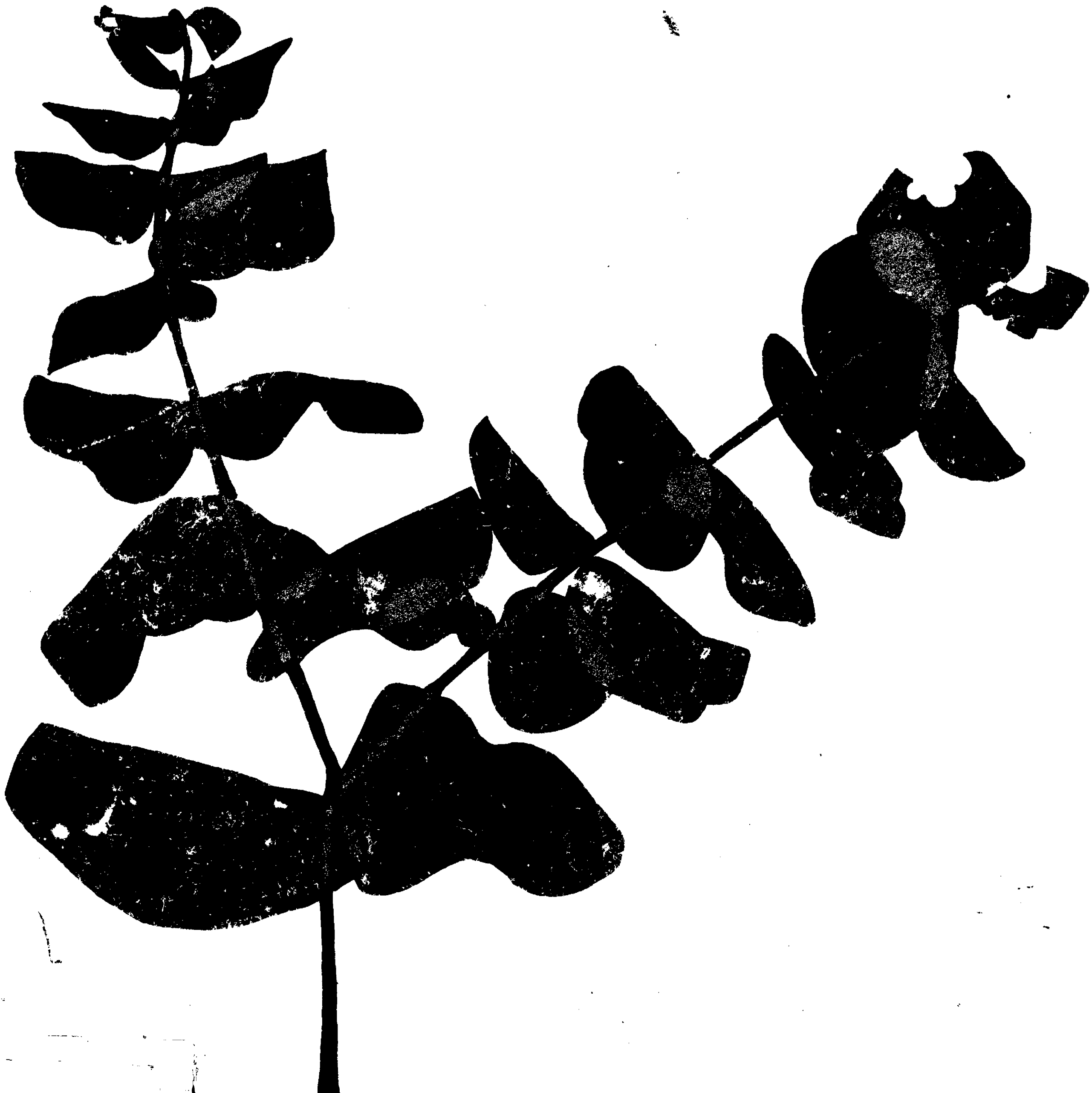
A Classification of the Eucalypts



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OF THE

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P R E F A C E

For more than twenty years we have felt the need to systematise the improvements in knowledge and understanding of *Eucalyptus*. Our association in this work had its genesis by a camp-fire in the Mallee of north-western Victoria in 1954. Resting after a day's fieldwork on eucalypts, we agreed to join forces and work towards the goal of a critically assessed and interpreted new classification. Since then many other workers have contributed, knowingly or unknowingly. Some have been our direct collaborators, others have worked independently or even in apparent competition, but all relevant findings and interpretations have been grist to the mill.

Fruition in the present form has perhaps been unconscionably slow in coming, but this is in fact not unfortunate, since some highly significant results, of our own and of others, are very recent. We have thus been able to improve the scheme and to make certain statements with a confidence impossible even two years ago.

Some features of our nomenclature are rather radical though in our view constructive and desirable, as is the newly devised coded classification. We hope that they will be received and assessed without prejudice.

Very many people have helped us over the years. Only a few names can be mentioned and we hope that the others - botanists, other scientists, foresters, gardeners, technicians, office workers, and the many who have generously assisted us in the field in all parts of Australia as well as overseas - will accept our gratitude. Special thanks are due to our immediate colleagues, in particular the late Erwin Gauba, Don F. Blaxell, Robert W. Boden, Barbara G. Briggs, M.I.H. (Ian) Brooker, O.R. (Mick) Byrne, George C. Chippendale, Robert B. Knox, Don J. McGillivray, Howard G. McKern, Percy B. Moore, Dugald M. Paton, James H. Webb, and Rudolf R. Willing. All have given information and/or valuable criticism or advice, but none is to be held responsible for the views expressed herein, which are our own. We thank warmly also Janette L. McDonald and Janet S. Bedford for so competently dealing with complex typing. The customary thanks to our wives, Wilma Pryor and Merle Johnson, is heartfelt indeed, for their tolerance of eucalyptomania and continued helpfulness and support.

L.D.P. and L.A.S.J.
Canberra and Sydney
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ABSTRACT

Pryor, L.D., and Johnson, L.A.S. (Dept. Bot., Aust. Nat. Univ., Canberra, and Roy. Bot. Gardens and Nat. Herb., Sydney). A CLASSIFICATION OF THE EUCALYPTS (Dept. Bot. Publ.), 102 pp., 1971.--A new classification is presented of all taxa of *Eucalyptus* (and *Angophora*) (Myrtaceae-Leptospermoideae), on the basis of studies from many disciplines and extensive field experience. This is not in the traditional revisionary form and formal nomenclatural innovations at the species and subspecies level will follow later. Infrageneric classification into subgenera, sections, series, and subseries follows a rationalised plan explicitly divorced from the traditional system embodied in the International Code of Botanical Nomenclature. This is accompanied by an equivalent and flexible system using 1- to 6-letter coded designations for taxa of the various ranks, which embodies the whole classificatory structure. There is a comprehensive index to specific and infraspecific names. Discussion covers the kinds of evidence used, the inflorescence, the operculum, the ovule, and the seed, as well as genetic behaviour, the range of variation-patterns found, and the case for recognition of segregate genera. Recognition of two (only) such genera (*Eucalyptus* s. str. and *Symphyomyrtus*) as proposed by some recent authors is considered oversimplified and contrary to the evidence. Although division into a number of genera may perhaps be desirable in the future, it seems best at present to consider all the eucalypts as constituting a single genus with eight subgenera. *Angophora* would logically be included as one of these but, to avoid possible future reversals, its generic status is not formally reduced at this stage.

1. GENERAL

1.1. Introduction

The large genus *Eucalyptus* has long been regarded as taxonomically difficult and, as in many other such groups, its taxonomic treatment is improved by amplifying traditional methods and adding others more recently developed. Although *Eucalyptus* is in one way now well known, several previously unknown species have in fact been found in recent years, even in the south-eastern parts of Australia. It is likely that relatively few taxa still await discovery as a result of exploration in botanically little-known areas. However, much remains to be achieved in the closer analysis of variation patterns and the assessment of relationships, whether phenetic or phyletic. Almost forty years have passed since Blakely's handbook "A Key to the Eucalypts" (1934) first appeared. The posthumous second and third editions of that work (Blakely 1955, 1965) are in no sense revisions but merely reprints with additions, and certainly do not represent current thought.

It is now desirable to draw up a classification incorporating the results of more recent study, drawing particularly upon information from the associated disciplines of genetics, ecology, and anatomy, as well as amplifying the study of morphology along traditional lines. It is too early to claim that enough information is available to permit the construction of a classification which will remain unchanged, for further study will undoubtedly lead to still more adjustments. Indeed, although classifications may be and should be improved, no perfect classification is definable (Johnson 1968). The following account, therefore, apart from incorporating the results of such study to date, indicates where uncertainties lie and where developments and adjustments are likely or needed in the future. Various sources of new information in such fields as chemotaxonomy (such as of the waxes, essential oils, polyphenols, proteins), biotic associations (such as host-specific insects), and anatomy (including wood and bark), are proving or will prove increasingly useful. Where the results of this information are already intelligible, they are taken into account in our arrangement; further work will serve to check the scheme and to clarify doubtful points.

