

## A preliminary checklist of fossil names in extant genera of the Proteaceae

Peter M. Olde

*National Herbarium of New South Wales, Royal Botanic Gardens and Domain Trust,  
Mrs Macquaries Road, Sydney, NSW 2000, Australia: [peter.olde@rbgsyd.nsw.gov.au](mailto:peter.olde@rbgsyd.nsw.gov.au)*

### Abstract

Information concerning published fossil names cannot presently be retrieved from any single source. A preliminary checklist of 380 fossil binomials in 21 extant recognised genera, plus three in synonymy, of the family Proteaceae is presented here, together with details of their publication. *Lomatia fraxinifolia* F.Muell. ex Benth., an extant species from Queensland, Australia, is found to be an illegitimate homonym and is replaced with *Lomatia milnerae* Olde. Three fossil species were also found to be illegitimate homonyms and two are given new names: *Lomatia neodubia* Olde and *L. novoreticulata* Olde. Seven extant species of Proteaceae described by C.R. von Ettingshausen, three previously treated as fossils, are also discussed in relation to the application of their names, *Anadenia heterophylla* R.Br. ex Ettingsh., *Grevillea repanda* J. Zahlbr. ex Ettingsh., *Hakea salisburiifolia* Hügel ex Ettingsh., *Lambertia floribunda* H.B.S. ex Ettingsh., *Manglesia trilobata* Hort. ex Ettingsh., *Protea dryandroides* Hügel ex Ettingsh. and *Protea grandis* Hort. Hügel ex Ettingsh. A table of fossil genera is provided and the orthography of published names has been corrected where applicable.

### Introduction

The nomenclature of fossil plants, which is covered by the International Code of Nomenclature for algae, fungi and plants (McNeill et al. 2012), states under article 43.1 that ‘in order to be validly published, the name of a new fossil-taxon published on or after 1 January 1996 must be accompanied by a Latin or English description or diagnosis or by a reference (see Art. 38.13) to a previously and effectively published Latin or English description or diagnosis.’ Prior to that date, a valid description could be published in any language. Fossil literature has been largely ignored by indexers since the inception of Hooker and Jackson’s *Index Kewensis* (1893 et seq.). This principal index of published botanical names from 1753, its subsequent supplements and successors to the present, have all failed to incorporate fossil names. None of the fossil names in the Proteaceae checklist presented here yielded a positive search result in either APNI (Australian Plant Name Index) or IPNI (International Plant Name Index), the successor to *Index Kewensis* from 1996. It is somewhat ironic then that an index for which Charles Darwin provided establishment funds should continue to ignore fossil names.

The first names for fossil plants in the Proteaceae were published by James Scott Bowerbank (1840, Pp. 43–51), who based his descriptions in the genus *Petrophiloides* Bowerb. on fossil fruits and seeds from the stiff bluish London Clay that contains Lower Eocene (c. 56–49 ma) fossils of a tropical/subtropical extant flora in England.

Bowerbank initially thought some of his fossil fruits belonged with *Casuarina* but, after consultation with Robert Brown who noted their affinity with '*Petrophila*' and '*Leucadendron*', and particularly with one species of the former genus *Petroph. diversifolia*, Bowerbank erected the form-genus in which he described seven species, later reduced to three by Ettingshausen (1851a, P. 7). Bowerbank's decision to create a form-genus, rather than assign his species to one with extant species was prescient, in retrospect, given his lack of certainty. Less than twenty years later, Charles Darwin (1859) published his ideas on the origin of species that have since become the foundation of evolutionary taxonomy, and is the basis for the replacement of morphology-based systematics with one based on phylogeny.

Palaeobotanists such as Gaston de Saporta, Constantin von Ettingshausen, Franz von Unger and Oswald Heer began confidently to describe fossil leaf impressions, petrefactions, pollen, fruits and seeds etc. in extant Proteaceae genera from around 1850. This work was typically based on very little evidence for the congenerity of these specimens. J.D. Hooker (1854, P. 165) pointed out the inadvisability of such actions. 'I think that no one who has not resorted to an *experimentum crucis* of this sort can form a just idea of the real difficulties of the task, of the number of species he may make of different leaves of the same plant, of the false affinities he may draw, and the false conclusions to which he may be led. Had the fossils of the Reading beds been presented to me in a recent state, and without my knowing their native place, I do not believe I should have been able to approximate with any tolerable degree of certainty to their affinities one with another, or to their position in the vegetable kingdom; and as I further do not think that they are even generically recognizable, I cannot deem it advisable to give them generic and specific names.' J.D. Hooker's apparent disdain of palaeobotanical systematics is seen here as partially influential in the absence of fossil names from *Index Kewensis*, which, according to Meikle (1971), he in part initiated.

The classification of northern hemisphere fossils as Proteaceae did not go unquestioned. Schimper (1872) and Engelhardt (1910) synonymised or transferred many into the Myricaceae, while Zittel et al. (1891) were completely unconvinced they were anything but ferns. Berry (1906) first, then Budantsev (1959), transferred many fossil species of *Dryandra* to *Comptonia* Banks ex Gaertn., a monotypic fern genus with numerous fossil species. Cookson and Duigan (1950) also questioned the classifications of northern hemisphere Proteaceae. Johnson and Briggs (1963, P. 26) agreed, saying 'they cannot be accepted as establishing the former existence of the family, much less of living genera, in regions in which they do not now occur.... Such genera as *Lambertia*, *Petrophile*, and *Dryandra* (reported as Scottish fossils by Simpson) are characterized by specialized features which seem clearly correlated with their occurrence in sclerophyllous communities of temperate Australia.'

Phylogenetic analysis of morphological and molecular data (Johnson and Briggs 1975; Drinnan et al. 1994; Hoot and Douglas 1998; Mast et al. 2008, 2009, 2012, 2015; Sauquet et al. 2009) are support the Gondwanic origin of the Proteaceae circa the mid-Cretaceous. Its widespread distribution in the southern hemisphere or in equatorial regions where extant species occur, does not now, nor ever apparently did, extend deeply into the northern hemisphere. Nonetheless, there are around 110 extant Proteaceae species in the northern hemisphere (Lambers et al. 2015). These occur either on landblocks that have undergone tectonic separation after the break-up of Gondwana or occur in areas where the Proteaceae have dispersed and evolved subsequently. There is no hard evidence that *Banksia* or its synonym *Dryandra* ever occurred in the northern hemisphere, ancestrally or otherwise.

By the end of the 19th Century, epithets were occupied by fossil taxa in 19 living genera of the Proteaceae, as well as in about 30 form-genera or morphotaxa, pseudo-Linnaean constructs in which phylogeny or natural affinity played no part in the classification of its members. Many of these form-genera are unassignable even to family and are in need of extensive re-evaluation, as many morphotaxa bring their own taxonomic problems to botanical nomenclature (Cleal and Thomas 2010). The flexible concept of 'fossil taxon' was introduced to remove the problems morphotaxa caused. Recent classifications of fossil taxa in extant genera (Kavaček and Erdei 2001; Carpenter et al. 2016) are more conscious of phylogeny and the need to identify synapomorphies that characterise living genera with the fossils.

Although it might be useful to palaeobotanists to have a list of all the Proteaceae species in the 67 fossil genera currently or formerly employed (Table 1), the epithets employed in those genera are exceedingly numerous and do not negatively impact the nomenclature of extant plants by creating potentially illegitimate homonyms. Publication of these names is therefore reserved perhaps for a future separate work. Some are already listed in two online databases under development at <http://fossilplants.info/> and <http://paleobotany.ru/>.

The failure to index fossil names in extant genera has had continuing nomenclatural consequences. Unable to gain access to published fossil names through an official index, impeded by language barriers and a vast array of specialist literature extending over 175 years or so (many collected by distant libraries of the world), both palaeobotanists and taxonomists working with living genera have tended to ignore the fossil literature, leading sometimes to the unintentional creation of illegitimate homonyms. Further consequences of the failure to

index fossil names include a lack of recognition for taxonomic palaeobotanists, lack of official author and publication abbreviations, ignorance of nomenclatural priorities including place and date of publication, and type repositories. Further, the tendency to categorise all the work of palaeobotanists as fossil-related has also caused confusion. The descriptions of cultivated plants in living genera by Ettingshausen (1858b) has been overlooked by indexers, or referred erroneously to the fossil literature.

In order to redress this problem, it is recommended that a list of fossil species in extant genera be surveyed family by family. The preliminary checklist presented below, together with details of publication, is a small step towards this goal. The list contains 380 fossil binomials in 24 living genera, (21 if three genera now in synonymy are combined), of the family Proteaceae and aims to reduce the likelihood of earlier fossil homonyms being taken up by botanists describing new extant flora or fossils. Impetus for this work was provided by I.M. Turner (2014) who published a list of more than 100 illegitimate homonyms in various families with valid fossil antecedents, including five Proteaceae names (three *Grevillea* species and two *Hakea*) that nomenclaturally affected six living species or subspecies. Turner's work resulted from a postliminary approach, the random checking of published names of extant flora against the known fossil literature. The necessitated name changes underline a serious nomenclatural problem and come on top of another change in the same year when the genus *Roebuckia* P.Short (Asteraceae) was replaced by *Roebuckiella* P.Short because of an earlier fossil homonym. In 1998, the Proteaceae fossil genus *Proteaciphyllum* R.J.Carp. & G.J.Jord., which was erected in 1997, was replaced by *Euproteaciphyllum* G.J.Jord., R.J.Carp. & R.S.Hill for similar reasons. R.K. Saxena (1992, 1993) has also given replacement names for more than ten palynofossils.

The preliminary checklist of Proteaceae fossil names presented here is concerned only with the names of fossil plants described in genera used for the description of living plants. The preliminary checklist does not catalogue extant plants that have also been found as fossils since their names already appear in indices of extant flora. The greatest value of the checklist lies in its ability to prevent future illegitimate homonyms. It is important also at this point not to overstate the problem with fossil homonyms. Notwithstanding the large number of epithets in the Proteaceae occupied by fossil names, only *c.* 2% overall represent illegitimate homonyms, a low risk to the stability of extant Proteaceae nomenclature. In fact, the only extant Proteaceae species found to be an illegitimate homonym, additional to those revealed by Turner (2014), is *Lomatia fraxinifolia* F.Muell. ex Benth. (1870). The priority name *Lomatia fraxinifolia* Heer (1857), a fossil species here recognised as the legitimate occupant of the name, is applicable to a taxon that is unlikely even to be a member of the Proteaceae. *Lomatia milnerae* Olde here replaces the illegitimate homonym *Lomatia fraxinifolia* F.Muell. ex Benth.

Lack of information has also negatively affected palaeobotanists, by whom the Code was also extensively ignored (Cleal and Thomas 2010). Heer (1856) illegitimately named *Persoonia laurina* from the fossil flora of Switzerland, postdating well-established use of the epithet by Persoon (1805) in the extant Australian flora. The fossil names *Lomatia dubia* I.V.Vassil. (1980) and *L. reticulata* H.Deane (1902) are also illegitimate homonyms and new names respectively *Lomatia neodubia* Olde and *Lomatia novoreticulata* Olde here replace them.

None of the 39 fossil names in the genus *Dryandra* have been here transferred to *Banksia*, following changes to the taxonomic standing of its living genus and its synonymisation under *Banksia* by A.R. Mast and K. Thiele (2007). *Dryandra urniformis* H.Deane was transferred to *Banksiaephyllum*, as *B. urniforme* (H.Deane) R.S.Hill in 1990. More recently it has been reassigned to *Banksia*, by R.J. Carpenter et al. (2016), as *Banksia urniforme*. To legitimise the remaining fossil *Dryandra* species in *Banksia* by alteration of their generic appellation here was deemed inappropriate when the likelihood of them being actual members of that genus is, in all remaining instances, infinitesimally remote. In fact, the assignment of most fossils inferred as Proteaceous to extant genera based on fragmentary leaf impressions without an identified synapomorphy, is tenuous in the extreme, given leaf and other morphological variation in those living genera. For similar reasons *Banksia myricifolia* N.D.Vassilevskaja, an illegitimate fossil homonym has not been renamed, as northern hemisphere names in the genus *Banksia* are unlikely to be Proteaceous.

Wherever possible, the earliest valid description of a fossil name is cited in this checklist. A number of important papers were apparently either reprinted or preprinted, but this is often unclear from the documents themselves. In these cases Stafleu et al. (1976) and its successor TL2 (Taxonomic Literature 2) online were consulted and publication dates therein followed. In the fossil literature, species are often validly described at each locality, with specimens or illustrations of specimens cited that could serve as nomenclatural types. Every effort has been made to ensure that listed names will not be later displaced by earlier ones. Names listed here as *nomen nudum* should also be avoided by taxonomists, at least until a full search of the literature is completed. *Nomina nuda* may have a valid description hidden earlier in some publication that was unavailable for examination.

## Materials and Methods

Research into this list progressed from narrow searches in the genus *Grevillea* to the whole Proteaceae. Journals and documents scanned to searchable Portable Document Format (PDF) were searched with the word 'Prof' and/or physically examined via the index. The search, thus defined and limited to a single family, began by using earlier lists, the most important of which were those given by Schimper (1872, 1874), Knowlton (1919), Schultze-Motel (2003), Andrews (1927) and particularly lists of Angiosperm leaf fossil names compiled by J. Van der Burgh (2005, 2006, 2008, 2010, 2011) which have been issued in parts alphabetically in generic order, but without reference to family. The various volumes cite an extensive list of references, not all of which could be searched for this exercise due to unavailability, but from which, *prima facie*, it was assumed all binomials have been accurately extracted. Notwithstanding the extensive inventory of 33 *Grevillea* names in Van der Burgh (2008), 47 epithets in that genus are listed here.

Although improved access via the internet to digitised obscure literature makes research increasingly viable, the indexer is still faced with difficulties arising from missing journals, unscanned series, website access, even the correct formulation of search terms. The Biodiversity Heritage Library maintains a 90 year copyright exclusion for most journals, following U.S. copyright law. Furthermore, some original works containing binomials presented here are not collected in Australian libraries and could not even be checked manually. For those, information was acquired second-hand. In addition, the serendipitous discovery for this work of names not indexed previously, undermined any confidence that the list might be in any way final.

Authority abbreviations were checked in IPNI. Journal abbreviations were checked in Hunt Institute for Botanical Documentation (BPH online, [http://fmhibd.library.cmu.edu/fmi/iwp/cgi?-db=BPH\\_Online&-loadframes](http://fmhibd.library.cmu.edu/fmi/iwp/cgi?-db=BPH_Online&-loadframes)) though most fossil publications are not there. Abbreviations were sometimes taken from the Biodiversity Digital Library, from IFPNI, from Van den Burgh and from Stafleu *et al.* Currency of fossil names could not be completely assessed from the fossil literature. Replaced synonyms and basionyms have been added where known.

## Results and Discussion

In the process of compiling the checklist, seven species in the family Proteaceae, three previously treated by A. Chapman (1991) as fossils, were found to be descriptions of extant plants by C.R. von Ettingshausen (1858b). Ettingshausen there proposed a way to identify fossils from the venation patterns of skeletonised leaf impressions by linking them to the leaf venation of known species. In the process of expounding his theory, he named and gave detailed leaf-vein descriptions of many extant species in a wide range of families, many of them in cultivation in the extensive gardens around Schönbrunn Palace, Vienna, home of the Habsburgs until 1916. Many of these plants, and probably the manuscript names, came originally from Hugel's garden at Heitzing, Vienna. Although Ettingshausen's descriptions are confined to the leaf venation, they are nonetheless valid, and are accompanied by illustrations that can serve as types, even if they cannot all be applied with certainty. Some are illegitimate under the Code of Botanical Nomenclature.

Extant species described by Ettingshausen in the Proteaceae are *Grevillea repanda* Zahlbr. ex Ettingsh., here treated as a species of uncertain application, notwithstanding accompanying leaf illustrations in the protologue; *Hakea salisburyifolia* Hügel ex Ettingsh., here referred to synonymy under *Hakea baxteri* R.Br.; and *Lambertia floribunda* H.B.S. ex Ettingsh., a probable synonym of *Lambertia formosa* Sm. *Protea dryandroides* Hügel ex Ettingsh. and *Protea grandis* Hort. Hügel ex Ettingsh. are unexamined taxonomically here and their application is therefore treated as uncertain. Ettingshausen's names in the genera *Anadenia* and *Manglesia* are *nomina illegitima*, the genera having already been taken up in *Grevillea*, under which genus they were synonymised by Meisner (1845) and subsequently widely accepted. *Manglesia trilobata* Hort. ex Ettingsh. is a probable synonym of *Grevillea manglesii*. These new names of extant plants, previously recognised as fossils or overlooked, are here treated separately in Part 2 of this paper.

