffusa* Hook. f., *Fl. Nov. Zel.* 1, 67, 1853. Not *M. diffusa* Smith, *Trans. Linn. Soc.* 3, 268, 1797, nor *Melaleuca diffusa* Forst. *Fl. Ins. Austr. Prodr.* 37, 1786.

This species has been known under the name of *M. diffusa* since the publication of Hooker's *Flora Novae Zelandiae* in 1853. It is not however the *Melaleuca diffusa* of Forster, better known as *M. hypericifolia*, nor the *Metrosideros diffusa* of Smith, which is a Polynesian species (*M. collina*), nor yet *M. diffusa* of Cunningham, which

Metrosideros



Plate 34 of Gaertner's *De Fructibus et Seminibus Plantarum*, 1788.



is *M. albiflora*. The name *diffusa* has thus been applied to four different species of *Metrosideros*.

Forster did not land at any point in the North Island, so that his name could not rightly be applied to the present species which is confined to the northern portion of that island.

***Metrosideros diffusa*** (Forst.) W. R. Oliv. new comb.

*Melaleuca diffusa* Forst. *Fl. Ins. Austr. Prodr.* 37, 1786.

*Metrosideros myrtifolia* Sol. ex Gaertn. *Fruct. Sem. Pl.* 1, 172, pl. 34, f. 12, 1788.

*M. hypericifolia* A. Cunn. *Ann. Nat. Hist.* 3, 114, 1839.

*M. subsimilis* Col. *Trans. N.Z. Inst.*, 12, 361, 1880.

Cheeseman in his *Illustrations of the New Zealand Flora*, pl. 48, 1914, discusses the identity of *Melaleuca diffusa*, of Forster and concludes that "in all probability his plant is identical with the species usually known as *M. hypericifolia*." In order to verify this I sent to Mr. Excell specimens illustrating the range of variation of *M. hypericifolia*. Mr. Excell kindly compared the specimens with Forster's type and reported that they belonged to the same species.

*Metrosideros diffusa* of Smith, is, as shown under *M. collina* not the same as Forster's *Melaleuca diffusa*.

*Metrosideros myrtifolia* of Gaertner is as shown by his plate reproduced herewith the same species as Forster's *Melaleuca diffusa*.

***Metrosideros Colensoi*** Hook. f.

*Metrosideros Colensoi* Hook. f. *Fl. Nov. Zel.* 1, 68, 1853.

*M. pendens* Colenso, *Trans. N.Z. Inst.*, 12, 360, 1880.

***Metrosideros perforata*** (Forst.) Rich.

*Leptospermum perforatum* Forst. *Char. Gen.* 72, 1776.

*Melaleuca perforata* Forst. *Fl. Ins. Austr. Prodr.* 37, 1786.

*Metrosideros scandens* Sol. ex Gaertn. *Fruct. Sem. Pl.* 1, 172, pl. 34, f. 10, 1788.

*M. perforata* A. Rich. *Voy. Astrol. Bot.* 334, 1832.

*M. buxifolia* A. Cunn. *Ann. Nat. Hist.* 3, 111, 1839.

*M. vesiculata* Colenso, *Trans. N.Z. Inst.*, 16, 327, 1884.

*M. tenuifolia* Colenso, *l.c.* 24, 387, 1892.

Not *Leptospermum scandens* Forst. *Char. Gen.* 72, 1776.

I have myself examined Forster's type of *Melaleuca perforata*, and found it to agree with the plant known to New Zealand botanists as *Metrosideros scandens*. Gaertner's *Metrosideros scandens*, which should not be confused with Forster's *Leptospermum scandens*, is shown, by Gaertner's plate reproduced herewith, to be the present species.

***Metrosideros robusta*** A. Cunn.

*Metrosideros robusta* A. Cunn. *Ann. Nat. Hist.* 3, 112, 1839.

*M. florida* Hook. f. *Bot. Mag.* pl. 4471, 1849 (not Forst.)

*M. robusta* var. *retusa* Kirk, *Students Fl. N.Z.* 162, 1899.

× ***M. subtomentosa*** Carse.

*Metrosideros robusta* var. *intermedia* Kirk. *Students Flora*, 162, 1899.

× *M. subtomentosa* Carse, *Trans. N.Z. Inst.*, 57, 92, 1927.

This hybrid was first described by Kirk as a variety of *M. robusta*. Kirk's specimens were collected on Rangitoto Island where both *M. robusta* and *M. excelsa* are found. There are also in his herbarium similar specimens from Great Omaha, where this form is known to bushmen as the "inland pohutukawa." Plants of different appearance, but intermediate between *M. robusta* and *M. excelsa* have been collected at Titirangi, Mount Tarawera, and Taupo Lake, in every case localities where both *M. robusta* and *M. excelsa* are found, so that their hybrid origin is practically certain.

***Metrosideros excelsa* Sol. ex Gaertn.**

*Metrosideros excelsa* Sol. ex Gaertn. *Fruct. Sem. Pl.* 1, 172, pl. 34, f. 8, 1788.

*M. tomentosa* Rich. *Voy. Astrol. Bot.* 336, pl. 37, 1832.

My attention was first drawn to the identity of *M. excelsa* through the examination of specimens in the Dominion Museum herbarium collected by Banks and Solander during Cook's first voyage. The specimens were labelled *Metrosideros excelsa*.