1.2. Classifications - Old and New

Blakely's aim was to produce a "natural system". He expressed this intention by presenting, as he said, an arrangement "designed to place species in the most natural position....relative to one another". Blakely's work was called "A Key", and as such it is undoubtedly useful, but often not easily workable due to lack of logical contrasting of characters. It is also useful for its rather full descriptions (although these are in need of considerable revision), and its information on distribution, synonymy, and bibliography. It was intended also as a guide to Maiden's invaluable but diffuse "Critical Revision", though most users have neglected this, to their loss. Especially, however, it is a classification. It is in this last regard that Blakely's work was so valuable, since in good measure it achieved his stated main aim. It suffered, however, from a major defect inherited from the earliest days of the serious study of *Eucalyptus*. In devising his classification, Bentham (1867) used characters of the anther on which to base major infrageneric groups. Until and including Blakely's work, successive authors continued to accord considerable weight to features of this organ. Some of the least satisfactory parts of Blakely's work and some of the least satisfactory groupings arise from undue weighting of anther characters. In spite of this shortcoming he made distinct progress by expressing in a compact work the ideas developed by

Maiden and himself, in the form of the best classification of the genus proposed up to that time. In Maiden's "Critical Revision of the Genus *Eucalyptus*" (1903-1931), all the known taxa and their relationships were described and discussed in detail. Maiden also considered at length, and often with remarkable insight, the variation and significance of numerous characters. Unfortunately he died before he was able to synthesise his ideas and findings into a comprehensive scheme of classification.

Our approach to classification in general has been more agglomerative than divisive. Using characters from the various available sources, we have sought to group individuals, populations, and taxa at each level on the basis of features held in common. As stressed by Johnson (1968), this inevitably involves weighting of characters, either consciously or unconsciously, at various stages, whether a study is numerical or not. We have certainly paid more attention to those characters which show most stability and are least likely to be affected by local conditions or by special and perhaps relatively recent adaptation. We have not assumed any particular phylogeny and the classification is (non-numerical) phenetic, in that sense. Nevertheless, our underlying outlook is an evolutionary one, and this should be clearly understood. We would consider, for instance, that a group held to be polyphyletic should not be maintained. Moreover, we hope that, within the inevitable limitations, this classification will both throw light on and reflect phylogeny - and be improvable in this regard.

It is useful to consider the significance and nature of the taxonomic evidence derived from various sources, and also the variation patterns in *Eucalyptus* populations so far as they are at present understood. Fortunately, although Australia has been subject to vast changes due to the activity of man, particularly since European settlement, it still has as remnants, even in the most severely affected areas, enough of the original eucalypt populations to enable one to interpret or discern with some confidence what the original stands were like and to see clearly the patterns of variation associated with the range of habitats. Some parts of the continent, of course, still possess substantial areas of little affected eucalypt-dominated vegetation.

This publication is not intended as an exhaustive literature review (which might only serve to confuse, in any case!) and only those works will be cited which are immediately relevant to the ensuing discussion. Much other published and unpublished work by various authors and ourselves has been considered in developing our ideas and the classification.

1.3. Taxonomic Evidence

1.3.1. Taxonomic Evidence from Morphology and Anatomy

1.3.1.1. The Inflorescence

Blakely's and all previous work was deficient in understanding of the essential structure of the *Eucalyptus* inflorescence. The inflorescence in Myrtaceae is fundamentally dichasially cymose, though in the reduced and condensed derivatives as found in such genera as *Leptospermum* or *Callistemon* it is usually described as quite otherwise, thus obscuring the actual relationships. In *Eucalyptus* there are various degrees of expansion, aggregation, or compaction of the total inflorescence. The *unit* inflorescence is generally called an "umbel", though it is actually a condensed dichasium, in which the intermediate axes are totally reduced and some branches may be absent so that later degrees of branching are monochasial.

Recognition of this fact was surprisingly late in coming. Each of us became aware of it independently early in our investigations, with consequent illumination of previously obscure points of description and affinity. Once this fundamental structure is discerned, it allows more precision in unit inflorescence description, particularly in those species which consistently have a seven-flowered cluster, and this in turn aids in taxonomic assignment and in interpreting certain hybrid situations.

The first published clarification (Pryor 1954) of the basic dichasial nature of the *Eucalyptus* inflorescence arose in fact from a study of inheritance of inflorescence characters. In a valuable study by Carr and Carr (1959a), additional details of the inflorescence and floral bracts were interpreted, together with certain more specialised features. Their discussion took insufficient account of comparison with inflorescence conditions in the Myrtaceae generally, and the suggestion of a build-up from a three- to a many-flowered condition is not supported by comparative morphology of the family (see also Moggi 1963). Ontogeny considered in comparative isolation can be an unsatisfactory guide to phylogeny, as pointed out many times by comparative morphologists and evolutionists.

The usual number of buds in each flower-cluster is often taxonomically useful, and for the lower numbers is generally consistent. In general, those species or subspecies with one flower in each cluster seem to depart from this condition only when hybrid (or in intermediate stages of a cline). The same is largely true of those with three or seven flowers, but there is at times some departure from consistency. In those species with flower numbers greater than seven, there is frequently more than one number in any one population or even one individual, although a particular number usually predominates in cases of fifteen or less (11 and 15 are most usual, representing partly or completely symmetrical branching).

Clinal and other geographic variation occurs in certain species, and these usually exhibit fairly consistent trends in flower number, although intrapopulation variation is found at times. For example, in *MATES *E. coccifera* on Mount Wellington, Tasmania, there is considerable mixture of three- and seven-flowered clusters both within and between individual trees in the stands. Some other populations of *E. coccifera* are much more uniformly seven-flowered.

Whatever the flower number, its accurate determination must take account of misleading apparent variation due to suppression after bud initiation or to accidental losses. Further, in some species the apparent single inflorescences are in fact compound, consisting of a number of unit inflorescences and representing condensed inflorescence-bearing shoots. These can be recognised, with due care, by their branching patterns. Cases occur in B subgenus *Blakella* and in such species of E subgenus *Eudesmia* as EAACM *E. jucunda* and EAADE *E. gamophylla*.

Thus any statement that a particular species is exclusively one-, three-, or seven-flowered must be taken with some reserve since, even in those cases where this is highly consistent, intensive population sampling may reveal some departures from the condition.

Another reason for departure from consistency is hybrid influence. This is clearly shown in the naturally occurring SPIFE *E. cypellocarpa* x SPIKK *viminalis*, SNEEF *E. blakelyi* x SPINU *cinerea*, SPEAG *E. aggregata* x SPINF *rubida*, and many others, as well as by the manipulated SPIFI *E. maidenii* x SPINF *rubida* and SECAB *E. grandis* x SPINQ *pulverulenta*. In this last combination considerable detail of inheritance of inflorescence features has been derived from

*The coded designations for taxa used throughout this text are explained below (2.1.8.). They will facilitate reference to the position of the taxon concerned in the Table of Classification (2.3.), and indicate at a glance at what level any two taxa are placed in a common higher taxon.

the F_2 populations (Hartley 1965).

Some discussion of this situation is necessary since published work tends to understate (as in the case of Blakely) or exaggerate the consistency of the inflorescence.

One example is illustrative of correct but misleading observation: Thorough examination of SNEEP *E. camaldulensis* shows it to be a highly consistently seven-flowered species in which very few individuals depart from this condition. This is contrary to the impression gained from the report of Carr and Carr (1959a) who describe for the species a quite complex and perhaps unique inflorescence. They say "this complexity has been observed in inflorescence buds from different trees in different localities in Victoria and also in material collected in Queensland and New South Wales". We have seen such inflorescences but rarely, in particular in a few trees in a natural stand at Narrandera, N.S.W., and in a tree, probably planted, on the campus of the University of Melbourne. In some hundreds of field samplings over several years in Western Australia, the Northern Territory, South Australia, Victoria, New South Wales, and Queensland, and in the examination of the large suite of specimens in the National Herbarium of New South Wales, we have found all geographical and morphological variants of *E. camaldulensis* to be almost entirely seven-flowered.

The precise frequency and nature of occurrence in *E. camaldulensis* of the complex inflorescence described by Carr and Carr can be determined only after intensive sampling, but without doubt it is quite unusual and perhaps very rare. It has not been reported in related species of the "Red Gum" group (SN section *Exsertaria*) and may be reasonably regarded as due to abnormal branching of the inflorescence primordia. In fact various complexities in inflorescences are seen from time to time in many species, such as the position of a single bud in a flower cluster being occupied by a complete additional inflorescence. Some of the cases verge on the teratological.