The need for an International Fossil Plants checklist is an urgent implication of the research presented here. The statement by McLoughlin (2015, P. 8) that 'For fossils, the International Organisation of Palaeobotany should seriously investigate directing some resources towards integrating the names of fossil plants into the existing large databases of extant plants' is strongly endorsed. Mandating registration of new fossil names and their authorities as part of the validation process with an International Plant Name Index might be a first step to solving future difficulties faced by nomenclaturists. A mandated requirement would need support from the botanical community. However, researching the published literature over almost 180 years to establish a complete referenced list of fossil names down to the species level can only be achieved with the services of a dedicated individual or multilingual team with access to a wide range of palaeobotanic journals. In the

meantime, working plant family by family from online references, centralised preliminary lists compiled by interested individuals could provide an interim updatable reference for taxonomists working with extant families. Fortunately, an independent Russian-based project, IFPNI, (International Fossil Plant Names Index) which is dedicated to the promotion of fossil plant science, is attempting to remedy this. It has a web presence (<http://fossilplants.info/>) that contains information on some Proteaceae fossils, many not readily available elsewhere, but it is still very incomplete, as observed by McLoughlin (2015). The ideals of IFPNI as set out in their website at <http://fossilplants.info/about> are laudable and worthy of wide support. One of the classic palynological databases is Palynodata. This bibliographic database, based on Gerhard O. W. Kremp's initial research, and compiled since 1974 by Palynodata Inc., under the direction of Ken Piel, indexes 122,422 species from 22,152 documents. The last entry was made in 2006 and copyright was transferred to Canada in 2007. It also has a web presence and a searchable database which is also incomplete (<http://paleobotany.ru/>).

## Part 1. Preliminary checklist of fossil names in the Proteaceae

### 1. *Anadenia* R.Br.

1. *Anadenia italica* A.Massal., *Syll. Pl. Foss. Veneti* P. 67 (1859b). *Nomen nudum*. See *Grevillea italica*.
2. *Anadenia lignitum* Ettingsh., *Kaiserl. Akad. Wiss. Wien, Math. Naturwiss. Kl., Denkschr.* Cl. 28: 202, Taf. XXXV, Fig. 2 (1868a). See *Grevillea lignitum*.
3. *Anadenia pighiana* A.Massal., (1859b). *Nomen nudum*. See *Grevillea pighiana*.

### 2. *Banksia* L.f.

1. *Banksia adunca* H.Deane, *Rec. Geol. Surv. Vic.* 4: 494–5; Pl. 62, fig. 10; Pl. 64, fig. 18 (1925). = *Pseudobanksia fastigata* (H.Deane) R.J.Carp., G.J.Jord. & R.S.Hill (2016). **Comments:** According to R.J. Carpenter *et al.* (2016), species referred to *Pseudobanksia* are no longer considered to be Proteaceae.
2. *Banksia agastachoides* Schmalh., *Palaeont. Abh.* 1(4): 307[25], Taf. VIII [XXXIII], Fig. 18 (1883).
3. *Banksia angusta* (Cookson & Duigan) R.J.Carp., G.J.Jord. & R.S.Hill, *Austral. Syst. Bot.* 29(2): 138 (2016). Basionym: *Banksiaephyllum angustum* Cookson & Duigan, *Australian Journal of Scientific Research Ser. B, Biol. Sci.* 3, 146, 148, plate 1 (1950).
4. *Banksia archaeocarpa* McNamara & J.Scott, *Alcheringa* 7(3):187–190, Figs 1, 2A (1983).
5. *Banksia archippae* (A.Massal.) A.Massal., *Synop. Fl. foss. Senog.* P. 66, Tab 29. figs 13,14, 22; Tab. 34. fig. 12; Tab. 42. fig.7 (1858a), as 'Archippae'. Basionym: *Embothrium archippae* A.Massal., *Lett. a Scarab.* P. 27. n. 185 (1857).
6. *Banksia basaltica* Ettingsh., *Die Proteaceen der Vorwelt*, Pp. 24–25[732–33] (1851a).
7. *Banksia blaxlandii* Ettingsh., *Kaiserl. Akad. Wiss. Wien, Math. Naturwiss. Kl., Denkschr.* Cl. 53: 116, Taf. XII, Figs. 12, 12a and b (1887a), as 'Blaxlandi'.
8. *Banksia brachyphylla* Ettingsh., *Sitzung. K. Akad. Wiss. Math. Naturw.* Cl. 28: 525–526 (1858a). Replaced synonym: *Ilex sphenophylla* Unger. **Comments:** Ettingshausen cited no figure of his own but referred to Heer (Siehe Heer's vortreffliches Werk die "Tertiärl. d. Schweiz" Seite 98 et sq. Taf. XCVII.) where it was treated as *Banksia deikiana* Heer.
9. *Banksia campbellii* Ettingsh., *Kaiserl. Akad. Wiss. Wien, Math. Naturwiss. Kl., Denkschr.* Cl. 53: 116–117, Taf. XIII, Fig. 4, 4a (1887a), as 'Campbelli'.
10. *Banksia celastrina* A.Massal., *Spec. Photogr.* P. 80 (1859a).
11. *Banksia chiavonica* (A.Massal.) A.Massal., *Spec. Photogr.* P. 79 (1859a). Basionym: *Quercus chiavonica* A.Massal., *Sop. plante foss. tert. Vic.* P. 133 (1851).
12. *Banksia cockerellii* R.W.Br., *Profess. Pap. U.S. Geol. Surv.* 154: 286, Pl. 72, Fig. 7 (1929), as 'Cockerelli'.
13. *Banksia comptonifolia* R.W.Br., *Profess. Pap. U.S. Geol. Surv.* 185-C: 57, Pl. 9 Figs 3–5 (1936) 'Choice of *Banksia* as a generic name for this species may leave much to be desired.' (From the protologue).
14. *Banksia cooksoniae* R.J.Carp., G.J.Jord., & R.S.Hill, *Austral. Syst. Bot.* 29(2): 138 (2016). Replaced synonym: *Banksiaephyllum acuminatum* Cookson & Duigan, *Australian Journal of Scientific Research Ser. B, Biol. Sci.* 3, 148–150, pl. 2 (1950).
15. *Banksia corrugata* Saporta, *Ex. Anal.* In Heer, *Rech. sur Clim. et Veg. du Pays Tert.* P. 162 (1861a).

16. *Banksia crenata* Ettingsh., *Kaiserl. Akad. Wiss. Wien, Math. Naturwiss. Kl., Denkschr.* 62: 31, Taf. III, Fig. 11 (1895).
17. *Banksia cretacea* Ettingsh., *Kaiserl. Akad. Wiss. Wien, Math. Naturwiss. Kl., Denkschr.* 62: 28–29, Taf. III, Fig. 9,10 (1895).
18. *Banksia cuneifolia* Heer, *Fl. Tertiär. Helv.* 2: 98, Taf. XCVII Fig. 36 (1856). Replaced synonym: *Proteoides radobojanus* Ettingsh., *Die Proteaceen der Vorwelt*, P. 6 (1851a).
19. *Banksia curta* Watelet, *Description des plantes fossiles du bassin de Paris* P. 195, Pl. 52, fig. 13 (1866) = *Anacardites curta* (Watelet) P.Friedrich, *Abh. geol. Specialk. Preuss u. Thüring* P. 148. Pl. XIX figs 8–10 (1883).
20. *Banksia deikiana* Heer, *Fl. Tert. Helv.* 2: 98, Taf. XCVII Fig. 38–43 (1856).
21. *Banksia dillenioides* Ettingsh., *Die Proteaceen der Vorwelt*, 25[733] (1851a). *Banksia dillenioides* Ettingsh. *Tert. Fl. v. Haering*, P. 13, 55, tab. XVIII, f. 7 (1853a). = *Myrica dillenioides* Schimper (1872, P. 544).
22. *Banksia elongata* (R.S.Hill & Christophel) R.J.Carp., G.J.Jord. & R.S.Hill, *Austral. Syst. Bot.* 29(2): 138 (2016). Basionym: *Banksiaephyllum elongatus* R.S.Hill & Christophel, *Botanical Journal of the Linnean Society* 97, 212–214, figs 24–29 (1988); *Banksiaephyllum elongatum* R.S.Hill & Christophel, *orth. var.*, *Proc. Roy. Soc., Victoria* 102, 24–25 (1990).
23. *Banksia faginea* Saporta, *Ex. anal.* P. 41; In Heer, *Rech. sur Clim. et Veg. du Pays Tert.* P. 157 (1861). A chapter written by Saporta entitled ‘*Examen analytique des flores tertiaires de Provence*’ is included in Heer’s work, published October 1861. Saporta’s article was separately printed in November 1861 (according Stafleu *et al.* 1976). The separate printing with different pagination has not been seen, only a reference to it, e.g. as here Saporta (1861b, P. 41).
24. *Banksia fastigata* H.Deane, *Rec. Geol. Surv. Vic.* 4: 494 Pl. 61, figs 1, 4; Pl. 62 figs 6,?7; pl. 63, fig. 13 (1925). = *Pseudobanksia fastigata* (H.Deane) R.J.Carp., G.J.Jord., & R.S.Hill (2016).
25. *Banksia giesekiaifolia* (A.Massal.) A.Massal., *Synop. Fl. foss. Senog.* 66, Tab. 29. fig. 11 12. 30; Tab. 43. fig. 3. (1858a), as ‘*giesekiaefolia*’. Basionym: *Embothrium ?giesekiaefolium* A.Massal. *Lett. a Scarab* P. 27 n. 186 (1857).
26. *Banksia gracilis* Saporta, *Ex. anal.* In Heer, *Rech. sur Clim. et Veg. du Pays Tert.* P. 168 (1861a).
27. *Banksia graeffiana* Heer, *Fl. Tert. Helv.* 3:187, Taf. CLIII. Fig. 34 (1859).
28. *Banksia haeringiana* (Unger) Ettingsh., *Die Proteaceen der Vorwelt*, 23[734] Taf.II, Figs 17, 18.; [Tab. XXX, f.17, 18] (1851a). Basionym: *Myrica haeringiana* Unger, *Gen. Sp. Pl. Foss.* P. 395 (1850a); *Die Foss. Fl. Sotzka* 160, Taf. 27, Fig. 11; Taf 28 Fig. 8 (1850b).
29. *Banksia haidingeri* Ettingsh., *Kaiserl. Akad. Wiss. Wien, Math. Naturwiss. Kl., Denkschr.* 32: 198, Taf. X, Fig 29 (1872), as ‘Haidingeri’.
30. *Banksia haldemiana* (Hosius & Marck) Ettingsh., *Mit. des Naturwiss. Ver. für Steiermark* 32: 163 (1896). Basionym: *Dryandroides haldemiana* Hosius & Marck, *Palaeontographica* 26: 168 (1880).
31. *Banksia hassiaca* R.von Ludwig, *Palaeontographica* 8: 115, tab. XLIV, f. 5 (1860).
32. *Banksia helvetica* Heer, *Fl. Tert. Helv.* 2: 98–99, Taf. XCV11 Fig. 44–48; Taf. XCV111 Fig. 16 (1856). **Comments:** Heer cited as basionym *Myrica helvetica* Heer, *Uebersicht der Tertiärflora der Schweiz*. S. 52. A paper so titled was published in *Mitth. Naturf. Ges. Zürich* 85–89 (1853b), and there is a passing reference to *Myrica helvetica* (P. 102), but a valid description could not be found there or elsewhere. *Myrica helvetica* Heer is thus treated as *nomen nudum*.
33. *Banksia hovellii* Ettingsh., *Kaiserl. Akad. Wiss. Wien, Math. Naturwiss. Kl., Denkschr.* 53: 115, Taf. XII, Fig 13, 13a, 14, 14a (1887a), as ‘Hovellii’.
34. *Banksia jacksonensis* E.W.Berry, *Profess. Pap., U.S.Geol. Surv.* 92: 161, Pl. XXXII, Figs 2–4 (1924).
35. *Banksia katzeri* Engelh. *Wissenschaftliche Mitteilungen aus Bosnien u. Herzegowina* 12: 615, Taf. XXXII, Fig. 6, 6a (1910c)
36. *Banksia kingii* G.J.Jord. & R.S.Hill, *Austral. Syst. Bot.* 4(3): 505–506 (1991).

37. *Banksia laevis* (Cookson & Duigan) R.J.Carp. G.J.Jord. & R.S.Hill, *Austral. Syst. Bot.* 29(2): 138 (2016). Basionym: *Banksiaephyllum laeve* Cookson & Duigan, as 'laevis', *Australian Journal of Scientific Research Ser. B, Biol. Sci.* 3, 148–150, pl. 2 (1950).
38. *Banksia laharpei* Heer, *Fl. Tert. Helv.* 2: 99, Taf. XCVIII Fig. 15 (1856), as 'Laharpii'.
39. *Banksia lancifolia* Ettingsh., *Kaiserl. Akad. Wiss. Wien, Math. Naturwiss. Kl., Denkschr.* 53: 116, Taf. XII, Fig. 15, 15a (1887a).
40. *Banksia lawsonii* Ettingsh., *Kaiserl. Akad. Wiss. Wien, Math. Naturwiss. Kl., Denkschr.* 53: 114, Taf. XIII, Fig. 1, 1a (1887a), as 'Lawsoni'.
41. *Banksia leiophylla* (Hosius & Marck) Ettingsh., *Mitt. Naturwiss. Ver. Steiermark* 32: 163 (1896). Basionym: *Myrica leiophylla* Hosius & Marck, *Palaeontographica* 26: 155 (1880).
42. *Banksia linearis* (R.J.Carp. & G.J.Jord.) R.J.Carp., G.J.Jord. & R.S.Hill, *Austral. Syst. Bot.* 29(2): 138 (2016). Basionym: *Banksiaephyllum lineare* R.J.Carp. & G.J.Jord., *Austral. Syst. Bot.* 10: 559 figs 7–12 (1997), as 'linearis', *orth. var.*
43. *Banksia lobata* Watelet, *Description des plantes fossiles du bassin de Paris* P. 196, Pl. 52, fig. 14. (1866).
44. *Banksia longicarpa* D.R.Greenw., P.Haines & D.Stewart, *Austral. Syst. Bot.* 14: 882–887, figs 11–13 (2001).
45. *Banksia longifolia* (Unger) Ettingsh., *Die Proteaceen der Vorwelt*, 22[730] Taf. 2[31], Fig. 19 (1851a). Basionym: *Myrica longifolia* Unger, *Gen. et spec. plant.* P. 396 (1850). **Comments:** Unger (1850) referred to an earlier treatment of *Myrica longifolia* (1845) but this is simply a name and location and therefore effectively *nomen nudum*. *Banksia longifolia* (Unger) Ettingsh. (1851, 1853) postdates the name *Banksia longifolia* Donn ex F. Dietrich (1802). However, George (1999, P. 250) treated Dietrich's name as 'insufficiently described'. Donn's name was treated by Breiterer (1817, P. 44), *nomen nudum*, as a synonym of *Banksia oblongifolia* Cav. Steudel (1840, P. 184), also listed *Banksia longifolia* Hort., *nomen nudum*, and referred it to *Banksia oblongifolia* Cav. The epithet *longifolia* was still therefore unoccupied in *Banksia* L f. when Ettingshausen used it. Subsequently, both Schimper (1872, P. 539) and Budantsev (1959, P. 217) transferred *Banksia longifolia* back to *Myrica longifolia* Unger. The name *Myrica longifolia* Teijsm. & Binn. ex C.DC. -- Prodr. [A. P. de Candolle] 16(2.1): 152. 1864 [late Dec 1864] postdates that of Unger and is therefore an illegitimate homonym. I.M.Turner (2014, P. 314) dealt with this in his new combination *Morella esculenta* (Buch.- Ham. ex D. Don) I.M.Turner.
46. *Banksia martorellensis* A.Sanz de Siria, *Paleont. i Evol.* 16: P.? (1981). Reference not seen.
47. *Banksia morlotii* Heer, *Fl. Tert. Helv.* 2: 97, Taf. XCVIII, Fig 17 (1856), as 'Morloti'.
48. *Banksia mugodsharica* I.V.Vassil., *Trudy Vsesoyuznogo Nauchno-Issledovatel'skogo Geologicheskogo Instituta Leningrad* 204: 76 (1980).
49. *Banksia myricifolia* Ettingsh., *Kaiserl. Akad. Wiss. Wien, Math. Naturwiss. Kl., Denkschr.* 53: 115, Pl. 13, figs 3, 3a (1887a), as 'myricaefolia'. *Banksia myricifolia* N.D.Vassilevskaja, *Eotsenovaja flora Badhyza v Turkmenii*. P. 142 (1957), as 'myricaefolia'. *Nomen illeg. nec* Ettingshausen (1887).
50. *Banksia neglecta* Saporta, In Heer, *Rech. sur Clim. et Veg. du Pays Tert.* P. 157 (1861a).
51. *Banksia novae-zelandiae* R.J.Carp., G.J.Jord., D.E.Lee & R.S.Hill, *Amer. J. Bot.* 97 (2): 290–294 (2010).
52. *Banksia ophir* Ettingsh., *Sitzungen der k.k. Geol. Reichenstalt* 2: 186 (1851), as 'Ophir'. *Nomen nudum*. ?Basionym: *Myrica ophir* Unger, *Foss. Fl. von Sotzka*, (1850).
53. *Banksia orientalis* (R.J.Carp. & G.J.Jord.) R.J.Carp., G.J.Jord. & R.S.Hill, *Austral. Syst. Bot.* 29(2): 138 (2016). Basionym: *Banksiaephyllum orientale* R.J.Carp., G.J.Jord. & R.S.Hill, *Austral. Syst. Bot.* 10: 559, figs 1–6 (1997), as 'orientalis', *orth. var.*
54. *Banksia orsbergensis* P.Wessel & C.O.Weber, *Palaeontographica* 4: 146, Taf. XXV, Fig. 9 a–d (1855). = *Engelhardia orsbergensis* (P.Wessel & C.O.Weber) Jähnichen, Mai & H. Walther, *Feddes Repertorium* 88: 323–363 (1977).
55. *Banksia paleocrypta* R.J.Carp., S.McLoughlin, R.S.Hill, K.J.McNamara & G.J.Jord., *Amer. J. Bot.* 101(9): 1489–1491, Figs 2–11 (2014).
56. *Banksia parvifolia* Ettingsh., *Die Proteaceen der Vorwelt*, 24 [732] (1851a).