In order to verify the identification I applied to Professor J. Arthur Harris, of the University of Minnesota, who kindly sent me a typed copy of the Gaertner's description of *M. excelsa* and a photographic reproduction of his plate 34. The description runs: "Calyx tomentosus, quinque-dentatus, capsulae ad medium usque adnatus. Capsula ovata, extra calyceem prominens, pubescens, trilocularis." The plate is reproduced herewith. There can be no doubt that Gaertner's plant, which was collected by Banks and Solander, is that commonly known as *M. tomentosa*. Mr. Exell is in agreement with me.

***Metrosideros kermadecensis* W. R. Oliv. new name.**

*Metrosideros polymorpha* Hook. f. *Handb. N.Z. Fl.* 73, 1864, (not Gaud).

*M. villosa* Kirk, *Students Fl. N.Z.* 163, 1899 (not Sm.).

This species has hitherto been referred to the very complex group known collectively under the name *Metrosideros collina* (Forst.) Gray, or one of its numerous aliases, and which is found throughout the Pacific from Fiji to Tahiti and the Hawaiian Islands.

Leaving aside the Kermadec species, *M. collina* may be divided into two groups, one confined to the Hawaiian Islands and consisting of 11 varieties, and another found in the South Pacific Islands and separable into three varieties. In the latter group I have seen no form corresponding to the Kermadec plant. Throughout its range it is for the most part either entirely glabrous or it has the inflorescence, young leaves, and to a greater or lesser extent, the under-surface of the leaves, canescent or tomentose. Moreover the leaves are typically elliptic, moderately thin and have flat margins. The Kermadec species has oblong coriaceous leaves with recurved margins and is densely tomentose below. The inflorescence and young leaves are also densely covered with white tomentum. In both *M. collina* and *M. kermadecensis* the flowers are sessile.

To find a form within the complex *collina* at all comparable with the Kermadec species it is necessary to go to Hawaii where the variety *incana* approaches it. But this variety differs from *M. kermadecensis* in its larger leaves with longer petioles and pedicellate flowers. Moreover it is generally an erect tree with grey bark, and

with the capsule slightly exerted or immersed in the calyx-tube, from which it is nearly free. The variety *incana* is said to come close to the variety *typica* which has cordate leaves, and if these and the other named varieties are properly included in a single species then its genetic constitution is entirely different from that of the South Pacific group and still more so from the Kermadec species. *M. kermadecensis* is really a close ally of *M. excelsa* of New Zealand, differing mainly in its smaller oblong leaves and smaller flowers.

NOTE ON *Metrosideros collina* (FORST) GRAY.

As the nomenclature of this species is involved in that of some of the New Zealand species, the following remarks are worthy of record in this place.

At my request Mr. Exell kindly examined for me the type of *Melaleuca lucida* in the Linnean herbarium. He reports that it agrees well with *Leptospermum collinum* of Forster. It was collected by Sparrman and given to Linné. Though it was said to have come from New Zealand it was probably collected at Tahiti.

As there has been a considerable amount of confusion through the application of the name *diffusa* to New Zealand species of *Metrosideros*, I applied to Dr. Daydon Jackson for particulars of the specimens in Smith's herbarium. I received back extracts of Smith's account in Volume 3 of the *Transactions of the Linnean Society*, and a tracing of the specimen in Smith's herbarium with a copy of the label attached thereto. The tracing might well be *M. collina*. Smith in his account states that he had seen the specimen given by Sparrman to Linné, and then synonymizes *Melaleuca lucida* Linn. with his *diffusa*. But *M. lucida* Linn. is as above stated, *Metrosideros collina*. The label of Smith's specimen reads "Otateite, Nelson. Herb. Banks, 1797." Otateiti is a form of Tahiti. "Nelson" must be a late addition as the place so called in New Zealand would not be named for more than forty years after Smith's account was published. Although Smith uses Forster's name *diffusa* he evidently had not seen Forster's type, for he states that "I have only seen one specimen which was given to Linneaus by Dr. Sparrman" (that is, *M. lucida* Linn.). From this it is clear that Smith's *Metrosideros diffusa* is identical with *Leptospermum collinum* of Forster. Finally, Hooker and Arnott identify Tahiti specimens with Smith's *diffusa*.

The synonymy of the Hawaiian group, which I recommend it would be convenient to call *M. polymorpha* Gaud, as was done by Gray, is given fully by Rock in *The Ohia Lehua Trees of Hawaii*. The following synonymy covers the South Pacific Group, all the names except *vitiensis* being founded on Tahiti specimens. *Leptospermum collinum* Forst. *Char. Gen.* 72, pl. 36, 1776. *Melaleuca lucida* Linn. f. *Suppl. Pl.* 342, 1781. *M. villosa* Linn. f. l.c. *M. aestuosa* Forst. *Fl. Ins. Austr. Prodr.* 38, 1786. *Metrosideros spectabilis* Sol. ex Gaertn. *Fruct. Sem. Pl.* 1, 172, pl. 34, f. 9, 1788. *M. villosa* Smith, *Trans. Linn Soc.* 3, 268, 1797. *M. diffusa* Smith l.c. Hook. & Arn. *Bot. Beech. Voy.* p. 63, 1841 (not Forst.). *M. villosa* var. *glaberrima* Bertero ex Guill. *Zeph. Tait.* p. 57. *M. collina* Gray, *Bot. U.S. Expl. Exp.* 558, pl. 68, 1854. *M. collina* var. *vitiensis* Gray l.c. p. 559. *M. tahitiensis* Decne., *Bot. Voy. Venus*, p. 30, 1855. *Nania collina* O. Ktze, *Rev. Gen. Pl.* 1, 242, 1891.