To continue the Red Gum example, we find that SNEEP *E. camaldulensis*, SNEEB *E. tereticornis*, and SNEEC *E. glaucina* have almost exclusively seven flowers, SNEEF *E. blakelyi* commonly has seven or eleven, and SNEEA *E. amplifolia* usually has eleven or fifteen but sometimes more. The future may provide a more precise statistical statement of the variation within and between individuals and populations, as well as an analysis of its determining factors.

Clearly the study of exomorphology itself - the basis of traditional systematics - is by no means fully explored and improvements in classification are continually made possible even by work in this field alone.

1.3.1.2. Opercular Structures

Traditionally, the presence of "a floral operculum" is one of the characters by which *Eucalyptus* is distinguished from many other genera (but not all) within the family. The opercular structures have long been considered to be derived by (phylogenetic) fusion of the perianth members. Their nature has been further elucidated by both exomorphological and anatomical study, upon which further publication is still to be expected.

The "operculum" is in fact often a double structure - a feature easily appreciated in some species where the outer operculum is retained until shortly before anthesis, when it falls as an outer cap just before the inner one is shed and the flower expands; in other species the outer operculum can be discerned as a small cap shed as an entire structure (sometimes extremely) early in the development of the bud or fragmenting into four small, usually caducous, segments with their edges closely appressed but not actually fused. These conditions apply in B subgenus *Blakella*, CC subgenus *Corymbia* section *Ochraria*, I subgenus *Idiogenes* (outer segments more or less free), and S subgenus *Symphyomyrtus* (except those four sections of SU section *Adnataria* listed below). In some other species the two opercula are separable only with care or not at all (except by anatomical investigation) and fall together at anthesis. This is the case in Red Bloodwoods of CA subgenus *Corymbia* section *Rufaria* and in some Boxes and Ironbarks of SU subgenus *Symphyomyrtus* section *Adnataria* (the series SUJ *Ochrophloiae*, SUL *Moluccanae*, SUN *Odoratae*, and SUX *Melliodorae*). In still other species only one operculum is found and this in some (most of EA subgenus *Eudesmia* section *Quadraria*, and G subgenus *Gaubaea*) is accompanied by four outer separate teeth which are never united into a fused structure and do not abscind or fall away, though they may fail to keep pace with the growth of the rest of the bud. In a small group (EF subgenus *Eudesmia* section *Apicaria*), and to a varying extent in subseries EAAB *Ebbanoensinae* and EAAC *Jucundinae* of section *Quadraria*, the outer teeth are carried to the apex by intercalary growth of the (fused)base of the operculum. In a substantial group no trace at all has been reported of a discernible second structure. This is the case in M subgenus *Monocalyptus*, consisting of the single section MA *Renantheria* (= *Eucalyptus* sensu strictissimo).

When two opercula are present, the outer and inner are interpreted as homologous respectively with the sepaline and petaline whorls of other Myrtaceous flowers. When four teeth and one operculum are found they are interpreted respectively as a calyx of free sepals and a corolla of fused petals. An earlier suggestion that the teeth are bracts and not sepals is untenable on grounds of comparative study of Myrtaceous inflorescences. Where only one operculum is evident its morphological nature has until recently been undecided.

Carr and Carr (1963) claimed that IAA:A *E. cloëziana*, as well as the *"Renantherae"* (= M subgenus *Monocalyptus* of our treatment) exhibited the unioperculate condition. The evidence from *E. cloëziana* (Pryor, Johnson, Whitecross, and McGillivray 1967) is consistent with the view that the operculum is corolline in this species, and minute separate caducous sepals do occur in the early ontogeny of the bud at a stage apparently overlooked by Carr and Carr. Later (1968) those authors associated *E. cloëziana* with their group corresponding to our EAAB, EAAC, and EF (see above), which its opercular condition manifestly does not support.

For *Monocalyptus* alternative views were (1) that the (free) calyx was lost in phylogeny, leaving a single corolline operculum (this would be equivalent to the operculum of EA *Eudesmia* section *Quadraria* but with the calyx entirely suppressed in development); (2) that the corolline (inner) whorl was completely suppressed, leaving only a fused calycine whorl as the operculum; and (3) that the two whorls are fused into one, perhaps with loss of anatomical traces of derivation (unlike, say, SUX *Symphyomyrtus* series *Melliodorae* in which the apparently single operculum is anatomically resolvable into two). The first and the last of these hypotheses (which have been thought to be supported by various studies and interpretations by Carr and Carr) are virtually conclusively contra-indicated by the recent studies of Pryor and Knox (in press), which demonstrate that, in the wide range of species of *Monocalyptus* investigated, the operculum is wholly calycine, with its early ontogeny similar to that of the *outer* operculum in other subgenera. Thus it appears very probable that the corolline whorl was lost by suppression of development at an early stage in the phylogeny of *Monocalyptus* (i.e. condition (2) above, applies).

Tradition tends to require that more weight be given to floral characters than to others and, as with anthers, perhaps the importance assigned to the various structures subsumed under the term "operculum" is somewhat greater than warranted. Nevertheless, these structures are undoubtedly very valuable in assessing affinity and in considering the evolutionary history, so that their continued study will be rewarding.

The characters of double and single operculum, time of abscission of the outer operculum, presence of separate calyx teeth, irregularity in the abscission zone, lobing at tips of opercula, imbrication or otherwise of "petal"-tips, and early bud ontogeny all have a bearing here.

1.3.1.3. Ovule and Seed-Coat Structure

Various other floral and carpological characters remain to be examined thoroughly. Detailed anatomical study of ovule and seed structure (Gauba and Pryor 1958, 1959, 1961), however, has proved useful in assessing affinity. Some species have anatropous ovules and a correspondingly elongated raphe, while in others the ovules are hemitropous with correspondingly short (and differently branched) raphes.

The structure of the integuments - particularly the outer - is also of considerable value. Some species have the outer epidermis of the outer integument made up of sclereids and very much thickened, while in others without this feature the inner epidermis of the outer integument forms a complete crystal layer.

Often these features are associated with other clusters of attributes and have been particularly useful. In some cases general seed shape and surface details help to characterise series, e.g. SIG *Reduncae* and the four series of SL section *Dumaria* (M.I.H. Brooker, pers. comm.).

Carr and Carr (1962a, 1963) have shown the classificatory value of the ovule-ovulode distribution in the loculi of the ovary, and it seems that morphological and anatomical investigation of such features will reveal further significant characters.

1.3.1.4. Other Morphological and Anatomical Features

Although no detailed discussion will be given, evidence of value in *Eucalyptus* systematics has come from a number of other essentially observational fields.

Pollen morphology (Pike 1956) gives support for major groupings, but future work with electroscan techniques may well make a closer analysis possible. Wood and bark anatomy have been described by Ingle and Dadswell (1953) and Chattaway (1953, 1955a,b,c), and we hope that the present new classification will stimulate further work in xylotomy, including perhaps comparisons with wood structure in other Myrtaceous genera as studied by the authors cited, and with bark structure as surveyed for the Myrtaceae-Leptospermoideae by Bamber (1962).

Carr and Carr have engaged in detailed and valuable studies of various features of vegetative and floral anatomy, and account has been taken here of their findings; in particular, the occurrence of oil glands in the pith and in the mature bark (as distinct from the primary cortex) (Carr and Carr 1969) has proved to characterise certain groups in a fairly definite way, although in others (notably SU section *Adnataria*) we find it to be of much less consistency and systematic value. This useful character is readily observed by careful longitudinal hand-slicing of nodes and internodes of young twigs in fresh or dry material and does not require the relatively elaborate techniques necessary first to elucidate the situation and recommended by the authors cited. The arrangement of stamens in the bud (which also affects anther-shape) is also helpful in characterising certain groups (e.g. SL section *Dumaria*), as we have recently been reminded through the courtesy of Mr M.I.H. Brooker (pers. comm.).

Details of leaf surface and venation are of great value, especially in checking the affinities of species suspected of being closely related. We may expect more detailed studies of these features, and in particular that computer pattern-analysis may assist in more objectively characterising and classifying venation patterns. Cotyledon details have been used widely by ourselves and correspond remarkably well with most of the major divisions in the new classification presented, but these organs also need more thorough study. Presence or absence of lignotubers is valuable chiefly at the specific or even at the infraspecific level, but is of course of considerable adaptational importance, as is the faculty of producing epicormic shoots (Jacobs 1955). Another such "survival feature" is the ability to regenerate by root-suckers, so far observed by us only in the tropical EAC:A *E. tetrodonta*, which constitutes the distinctive series EAC *Tetrodontae* here referred to subgenus *Eudesmia* section *Quadraria*.

1.3.2. Taxonomic Evidence from Chemistry and Biotic Associations

Chemical studies in *Eucalyptus* are of long standing and a bibliography and general account of earlier work, especially on essential oils, are given by Penfold and Willis (1961). More recent work on terpenoid chemistry is reviewed by McKern (1965), who stresses the quantitative and genetic variability encountered, which rather down-rates some of the supposed qualitative differences emphasised by earlier authors. McKern advocates great caution in basing taxonomic schemes on chemical constituents of this nature; nevertheless considerable correspondence can be noted with patterns shown by other characters.