57. *Banksia plagioneura* Ettingsh., *Kaiserl. Akad. Wiss. Wien, Math. Naturwiss. Kl., Denkschr.* 62: 29–30, Taf. III, Fig. 8 (1895).
58. *Banksia polygonata* Watelet, *Description des plantes fossiles du bassin de Paris* P. 197, Pl. 52, Fig. 12 (1866).
59. *Banksia poolii* Ettingsh., *Denkschr. K. Akad. Wiss. Wien, Math. Naturw. Cl.* 53: 115, Taf. XIII, Fig. 2, 2a (1887a), as 'Poolii'.
60. *Banksia praegrans* Tate ex F.Chapm., *Trans. Roy. Soc. S.A.* 61: 6, Figs. 2 & 6 (1937).  
= *Banksiaeiformis praegrans* (Tate) Greenwood, Haines & Steart (2001).
61. *Banksia prototypus* Ettingsh., *Die Proteaceen der Vorwelt*, 24[732] (1851a).
62. *Banksia provincialis* Saporta, In Heer, *Rech. sur Clim. et Veg. du Pays Tert.* P. 168 (1861a).
63. *Banksia puryearensis* E.W.Berry, *Profess. Pap. U.S. Geol. Surv.* 91: 211, Pl. xxxvi, Fig. 4 (1916).
64. *Banksia pusilla* Velen., *Beiträge Paläontologie Österreich-Ungarns und des Orients* 3(1): 32 [7], pl ix, [i], f. 14–17 (1883). = *Banksiophyllum pusillum* Velen. (1889).
65. *Banksia quercula* A.Massal., *Syll. Pl. Foss. Veneti*, P. 65 (1859b). *Nomen nudum*.  
Also *Spec. fotogr.* P. 70 (1859a). Reference not seen. ?*Nomen nudum*.
66. *Banksia radobojensis* Unger, *Syll. pl. foss.* III: 75, Tab. XXIV, Fig. 16, 17 (1866).
67. *Banksia rossica* Schmalh., *Palaeont. Abh.*, 1(4): 307[25]. Taf. VIII [XXXV], Fig. 19, 20 (1883).
68. *Banksia saffordii* (Lesq.) E.W.Berry, *Profess. Pap. U.S. Geol. Surv.* 91: 208, pl xxxvi, f. 5.6 (1916). Basionym: *Quercus saffordii* Lesq., *Amer. J. Sci. Arts*, ser. 2 vol. 27: 364 (1859).
69. *Banksia sagoriana* Ettingsh., *Kaiserl. Akad. Wiss. Wien, Math. Naturwiss. Kl., Denkschr.* 50: 15–16, Taf. XXX, Fig. 10, 10a (1885).
70. *Banksia scleronervis* Budantzev, *Tret. Fl. Ostr. King-Dzhordzh*, P. 66 (2013).
71. *Banksia solonis* Unger, *Neu-Holland in Europa*, Pp. 65–67, Fig. 22 (1861a).  
= *Myrica solonis* (Unger) Saporta, *fide* Schimper (1872, P. 542)
72. *Banksia spathulifolia* A.Massal., *Spec. fotogr.* P. 79 (1859a), as 'spathulaefolia'. Reference not seen. ?*Nomen nudum*.
73. *Banksia strahanensis* G.J.Jord. & R.S.Hill, *Austral. Syst. Bot.* 4(3): 501–505 (1991).
74. *Banksia sublongifolia* Ettingsh., *Kaiserl. Akad. Wiss. Wien, Math. Naturwiss. Kl., Denkschr.* 62: 29, Taf. III Fig. 7 (1895), as 'sub-longifolia'.
75. *Banksia taylori* (R.S.Hill & Christophel) R.J.Carp., G.J.Jord. & R.S.Hill, *Austral. Syst. Bot.* 29(2): 138 (2016). Basionym: *Banksiaephyllum taylori* R.J.Carp., G.J.Jord. & R.S.Hill, *Austral. Syst. Bot.* 7: 389, figs 1–6 (1994).
76. *Banksia tenuifolia* E.W.Berry, *Profess. Pap. U.S. Geol. Surv.* 91: 210, pl xxxvi, f. 1–3 (1916). *Nomen illegitimum*, nec *Banksia tenuifolia* Salisb. (1796, P. 50).
77. *Banksia ucrainica* Ya. Kh.Lepchenko, *Trudy Ukrayins'koho Naukovo-Doslidchoho Heolohichnoho Instytutu*. 3: 181–182 (1929).
78. *Banksia undulata* Watelet, *Description des plantes fossiles du bassin de Paris* P.196, Pl. 52, fig. 16 (1866).
79. *Banksia ungeri* Ettingsh., *Die Proteaceen der Vorwelt*, 23 [731] (1851a), as 'Ungeri'. Type not cited.  
*Banksia ungeri* Ettingsh., *Tert. Fl. von Haring in Tirol*, P. 13 Taf. 17 Fig. 1–22, Taf. 18, Fig. 1–6 (1853a). = *Myrica banksiaefolia* Unger (*fide* Schimper 1872, P.543).
80. *Banksia urniformis* (H.Deane) R.J.Carp., G.J.Jord. & R.S.Hill, *Austral. Syst. Bot.* 29(2): 138 (2016).  
Basionym: *Dryandra urniformis* H.Deane, *Records of the Geological Survey of Victoria* 4, 495, plate 62, fig. 9 (1925). Syn. *Banksiaephyllum urniforme* (H.Deane) R.S.Hill, *Proc. Roy. Soc. Victoria* 102, 24, figs 1A–D, 2A (1990).
81. *Banksia valdensis* Heer, *Fl. Tert. Helv.* 2: 99, Taf. XCV11 Fig. 49 (1856).

**Excluded Name:** *Banksia townrowi* Cosgriff (1974) Brachyopidae (Temnospondyli) = *Banksiops townrowi* (Cosgriff) Warren & Marsicano (2000). **Comment:** *Banksiops townrowi* is an extinct genus of temnospondyl amphibian in the family Brachyopidae.



**Carnarvon** F. Muell.

**Excluded Name:** *Carnarvon* *australis* Cookson & Eisenack *Paleontographica Abteilung B* 184(1): 23–63 (1982). **Comment:** *Carnarvon* *australis* is a species of marine Protista, since transferred to the genus *Narcarvon*, nec *Carnarvon* F.Muell.

**3. Cenarrhenes** Labill.

1. *Cenarrhenes haueri* Ettingsh., *Die Proteaceen der Vorwelt*, 10 [718], Taf. 1 Fig. 4, 5 (1851a).

**4. Conospermum** Sm.

1. *Conospermum macrophyllum* Ettingsh., *Die Proteaceen der Vorwelt*, 8–9 [716–7] Taf. 1, Fig. 2 (1851a).
2. *Conospermum sotzkianum* Ettingsh., *Die Proteaceen der Vorwelt*, 9–10 [717–8] Taf. 1, Fig. 3 (1851a).

**5. Dryandra** R.Br.

1. *Dryandra acutiloba* (Brongn. ex Unger) Ettingsh., *Die Proteaceen der Vorwelt*, 27–8 [735–6] Taf. IV Fig. 2, 3 (1851a). Basionym: *Comptonia acutiloba* Brongn. ex Unger, *Foss. Fl. Sotzka*, 32 [162] Tab. V111 [XXIX], Fig. 6, 7, 8 (1850b). = *Comptonia diforme* (Sternb.) E.W.Berry, *Amer. Naturalist* 40(475): 495–6 (1906). = *Comptoniophyllum naumannii* Nathorst, *fide* Budantsev (1959, P. 214). **Comment:** Heer (1859, P. 315) erroneously attributed Sternberg as the authority of the name *Dryandra acutiloba*.
2. *Dryandra antiqua* (Nilss.) Ettingsh., *Die Proteaceen der Vorwelt*, 31 [739] (1851a). Basionym: *Comptonites ?antiquus* Nilss., *Act. Acad. Handl.* S 346, T. 1 Fig. 8 (1831). **Comment:** E.W.Berry (1906, P. 500) treated this species and its basionym as synonyms of *Comptonia antiqua* Nilss.
3. *Dryandra aventica* Heer, *Fl. Tert. Helv.* 3: 186, tab. CLIII, f. 17 (1857). = *Comptonia vindobonensis* (Ettingsh.) E.W.Berry (1906, Pp. 515–6). See also *Dryandra vindobonensis* (q.v.)
4. *Dryandra bayeri* Velen. & Vinikláf, *Flora Cretacea Bohemiae*, P. 19, Tab. XXVIII, Fig. 10; Tab. XXIX, Fig. 6; Tab. XXXI, Fig. 5 (1931).
5. *Dryandra benthamii* Ettingsh., *Kaiserl. Akad. Wiss. Wien, Math. Naturwiss. Kl., Denkschr.* 53: 117, Taf. XIII Fig. 5, 5a (1887a), as ‘Benthami’.
6. *Dryandra bilinica* Ettingsh., *Die Proteaceen der Vorwelt*, 29[737] (1851a).
7. *Dryandra brongniartii* Ettingsh., *Die Proteaceen der Vorwelt*, 26–27[734–5] Taf. 111, Fig. 1–8 (1851a), as ‘Brongniarti’ = *Dryandra schrankii* Ettingsh. *fide* Heer, *Fl. Helv.* 2: 96 (1856).
8. *Dryandra bunburyi* (De la Harpe) De La Harpe & P.Salter, *Memoirs of the Geological Survey of Great Britain* 10: 115; Pl. 5, fig. 4 (1862), as ‘Bunburyi’.
9. *Dryandra carakulensis* V.I.Baranov, *Rannepaleogeovij zapadnokazakhstanskij vid roda Comptonia*, P. 28 (1954). = *Comptonia carakulensis* (V.I.Baranov) S.G.Zhilin (1980, P. 649).
10. *Dryandra chironis* (A.Massal.) Vis. & A.Massal., *Synops. pl. Florae tert. Noval. Flora* 8: 119, Fig. 47–49 (1854). Basionym: *Comptonia chironis* A.Massal., *Sopra le piante fossili dei terrini del Vicentino osservazioni* P. 118 (1851).
11. *Dryandra comptoniifolia* Ettingsh., *Kaiserl. Akad. Wiss. Wien, Math. Naturwiss. Kl., Denkschr.* 53: 167, Taf. IV, Fig. 14–18, 18a; Taf. V, Fig. 9–12 (1887b), as ‘comptoniaefolia’.
12. *Dryandra cretacea* Velen., *Die Flora der Böhmischen Kreideformation II*: 1–2 (1883). **Comment:** In the unlikely event that this taxon is transferred to *Banksia* L.f., the epithet will conflict with *Banksia cretacea* Ettingsh. and a new name would have to be chosen.
13. *Dryandra dryandroides* J.B.Simpson, *Trans. Roy. Soc. Edinburgh* 64: 439–440, Pl. XI, fig. 8 (1961).
14. *Dryandra duisburgii* Casp., *Sitzungs.* Seite 17 (S17) (1872).
15. *Dryandra eocenica* Ettingsh., *Sitzungen der k.k. Geol. Reichenstalt* 2: 186 (1851). *Nomen nudum*.
16. *Dryandra gaudini* (Heer) Heer, *Fl. Tert. Helv.* 3: 200 (1857). Basionym: *Myrica gaudini* Heer, *Fl. Tert. Helv.* 2: 34 Pl. 70 fig. 9 (1856).

17. *Dryandra gracilis* Heer, *Fl. Tert. Helv.* 3: 311, note 4 (1859). = *Comptonia gracillima* (Heer) E.W.Berry (1906, P. 504).
18. *Dryandra insignis* P.Wessel & C.O.Weber (1855).  
Listed by Van den Burgh (2008) who cited P.Wessel and C.O.Weber (1855) as the authority, but not found at the given reference or elsewhere.  
*Dryandra karakulensis* V.I.Baranov, see *D. carakulensis*.
19. *Dryandra lyellii* Lath. ex Heer, *Philosoph. Trans. Roy. Soc. London* 159: 475 (1869), as 'Lyelli'. *Nomen nudum*. No further reference could be found. The identity of the authority Lath. could not be ascertained.
20. *Dryandra macroloba* P.Wessel & C.O.Weber, *Palaeontographica* 4: 147, Taf.XXV, Fig. 11 (1855). = *Comptonia macroloba* (P.Wessel & C.O.Weber) E.W.Berry (1906, P. 500).
21. *Dryandra meneghinii* (Unger) Ettingsh., *Die Proteaceen der Vorwelt*, P. 28 (1851a), as 'Meneghinii'.  
Basionym: *Comptonia meneghinii* Unger, *Foss. Fl. Sotzka*, 162 T. 29, F. 10 (1850).  
= *Comptonia oeningensis* Alex Braun, *Neues Jahrb. f. Min. und. Geogn.* S.108 (1845) (This reference not seen.) (*fide* E.W.Berry 1906, P. 510).
22. *Dryandra michelotii* (Watelet) Saporta, as 'Micheloti' *Essai pl. foss. Brives*, Pp. 37–40 (1878).  
Basionym: *Dryandroides micheloti* Watelet, *Description des plantes fossiles du bassin de Paris*, Pp. 199–200, Pl. 53, Fig. 8–12; Pl. III, fig. 6–8, et IV, fig. 2 (1866).
23. *Dryandra oeningensis* (A.Braun) Ettingsh., *Die Proteaceen der Vorwelt*, 28[736] (1851a).  
Basionym: *Comptonia oeningensis* A.Braun, *Neues Jahrb. f. Min. und. Geogn.* P.168 (1845).
24. *Dryandra praeformosa* Ettingsh., *Kaiserl. Akad. Wiss. Wien, Math. Naturwiss. Kl., Denkschr.* 53: 117, Taf. XII, Fig. 16, 16a, 17 (1887a), as 'prae-formosa'.
25. *Dryandra primaeva* Ettingsh. ex Zittel et al., *Trait de Paléontologie* 2: 648 (1891). *Nomen nudum*.  
Zittel states, here translated, that 'D. primaeva, from Comen near Trieste (Cretaceous), which has not been accepted elsewhere by any author, is a fern.' No original description by Ettingshausen can be found at present.
26. *Dryandra pteroides* Ettingsh., *Die Proteaceen der Vorwelt*, 29–30[737–8] Taf. III, fig. 9 (1851a).
27. *Dryandra rigida* Heer, *Abh. Naturwiss. Ver. Sachsen u. Thüringen* 2: 427[21] Taf. X, fig. 15 (1861b).
28. *Dryandra rolleana* Heer, *Fl. Tert. Helv.* 3: 186 (footnote) Pl. 153, fig. 18 (1857).  
= *Comptonia vindobonensis* (Ettingsh.) E.W.Berry (*fide* Berry 1906, P. 515–6).
29. *Dryandra sagoriana* Ettingsh., *Die Proteaceen der Vorwelt*, 28–29[736–737], Taf. 1, Figs 4, 5 (1851a).
30. *Dryandra saxonica* P.Friedrich, *Abh. geol. Specialk. Preuss u. Thüring.*, vol. 4: 169–173 [327–331], Taf. 21, Fig. 10a–16; Taf. 28, Fig. 3–5; 224[382] Taf. 29, Fig. 16 (1883).  
= *Comptonia diforme* (Sternb.) E.W.Berry (1906, Pp. 495–6).
31. *Dryandra schrankii* (Sternb.) Heer, *Regel's Gartenflora* 2: 291, 293, 296 Taf. 65 Fig. 4 a-c (1853a), as 'Schranski'.  
Basionym: *Aspleniopteris Schrankii* Sternb., *Fl. Vorwelt* 2: 29, Pl. 21, fig. 2 (1822).  
= *Comptonia schrankii* (Sternb.) E.W.Berry (1906, P. 514).
32. *Dryandra serotina* Heer, *Fl. Tert. Helv.* 3: 228 (1859). *Nomen nudum* (orthographic error).  
= *Dryandroides serotina* Heer (1857: 189).
33. *Dryandra thesei* Unger, *Kaiserl. Akad. Wiss. Wien, Math. Naturwiss. Kl., Denkschr.* 27: 59, Tab. VIII, f. 14 (1867).
34. *Dryandra trifoliata* R.Givelescu & A.Lăcătușu, *Studii și cercetări de geologie, geofizică, geografie* 2(23): 330 (1978).
35. *Dryandra ungeri* Ettingsh., *Die Proteaceen der Vorwelt*, 30–31[738–9] Taf. IV, fig. 1 (1851a), as 'Ungeri'.  
Replaced synonym: *Comptonia dryandroides* Unger (1850: 161) *fide* Ettingsh. (*l.c.*)  
= *Comptonia oeningensis* A.Br. *fide* Budantsev (1959, P. 215).
36. *Dryandra urniformis* H.Deane, *Rec. Geol. Surv. Vic.* 4: 495, Pl. 62, fig. 9 (1925).  
= *Banksiaephyllum urniforme* (H.Deane) R.S.Hill (1990).  
= *Banksia urniformis* (H.Deane) R.J.Carp., G.J.Jord. & R.S.Hill (2016).
37. *Dryandra veronensis* A.Massal., *Syll. pl. foss.* P. 62 (1859b). *Nomen nudum*.