Polyphenols are the subject of a useful and comprehensive survey by Hillis (1966a,b, 1967a,b,c,d). Here, for certain substances only, a good correspondence exists with the major groupings of our proposed system, but the polyphenols do not seem to help much at lower levels in the hierarchy and it is clear that considerable quantitative variation (appearing qualitative in less precise analyses) is frequent here also. The likelihood of misidentification of some of the source material is an unfortunate drawback in this work and much of the detailed discussion (on the basis of Blakely) seems to be of limited value.

We find the same rather disappointing lack of significance (apparently due to parallelism) below the subgeneric or sectional level in the crystal-shape and chemistry of leaf-waxes (Hallam and Chambers, pers. comm.). Greater hope may be held out for comparative studies of proteins by serological or more direct methods, since these substances reflect more closely the underlying genetic constitution and can give a measure of patristic affinity. However, such work has scarcely begun.

Critical investigations of *Eucalyptus* host-insect and host-fungus associations are in their infancy, but the recent study by Moore (1970) on the "lerp"-forming Psyllidae (Homoptera) in relation to *Eucalyptus* hosts is based on a detailed revision of the insect species and subgenera and in general on accurately-determined eucalypt material. These psyllids are "good taxonomists" at the higher levels of the eucalypt hierarchy but unfortunately are of little help in the finer classification. Recent work by Walker and Bertus (in press, pers. comm.) on a fungal pathogen is of interest in supporting the taxonomic association of A *Angophora* and *Eucalyptus* subgenus C *Corymbia*.

1.3.3. Taxonomic Evidence from Genetic Systems and Capacity to Interbreed

Genetic study has played a prominent part in recent decades in revealing some of the factors underlying the patterns of variation with which taxonomy has to deal. *Eucalyptus* does not display all the aspects of variation found in those plants which are best understood by genetic study. Apomixis is unknown, nor is there any special feature of the reproductive or genetic systems which sets a particular pattern affecting species grouping. No polyploid taxa are known. The usual chromosome number is $2\underline{n} = 22$, as in the great majority of the Myrtaceae, but in a few species $2\underline{n} = 24$ has been reported (Ruggeri 1960a,b,c,1962; Barbara G. Briggs, pers. comm.). Although the latter chiefly belong to SI section *Bisectaria*, they do not make up a coherent assemblage within this group, and obviously related species are reported as differing in chromosome number. Unfortunately the present sampling is inadequate to indicate whether there is intraspecific or intra-population variation in number.

In assembling and circumscribing taxa and determining affinity between them, knowledge of capacity to cross may be useful, especially in a diploid and facultatively outbreeding group like *Eucalyptus*. Duffield (1952), for example, has explored the crossing relationships and their bearing on affinity in *Pinus*, another sizeable genus of usually ecologically dominant trees, in which some of the taxonomic and variational problems are similar to those in *Eucalyptus* (see also Mirov, 1967).

Fertile hybrids are very frequently found between some species of *Eucalyptus*, and the pattern of such hybridization conforms to some extent with Blakely's classification. For example, Blakely's *"Renantherae"* (with a few exceptions and additions) emerge as a group (our M subgenus *Monocalyptus* with its single section MA *Renantheria*) genetically isolated from other groups within the genus but capable of hybridizing rather freely among themselves. On the basis of this kind of evidence, as for example in relation to SIVCG *E. caesia* and SPINQ *E. pulverulenta* (Pryor 1956a), the establishment of some taxa not included in Blakely's scheme has already been proposed, and relationships suggested by morphological and anatomical study have been supported. The results from the detection of naturally occurring hybrids and from manipulated crossing suggest that there are several completely reproductively isolated groups within *Eucalyptus* (Pryor 1959), and these conform to the subgenera of our system.

An intermediate situation is that in which crossing between species results in viable seed but the seedlings are weak or, if they reach maturity, are sterile. As examples of the former, D. Martin (pers. comm.) raised the F_1 hybrid between SPINO *E. cordata* and SUX:C *E. leucoxylon* but it died in the juvenile stage, and Pryor and Willing (unpublished) have raised to about twelve leaf-pairs SPIFK *E. st-johnii* x SUX:A *melliodora*, both of these combinations being hybrids between members of sections SP *Maidenaria* and SU *Adnataria* of the subgenus *Symphyomyrtus*. A case of a (sub-?) sterile hybrid is the so-called *E. oxypoma* which is with little doubt the result of natural crossing between SNEEP *E. camaldulensis* and SUDEC *E. largiflorens* (sections SN *Exsertaria* and SU *Adnataria*, respectively, of subgenus *Symphyomyrtus*). Although in such cases the parent species usually fall into different sections of the same subgenus, some other intersectional hybrids seem to show little or no reduction in fertility (e.g. between SE *Transversaria* and SN *Exsertaria*).

There are a few cases of species not known to hybridize with those of other groups but which, on morphological grounds, we have separated only sectionally and not subgenerically, e.g. SWA:A *E. microcorys*, which is placed as SW section *Sebaria* of subgenus *Symphyomyrtus*. In the following sections no hybrids with others are known, but no adequate testing has yet been carried out: subgenus *Eudesmia* sections EA *Quadraria* and EF *Apicaria*, subgenus *Symphyomyrtus* sections SB *Equatoria*, SD *Tingleria*, SQ *Umbrawarria*, and SS *Howittaria*. Also untested, but with no known hybrids, are certain somewhat isolated series (e.g. EAC *Tetrodontae* and SNI *Michaelianae*) which we have not separated at a higher level because of rather evident morphological relationships to other taxa placed in their respective sections.

1.4. Variation Patterns in *Eucalyptus* Populations

Detailed quantitative studies of variation patterns have been few (e.g. Jackson pers.

comm., Pryor and Byrne 1969, Larsen 1965) but herbarium and field studies have been extensive. These are sufficient for us to designate some of the types of variation which are known to occur and to indicate the kind of situation where precise quantitative analysis should be illuminating (bearing in mind the warning with regard to attempts to quantify taxonomic difference given below under 2.1.2.).

1.4.1. General Types of Variation Pattern

1.4.1.1. Disjunction

Striking intraspecific disjunctions are a feature of *Eucalyptus*; morphologically virtually identical populations may occur in widely separated areas. A few examples will illustrate the phenomenon. MAHAC *E. macrorhyncha* is found over 500 hectares or so in the Clare Hills of South Australia, and is then absent from the intervening 500 km to the Grampians in western Victoria, from where it extends to northern New South Wales. SPIFG *E. nitens* occurs in moist montane forests in northern New South Wales and reappears some 400 km away in similar situations in southern New South Wales, whence it extends intermittently to eastern Victoria. SECAB *E. grandis* grows at Atherton in northern Queensland, and extends in patches separated often by some hundreds of kilometres to as far south as Maitland, New South Wales. IAA:A *E. cloëziana* occurs in widely separated stands in Queensland from Almaden to Gympie. CAFUL *E. nesophila* is a tropical example of the same kind, and SIT:T *E. flocktoniae* shows a disjunction between the south of Western Australia and Eyre Peninsula, South Australia.

Whether these disjunctions result from shifting population boundaries and extinction in intervening areas (due to climatic change), or to distance dispersal, is at present an unanswered question.

1.4.1.2. Convergence

Many have commented on similarities in some prominent feature or features often displayed by otherwise unrelated species in *Eucalyptus*. Keys for identification may usefully employ such characters; for example smooth decorticating bark, a useful field character, is shared by species placed in widely different subgenera. The same is true, for instance, of three-flowered inflorescences, absence of lignotubers, persistence of juvenile-type foliage in the adult tree, and urceolate fruits.

Striking convergence in general field appearance is sometimes shown by species such as MATEN *E. elata* and SPIKE *E. smithii* which grow close at hand in rather similar situations (SPIKN *E. badjensis* could also perhaps be included with these). As in this case, different major groups are often represented. SBA:C *E. raveretiana* and SUADFB *E. microtheca* ssp. [*"coolabah"*], which also occur close by each other have a similar marked resemblance, while other examples, which actually grow in mixed stands, are MATKF *E. rossii* and SPECH *E. mannifera*, and also SIT:L *E. socialis* and SLE:G *E. dumosa*. Three "Boxes" with similar but separated moist forest habitats in eastern New South Wales show extraordinary similarity, though they belong to different series and are related to quite other species; these are SUAAA *E. rummeryi*, SUDAA *E. largeana*, and SUT:A *E. rudderi*. On the other hand, habital convergence is common in species which do not occur in the same habitat but are widely separated, sometimes at opposite sides of the continent. Such pairs are: MATKE *E. racemosa* and SQA:A *E. umbrawarrensis*, SICAA *E. gomphocephala* and SUL:B *E. moluccana*, SLE:K *E. kondininensis* and SUG:A *E. cambageana*, SIU:A *E. salmonophloia* and SUJ:A *E. thozetiana*, SNABG *E. brevifolia* and SPECH *E. mannifera*, SPEAC *E. yarraensis* and SUDEA *E. populnea*.

1.4.1.3. Clinal Variation

A common characteristic of most eucalypt species is the close adaptive response of the population to environment. If species are at all widely distributed, they frequently vary clinally, either continuously or more often in stepped series. This has been described in each of MAKBE *E. delegatensis*, MATES *E. coccifera*, SPINI *E. gunnii*, and SPINL *E. urnigera* by Barber (1955) and Barber and Jackson (1957), in MAKHA *E. pauciflora* by Pryor (1957), and in SPIJA *E. vernicosa* s. lat. (comprising SPIJAA [*"vernicosa"*] s.str., SPIJAB [*"subcrenulata"*] and SPIJAC [*"johnstonii"*] by Jackson (unpublished pers.comm.). In the more widespread species such clines may be multidirectional. Populations may show evenly-graded variation when the stands are continuous, but more commonly the total species-population is divided into small, separate, closely circumscribed stands because of the precise ecological specificity of most eucalypts. Clinal variation is then seen as a series of steps corresponding with some at least of the different stands. Even within a single stand there may be a minor continuous cline following the same trend - the sloped treads of the steps, in Huxley's analogy (1940). Where the distribution of a species is markedly discontinuous, as between the Australian mainland and Tasmania, the populations may fall into clearly distinguished geographic races, comparable with the classical zoological subspecies.

Since some degree of clinal gradation is perhaps the rule rather than the exception, it is necessary for the deviser and the user of a taxonomic treatment to take serious note of this kind of variation. Gregor (1938) suggested the use of the cline itself as a unit, but full description of the clines within (and sometimes between) the assemblages recognised as species in *Eucalyptus* will require much more elaborate study than has yet been possible, and in any case may not be profitable once general principles are illustrated by a few examples treated in detail. Where points within clines are used as reference points for description and designation, the use of the term "cline-form" has been suggested (Pryor 1957). For formal purposes, as discussed below (2.1.6.), we now consider it most practical to use only one infraspecific (trinomially designated) category and to give this the rank of *subspecies*, especially since there is certainly a complete gradation between clear-cut regional races and very gradually changing clines. In this classification, therefore, the designation "subspecies (including cline-form)" is used, but the nature of the variation so covered, though it is reasonably well-known to us in a general way, will not be individually described, and in some cases can only be resolved by further study.

1.4.1.4. Hybridism

Hybrids between relatively uniform populations are also a feature of *Eucalyptus* and their occurrence is closely analogous to that in *Quercus* (Stebbins 1950), a genus which (like *Pinus*) shows many parallel conditions to those in *Eucalyptus*. F_1 hybrids occur between populations quite commonly and, given adequate field knowledge, their recognition is not difficult. The nomenclatural types of numerous described *Eucalyptus* "species" are clearly hybrids and we believe that the use of binomials for these serves no useful purpose, especially since much more numerous equally common or uncommon interspecific hybrids have not received such names. Therefore names based on such types are here mentioned only in the Index (3.2.), where their more or less well-established parentage is indicated (we dislike the commonly used adjective "putative" for these cases; it implies a much greater degree of doubt than we believe to be justified in view of the considerable accumulated knowledge of the phenomenon).

Also, many eucalypts, named and unnamed, are apparently later hybrid derivatives, and hybrid swarms can often be clearly recognised. Other cases, somewhat less clear, concern local (sub-)populations, referred to a particular species, in which the variance of a number of characters greatly exceeds that found within the general population of the species elsewhere.

There is room for debate about certain kinds of population variation of this sort. It may be supposed on the one hand that hybridization has taken place, followed by backcrossing over some generations and thus leading to "introgression" in the sense of Anderson (1953). On the other hand it has been argued that this interpretation is incorrect, and that what appears to be introgression is simply the consequence of selection on the total gene complement of a widespread species in a particular local environment (Barber and Jackson 1957). Barber (1965) discusses a possible mechanism for the development and maintenance of clines and fairly sharply differentiated variant sub-populations without spatial separation, in relation to the intensity and cost of selection. In this he emphasises the role of density-dependent survival. Such arguments apply particularly to *Eucalyptus* and groups with similar ecology and genetic systems. Quite probably the genus includes examples of both (i) hybridization with consequent introgression following breakdown of spatial or other external barriers; and (ii) selective differentiation within a genetic continuum. Taxonomic treatment of genetically mixed populations presents problems, whatever their cause or interpretation.

Hybridism in *Eucalyptus* has been well investigated, and has been shown to occur in the field commonly in a narrow zone at the junctions of the areas of two parapatric species, perhaps extended somewhat by selfed or backcrossed segregates. Hybrids and hybrid swarms are often associated with areas of human disturbance. Nevertheless, similar cases do seem to occur quite frequently in the absence of such recent disturbance, and hybridism in response to "natural" changes in the environment has doubtless played a significant part in the evolutionary history of the eucalypts.

Occasionally, apparent hybrids are found in one species population at a considerable distance from the nearest population of the second supposed parent. Determining hybrid status is more difficult and may depend on progeny testing. Such trees may arise either from long-range outcrossing (as by birds) or may represent hybrid remnants left behind by movements of species-boundaries such as follow climatic changes (as postulated for *Quercus* by Stebbins 1950). They may thus be the last relics of "phantoms".

1.4.1.5. Phantoms

A further type of variation is conveniently designated by the term *phantom* (Pryor 1955b) originally proposed by R.G. Brett (pers. comm.). This is well illustrated by a case involving SUL:G *E. albens*. As mentioned below (1.4.2.6.), in the three most eastern States this forms stand-junctions over very considerable distances with SUL:DA *E. woollsiana* ssp. [*"woollsiana"*] and SUL:DB *E. woollsiana* ssp. [*"microcarpa"*], with both of which it sometimes hybridizes so that in places one finds genetically mixed zones, although elsewhere the two species are clearly distinct. In South Australia, in a disjunct occurrence at Wirrabara of *E. woollsiana* ssp. [*"microcarpa"*], there is a somewhat mixed subpopulation intermediate in character between [*"microcarpa"*] and *E. albens*. "Typical" *E. albens* does not occur in the area and it is some 600 km to the nearest stands of that species. This South Australian occurrence is interpreted as a genetic relict of *E. albens* remaining after the elimination of the species in the "pure" form by some unfavourable circumstance such as a climatic shift.

In other cases, such as the presence of somewhat SIZ:E *E. uncinata*-like patches among SIZ:B *E. foecunda* on Eyre Peninsula, South Australia, or SIX:D *E. calycogona*-like individuals amongst SIX:A *E. gracilis* near Griffith, New South Wales, it is at present impossible to say whether we have a "phantom" situation or simply parallel development from a related species.

1.4.1.6. Individual Variants

Within a population one often finds individuals which depart a good deal from the usual range in some character. On occasions a nomenclatural type has been chosen from such an individual and a binomial or trinomial thereby attached to it. Except where priority considerations demand otherwise, such cases are here relegated to the Index with an appropriate note. For instance, *E. albens* var. *elongata* (referred to SUL:G) is in this category, as is *E. robusta* var. *bivalvis* (referred to SECAF).

More detailed population studies may yet show that a few of the names now eliminated actually apply to clinal variations of a more local pattern than those discussed above (1.4.1.3.). Perhaps amongst the names here retained there may be some which represent individual or very minor variants rather than populations which meet our requirements for formal recognition.

1.4.1.7. Non-adaptive or Poorly Viable Variants

Variants occur from time to time which do not suggest hybridity but are found more or less singly as anomalous individuals. These may result from recessive gene combinations which rarely survive in natural stands, or they may be produced by irregularities such as chromosomal translocations of rare occurrence or poor viability. Though presumably usually lost under field conditions, such forms can frequently be preserved in cultivation, and several published names probably apply to trees of such origin, especially some of those described from plantings outside Australia.

Since they do not represent populations, these names are synonymised in the Index and excluded from the scheme of classification. An example from a natural stand is *E. odorata* var. *refracta* (referred to SUNEBA). A case from a planted tree is *E. langii*, which appears to be an abnormal variant of SIS:A *E. cladocalyx*.

Doubtless such variants occur far more often than they are described. Barber (1954) has drawn attention to a curious form in SPEAF *E.* sp. in eastern Tasmania, which is doomed not to reproduce since the operculum never sheds.

1.4.2. Exemplars of Variation Pattern

It is convenient to describe a range of variation patterns characteristic of different kinds of species or complexes within the genus. Combinations and variants of these patterns are also common, as one might expect in a large and evolutionarily vigorous group.