38. *Dryandra vindobonensis* Ettingsh., *Abh. d. K.-K. Geol. Reich. Wien* 3(1): 18, t.III, fig 6 (1851c).  
= *Comptonia vindobonensis* (Ettingsh.) E.W.Berry (1906, Pp. 515–6).
39. *Dryandra yakovlevii* Palib., *Verkhne-melovaja flora yugovostoka Aakavkaz'ja*, P. 908 (1930), as 'Yakovlevi'.

*Eidothea* A.W.Douglas & B.Hyland

See *Xylocaryon* F.Muell.

**6. *Embothrium*** J.R.Forst. & G.Forst.

1. *Embothrium affine* Ettingsh., *K. Akad. Wiss. Sitzungs. Math-Natur. Cl., Band* 60: 66, Taf. III, Fig. 17 (1869).
2. *Embothrium archippae* A.Massal., *Lett. al Scarabelli*, P.27, n. 185 (1857).
3. *Embothrium boreale* (Unger) Unger, *Kaiserl. Akad. Wiss. Wien, Math. Naturwiss. Kl., Denkschr.* 27: 61, Tab. IX, Fig. 23 (1867). Basionym: *Embothrites borealis* Unger, *Foss. Fl. Sotzka*, 171[41] Tab. XXI (XLII). Fig. 10–12 (1850b[1851]).
4. *Embothrium brachypterum* Ettingsh., *Kaiserl. Akad. Wiss. Wien, Math. Naturwiss. Kl., Denkschr.* 57: 109, Taf IV, Fig. 11, 12 (1890).
5. *Embothrium daphneoides* Lesq., *Rep. U.S. Geol. Surv. Terr.* Vol. 6: 87, pl. xxx, fig. 10 (1874).
6. *Embothrium giesekiaefolium* A.Massal., *Lett. a Scarab.* 27, n. 186 (1857), as 'Embothrium? giesekiaefolium'. = *Banksia giesekiifolia* (A.Massal.) A.Massal.
7. *Embothrium leptospermum* (Ettingsh.) Ettingsh., *Kaiserl. Akad. Wiss. Wien, Math. Naturwiss. Kl., Denkschr.* 32: 197, Taf. X, Fig. 16, 17 (1872). Basionym: *Embothrites leptospermos* Ettingsh., *Die Proteaceen der Vorwelt*, 19[727] Taf. 2, Fig. 12, 13 (1851a).
8. *Embothrium macropterum* (Ettingsh.) Ettingsh., *Kaiserl. Akad. Wiss. Wien, Math. Naturwiss. Kl., Denkschr.* 32: 197 (1872). Basionym: *Embothrites macropteros* Ettingsh., *Die Proteaceen der Vorwelt*, 19[727] Taf. 2, Fig. 15 (1851a).
9. *Embothrium microspermum* Heer, *Fl. Tert. Helv.* 3: 186, Taf. CLIII, Fig. 25 (1857). = *Hakea microsperma* (Heer) Schimp. (1874). *Embothrium microspermum* Ettingsh., *Kaiserl. Akad. Wiss. Wien, Math. Naturwiss. Kl., Denkschr.* 57: 109, Taf IV, Fig. 37 (1890). *Nomen illeg. nec* Heer (1857).
10. *Embothrium obliquum* Ettingsh., *Kaiserl. Akad. Wiss. Wien, Math. Naturwiss. Kl., Denkschr.* 57: 109, Taf IV, Fig. 38 (1890). *Nomen illeg. nec* *Embothrium obliquum* Ruiz & Pav., *Fl. Peruv.* 1: 63, T. 97 (1798).
11. *Embothrium ovatum* Saporta, *Ann. Sc. Nat. Bot. 5e série* (8): 88, Pl. IX, Fig. 8 (1867a).
12. *Embothrium parschlugianum* Ettingsh., *Kaiserl. Akad. Wiss. Wien, Math. Naturwiss. Kl., Denkschr.* 57: 110, Taf. IV, Fig. 43, 44 (1890).
13. *Embothrium precoccineum* E.W.Berry, *Tert. Flora Rio Pich. Argentina*, P. 71, Pl. 16, Figs 3–6 (1938).
14. *Embothrium pregrandiflorum* E.W.Berry, *Tert. Flora Rio Pich. Argentina*, P. 70, Pl. 16, Fig. 7 (1938).
15. *Embothrium salicinum* (Ettingsh.) Heer, *Fl. Tert. Helv.* 2: 97, Taf. 97, Figs. 29–33(1856). Basionym: *Santalum salicinum* Ettingsh., *Die Tert. Flora v. Häring*, P. 49, Taf. 12, Figs. 3–5 (1853a).
16. *Embothrium schoeneggense* Ettingsh., *Kaiserl. Akad. Wiss. Wien, Math. Naturwiss. Kl., Denkschr.* 57: 110, Taf. IV, Fig. 36 (1890).
17. *Embothrium sotzkianum* (Unger) Ettingsh., *Kaiserl. Akad. Wiss. Wien, Math. Naturwiss. Kl., Denkschr.* 54: 315 (1888b). Basionym: *Embothrites sotzkianus* Unger, *Sylloge plantarum fossilium* III: 75, tab. XXIV, fig. 18 (1866).
18. *Embothrium stenopterum* Heer, *Fl. Tert. Helv.* 2: 186, Taf. CLIII, Fig. 24 (1857). = *Hakea stenoptera* (Heer) Schimp. (1874), *nomen illeg., nec* Ettingsh. (1851a). *Embothrium stenopterum* Ettingsh., *Kaiserl. Akad. Wiss. Wien, Math. Naturwiss. Kl., Denkschr.* 57: 110 (1890). *Nomen illegitimum nec* Heer (1857).
19. *Embothrium stenospermum* Ettingsh., *Kaiserl. Akad. Wiss. Wien, Math. Naturwiss. Kl., Denkschr.* 32: 197, Taf. X, Fig. 19, 20 (1872).
20. *Embothrium stiriacum* Ettingsh., *Kaiserl. Akad. Wiss. Wien, Math. Naturwiss. Kl., Denkschr.* 54: 316, pl. 4, fig. 32 (1888b). = *Cedrelospermum stiriacum* (Ettingsh.) Kovar-Eder & Z.Kvacek.
21. *Embothrium tenerum* Saporta, *Ann. Sc. Nat. Bot. 5e série* (8): 88–89, Pl. IX, Fig. 7(1867a).

### 7. *Faurea* Harv.

1. *Faurea faureoides* J.B.Simpson, *Trans. Roy. Soc. Edinburgh* 64(16): 438, Pl. XI, fig. 4 (1961).

### 8. *Gevuina* Molin.

1. *Gevuina choryzimifolia* A.Massal., *Syll. Pl. Foss.* P. 67 (1859b), as ‘*Guevinia choryzaemaefolia*’. *Nomen nudum*.

### 9. *Grevillea* R.Br. ex Knight (1809)

1. *Grevillea acuta* Saporta, *Ann. Sci. Natur. Botanique* 4e sér. 19: 61–2 (1863).
2. *Grevillea alaskana* Hollick, *Profess. Pap., U.S. Geol. Surv.* 182: 111, Pl. 60, figs 3–5 (1936).  
= *Vaccinium homerensis* Wolfe.
3. *Grevillea anisoloba* (Brongn.) Saporta, *Notice sur les plantes fossiles de Coumi et d’Oropo* P.5 (1866).  
Basionym: *Stenocarpites anisolobus* Brongn., *Comptes Rendus* 52: 1237 (1861).
4. *Grevillea aquensis* M.Debey, ?*Sur les feuilles querciformes des sables d’Aix-la-Chapelle* (1880).  
**Comments:** Publication not seen. Two specimens of *Grevillea aquensis* Debey (MNHN-F-6822.2, MNHN-F-6819) are held at P which were collected by Debey at Aix-La-Chapelle. The names are assumed to have been validated in the publication cited.
5. *Grevillea brongniartii* M.Debey, ?*Sur les feuilles querciformes des sables d’Aix-la-Chapelle* (1880).  
**Comments:** Publication not seen. Four specimens of *Grevillea brongniartii* Debey (MNHN-F-6820.1, MNHN-F-6821.1, MNHN-F-6822.1, MNHN-F-6824.1) are held at P which were collected by Debey at Aix-La-Chapelle. The names are assumed to have been validated in the publication cited.
6. *Grevillea celastrina* A.Massal., *Syll. pl. foss.* P. 69 (1859b). *Nomen nudum*.
7. *Grevillea constans* Velen., *Beitr. Paläont. Osterreich-Ungarns* *Orients* 3(1): 3–4, Taf. 1 [IX], Fig. 6–10 (1883). = *Grevilleophyllum constans* (Velen.) Velen. (1899, P. 53).
8. *Grevillea coriacea* Saporta, *Ann. Sci. Natur. Botanique* 4e sér. 17: 251–2, Pl. VII, Fig. 13 (1862b). **Comments:** Hollick (1936, P. 111 in nota) states that there is a text error in Saporta and that the species is figured at Pl. VIII, Figs 9, 9a). Schimper (1872, P. 785) cites the Saporta reference as *Étud.* 1, I, P. 98, tab V11, f. 13 which, according to Stafleu *et al.* (1976–: (10.257), is from a reprint published 1863. Replaced homonym *Grevillea coriacea* McGill., *Telopea* 1: 19 (1975). *Nomen illeg.*  
= *Grevillea macgillivrayi* I.M.Turner, *Ann. Bot. Fenn.*, 51(5): 307 (2014).
9. *Grevillea darlingioides* H.Deane, *Rec. Geol. Surv. N.S.W.* 7(3): 231–2, Plate XLVI (1903).
10. *Grevillea dissecta* L.Laurent, *Fl. Calc. Célas* P. 79, t.4, fig.18 (1899).  
Replaced homonym: *Grevillea dissecta* (McGill.) Olde & Marriott, *Nuytsia* 9: 282 (1993)  
= *Grevillea neodissecta* I.M.Turner, *Ann. Bot. Fenn.*, 51(5): 307 (2014).
11. *Grevillea dvořákii* E.Bayer, *S. ber. K. Böhm. Ges. Wissensch., Math. Natur. Cl.* 26: 27–28, textfigs 9, 9a, Tab. I. Fig. 15 (1900), as ‘dvořáki’.
12. *Grevillea elaeophylla* Saporta, *Ann. Sci. Natur. Botanique* 5e sér. 3: 100–101, pl. V, fig. 1 (1865a).
13. *Grevillea elliptica* Saporta, *Ann. Sci. Natur. Botanique* 4e sér. 17: 251, Plate V11, fig. 12 (1862b).  
**Comments:** According to Schimper (1872, P. 785) *G. elliptica* was first published in ‘*Étud.*’, 1, 1, P. 97’ which is a reprint published in 1863. Saporta (1862, P. 251) does not mention any earlier publication.
14. *Grevillea grandis* (Unger) Ettingsh., *Die Proteaceen der Vorwelt*, 14 [722] (1851a).  
Basionym: *Dryandroides grandis* Unger, *Foss. Fl. Sotzka*, P. 169, Taf. 41, Figs 11–14 (1850b).
15. *Grevillea haeringiana* Ettingsh., *Proteaceen der Vorwelt*, 12–13[720-1], Taf. II, Fig. 1 (1851a). *Grevillea haeringiana* A.Massal., *Lett. a Scarab.*, P. 25 n. 154 (1857). *Nomen illeg. nec* Ettingsh. (1851).
16. *Grevillea heerii* De La Harpe, *Memoirs of the Geological Survey of Great Britain* 10: 116 (1862), as ‘Heeri’. *Nomen nudum*.
17. *Grevillea hermionis* Ettingsh. & J.Gardner, *Proc. Roy. Soc., London* Vol. 30: 233 (1880).  
*Nomen nudum.* **Comments:** Ettingshausen (1880, p. 233) listed *Grevillea hermionis* Ett. and Gard., presumably with the intention of co-authoring the write-up. This, however, did not apparently eventuate.
18. *Grevillea inermis* Saporta, *Ann. Sci. Natur. Botanique* 5e sér. 3: 100, pl. V, fig. 1 (1865a).

19. *Grevillea italica* (A.Massal.) Mesch & Squinab., *Fl. Tert. Ital.* P. 434 (1893).  
Basionym: *Anadenia italica* A.Massal., *Syll. Pl. Foss.* P. 67 (1859b). *Nomen nudum*.
  20. *Grevillea jaccardi* Heer, *Fl. Tert. Helv.* 2: 110, Taf. C. Fig. 19 (1856).
  21. *Grevillea kymeana* Unger, *Neu-Holland in Europa*, Pp. 60–62, Fig. 17 (1861a), as ‘*kymmeana*’.  
= *Myrica kymeana* (Unger) Berger (1953: p. 36). = *Berberis kymeana* (Unger) Kavaček & Erdei (2001).  
**Comments:** It is unlikely that Unger’s specimen is a *Grevillea*. Unger (1862, P. 163) repeated the earlier description exactly but the orthography of the epithet was revised to ‘*kymeana*’ without comment. Saporta (1862) treated identical leaf fossils as *Lomatites aquensis*. The epithet is derived from fossil beds at ‘Kymi’, the lower Miocene of Greece.
  22. *Grevillea laharpei* Heer ex De La Harpe & P.Salter, *Memoirs of the Geological Survey of Great Britain* 10: 116, 123 (1862), as ‘La Harpii’. *Nomen nudum*.
  23. *Grevillea lancifolia* Heer, *Fl. tert. Helv.* 2: 96, Taf. XCVII. Fig. 23 (1855).  
**Comments:** According to Stafleu *et al.* (1976), the text of the description was published Jul–Dec, 1855. The plate forming the type in the absence of a specimen, was published in 1856.
  24. *Grevillea lignitum* (Ettingsh.) W.Schimp., *Traité de paléontologie végétale* 2: 789 (1872).  
Basionym: *Anadenia lignitum* Ettingsh., *K. Akad. Wiss. Wien, Math. Naturw. Cl., Denkschr.* 53: 202, Taf. XXXV, Fig. 2 (1868a). **Comments:** The epithet ‘*lignitum*’ is treated as an indeclinable noun in apposition. It has been used as an epithet in the genera *Cassia*, *Myrica*, *Osmunda*, *Rosa*, and others and alludes to the coal strata in which the fossils are found.
  25. *Grevillea major* Saporta, *Ex. anal. in Heer’s Recherch Clim. Veg. Tert.*: P. 161–2 (1861a).  
**Comments:** This description is the only reference to *Grevillea major* in the palynological literature. Treatment of this species by Saporta (1861b, P. 41) is the same with different pagination. Apart from uncertainty as to the identification of the fossil itself, there is no illustration that can serve as a type until a type specimen, present location unknown, is found. It is here treated as a name of uncertain application.
  26. *Grevillea mimosites* A.Massal., *Syll. pl. foss.* P. 69 (1859b). *Nomen nudum*.
  27. *Grevillea minutula* Saporta, *Ann. Sci. Natur. Botanique* 8: 20–21, P. 11, figs. 11–12 (1867a).
  28. *Grevillea mucronata* Saporta, *Ann. Sci. Natur. Botanique 5e sér.* 3: 99–100, pl. V, fig. 3 (1865a).
  29. *Grevillea myrtifolia* Saporta, *Ex. anal. Heer’s Recherch Clim. Veg. Tert.*: P. 145 (1861a).  
**Comments:** Saporta (1862b, P. 250) cited first publication of this species at ‘*Ex. anal.* P. 29’ (Saporta 1861b), a reference not available for examination in this work. Saporta (1861a) is apparently an exact reprint with different pagination. However, there is no figure cited at the first reference. Saporta (1862b, P. 250) gives figuring detail for the name (Pl. VII, fig. 11). Schimper (1872, P. 785) gives as reference for the name *Grevillea myrtifolia* Saporta as ‘*Étud.*, 1, 1, P. 97.’ This is believed to be a reference to a reprint, Volume 1 of which was published in 1863, according to Stafleu *et al.* (1976), but which was also not available for examination for this work.
  30. *Grevillea nervosa* Heer, *Abh. Naturwiss. Ver. Sachsen u. Thüringen* 2: 8–9[414–5] Taf. V, Fig. 4, 5 (1861b).
  31. *Grevillea obscura* Saporta, *Ann. Sci. Natur. Botanique 4e sér.* 17: 251, Plate V11, fig. 14 (1862b).
  32. *Grevillea oxleyana* Ettingsh., *Kaiserl. Akad. Wiss. Wien, Math. Naturwiss. Cl., Denkschr.* 62: 27, Taf. 111, Fig. 14 (1895), as ‘Oxleyana’.
  33. *Grevillea pandorae* Unger, *Kaiserl. Akad. Wiss. Wien, Math. Naturwiss. Kl., Denkschr.* 27: 59, Tab XV1, Fig. 11 (1867).
  34. *Grevillea parisiensis* Watelet, *Description des plantes fossiles du bassin de Paris*, P. 192, Pl. 53, fig. 3, 3a (1866).
  35. *Grevillea pighiana* (A.Massal.) Mesch. & Squinab., *Fl. Tert. Ital.* P. 434 (1893), as ‘*Pighiana*’.  
Basionym: *Anadenia Pighiana* A.Massal., *Syll. Pl. Foss.* P. 126 (1859b), *nomen nudum*.
  36. *Grevillea provincialis* Saporta, *Heer’s Recherch Clim. Veg. Tert.*: P. 145 (1861a).  
**Comments:** The application of the name at this reference is uncertain, since there is only a brief description but no figure cited. It is assumed that at the reference Saporta (1861b, P. 29) the treatment is the same. The species is described more fully by Saporta, *Ann. Sci. Natur. Botanique 4e sér.* 17: 251, Plate V11, fig. 10 (1862b).
- 34a. *Grevillea provincialis* var. *provincialis*

Autonym: Vassilevskaya (1957, P. 145).

34b. *Grevillea provincialis* var. *rarinervosa* Vassilevskaya, *Sbornik pamjati Afrikana Nikolaevicha Krishtofovicha* P.145, t. 6 fig 12–14, text fig. 10 (1957).

37. *Grevillea proxima* Ettingsh., *Kaiserl. Akad. Wiss. Wien, Math. Naturwiss. Kl., Denkschr.* 53: 110, Taf. XI, Fig 13, 13a (1887a).
38. *Grevillea relict*a Saporta, *Ann. Sci. Natur. Botanique sér.* 5, 4: 137 (1865b).  
**Comments:** Saporta failed to support the description by citing a figure that could be used as the type. Since it is unlikely that the fossil is a *Grevillea* anyway, there seems little point in trying to neotypify the name with a specimen, even if one could be identified. The name is therefore treated as uncertain in application.
39. *Grevillea reusii* Ettingsh., *Die Proteaceen der Vorwelt*, P. 13[721] (1851a), as ‘*Reussii*’.  
 Replaced synonyms: *Salicites angustus* A.E.Reuss, (1844, P.169); *Salix angusta* A.E.Reuss, *Verstein. d. Bohm Kreideformation* P. 96, T. 51, f.7, 8 (1846).
40. *Grevillea rigida* Saporta, *Ann. Sci. Natur. Botanique 4e, sér.* 17: 252 (1862b). Nomen inval.  
*Grevillea rigida* Saporta, *Ann. Sci. Natur. Botanique sér.* 5, 3: 100, t. 5 fig. 2 (1865a).  
 Replaced homonym: *Grevillea rigida* Olde & Marriott, *Grevillea Book 1*: 186–187 (1994)  
 = *Grevillea neorigida* I.M.Turner, *Ann. Bot. Fenn.*, 51(5): 307 (2014).
41. *Grevillea susedana* Pilar, *Fl. Foss. Sused.* 73 (1883).
42. *Grevillea synaphaefolia* (A.Massal.) Mesch. & Squinab., *Fl. Tert. Ital.* P. 434 (1893).  
 Basionym: *Manglesia synaphaefolia* A.Massal., *Syll. Pl. Foss.* P. 67 (1859b). *Nomen nudum*.
43. *Grevillea tenera* Velen., *Beiträge Paläontologie Österreich-Ungarns und des Orients* 5(1): 11, Taf. 7 [XXX], figs. 9, 14, 16 (1885). **Comments:** According to E.W. Berry (1919, P. 103), this fossil is a fern.
44. *Grevillea verbinensis* Watelet, *Description des plantes fossiles du bassin de Paris*, P. 192, Pl. 53, fig. 4 (1866).
45. *Grevillea wentworthii* Ettingsh., *Kaiserl. Akad. Wiss. Wien, Math. Naturwiss. Kl., Denkschr.* 53: 100, Taf. XI, Figs. 12, 12a (1887a), as ‘Wentworthi’.

#### 10. *Hakea* Schrad. & J.C.Wendl.

1. *Hakea acanthina* A.Massal., *Spec. Photogr.* P. 78, t. XXXV, f. 2 (1859a).
  - 1a. *Hakea acanthina* var. *acanthina* Autonym.
  - 1b. var *amphiodonta* (A.Massal.) A.Massal. *Syll. Pl. Foss.* P. 67 (1859b).  
 Basionym: *Quercus amphiodon* A.Massal., *Pl. Foss. Nov. Veneti* P. 17. (1853).
  - 1c. var. *acrodonta* (A.Massal.) A.Massal. *Syll. Pl. Foss.* P. 65 (1859b).  
 Basionym: *Quercus acrodon* A.Massal., *Pl. Foss. Nov. Veneti* P. 16. (1853).
  - 1d. var *deltoidea* A.Massal., *Syll. Pl. Foss.* P. 79 (1859b).
  - 1e. var *horrida* A.Massal. *Spec. Photogr.* P. 78, t. XXXV, f. 2 (1859a).
  - 1f. var *heterodonta* (A.Massal.) A.Massal. *Syll. Pl. Foss.* P. 65 (1859b).  
 Basionym: *Quercus heterodon* A.Massal., *Pl. Foss. Nov. Veneti* P. 17. (1853).
  - 1g. var *inermis* A.Massal. *Spec. Photogr.* P. 79 (1859a). ?*Nomen nudum*.
  - 1h. var *spathulata* A.Massal. *Spec. Photogr.* P. 79 (1859a). ?*Nomen nudum*.
2. *Hakea alaskana* Hollick, *Profess. Pap., U.S. Geol. Surv.* 182: 111–112, Pl. 116, fig 8 (1936).
3. *Hakea amphibola* Saporta, *Ann. Sci. Natur. Botanique 5e série* 3: 102–3, Pl. IV, fig. 5 (1865a), as ‘*Hakea? amphibola*’ [Etud., II, 1, P. 98, tab. IV, f. 5 *fide* Schimper (1872)].
4. *Hakea arctica* Heer, *Fl., Foss. Arctica*, P. 113–4, tab. XV, f. 5, 6 (1868), as ‘(?) *arctica*’.
5. *Hakea attica* Unger, *Kaiserl. Akad. Wiss. Wien, Math. Naturwiss. Kl., Denkschr.* 27: 56–57, Tab VIII, Figs 32, 33 (1867).
6. *Hakea banksiiformis* L.Laurent, *Fl. Calc. Célas* (1899), as ‘*banksiaeformis*’ . Reference not seen, *fide* Van den Burgh (2010).
7. *Hakea berendtiana* Göppert, *Zeitschr. deutsch. geol. Gesell.*, 16: 195, t.VIII, figs 4–5 (1864), as ‘Berendtiana’.
8. *Hakea bohémica* Ettingsh., *Kaiserl. Akad. Wiss. Wien, Math. Naturwiss. Kl., Denkschr.* 28: 203, tab. XXXV, fig. 3 (1868a).

9. *Hakea bosniaca* Engelh., *Glasnik zemaljskog muzeja u Bosni i Hercegovini* 22(1): 162, 170 (1910a).
10. *Hakea demersa* Saporta, *Ann. Sci. Natur. Botanique* 4e série 19: 63–4, Pl. VII, fig. 4 (1863).
11. *Hakea discerpta* Saporta, *Ann. Sci. Natur. Botanique* 5e série 3: 102, Pl. V, fig. 4 (1865a). [Étud., II, 1, P. 98, tab. V, f. 4. *fide* Schimper (1872)].
12. *Hakea dryandroides* Ettingsh., *Sitzungs. d. K. Akad. Wiss.* 57: 855 (1868). Figure cited as Ludwig, *Palaeontographica* 8: 113, Taf. 44, Fig. 8. (1860) (Ex parte).
13. *Hakea dullonii* Ettingsh., *Kaiserl. Akad. Wiss. Wien, Math. Naturwiss. Kl., Denkschr.* 53: 111, Taf. XII, Fig. 11, 11a (1887a), as ‘Dulloni’.
14. *Hakea duttonii* Ettingsh., *Contrib. Tert. Fl. Aust.*, 133, Plate XII, Figs. 11, 11a (1888a), as ‘Duttoni’. ?orthographic var. = *Hakea dullonii* Ettingsh.
15. *Hakea ettingshausenii* Debey, ?*Sur les feuilles querciformes des sables d’Aix-la-Chapelle* (1880), ?as ‘*ettinghausii*’. Publication not seen. **Comments:** Three specimens determined as *Hakea ettinghausii* Debey (MNHN-F-6821.2, MNHN-F-6823, MNHN-F-6824.2) are held at P which were collected by Debey at Aix-La-Chapelle. The name is assumed to have been validated in the publication cited.
16. *Hakea erdöbényensis* Stur, *Jb. K.K. Geol. Reichsanst.* P. 168 Tab. V, f. 17 (1867).  
Replaced synonyms: *Pinites hakeoides* Kov., *Foss. Fl. v. Erdöbénye* P. 20, T. 1, f. 14 (1856);  
*Pinites aequimontanus* Ettingsh., *Fl. v. Tokaj*. P. 15, tab. 1, f. 4 (1853b).
17. *Hakea exulata* Heer, *Regel’s Gartenflora* II: 293, 296, Taf. 65, fig. 5 (1853a).
18. *Hakea fraxinoides* Ettingsh., *Kaiserl. Akad. Wiss. Wien, Math. Naturwiss. Kl., Denkschr.* 50: 15, Taf. XXX, Fig. 11, 11a (1885).
19. *Hakea gaudinii* Heer, *Fl. Tert. Helv.* 2: 96 tab. XCVIII, f. 20 (1856), as ‘Gaudini’.
20. *Hakea germari* Ettingsh., *Sitzungs. d. K. Acad. Wiss.-Math.* 9: 822[4] Taf. LVIII,[I] Fig. 3 (1852), as ‘Germari’.
21. *Hakea ilicina* (Saporta) Saporta, *Ann. Sci. Natur. Botanique* 4e série 19: 63, Pl. VII, fig. 7 (1863). Basionym: *Hakeites ilicinus* Saporta, *Ex. anal.*, 35[137](1861a,b).
22. *Hakea lanceolata* C.O.Weber, *Palaeontographica* 4: 147 tab. XXV, f. 13; XXVI, f. 3 (1855).
23. *Hakea macroptera* Ettingsh., *Kaiserl. Akad. Wiss. Wien, Math. Naturwiss. Kl., Denkschr.* 32: 196, tab. X, f. 12, 18 (1872).
24. *Hakea mahoniiformis* (Saporta) Saporta, *Ann. Sci. Natur. Botanique* 4e série 19: 62, Pl. VII, fig. 6 (1863), as ‘*mahoniaeformis*’. Basionym: *Hakeites mahoniaeformis* Saporta, *Ex. anal.*, 35[137](1861a). **Comments:** Saporta (1863) gave P. 21 as the page on which the basionym was published.
25. *Hakea microphylla* P.Friedrich, *Abh.geol. Special. v. Preuss. und d. Thüring. Staat.* 4: 224– 5[382–383], Taf. 29, Fig. 12–13 (1883).
26. *Hakea microsperma* (Heer) Schimp., *Traité de paléontologie végétale*. Part 3: 757 (1874).  
Basionym: *Embothrium microspermum* Heer.
27. *Hakea myricopsis* A.Massal., *Syll. Pl. Foss. Veneti*, P. 65 (1859b). *Nomen nudum*.  
Also *Spec. Photogr.* P. 79 (1859a). Reference not seen. ?*Nomen nudum*.
28. *Hakea myrsinites* Ettingsh., *Die Proteaceen der Vorwelt*, P.15[723] Taf. 11, Fig 3, 4; Tab. XXXI, f. 3, 4 (1851a), as ‘*Myrsinites*’.
29. *Hakea myrtilloides* Schmalh., *Palaeont. Abh.*1(4): 307[25], Taf. 6 [XXXIII], Fig. 14 (1883).
30. *Hakea obscurata* Saporta, *Ann. Sci. Natur. Botanique* 5e série 3: 102, Pl. V, fig. 5 (1865a).  
Étud., II, i, P. 98, tab. V, f. 5. *fide* Schimper (1872).
31. *Hakea palaeoptera* Saporta, *Ann. Sci. Natur. Botanique* 4e série 19: 64, Pl. VII, fig. 5 (1863).
32. *Hakea parschlugiana* Ettingsh., *nomen nudum*. **Comments:** Kovar-Elder *et al.* (2004) indicate that there are numerous specimens determined by Ettingshausen as *Hakea parschlugiana*, but nowhere could formal publication be found. = *Engelhardia orsbergensis* (P.Wessel & C.O.Weber) Jahnichen, Mai & Walther.