1.4.2.1. The *E. crenulata* Pattern

This species represents the least complicated situation of all. SPICA *E. crenulata* is known as a very few populations in Victoria in the vicinity of Narbethong, Buxton, and the Upper Yarra. They occur in a distinct habitat which is more swampy than that usually occupied by the more common SPEAA *E. camphora*. The stands are very small, at the most a few hundred trees each, and seem to be almost completely cut off genetically from neighbours, with little sign of hybridization (the barriers are not intrinsic, hybrids are not quite unknown). *E. crenulata* is not especially closely related to any other species; we refer it to a subseries of its own. The circumscription of a group of populations of this kind as a species is simple, since there is phenotypic and presumably genotypic uniformity, and the boundaries are unblurred.

Their distinctness suggests that such taxa must have a long evolutionary history but they can scarcely have undergone this in the same restricted populations as those in which they now occur. Presumably they are relics from an epoch when suitable conditions were more widespread - in the case of *E. crenulata* probably a pluvial period.

Other examples of this sort are MAKLA *E. mitchelliana*, SPIAA *E. neglecta*, SPIAF *E.* sp. (from the Pigeon House Range, N.S.W.), SPINO *E. cordata*, and SPINQ *E. pulverulenta*.

Many other clear-cut species have more extensive populations, but these situations differ only in degree from that just described. Examples are AAAAA *Angophora cordifolia* and SWA:A *E. microcorys*, with rare individual hybrids in the former and none in the latter.

1.4.2.2. The *E. parvifolia* Pattern

SPIBA *E. parvifolia* grows on restricted sites which are rather swampy and cold, near the eastern edge of the Southern Tablelands of New South Wales, at elevations over 1000 m. In its typical form it is quite distinct and it has no very close relatives, but it hybridizes frequently with SPIKK *E. viminalis* and also with SPINF *E. rubida* so that in and around the small stands there are often distinctly hybrid trees, and in a number of places there is intergradation between it and the species mentioned. The nuclei of the populations are quite distinct, but the boundaries are blurred, unlike those of the *E. crenulata* type. Examples of the pattern are CAFOA *E. ficifolia*, MATEB *E. risdonii*, and SPINH *E. glaucescens*, though the last (a mainland species) is closely related to the Tasmanian SPINI *E. gunnii* and SPINK *E. morrisbyi*, while *E. risdonii* has the somewhat more widespread relative MATEC *E. tenuiramis*.

1.4.2.3. The *E. regnans-E. fastigata* Pattern

These species (MAKCA, MAKCB) are morphologically very closely similar; in fact separation in the herbarium is difficult, although there is virtually no confusion in the field. They occupy separate geographic areas and perhaps nowhere share a common boundary, that is, they are probably fully allopatric.

The presence of rough bark in *E. fastigata* and its absence except for a small stocking in *E. regnans* may seem a trivial difference by which to recognise different species. There is evidence that physiological differences underlie the ecological differentiation of the two taxa. In such cases the close affinity which is indicated by the general morphology is implied in our classification by grouping the species into a single *superspecies* (see below, 2.1.3.).

Other examples of this kind are: EFAAA *E. similis* - EFAAB *E. lirata*, MAKEA *E. consideniana* - MAKEB *E. remota*, SECGA *E. longifolia* - SECGB *E. cosmophylla*, SIJ:C *E. stricklandii* - SIJ:D *E. carnei*, SPEAG *E. aggregata* - SPEAH *E. rodwayi*.

A variation of this pattern is provided by certain tree-*versus*-mallee pairs, wherein the members may meet in the field but remain distinct and occupy distinct habitats; often they are hard to distinguish from poorly annotated herbarium material, thus misleading those botanists who are not familiar with them in the field. Examples are: MAKED *E. sieberi* - MAKEE *E. multicaulis*, MAKHA *E. pauciflora* - MAKHF *E.* sp. ("*pauciflora* var. *nana*"), SIGAA *E. wandoo* - SIGAC *E. redunca*.

1.4.2.4. The *E. saligna-E. botryoides* Pattern

These two species (SECAC, SECAD) are distinct through most of their ranges, but in the south-eastern part of New South Wales between the Illawarra district and Bega there is a wide zone in which many local populations are intermediate in varying degrees between the two species. The zone can be regarded as either an extended hybrid swarm or a region of introgression. In the characters by which it is distinguished from its relatives, *E. saligna* is consistent from somewhat south of Sydney to its northernmost occurrence in Queensland, while *E. botryoides* is similarly consistent from southern New South Wales into eastern Victoria. It is emphasised that these species exhibit spatial overlap: quite characteristic *E. botryoides* can be found well north of some of the southern occurrences of definite *E. saligna*. The case is one of partial breakdown, not a regular clinal transition.

If the recognition of separate species were to depend upon the possibility of drawing a sharp boundary between populations, these species would have to be united. However, it is considered to be of more practical value to maintain them as two separate species, because of both the overlap of characteristic stands of the species and the narrowness of the zone of mixed or variable populations relative to the zones of uniformity.

The situation in Western Australia between SNEEP *E. camaldulensis* and SNEER *E. rudis* is similar (though more regularly clinal) with an extensive intergradation zone from a little south of Perth northwards to the Murchison River. The type tree of the so-called species *E. algeriensis*, it seems clear, was raised from seed collected from this intermediate zone.

There is probably a similar pattern in Central Australia between CAFEGG *E. dichromophloia* ssp. [*"oligocarpa"*] and CAFEP *E. terminalis*, in eastern Australia between SECCA *E. pellita*, SECCB *E. notabilis*, and SECCC *E. resinifera*, and indeed in many "borderline" species with contiguous to overlapping ranges.

1.4.2.5. <u>The "Red Box" Pattern</u>

The species typifying this pattern are SUT:D *E. polyanthemos*, SUT:C *E. bauerana*, SUT:F *E. fasciculosa*, SUT:E *E. dawsonii*, SUT:B *E. conica*, and SUT:A *E. rudderi*. The situation between *E. polyanthemos* and *E. bauerana* is rather like that between *E. saligna* and *E. botryoides* (1.4.2.4.). The two species grade into each other in part of southern Victoria, and the intermediate populations cannot be assigned to one species or the other. The individuals in these populations are as consistent as in normal stands of a straightforward species. Each of these two box species exhibits some geographic variation within its own range, as well. On the other hand, *E. fasciculosa* is geographically isolated in South Australia and the extreme south-west of Victoria, though it is evidently closely related to *E. polyanthemos*. The New South Wales species *E. dawsonii* has a distinct facies and occupies distinct sites, although geographically it overlaps slightly with *E. polyanthemos*, which it most resembles. *E. conica* bears a *regnans-fastigata* type of relation to *E. bauerana*, while it overlaps geographically but not ecologically with the more different *E. dawsonii* and *E. polyanthemos*. *E. rudderi*, while of patchy distribution, has a distinct and limited habitat in parts of the coast ranges of New South Wales. It is clearly a member of the complex, but quite distinct from any of the other species.

The Red Box situation, then, is a rather complicated one in which a pair of species differing rather markedly at their limits intergrade fully with no definable boundary between them, while several species (some of which appear more closely related to one or other of the pair than those are to each other) are distinct and ecologically or geographically isolated. SNEC subseries *Bancroftinae* is one of a number of similar cases.

1.4.2.6. <u>The "Grey Box" Pattern</u>

Five taxa of the "Grey Box" sequence form a rather close-knit assemblage, chiefly in Queensland, New South Wales, and Victoria, but with an outlier in South Australia. They are SUL:A *E.* sp., SUL:B *E. moluccana*, SUL:DB *E. woollsiana* ssp. [*"microcarpa"*], SUL:DA *E. woollsiana* ssp. [*"woollsiana"*], and SUL:F *E. pilligaensis*, which constitute a morphological sequence in the order given.

The four treated as species are more or less distinct, but it does not seem feasible to separate [*"microcarpa"*] from [*"woollsiana"*] at that level. Except for the unnamed species (in north-eastern Queensland), their areas are contiguous, with minor complications, in the same sequence as the morphological one. For example, *E. woollsiana* ssp. [*"woollsiana"*] adjoins *E. pilligaensis* to the north-east between Dubbo and Baradine, New South Wales, and grades insensibly into its more widespread subspecies [*"microcarpa"*] to the east and south; the latter meets *E. moluccana* (this name is, of course, a geographical misnomer) in places to the east.

The junction zones are rather wide and within them the characters of the trees display a general clinal variation. However, while *E. woollsiana* ssp. [*"woollsiana"*] shows this relationship vis-à-vis *E. pilligaensis*, the Queensland occurrences of the [*"microcarpa"*] race sometimes meet *E. pilligaensis* with little breakdown. A further complication is that the "White Box", SUL:G *E. albens*, is also closely related but edaphically rather than geographically separated, and meets three of the Grey Box species with either local or virtually no hybridization. While this is true in many areas, there is certainly an extensive breakdown between *E. albens* and *E. moluccana* in the Hunter River Valley of New South Wales (see also above under "Phantoms", 1.4.1.5.)