33. *Hakea plurinervia* Ettingsh., *Die Proteaceen der Vorwelt*, 15 [723] Taf. 31, Figs 2, 17 (1851a).  
Replaced homonym: *Hakea plurinervia* F. Muell. ex Benth., *Fl. Austral.* 5: 523 (1870). *Nomen illeg.* = *Hakea benthamii* I.M.Turner, *Ann. Bot. Fenn.*, 51(5): 307 (2014).
34. *Hakea pseudonitida* Ettingsh., *Abh. d. K.-K. Geol. Reich. Wien* 3(1): 17, tab III, f. 5 (1851c).
35. *Hakea redux* Saporta, *Ann. Sci. Natur. Botanique* 4e série 19: 63, Pl. VII, fig. 8 (1863).
36. *Hakea salcedana* A.Massal., *Syll. Pl. Foss. Veneti*, P. 65 (1859b). *Nomen nudum*.  
*Spec. Photogr.* P. 80 (1859a). Reference not seen. ?*Nomen nudum*.
37. *Hakea salicina* (Ettingsh.) Schimp., *Traité de paléontologie végétale*. Part 2: P. 97 (1872).  
Basionym: *Santalum salicinum* Ettingsh., *Tert. Fl.v. Haering*, P. 49, tab. XII, f. 3 (1853a).  
Synonym: *Embothrium salicinum* (Ettingsh.) Heer, *Fl. Tert. Helv.*, II, P. 97, tab. XCVII, f. 29–33 (1856).
38. *Hakea schemnitzensis* Stur, *Jb. K.K. Geol. Reichsanst.* 17: 169 Tab. V, f. 17 (1867).
39. *Hakea spathulata* Schmalh., *Palaeont. Abh.*, 1(4): 306[24], pl. 35[8], figs. 2-6, 10 (1883).  
Synonyms: *Hakea auriculata* var. *spathulata* Benth., *Fl. Austral.* 5: 510 (1870);  
Replaced synonym: *Hakea spathulata* (Benth.) R.M.Barker, *J. Adelaide Bot. Gard.* 13: 107 (1990), *nomen illeg.* = *Hakea neospathulata* I.M.Turner, *Ann. Bot. Fenn.*, 51(5): 307 (2014).
40. *Hakea stenocarpifolia* Ettingsh., *Die Proteaceen der Vorwelt*, 14–15[722–23], Taf. 1, fig. 15, 16 (1851a).
41. *Hakea stenoptera* Ettingsh. *Sitzungs. K. Akad. Wiss* 60: 65, Taf. 3, Fig. 16 (1869).  
*Hakea stenoptera* (Heer) Schimp., *Traité de paléontologie végétale*. Part 3: 757 (1874), *nomen illegitimum*,  
*nec* Ettingsh. (1869). Basionym: *Embothrium stenopterum* Heer (*q.v.*).
42. *Hakea stenosperma* Saporta, *Ann. Sci. Natur. Botanique* 5e série 8: 20, Pl. 1, fig. 5 (1867a).
43. *Hakea sturii* Pilar, *Fl. Foss. Sused.* 73, Tab. XIII, fig. 3 (1883), as ‘Sturi’.
44. *Hakea toxotes* (A.Massal.) A.Massal. *Syll. Pl. Foss. Veneti*, P. 65 (1859b).  
Basionym: *Quercus toxotes* A.Massal., *Pl. foss. nov. Veneti*, P. 17 (1853).
45. *Hakea wetteravica* Ettingsh., *Sitzungs. d. K. Akad. Wiss.* 57: 856 (1868).  
Replaced synonym: *Hakea exulata* Heer *sensu* Ludwig, *Palaeontographica* 8: 114, Taf. 44, Fig. 6,7 (1860).  
**Note:** Ludwig cited an additional Figure (6a) not included by Ettingshausen.

#### 11. *Helicia* Lour.

1. *Helicia ambigua* (Vis. & A.Massal.) A.Massal., *Synop. fl. foss. Senog.*, P.67, Tab 14, Fig. 8; Tab. 44, Fig. 10 (1858a). Basionym: *Pyrus ambigua* Vis. & A.Massal., *Fl. foss. Nov.*, 38, tab XII, f. 4 (1854).
2. *Helicia eoerratica* W.Prasad *et al.*, *Palaeobotanist* 48 (1999). (Reference not seen).
3. *Helicia sotzkiana* Ettingsh., *Die Proteaceen der Vorwelt*, Pp. 16–17[724–5], Taf. 11, Fig 10 (1851a).

#### 12. *Kermadecia* Brongn. & Gris

1. *Kermadecia merytifolia* A.M.Holden, *Journ. Roy. Soc. N.Z.* 12: 89, Figs. 32, 3.2, 3.10, 4.1, 4.2 (1982), as ‘?Kermadecia merytifolia’.

#### 13. *Knightia* R.Br.

1. *Knightia andreae* Dusén, *Wissenschaftliche Ergebnisse der Schwedischen Südpolar-Expedition 1901–1903*. Vol. 3(3), *Geologie et Paläontologie*. Pp. 7–8, Taf. 1, fig. 7, 9, 11 (1908), as ‘Andreae’.
2. *Knightia daltoniana* Ettingsh., *K. Akad. Wiss. Wien, Math. Naturw. Cl., Denkschr.* 47: 128–129, Taf VI, Fig. 7 (1883), as ‘Daltoniana’.
3. *Knightia fossilis* W.R.B.Oliver, *Trans. N.Z. Instit.* 59: 295, Fig. 11 (1928).
4. *Knightia nimrodus* (Unger) Ettingsh., *Die Proteaceen der Vorwert*, Pp.17–18[725–26] (1851a), as ‘Nimrodus’.  
Basionym: *Quercus nimrodus* Unger, *Kaiserl. Akad. Wiss. Wien, Math. Naturwiss. Kl., Denkschr.* 11 Bd S. 163, T. 31 f. 1–3 (1851).
5. *Knightia oblonga* W.R.B.Oliver, *Trans. N.Z. Instit.* 66: 294, fig. 12 et Figs. 3.3, 3.4, 3.5, 4.3 (1936).

#### 14. *Lambertia* Sm.

1. *Lambertia aulacoides* J.B.Simpson, *Trans. Roy. Soc. Edinburgh* 64(16): 439, Pl. XI, fig. 9 (1961).
2. *Lambertia dura* Velen., *Beiträge Paläontologie Österreich-Ungarns und des Orients* 3(1): 30 (1883).



3. *Lambertia extincta* Ettingsh., *Die Proteaceen der Vorwert*, P.16[724] Taf. 11, Fig. 5 (1851a).
4. *Lambertia premultiflora* J.B.Simpson, *Trans. Roy. Soc. Edinburgh* 64(16): 439, Pl. X, fig. 9 (1961), as 'premultiflora'.
5. *Lambertia shiabensis* J.B.Simpson, *Trans. Roy. Soc. Edinburgh* 64(16): 439, Pl. X, figs. 10, 11 (1961).
6. *Lambertia tertiaria* Engelh., *Sitzungs. u. Abh. d. Naturwiss. Isis, Dresden* 7–12 (July–December 1879): 141, Tfl. VII, Fig. 28 (1880).

#### 15. *Leucospermum* R.Br.

1. *Leucospermum denticulatum* Saporta, *Exam anal.* P. 21 (1861)

#### 16. *Lomatia* R.Br.

1. *Lomatia abbreviata* Lesq., *Rep. U.S. Geol. Surv. Terr.* Vol. 8: 167, Pl. XLIII Fig. 17 (1883).
2. *Lomatia acutiloba* Lesq., *Rep. U.S. Geol. Surv. Terr.* Vol. 8: 167, Pl. XLIII Fig. 11–16 (1883).
3. *Lomatia angustiloba* Dusén, *Wissenschaftliche Ergebnisse der Schwedischen Südpolar- Expedition 1901–1903*. Vol. 3(3), *Geologie et Paläontologie*. P. 6, Taf. 2, fig. 3, 5 (1908).
4. *Lomatia antarctica* H.Orlando, *Antarctic Geology*, P. 633, fig. 3 (1964).
5. *Lomatia aquensis* (Saporta) Saporta, *Ex. anal.* In Heer O, *Recherches sur le climat et la végétation du pays tertiaire*, P.145 (1861a). Basionym: *Hakeities aquensis* Saporta.  
**Comments:** This name was cited by Saporta (1861a, P. 145) but its place of publication was not found.
6. *Lomatia aquifolia* A.Massal., *Syll. pl. foss. Veneti*, P. 67 (1859b). *Nomen nudum*.
7. *Lomatia australis* Engelh., *Sitzungs. u. Abh. d. Naturwiss. Isis, Dresden*. Pp. 87–88, Taf. V, Fig.7 (1884).
8. *Lomatia bivascularis* (E.W.Berry) Freng., *Notas del Museo de La Plata* VIII (52): 201–213. (1943). Reference not seen. Basionym: *Carpolithus bivascularis* E.W.Berry, *Johns Hopkins Univ. Stud. Geol.* 6: 232, Pl. IV, Figs 2, 3 (1925).
9. *Lomatia bolcencis* Unger, *Neu-Holland in Europa*, Pp. 62–65, Fig 20 (1861a).
10. *Lomatia borealis* Heer, *Mioc. Balt. Fl.*, P. 79, tab. XXIV, f. 9–13a, 14e (1869).
11. *Lomatia bosistoides* H.Deane, *Rec. Geol. Surv. Vic.* 1: 28–29, Pl. IV., Fig.10; Pl. V Fig.9; Pl. VII., Fig. 12 (1902).
12. *Lomatia brevior* Saporta, *Ex. Anal.* In Heer O, *Recherches sur le climat et la végétation du pays tertiaire*, P.151 (1861). *Nomen nudum*.
13. *Lomatia brevipinna* P. Dusén, *Wissenschaftliche Ergebnisse der Schwedischen Südpolar- Expedition 1901–1903*. Vol. 3(3), *Geologie et Paläontologie*. Pp. 6–7, Taf. 2, fig. 7 (1908).
14. *Lomatia britannica* Ettingsh. & Gardner, *Proc. Roy. Soc. London* 30: 233 (1880). *Nomen nudum*.
15. *Lomatia brownii* Ettingsh., *Kaiserl. Akad. Wiss. Wien, Math. Naturwiss. Kl., Denkschr.* 53: 112–113, Taf. XII, Fig. 4, 5 (1887a), as 'Brownii'.
16. *Lomatia castaneifolia* Ettingsh., *Kaiserl. Akad. Wiss. Wien, Math. Naturwiss. Kl., Denkschr.* 53: 113, Taf. XII, Fig. 2, 2a, 3 (1887a), as 'castaneaefolia'.
17. *Lomatia coloradensis* (Knowlt.) R.W.Br., *Profess.Pap., U.S. Geol. Surv.* 154: 285, Plate 72, Fig. 3–6 (1929). Basionym: *Phyllites coloradensis* Knowlt. *Profess.Pap., U.S. Geol. Surv.* 131: 176, Pl. 38, Fig. 3 (1923).
18. *Lomatia dubia* H.Deane, *Rec. Geol. Surv. Vic.* 1: 29, Pl.V., Figs. 2, 3, 4, 5 (1902b).
19. *Lomatia evansii* Ettingsh., *Kaiserl. Akad. Wiss. Wien, Math. Naturwiss. Kl., Denkschr.* 53: 114, Taf. XII, Fig. 6, 6a (1887a), as 'Evansii'.
20. *Lomatia favrettii* A.Massal., *Sulla piante fossili di Zovencedo e dei Vegroni* P. 15 (1858b), as 'Favrettii'.
21. *Lomatia finnisii* Ettingsh., *Kaiserl. Akad. Wiss. Wien, Math. Naturwiss. Kl., Denkschr.* 53: 113, Taf. XII, Fig. 1, 1a (1887a), as 'Finnisii'.
22. *Lomatia firma* (Heer) Heer, *Beitr. Naturk. Preuss.* 2: Pp. 35–6, tab.VIII, f. 6-9 (1869a); P. 80, tab. XXIV, f. 15; XXVI, f. k. h (1869b). Basionym: *Acerates firma* Heer, *Fl. Tert. Helv.*, III, P. 21, tab. CIV, f. 9 (1857).

23. *Lomatia fraxinifolia* Heer, *Fl. Tert. Helv.* 3(6): 189, Taf. CXIV, Fig. 1 (1857).  
*Lomatia fraxinifolia* F.Muell. ex Benth., *Fl. Austral.* V: 536 (1870), *nomen illeg. nec* Heer (1857).  
**Replacement name:** *Lomatia milnerae* Olde, *nom. nov.* **Etymology:** The name recognises the studies in biogeography and systematics of *Lomatia* by Melita L. Milner. **Comments:** R.J. Carpenter and G.J. Jordan (1997) reported fossil specimens indistinguishable from *Lomatia fraxinifolia* F.Muell. ex Benth., an extant species from north-eastern Queensland, in Oligocene lacustrine sediments at Cethana, Tasmania. These fossils are now included in *Lomatia milnerae*, and should not be confused with *Lomatia fraxinifolia* Heer.
24. *Lomatia gargarina* Saporta, *Ex. Anal.* In Heer, *Rech. sur Clim. et Veg. du Pays Tert.* P. 156 (1861a).
25. *Lomatia goyderi* Ettingsh., *Kaiserl. Akad. Wiss. Wien, Math. Naturwiss. Kl., Denkschr.* 53: 113, Taf. XI Fig. 15, 15a (1887a), as 'Goyderi'.
26. *Lomatia gracilis* Saporta, *Ex. Anal.* In Heer, *Rech. sur Clim. et Veg. du Pays Tert.* P. 156 (1861a).
27. *Lomatia guembelii* Heer, *Beitr. Naturk. Preuss.* 2: 36 (1869a), as 'Gümbeli'. *Nomen subnudum.*  
**Comments:** An adequate description could not be found. However, the protologue of *L. firma* Heer states that it is very similar to '*Lomatia Gümbelii* from Peissenberg', but that its leaves differ in their rounded base. Schmalhausen (1883, P. 26) also compared it with *Lomatia ucrainica*.
28. *Lomatia hakeifolia* Lesq., *Rep. U.S. Geol. Surv. Terr.* Vol. 8: 166, Pl. XXXII Fig. 19 (1883), as '*hakeaefolia*'.  
**Comments:** Cockerell (1908, P. 89) transferred this species to *Lomatites* Saporta, as '*L. hakeaefolia*'.
29. *Lomatia heerii* Engelm., *Nova Acta* 38: 383–4, Tab. III, fig. 14 (1876), as 'Heeri'.
30. *Lomatia ilicoides* A.Massal., *Syll. Pl. foss. Veneti* P.67 (1859b); *Spec. Photogr.* P. 80 (1859a). *Nomen nudum.*
31. *Lomatia inaequalis* Watelet, *Description des plantes fossiles du bassin de Paris*, P. 194, Pl. 53, fig.1 (1866).
32. *Lomatia interrupta* Lesq., *Rep. U.S. Geol. Surv. Terr.* Vol. 8: 167, Pl. XLIII Figs. 18, 19 (1883).
33. *Lomatia latior* Heer, *Beitr. Naturk. Preuss.* 2: 80, Tab. XXIV, fig. 16 (1869b).
34. *Lomatia lineata* (Lesq.) MacGinitie, *Carnegie Instit. Wash. Publ.* 599: 108 (1953).  
 Basionym: *Banksites lineatus* Lesq., *Rep. U.S. Geol. Surv. Terr.* Vol. 8: 165, Pl. XXXII Fig. 21 (1883).
35. *Lomatia lineatulus* (Cockerell) MacGinitie, *Univ. Calif. Publ. Geol. Sci.* 83: 99, Pl. 16, figs. 6, 7 (1969).  
 Basionym: *Banksites lineatulus* Cockerell, *Proc. U.S. Nat. Mus.* 66: 8, Pl. 2 fig. 3 (1925).
36. *Lomatia longissima* Saporta, *Ex. Anal.* In Heer, *Recherches sur le climat et la végétation du pays tertiaire*, P.145 (1861a).
37. *Lomatia macrophylla* N.M.Makulbekov, *Materialy po istorii fauny i flory Kazakhstana* 5: 130 (1971).
38. *Lomatia mawsonii* F.Chapm., *Trans. Roy. Soc. South Austral.* 61: 6, pl.ii, fig. 10 (1936).
39. *Lomatia microphylla* Lesq., *Rep. (Annual) U.S. Geol. Geogr. Surv. Terr. for 1874*: 315 (1876).
40. *Lomatia mirabilis* (Dusén) H.Li, *Stratigraphy and Palaeontology of Fildes Peninsula, King George Island, Antarctica, State Antarctic Committee, Beijing, Monograph* 3: 000 (1994). Reference not seen. Basionym: *Caldcluvia mirabilis* Dusén, *Wissenschaftliche Ergebnisse der Schwedischen Südpolar-Expedition 1901–1903*: 3 (1903).
41. *Lomatia neodubia* Olde, *nom. nov.* Replaced homonym: *Lomatia dubia* I.V.Vassil., *Trudy Vsesoyuznogo Nauchno-Issledovatel'skog Geologicheskogo Instituta Leningrad* 204: 75 (1980). *Nomen illeg. nec* H.Deane (1902).
42. *Lomatia novoreticulata* Olde, *nom. nov.* Replaced homonym: *Lomatia reticulata* H. Deane, *Rec. Geol. Surv. Victoria* 1: 28, Pl. IV., Figs 8, 9; Pl V., Fig. 8 (1902). *Nomen illeg. nec* Ettingsh. (1851).
43. *Lomatia novae-zelandiae* Pole, *Austral. Syst. Bot.* 11: 387–388 (1997).
44. *Lomatia obovata* Watelet, *Description des plantes fossiles du bassin de Paris*, P. 194, Pl. 53, fig.2 (1866).
45. *Lomatia obscura* H.Deane, *Rec. Geol. Surv. Victoria* 1: 28, Pl. V., Figs 6, 7 (1902b).
46. *Lomatia obtusiuscula* Cockerell, *Proc. U.S. Nat. Mus.* 66: 7, Pl. 1, Fig. 4 (1925).
47. *Lomatia occidentalis* (E.W.Berry) Freng., *Notas Mus. La Plata* 8: 205, Pl. II, Figs 1, 2 (1943).  
 Basionym: *Lomatites occidentalis* E.W.Berry, *Johns Hopkins Univ. Stud. Geol.* 6: 200, Pl. IX, Figs 1–3 (1925).  
 = *Orites bivascularis* (E.W.Berry) E.J.Romero, Dibbern and Gandolfo.
48. *Lomatia oceanica* Ettingsh., *Die Proteaceen der Vorwelt*, P. 20[728] Taf. 11 Fig. 7–9 (1851a).

49. *Lomatia patagonica* Freng., *Notas Mus. La Plata* 8: 201–213, Figs 2H–K (1943).
50. *Lomatia perspicua* H.Deane, *Rec. Geol. Surv. Vic.* 1(2): 28, pl. V, fig. 1. (1902b).
51. *Lomatia praelongifolia* Ettingsh., *Kaiserl. Akad. Wiss. Wien, Math. Naturwiss. Kl., Denkschr.* 47: 127–128, Taf. 6, Fig. 8 (1883).
52. *Lomatia preferruginea* E.W.Berry, *Geol. Soc. Amer. Spec. Pap.* 12: 68, Pl. 14, figs. 5–7 (1938).
53. *Lomatia pseudoilex* Unger, *Foss. Fl. Sotzka*, Pp. 40[170], Tab. XXI [XLII], Fig. 3–8 (1850b), as ‘*Pseudoilex*’.
54. *Lomatia reticulata* Ettingsh., *Die Proteaceen der Vorwelt*, Pp. 20–21 [728–729] Tab 11, Fig. 6; tab. XXXI, f. 6. (1851a). *Lomatia reticulata* H. Deane (1902b) (See *Lomatia novoreticulata* Olde)
55. *Lomatia saportanea* (Lesq.) Lesq., *Rep. (Annual) U.S. Geol. Geogr. Surv. Terr.* 8: 346–7 (1876), as ‘*Lomatia* ? *Saportanea*’. Basionym: *Todea? saportanea* Lesq., *Rep. U.S. Geol. Geogr. Surv. Terr.* 6: 48–9, Pl. XXIX Figs. 1–4 ; Pl.VI Fig. 2 (1874).  
     52a. var. *saportanea* Autonym: l.c. (1883).  
     52b. var. *longifolia* Lesq., *U.S. Geological Report* 8: 52 (1883).
56. *Lomatia scottii* (Lesq.) Lesq. in Ettingsh. (1887a Table), Lsq sp., as ‘*L. scottii*’. *Nomen nudum*. Basionym: *Myrica scottii* Lesq., *Rep. U.S. Geol. Surv. Terr.*, vol. 8: 147, pi. 32, figs. 17, 18 (1883).
57. *Lomatia serrulata* P. Dusén, *Wissenschaftliche Ergebnisse der Schwedischen Südpolar-Expedition 1901–1903*. Vol. 3(3), *Geologie et Paläontologie*. P. 7, Taf. 1, fig. 2 (1908).
58. *Lomatia seymourensis* P. Dusén, *Wissenschaftliche Ergebnisse der Schwedischen Südpolar- Expedition 1901–1903*. Vol. 3(3), *Geologie et Paläontologie*. P. 7, Taf. 1, fig. 2 (1908).
59. *Lomatia sinuata* Saporta, *Ex. Anal.* In Heer O, *Recherches sur le climat et la végétation du pays tertiaire*, P.145 (1861a). *Nomen illeg. nec R.Br.* (1830, P. 33).
60. *Lomatia spinosa* Lesq., *Rep. U.S. Geol. Geogr. Surv. Terr.* Vol. 8: 166, Pl. XLIII Fig. 1 (1883). **Comments:** Cockerell (1908: 89) transferred this species to *Lomatites* Saporta as *Lomatites spinosa*.
61. *Lomatia stricta* Saporta, *Ex. Anal.* In Heer O, *Recherches sur le climat et la végétation du pays tertiaire*, P.161 (1861a).
62. *Lomatia swantevitii* Unger, *Foss. Fl. Sotzka*, Pp. 40[170], Tab. XXI [XLII], Fig. 1–2 (1850b), as ‘Swanteviti’.
63. *Lomatia synapheifolia* Unger, *Foss. Fl. Sotzka*, Pp. 40–41[170–1], Tab. XXI [XLII], Fig. 1 (1850b), as ‘*Synaphaeafolia*’.
64. *Lomatia terminalis* Lesq., *Rep. U.S. Geol. Geogr. Surv. Terr.* Vol. 8: 166, Pl. XLIII Figs. 2–7 (1883).
65. *Lomatia torreyi* (Lesq.) Ettingsh., *Mem. Geol. Surv. N.S.W., Palaeont. Mem.* 2: 45 (1888a), as ‘Torreyi’. Basionym: *Myrica torreyi* Lesq., *Rep. (Annual) U.S. Geol. Geogr. Surv. Territ.* 6: 392 (1873).
66. *Lomatia tripartita* Lesq., *Rep. U.S. Geol. Surv. Terr.* Vol. 8: 166, Pl. XLIII Figs. 8–10 (1883).
67. *Lomatia tusca* (C.T.Gaudin & Strozzi) Schimp., *Traité de paléontologie végétale* 3: 757 (1874). Basionym: *Dryandroides tusca* C.T.Gaudin & Strozzi, *N. Denkschr. Schweiz. Naturf. Ges.* 16: 37, tab. XII, f.12 (1858).
68. *Lomatia ucrainica* Schmalh. *Palaeont. Abh.* 1(4): 308[26], Taf. VIII[XXXV], Fig. 29–32 (1883).
69. *Lomatia xeromorpha* R.J.Carp. & R.S.Hill, *Rev. Palaeobot. Palyn.* 56: 143–148 (1988).

#### 17. *Manglesia* Endl.

1. *Manglesia synapheifolia* A.Massal., *Syll. Pl. Foss. Veneti* P. 67 (1859b), as ‘*synaphaeafolia*’. *Nomen nudum*. **Comments:** *Manglesia* Endl. was synonymised under *Grevillea* R.Br. ex Knight by C.F. Meisner (1845, P. 535).

#### 18. *Orites* R.Br.

1. *Orites bivascularis* (E.W.Berry) E.J.Romero, Dibbern & Gandolfo, *Congreso Argentino de Paleontologia y Bioestratigrafia, Simposio* Pp.125–130 (1988). Basionym: *Carpolithus bivascularis* E.W.Berry, *Johns Hopkins Univ. Stud. Geol.* 6: 232, Pl. IV, Figs 2, 3 (1925).
2. *Orites excelsoides* R.J.Carp. & G.J.Jord., *Austral. Syst. Bot.* 10: 560, Figs 13–16 (1997).
3. *Orites milliganioides* G.J.Jord., R.J.Carp. & R.S.Hill, *Austral. Syst. Bot.* 11: 470–1, Figs 2–8 (1998), as ‘*milliganioides*’.

4. *Orites scleromorpha* G.J.Jord., R.J.Carp. & R.S.Hill, *Austral. Syst. Bot.* 11: 470–1, Figs 14–21 (1998).
5. *Orites truncata* G.J.Jord., *Bot. J. Linn. Soc.* 118: 30 (1995).

#### 19. *Persoonia* Sm.

1. *Persoonia cuneata* H.Deane, *Rec. Geol. Surv. Vic.*1(3): 213, pl. xx, figs. 11, 12 (1904).
2. *Persoonia cuspidata* Ettingsh., *Die Proteaceen der Vorwelt*, P. 11[719], Taf. 1, Fig. 8, 9 (1851a).
3. *Persoonia daphnes* Ettingsh., *Die Proteaceen der Vorwelt*, Pp. 10–11[718–719], Taf. 1, Fig. 6, 7 (1851a).
4. *Persoonia deperdita* A.Massal., *Pl. foss. nov. Veneti*, P. 20 (1853).
5. *Persoonia eocenica* Ettingsh., *Proc. Roy. Soc. London* 30: 233 (1880). *Nomen nudum*.
6. *Persoonia euboea* Unger, *Kaiserl. Akad. Wiss. Wien, Math. Naturwiss. Kl., Denkschr.* 27: 57, Tab. VIII, f. 13 (1867).
7. *Persoonia firma* Heer, *Fl. Tert. Helv.* II: 95, Taf. XCVII, Fig. 24 (1856).
8. *Persoonia heerii* Pilar, *Fl. Foss. Sused.* 72, Pl.XIII, Fig. 16 (1883). *Persoonia heerii* Engelhardt, *Abh. Senck. Natur. Ges.* 29: 356–7 (1911), as ‘Heeri’. *Nomen illeg. nec Pilar* (1883).
9. *Persoonia hemiphylla* A.Massal., *Syll. pl. foss. Veneti*, P. 67 (1859b). *Nomen nudum*.
10. *Persoonia incerta* A.Massal., *Pl. foss. nov. Veneti* P.19 (1853).
11. *Persoonia kunzei* Heer, *Abh. Naturwiss. Ver. Sachsen u. Thüringen* 2: 9[415] Taf. VIII, Fig. 22 (1861b), as ‘kunzii’.
12. *Persoonia laurina* Heer, *Fl. Tert. Helv.* II: 95, Taf. XCVII, Fig. 25–28 (1856).  
*Nomen illegitimum nec Persoonia laurina* Pers., *Synopsis plantarum...* 1: 118 (1805).  
**Comment:** This is unlikely to be a *Persoonia*. Accordingly, a replacement name is not given.
13. *Persoonia laurinoidea* Engelh., *Wissenschaftliche Mitteilungen aus Bosnien und der Hercegowina* 9: 401, Taf. XCVII, Fig. 10, 11 (1904).
14. *Persoonia lesquereuxii* Knowlt., *U.S. Geol. Surv., Mon.* 17, 1891: 89, pl. xx, f. 10–12 (1892), as ‘Lesquereuxii’  
13a. var. *lesquereuxii*, Autonym: (1919) E.W.Berry.  
13b. var. *minor* E.W.Berry, *Upper cret. floras eastern gulf Tenness., Mississ., Alab., and Georgia.* P. 86 (1919).
15. *Persoonia limonensis* C.T.Gaudin & Strozzi, *N. Denkschr. Schweiz. Naturf. Ges.* 20: 17, Pl. I, fig. 10 (1864).
16. *Persoonia murrayi* Ettingsh., *Kaiserl. Akad. Wiss. Wien, Math. Naturwiss. Kl., Denkschr.* 53: 110, Taf. XI, Fig. 16, 17, 17a (1887a), as ‘Murrayi’.
17. *Persoonia myrtillus* Ettingsh., *Die Proteaceen der Vorwelt*, Pp. 11–12[719–20], Taf.1. Fig. 10–14 (1851a).
18. *Persoonia oviformis* Lesq., *Amer. J. Sci. Arts* 2nd ser. vol. 27: 361 (1859).
19. *Persoonia parvifolia* P.Friedrich, *Abh. geol. Specialk. Preuss u. Thüring.*, Vol. 4: 176–77 [334–335], Taf. 21, Fig. 14, 14a (1883).
20. *Persoonia radobojana* Unger, *Kaiserl. Akad. Wiss. Wien, Math. Naturwiss. Kl., Denkschr.* 19: 19, Taf. 7, figs 1, 2 (1861b).
21. *Persoonia scarabelliana* C.T.Gaudin & Strozzi, *N. Denkschr. Schweiz. Naturf. Ges.* 20: 5 (1864). *Nomen nudum*.
22. *Persoonia spatulata* Hollick, *Monogr.* 26, *U.S. Geol. Surv.* 1895: 71–2, Pl. XLII, Fig. 14 (1896).  
**Comments:** *Persoonia spathulata* R.Br. (1810) might be regarded as a homonym, rendering Hollick’s name illegitimate. However, the orthography is uncertain.
23. *Persoonia subrigida* Casp., *Sitzungs.* Seite 17: S20 (1872).
24. *Persoonia tusca* C.T. Gaudin & Strozzi, *N. Denkschr. Schweiz. Naturf. Ges.* 20: 16–17, Pl. I, fig. 13, 14 (1864).
25. *Persoonia veneta* A.Massal., *Pl. foss. nov. Veneti* P.19 (1853).
26. *Persoonia vicetina* A.Massal., *Pl. foss. nov. Veneti* P.19 (1853).

**20. *Petrophile* R.Br. ex Knight**

1. *Petrophila coryloides* J.B.Simpson, *Trans. Roy. Soc. Edinburgh* 64(16): 438, Pl. XI, fig. 3 (1961).
2. *Petrophila scotica* J.B.Simpson, *Trans. Roy. Soc. Edinburgh* 64(16): 437–8, Pl. XI, figs 1, 2 (1961).  
**Comments:** *Petrophila* R.Br is considered to be an orthographic variant of *Petrophile* R.Br. ex Knight and the fossil names in *Petrophila* are all regarded as occupied in the genus *Petrophile*.

**21. *Protea* L.**

1. *Protea bilinica* Ettingsh., *Kaiserl. Akad. Wiss. Wien, Math. Naturwiss. Kl., Denkschr.* 28: 202, Taf. XXXV, fig. 1 (1868a).
2. *Protea curionii* A.Massal., *Synop. Fl. foss. Senog.* P. 67, Tab. 10–11, fig. 1; Tab. 45. fig.11 (1858a), as ‘Curionii’.
3. *Protea europaea* Ettingsh., *Kaiserl. Akad. Wiss. Wien, Math. Naturwiss. Kl., Denkschr.* 54: 313, Taf. IV, Fig. 12–14, 14a (1888b).
4. *Protea giossa* A.Massal., *Syll. pl. foss. Veneti*, P. 68 (1859b). *Nomen nudum*.
5. *Protea graeca* Unger, *Kaiserl. Akad. Wiss. Wien, Math. Naturwiss. Kl., Denkschr.* 27: 57, Tab. VIII, fig. 12 (1867).
6. *Protea haidingeri* Ettingsh., *Sitzungs. d. K. Akad. Wiss. Classe* 55: 254, Taf. II, Fig. 12 (1867b), as ‘Haidingeri’.
7. *Protea linguifolia* P.Wessel & C.O.Weber, *Palaeontographica* 4: 145, t. XXVI, f. 1 (1855), as ‘linguaefolia’.
8. *Protea lingulata* Heer, *Foss. Fl. Helvet.* II: 95, Taf. XCV11, Fig. 19–22 (1856).
9. *Protea malpighiacea* A.Massal., *Syll. pl. foss. Veneti*, P. 68 (1859b). *Nomen nudum*.
10. *Protea pimeloides* A.Massal. *Syll. pl. foss. Veneti*, P. 68 (1859b). *Nomen nudum*.
11. *Protea polymorpha* A.Massal. *Syll. pl. foss. Veneti*, P. 68 (1859b).  
11a. Var. *polymorpha*, *Syll. pl. foss. Veneti*, P. 68 (1859b). *Autonym. Nomen nudum*.  
11b. Var. *hyophorbioides* A.Massal., *Syll. pl. foss. Veneti*, P. 68 (1859b). *Nomen nudum*. *Basionym:* *Carpolithes hyophorbioides* A.Massal., *Sopra le piante fossili dei terrini del Vicentino*, P. 230 (1851).  
11c. Var. *deformis* A.Massal. *Syll. pl. foss. Veneti*, P. 68 (1859b). *Nomen nudum*.  
11d. Var. *orbis* A.Massal., *Syll. pl. foss. Veneti*, P. 68 (1859b). *Nomen nudum*.  
11e. Var. *elliptica* A.Massal., *Syll. pl. foss. Veneti*, P. 68 (1859b). *Nomen nudum*.  
11f. Var. *parvula* A.Massal., *Syll. pl. foss. Veneti*, P. 68 (1859b). *Nomen nudum*.