Because of the complications of the case, and the differences and recognisability of the four main population-groups, we have divided the Grey Boxes into formal species, but they are certainly not separated by sharp discontinuities. We have referred the Grey Boxes to a single superspecies, excluding *E. albens* because it is not part of the same replacement pattern, though it does show resemblance to, and genetic connection with, *E. moluccana*. Other complexes show similar replacement patterns, in whole or in part.

1.4.2.7. The "Stringybark" Pattern

The situation in a number of species of MAH series *Capitellatae*, centred around Sydney, is reminiscent of that in the Grey Boxes but more complex and often with multidirectional intergradation, variation being from one species to two or more others. The chief species concerned are MAHCD *E. blaxlandii*, MAHCE *E. camfieldii*, MAHCF *E. capitellata*, MAHCG *E. agglomerata*, MAHEA *E. eugenioides*, MAHEF *E. globoidea*, MAHEK *E.* sp., MAHEL *E. oblonga* (including *"deformis"*) MAHEN *E.* sp., MAHEO *E.* sp., MAHEQ *E. ligustrina*. Similar cases (involving some of these and other species of the same series) occur in northern New South Wales.

This is one of the most complex situations, involving members of two subseries, and is perhaps most closely paralleled by the "Red Gums", SNEE subseries *Tereticorninae*, including species such as SNEEA *E. amplifolia*, SNEEB *E. tereticornis*, SNEEC *E. glaucina*, SNEEF *E. blakelyi*, SNEEH *E.* sp. (*"dealbata* var. *chloroclada"*), SNEEJ *E. dealbata*, and SNEEL *E. dwyeri*. These latter also provide a parallel to the Grey Box group in the broad intergrading zone between *E. tereticornis* and *E. blakelyi* in the same region of the upper Hunter Valley as the *E. moluccana* -*E. albens* intergrades. SNEEP *E. camaldulensis* is also involved in this complex in parts of its range, and in turn links with SNEER *E. rudis* (see 1.4.2.4.), giving virtually an Australia-wide coenospecies. SIT series *Oleosae* provides another example, while AAAB subseries *Floribundinae* of *Angophora* is similar but less complex.

In all of these cases some botanists have expressed the view (in print or otherwise) that only one very variable species was involved. This can only be supported if one demands lack of interbreeding as a species criterion. Such a view makes nonsense of the actual practical usage of the species category in plants, and has been rejected often enough to require little further discussion. It is certainly not likely to appeal to those who are well-acquainted with any of the above-listed groups in the field.

1.4.2.8. The *E. viminalis* Pattern

There are, however, somewhat similar cases in which separation at the species level seems impractical or otherwise unjustified. In population groups of this kind there is a wide variational range, sometimes apparently greater than that on which specific separation is made in other groups (though such a statement is always subjective or a pseudo-objective product of arbitrary or subjective selection and scoring of attributes). A good example is SPIKK *E. viminalis*, which ranges from a spreading woodland tree to a tall tree of wet sclerophyll gully forests, from wholly rough-barked to entirely smooth-barked, and also displays other kinds of variation.

Local populations are often relatively uniform in themselves but all intermediate conditions are shown in the total variation and even the recognition of subspecies is somewhat difficult. The species as a whole is clearly cut off from its relatives, so that one is not concerned with an overall situation as wide-ranging and diverse as in the Stringybark pattern. Similar situations occur in AAADA *Angophora costata*, MAKHA *E. pauciflora*, SUADF *E. microtheca*, to some extent within SNEEP *E. camaldulensis* (though here two *main* subgroups can be recognised), and in many other geographically widely distributed species. In some other cases, e.g. BAA:B *E. papuana* s. lat. and CAFEG *E. dichromophloia*, at present treated here in a like manner, it is possible that further investigation may favour separation of some of the constituent populations as species rather than subspecies.

1.4.2.9. The *E. cinerea* Pattern

Geographically quite separate populations of closely related but distinguishable taxa are at times found. The only uncertainty is whether to regard the constituent groups as species or as subspecies, and it is essentially a matter of opinion as to which course to follow. Where we have treated them as species, they are placed in a common superspecies.

The *E. cinerea* group is made up of SPINS *E. nova-anglica* (New England Tableland, New South Wales), SPINUA *E. cinerea* ssp. [*"cinerea"*] (patchy distribution on the Central and Southern Tablelands of the same State), SPINUB *E. cinerea* ssp. (Beechworth, northern Victoria), SPINUD *E. cinerea ssp.* (East Gippsland, Victoria, and far South Coast of New South Wales), and SPINUC *E. cinerea* ssp. [*"cephalocarpa"*] (east of Melbourne on somewhat sandy areas). The New England populations are less linked in the morphological-geographic chain than the others and are therefore maintained as a species; the last two populations have some contact and intergradation. It is notable that within the not inconsiderable ranges of the two more northern taxa there is no sign of a clinal gradation.

1.5. *Eucalyptus* - One Genus or Several?

1.5.1. Discussion of Major Groupings

Proposals to divide the eucalypts into more than one genus are not a novelty. Andrews (1913) suggested that *Eucalyptus* should be split into five genera, to be called *Eudesmia*, *Poranthera* (there is a genus of this name in the Euphorbiaceae), *Corymbosa*, *Parallelanthera*, and *Eucalyptus* (s. str.). He applied *Eucalyptus* only to our M subgenus *Monocalyptus* (in the main), since the type species of the genus is MAKAA *E. obliqua* L'Hérit., belonging to this group.

A more recent proposal by Carr and Carr (1959b, 1962a) would restrict *Eucalyptus* to what Blakely called the **Renantherae* (with a few adjustments which render it equivalent to our

* In this section an asterisk indicates an infrageneric (or rarely generic) name used by Blakely or other past authors. The scope of the relevant usage is indicated by our code designation.

subgenus *Monocalyptus*) *together with* the **Eudesmieae* (likewise with one or two adjustments and comprising our subgenera E *Eudesmia* and G *Gaubaea*). They say "For the present the other eucalypts will be left together and they must therefore be transferred to a new genus bearing the name *Symphyomyrtus*...". Since *Symphyomyrtus* was described long ago by Schauer (1844) for SICBE *E. lehmannii*, Carr and Carr have in fact technically merely revived and recircumscribed it - it is not nomenclaturally "new". Further, since anyone is at liberty to use a name with any circumscription he chooses, so long as the nomenclatural type is included, the citations "*Eucalyptus* L'Hérit. emend. D.J. & S.G.M. Carr" and "*Symphyomyrtus* Schau. emend. D.J. & S.G.M. Carr" as used by these authors (Carr and Carr 1963) have no formal justification. *Eucalyptus* as conceived by L'Héritier has been "emended" by many authors; the expression "sensu Carr and Carr" could be used but these additions have no special status in formal nomenclature. The citation of an author merely indicates who first validly published a name, for instance, it is not customary to add "emend..." or "sensu..." when citing "L." as the author of genera which often have very different circumscriptions from those given by Linnaeus.

Any serious consideration of the wide range of observational and experimental evidence clearly indicates that several (not two) major groups are distinguishable in the eucalypts, and the question is whether to treat these as genera or subgenera. Some doubt remains as to the precise number of these, since there are a few rather isolated species needing more study to determine whether they should be segregated in small or even unispecific groups, but there are certainly a number of very distinct taxa which it is reasonable to rank equivalently. For the moment we advocate that these groups be ranked as subgenera, holding in abeyance any decision to recognise separate genera until the results of very thorough investigation of as many relevant factors as possible have become available for assessment. The delimitation and recognition of the groups are more important than their precise formal ranking.

Carr and Carr (l.c.) attached particular, though not exclusive, importance to a single character, the presence of a supposedly single operculum, in grouping in the same proposed "new" genus both the **Eudesmieae* (E, G) and **Renantherae* (M), and included in the **Eudesmieae* Blakely's **Miniatae* (EFC) containing the species *E. miniata* and *E. phoenicea*. As we have seen (1.3.1.2., above) the operculum is in fact not simple in EF subgenus *Eudesmia* section *Apicaria*, to which these and three other species belong. Carr and Carr (1968) have since described its actual nature, which we had in fact discerned by careful examination, even at low magnifications, and which is confirmed by developmental studies by both groups of workers. Included by Carr and Carr in their group *"Eudesmieae B"* are the species of EF *Apicaria* as delimited by us, together with EAABJ *E. ebbanoensis*, EAACL *E. roycei* (Carr, Carr, and George 1970), EAACM *E. jucunda*, and even IAA:A *E. cloëziana*. The last-named clearly does not belong here, on the basis either of opercular condition or of other features (see above, 1.3.1.2.). As Carr et al. (1970) themselves state, *E. ebbanoensis* and *E. roycei* in fact exhibit a range of intermediate conditions, varying intraspecifically from an almost or quite separate calyx of free sepals to an *Apicaria*-like condition in which most of the operculum is produced from an undifferentiated ring of basal tissue showing separate calyx and corolla only at the top. *E. jucunda*, which we agree is close to *E. roycei*, appears to show an *Apicaria*-like condition only.