**22. *Roupala* Aubl.**

1. *Rhopala aneimiifolia* Heer, *Fl. Tert. Helv.* 3, Part 6: 188–189, Taf. CLIII, Fig. 35 (1857), as ‘aneimiaefolia’.
2. *Rhopala ficifolia* A.Massal., *Syll. pl. foss. Veneti*, P. 61 (1859b). *Nomen nudum*.
3. *Rhopala helicterifolia* A.Massal., *Syll. pl. foss. Veneti*, P. 64 (1859b), as ‘helicteraefolia’. *Nomen nudum*.
4. *Rhopala parryi* Ettingsh., *Kaiserl. Akad. Wiss. Wien, Math. Naturwiss. Kl., Denkschr.* 53: 112, Taf. XII, Fig. 7, 7a (1887a), as ‘Parryi’.
5. *Roupala patagonica* Durango de Cabrera & E.J.Romero, *Paleontol. Biostratigr. Abstr.* 3: 121–124 (1988).
6. *Rhopala primaeva* Ettingsh., *Sitzungs. d. K. Akad. Wiss. Classe* 55: 255, Taf. III, fig. 5 (1867).
7. *Rhopala proteifolia* A.Massal., *Syll. pl. foss. Veneti*, P. 64 (1859b), as ‘proteaefolia’. *Nomen nudum*.
8. *Rhopala sapindifolia* Ettingsh., *Kaiserl. Akad. Wiss. Wien, Math. Naturwiss. Kl., Denkschr.* 53: 111– 112, Pl. XII, Figs 8–10, 10 a–c (1887a). **Comments:** *Rhopala* Schreb. is considered to be an orthographic variant of *Roupala* Aublet (1775) and the fossil names in *Rhopala* are all regarded as occupied in the genus *Roupala*.

**23. *Stenocarpus* R.Br.**

1. *Stenocarpus salignoides* P.Friedrich, *Abh. geol. Specialk. Preuss u. Thüring.*, vol. 4: 175–176 [333– 334], Taf. 21, Fig. 1–3 (1883).

**24. *Telopea* R.Br.**

1. *Telopea strahanensis* G.J.Jord., *Bot. J. Linn. Soc.* 118: 30 (1995).

## Part 2. Ettingshausen's extant Proteaceae.

In 1858, C.R. von Ettingshausen published a paper entitled *Die Blattsketele der Apetalen, eine Vorarbeit zur Interpretation der fossilen Pflanzenreste* [The leaves of plants without flowers. A preliminary work on the interpretation of fossil plant remains] in Volume 15 of the German-language scientific journal *Denkschriften der Kaiserlichen Akademie der Wissenschaften, Mathematische-naturwissenschaftliche Classe*. In this work, Ettingshausen attempted to classify the venation of leaves utilising species in cultivation and described species in a way that assisted the identification of fossil leaf imprints. In the process he introduced many new names in a wide range of botanical families. At least some of these names have erroneously been treated as fossils by earlier researchers.

1. ***Anadenia heterophylla*** ([A.Cunn. ex] R.Br.) Ettingsh., *Kaiserl. Akad. Wiss. Wien, Math. Naturwiss. Kl., Denkschr.* 15: 254, 271, Taf. XXXVI, Figs. 7, 8 (1858b).  
**Basionym:** *Grevillea heterophylla* A.Cunn. ex R.Br., *Prodr. Suppl. Prot. Nov.*: 24 (1830).  
**Type:** [Australia] 'Neuholland'. The illustrations cited in the protologue serve as the type.  
**Discussion:** Nowhere does Ettingshausen indicate that this species is in cultivation. Robert Brown, whom Ettingshausen cited as the sole authority for this name, did not describe any plant with the binomial *Anadenia heterophylla*. Presumably Ettingshausen was referring to *Grevillea heterophylla* A.Cunn. ex R.Br. (1830) which is a synonym of *Grevillea refracta* R.Br. subsp. *refracta*. Given that the genus *Anadenia* was erected for species without a nectary, and that *G. refracta* has a particularly conspicuous nectary, there is great uncertainty about the application of the name here. It is also uncertain whether Ettingshausen was describing a plant in cultivation or a dried specimen. The leaf illustrations in Ettingshausen's treatment are not of *G. refracta* but of a different species (not identifiable in the absence of flowers), possibly a *Grevillea* species, but, in any event, one to which Ettingshausen has misapplied Brown's name.
2. ***Banksia rohanii*** Ettingsh., as 'Rohani', *Kaiserl. Akad. Wiss. Wien, Math. Naturwiss. Kl., Denkschr.* 15: 266, 272 Taf. 45, Fig. 6 with caption 'Banksia Rohani cult.' (1858b).  
**Type:** [Australia] 'Neuholland'. Taf. 45, Fig. 6. The illustration cited in the protologue serves as the type.  
**Discussion:** Apart from the illustration of a leaf from a plant in cultivation, there is no description for *B. rohanii*, which Ettingshausen cited as a comparator. At this reference, Ettingshausen compared the venation of *B. rohanii* and *B. attenuata* R.Br. with those of *B. serrata* and *B. aemula* by describing the intramarginal leaf vein of the former two as closer to the edge than the latter two. *B. rohanii* is an oblique reference, here treated as insufficiently described.
3. ***Grevillea repanda*** Zahlbr. ex Ettingsh. *Kaiserl. Akad. Wiss. Wien, Math. Naturwiss. Kl., Denkschr.* 15: 256, 272, Taf. XXXVII, Figs. 20–23 (1858b).  
**Type:** [Australia] 'Neuholland'. The illustrations cited in the protologue serve as the type.  
**Discussion:** The detailed description by Ettingshausen of leaf venation, together with the illustrations, effectively validate the name of *Grevillea repanda*. Ettingshausen gives 'Zahlbr.' as the authority of the name. Ettingshausen's attribution must refer to J.B Zahlbruckner (1782–1851). The only work attributed to J. Zahlbruckner by Stafleu FA et al. (Zahlbruckner 1832) contains no reference to this species. Meisner (1856) makes no reference to it. It must therefore be assumed that the species has not previously been published. The leaf illustrations with Ettingshausen's description do not immediately suggest a known species in that genus. Accordingly, the name must be treated as a name of uncertain application.
4. ***Manglesia trilobata*** Hort. ex Ettingsh., *Kaiserl. Akad. Wiss. Wien, Math. Naturwiss. Kl., Denkschr.* 15: 254, 271, Taf. XXXVI, Figs. 1–5 (1858b).  
**Type:** [Austria] 'Cultivirt im k. k. Hofgarten zu Schönbrunn.' [Cultivated at the Imperial Court of Schönbrunn]. The illustrations cited in the protologue serve as the type.  
**Discussion:** The extensive gardens at Schönbrunn Palace, Austria were the source of the cultivated plant, the leaf venation of which was extensively described by Ettingshausen as *Manglesia trilobata*. The figures in the illustration suggest it as a specimen of *Grevillea manglesii* (R.Graham) Planch., the leaves of which are similarly variable in shape, and glabrous. According to Olde & Marriott (1995, p. 15), this species was in cultivation in Europe from 1854, as *Grevillea glabrata* Hort. or *Manglesia glabrata* Hort. There is a resemblance in shape to the hairy leaves of *Grevillea vestita* (Endl.) Meisn., but, unless it can be established that hairs were omitted purposely from the illustration, *Grevillea trilobata* is almost certainly a synonym of *Grevillea manglesii* subsp. *manglesii*.

5. ***Hakea salisburiifolia*** H. Hügel ex Ettingsh., as '*salisburiaefolia*', *Kaiserl. Akad. Wiss. Math.-Naturwiss., Denkschr. Kl.* 15: 184, 243, 259, 272, t. 40, f. 6 (1858).  
**Type:** [Australia] 'Neuholland'. The illustration cited in the protologue serves as the type until the holotype can be located.  
**Discussion:** Ettingshausen, like Endlicher (1837, 1839), has here described a plant from the once extensive collection of Carl Hügel, whose garden at Hietzing near Vienna was the source of many Australian plants in Europe. In the protologue of his new species, Ettingshausen made a comparison with *Hakea baxteri* R.Br., differentiating it from his new species by its sparser and less prominent tertiary veins and its leaf texture, among other trivial differences in the venation. A discussion on the taxonomic basis separating the two species put forward by Ettingshausen is outside the scope of this work but comparisons utilising venation prominence have not contributed to subsequent taxonomic treatments. The newly described species is therefore here treated as a likely synonym of *Hakea baxteri* R.Br., with which Ettingshausen observed its affinity, and illustrated its similarity in the figure accompanying the protologue. *H. salisburiifolia* was treated by Chapman, *Australian Plant Name Index 1518* (1991), as a fossil species. However, according to the authority cited in the description, *H. salisburiifolia* originated with Hügel (H[ort]. Hüg). The caption for Ettingshausen's figure of this species (Tafel XL, fig. 6) gives the authority of *H. salisburiifolia* as H.B.S., (possibly an abbreviation for Hort. Bot. Schönbrunn). It was also noted (*ibid.*, P. 272) that the illustration was figured from a specimen 'Cultivirt im genannten Hofgarten', [Cultivated in the court garden] almost certainly that at Schönbrunn. The plant was possibly raised originally from seed collected by Hügel himself when he visited Albany, Western Australia in 1834 or was sourced from England where it was introduced in 1836. Richard Salisbury, a renowned but controversial English botanist and horticulturist for whom *Hakea salisburiifolia* appears to be named, was the first Englishman to describe *Hakea* species, as *Conchium*, in 1798.
6. ***Lambertia floribunda*** H.B.S. ex Ettingsh., *Kaiserl. Akad. Wiss. Math.-Naturwiss. Kl., Denkschr.* 15: 260, t. 39, f. 7–9 (1858b).  
**Type:** [Australia] 'Neuholland'. The illustrations cited in the protologue serve as the type.  
**Discussion:** Ettingshausen treated this extant species with a taxonomic diagnosis and a discussion in which he acknowledged identity with *L. formosa* in its primary venation pattern but difference in its less distinct and more acutely angled secondary veins. A discussion on the validity of the taxonomic argument mounted is beyond the purpose of this work. The initials H.B.S., cited as the authority, are an uncertain abbreviation, possibly Hort. Bot. Schönbrunn, where a specimen of the described species may have been examined. Nowhere else in the main text of Ettingshausen's paper are these letters used as the nomenclatural authority but they are found in the captions for the figures (*ibid.*, Pp. 269– 272) for many species including *Coccoloba fagifolia*, *Enkea prunifolia*, *E. media*, *Ficus angustifolia*, *F. cerasifolia*, *F. cuspidata*, *F. denticulata*, *F. hispida*, *F. montana*, *F. nereifolia*, *F. populiformis*, *Hakea salisburiifolia* (sic!), and *Myrica caroliniana*. In the taxonomic treatment of most of these species, Ettingshausen cited no authority at all but gives 'Cultivirt im k. k. Hofgarten zu Schönbrunn' as the source of his material.
7. ***Protea dryandroides*** Hügel ex Ettingshausen, *Kaiserl. Akad. Wiss. Wien, Math. Naturwiss. Kl., Denkschr.* 15: 248–9, 271, Taf. XXXIV, Figs. 2–4 (1858b).  
**Type:** Südafrika. Cultivirt im genannten Hofgarten.  
**Discussion:** It is likely that Ettingshausen assumed this and other species originating from Hügel's collection and garden had already been described. However, it is here treated as an undescribed species, not necessarily *Protea*, of uncertain application.
8. ***Protea grandis*** Hort Hügel ex Ettingshausen, *Kaiserl. Akad. Wiss. Wien, Math. Naturwiss. Kl., Denkschr.* 15: 249, 271, Taf. XXXV, Fig. 1 (1858b).  
**Type:** Südafrika. Cultivirt im genannten Hofgarten. The figures cited in the protologue serve as the type.  
**Discussion:** C.F. Meisner (1856, P. 247) treated *Protea grandis* as *nomen nudum*, along with 43 species 'non descriptae, plurimae versimiliter ad alia genera pertinentes.' Ettingshausen (1858b) however gives a valid description based on the leaf venation, but insufficient to apply the name with certainty to another living species. It is here treated as a name of uncertain application, not necessarily in the genus *Protea*. It seems clear that the name was used colloquially in horticulture for a plant that originally came from Hügel's garden.

Table 1. A list of non-extant fossil genera.

	Genus	Authority	Published	Comments
1	<i>Aplectotremas</i>	Serlin	1982	
2	<i>Athertonioides</i>	A.C. Rozenfelds	1990	Syn. <i>Wilkinsonia</i>
3	<i>Banksicarpus</i>	Velen. & Viniklar	1927	
4	<i>Banksieaeafolia</i>	R.J.Carp., G.J.Jord. & R.S.Hill	2016	
5	<i>Banksieaeiformis</i>	R.S.Hill & Christophel	1988	
6	<i>Banksieaeidites</i>	Cookson	1950	
7	<i>Banksieaeophyllum</i>	Cookson	1950	
8	<i>Banksioxylon</i>	Crié	1889	
9	<i>Banksiphyllum</i>	Velen.	1889	
10	<i>Banksites</i>	Saporta	1861	
11	<i>Beaupreadites</i>	Cookson ex Couper	1950	
12	<i>Celyphina</i>	F. Muell.	1874b	
13	<i>Conchocarpa</i>	F. Muell.	1871	
14	<i>Conchotheca</i>	F. Muell.	1871	
15	<i>Conospermites</i>	Ettingsh.	1867	
16	<i>Conospermophyllum</i>	Velen.	1889	
17	<i>Constantinium</i>	Unger	1863	
18	<i>Cranwellipolis</i>	ARH Martin & WK Harris	1974	
19	<i>Dorotoxylon</i>	Nishida, Nishida & Ohsawa	1989	
20	<i>Dryandroides</i>	Unger	1850	
21	<i>Dryandrophyllum</i>	Velen.	1889	
22	<i>Echitriporites</i>	Van der Hammen	1956	
23	<i>Embothriophyllum</i>	Dusen	1899	
24	<i>Embothriopsis</i>	Hollick	1912	
25	<i>Embothrites</i>	Unger	1850	
26	<i>Euproteaciphyllum</i>	GJ Jord., Carp., & RS Hill	1998	
27	<i>Eureka</i>	Dettmann & Clifford	2010	
28	<i>Granodiporites</i>	CP Varma & MS Rawat	1963	<i>Beaupreadites</i> , fide Kalgutkar (2000)
29	<i>Grevilleophyllum</i>	Velen.	1889	
30	<i>Hakeadites</i>	AM Khan	1976	
31	<i>Hakeites</i>	Saporta	1861	
32	<i>Knightiophyllum</i>	Ettingsh.	1887	
	<i>Knightiophyllum</i>	E.W.Berry	1916	<i>Nomen illegitimum</i>
33	<i>Knightites</i>	Saporta	1861	
34	<i>Leucadendrites</i>	Saporta	1862	
35	<i>Leucospermites</i>	Saporta	1861	
36	<i>Lewalanipollis</i>	ME Dettmann & D Jarzen	1996	
37	<i>Lomatites</i>	Saporta	1861	
38	<i>Macclintockia</i>	Heer	1866	
39	<i>Maslinia</i>	D.T. Blackburn	1981	
40	<i>Musgraveinanthus</i>	Christophel	1984	
41	<i>Myricophyllum</i>	Saporta	1862	
42	<i>Palaeodendron</i>	Saporta	1862	
43	<i>Palibinia</i>	Korovin	1932	
44	<i>Parafatsia</i>	Blackburn	1981	
45	<i>Peninsulapollis</i>	Dettmann & Jarzen	1988	
46	<i>Persooniaeaphyllum</i>	R.,J. Carpenter	2010	
47	<i>Petrophiloides</i>	Bowerb.	1840	
48	<i>Propylipollis</i>	ARH Martin & WK Harris	1974	
49	<i>Proteacidites</i>	Cookson	1950	
50	<i>Proteaciphyllum</i>	MacGinitie	1974	
	<i>Proteaciphyllum</i>	Carp. & GJ Jord.	1997	<i>Nomen illegitimum</i> = <i>Euproteacyphyllum</i>
51	<i>Proteacites</i>	Caspary	1882	
52	<i>Proteaephyllum</i>	Fontaine	1889	
53	<i>Proteooides</i>	Ettingsh.	1851	
	<i>Proteoites</i>	Saporta	1872	<i>Nomen nudum</i> ; <i>Orth</i> var. = <i>Proteooides</i> Ettingsh.
54	<i>Proteophyllum</i>	Friedrich	1883	
55	<i>Proteopsis</i>	Velen.	1899	
56	<i>Proteotites</i>	Kuntze	1904	
57	<i>Proteoxylon</i>	Kräusel	1939	
58	<i>Rogersia</i>	Fontaine	1889	
59	<i>Rhopalophyllum</i>	Ettingsh.	1880	
60	<i>Rhopalospermites</i>	Saporta	1862	
61	<i>Scalarixylon</i>	RR Pujana	2007	
62	<i>Stenocarpites</i>	Brongn.	1861	
63	<i>Taurocephalus</i>	J.B. Simpson	1961	
64	<i>Triorites</i>	Couper	1953	
65	<i>Triporopollenites</i>	Pflug & Thomson	1953	
66	<i>Wilkinsonia</i>	F. Muell.	1879	
67	<i>Xylocaryon</i>	F. Muell.	1883	



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