We agree that these three species indicate how the basic *Quadraria* condition can give rise to the *Apicaria* condition, but not that they are themselves links between the sections. Checking by as many features as possible is desirable, but the three species seem in general to differ considerably from *Apicaria*, and to resemble other members of EAA *Quadraria* series *Tetragonae*. Therefore they are here referred to two subseries within *Tetragonae*.

In support of their two-genus proposal, Carr and Carr (1959) developed an argument suggesting that the **Renantherae* have been derived from the **Eudesmieae* or a eudesmioid ancestor. There may be some affinities between some of the **Eudesmieae* (in this composite sense) and the **Renantherae* but this is *not* indicated by the evidence, as are the definite affinities between the **Clavigerae* (B), the **Corymbosae* (C), and **Angophora* (A), or between the **Porantheroideae-Terminales* (with modifications = SU) and most of Blakely's **Macrantherae* (with modifications = S, excluding SU).

To say the least, there are shortcomings in the idea that the **Eudesmieae* and the **Renantherae* should be grouped together, whether as a segregate genus or not. The two species GAA:A *E. curtisii* and GAA:C *E. tenuipes* are discordant, on several counts, among Blakely's **Eudesmieae* and it is highly questionable, especially on the basis of seed-coat anatomy, that these can be regarded as intermediates bridging the **Eudesmieae* and the **Renantherae*, as suggested by Carr and Carr.

There is a sharp break in seed-coat characters if one considers the presence of sclereids in the outer epidermis of the outer integument and the presence of a well-developed crystal layer in the inner epidermis of the outer integument. The former condition is found in the **Renantherae* as modified (M) and in *E. curtisii* and *E. tenuipes*, but is absent in the **Eudesmieae* proper (E), while it is *vice versa* in the case of the crystal layer. The diagrammatic illustration of the raphe in *E. curtisii* and *E. tenuipes* given by Carr and Carr (1962a, p. 435) and used in their argument cannot readily be reconciled with the facts. The raphe in these two species is quite long and as complex as that in *Monocalyptus* and not intermediate between the condition in that group and that in *Eudesmia* in our sense. In fact the seed of these two species resembles that of the genus *Tristania*, as pointed out originally by Maiden and noted by Gauba and Pryor (1959). The neat series **Eudesmieae* → *E. curtisii* / *E. tenuipes* → **Renantherae* in fact does not exist.

We regard *E. curtisii* and *E. tenuipes* as constituting a small group (G subgenus *Gaubaea*) standing in considerable isolation.

The notion that the presence of hairs on juvenile shoots is evidence of affinity between the **Eudesmieae* and the **Renantherae* must be regarded with suspicion. An indumentum of one kind or another is present in the following: A *Angophora*, B subgenus *Blakella*, C subgenus *Corymbia*, E subgenus *Eudesmia*, MAH subgenus *Monocalyptus* (section *Renantheria*) series *Capitellatae*, and a few species of SI subgenus *Symphyomyrtus* section *Bisectaria*. However, it is absent from G subgenus *Gaubaea*, I subgenus *Idiogenes*, M subgenus *Monocalyptus* except series *Capitellatae*, and almost all of the very large S subgenus *Symphyomyrtus* (i.e. *Symphyomyrtus* in our sense, not that of Carr and Carr which includes B and C also). Critical anatomical study of the trichomes is necessary before their similarities and differences can be fully assessed, but clearly a number of types exists. In particular, *Angophora*, *Blakella*, and *Corymbia* are linked by their indumentum-types as well as other features.

As discussed in 1.3.1.2. above, the development of the opercular structures (Pryor and Knox, in press) points up most clearly the wide gap between *Eudesmia* and *Monocalyptus* and, in conjunction with other features, aids in the separation of other groups treated by us as subgenera.

1.5.2. Summary of Subgeneric Relations

We may now summarise the subgeneric position in each case:

(i) Subgenera B *Blakella* and C *Corymbia* are clearly related to each other *and to* the traditionally separated "genus" A *Angophora*, more than to other subgenera. Evidence for this comes from virtually every one of the fields discussed earlier, and the separation into A *Angophora* on the one hand and the traditional *Eucalyptus* (B, C, E, G, I, M, S) on the other is an absurdity on general phenetic grounds, even without recourse to inferred phylogeny. The union of the three groups (A, B, C) could be advocated, but they are clearly marked off from each other and, so far as is known, are genetically isolated, so that we prefer to maintain them for the present as separate and in principle as co-equal. We have refrained from recommending formal reduction of *Angophora* at this stage purely to avoid nomenclatural reversals in the event of upgrading of our subgenera. The term "eucalypt" as used by us embraces *Angophora*, and the absence in the latter of the operculate condition in either perianth whorl is not considered more important than many other cases of resemblance or difference in the entire group. If one seeks to characterise the eucalypts as a whole by a single diagnostic feature (a naïvely simplistic and outmoded notion in the view of both phenetic and evolutionary taxonomists, though some other biologists seem to cling to it!), one could perhaps seize on the character of the broad-based petals (though these organs are inconveniently absent in *Monocalyptus*), as distinct from the clawed petals of other Myrtaceous genera.

(ii) Subgenus E *Eudesmia* as here delimited resembles the three foregoing only in the common possession of certain generalised Myrtaceous features, and cannot be regarded as at all closely related to them. *Eudesmia* hangs together well on most characters and is clearly separate from all of the following groups. As well as the two extremes of operculum condition found in the subgenus, intermediate and variable conditions occur in some species, illustrating how easily the transition in development can occur (see above, 1.5.1.).

(iii) Subgenus G *Gaubaea*, included in the so-called "eudesmioid complex" by Carr and Carr, clearly shares with *Eudesmia* only certain unspecialised features and stands widely apart in others. Subgenus I *Idiogenes* is here set up, somewhat tentatively, to accommodate the rather isolated species *E. cloëziana* which, as has been shown, is decidedly not a linking form between **Eudesmieae* and **Renantherae* as claimed by Carr and Carr. The possibility of its being related to *Gaubaea* deserves further detailed inquiry.

(iv) Subgenus M *Monocalyptus*, which comprises the **Renantherae* and **Renantheroideae* of Blakely with appropriate minor excisions and inclusions now generally agreed upon, we regard as an isolated group, still vigorous in evolutionary radiation. Despite the lack of the "renantherous" character of confluent anther-loculi in MAA series *Preissianae*, we consider this sufficiently bridged to the rest of the subgenus by the following series MAB *Diversifoliae* to justify the inclusion of all the species of *Monocalyptus* in a single section MA *Renantheria*.

(v) Subgenus S *Symphyomyrtus* is large and diverse but is nonetheless coherent in general. The division into sections within it is to some extent subjective, for the convenience of grouping the numerous series; thus, members of some sections seem to be fully interfertile (see 1.4.1.4., above). SU section *Adnataria* appears to show only very limited hybridism with some of those sections formerly referred to **Macrantherae* (see 1.4.1.4.) but nevertheless shares many morphological and other features with sections SE *Transversaria*, SI *Bisectaria*, SL *Dumaria*, SN *Exsertaria*, and SP *Maidenaria*. The remaining small sections SB *Equatoria* (mistakenly included in **Renantherae* by Blakely), SD *Tingleria* (perhaps related to *Transversaria* but differing strikingly in anthers and inflorescence), SQ *Umbrawarria*, SS *Howittaria*, and SW *Sebaria* show general morphological characters of *Symphyomyrtus* but still present problems of placement, and their recognition at this stage chiefly serves to emphasise their isolation from the larger sections and from each other.

2. THE CLASSIFICATION

2.1. Introduction and Explanation of the Table

2.1.1. Scope and Limitations

The classification here proposed and set out in the Synopsis (2.2.) and the Table (2.3.) below is *not* intended to be a conventional taxonomic revision in which nomenclature, typification, keys, descriptions, distributions, citation of specimens, and discussions are painstakingly presented for each taxon. To produce such an account would be an extremely protracted task, and there is *immediate* need for a *structured classification* as a basis for intelligent and profitable discussion and for presentation of evidence from the many workers now interested in the eucalypts. Until now authors have perforce built their papers around the outdated Blakely classification, with consequent waste of effort and ink in flogging dead horses and frequently with neglect of comparisons which need to be made.

To progress, any science needs updating of its hypotheses from time to time. A classificatory structure functions in a way as a hypothesis (Johnson 1970, Hull 1970, and other papers by Hull cited therein). It is certainly not necessary to present in detail every argument for a complex hypothesis in order for it to be useful and testable, within the limits of the discipline and general corpus of theory concerned. Likewise, a complex hypothesis may be modified without being destroyed. This, we hope, will be the justification, use, and future development of our classification, and we trust that it will be used as a basis for critical discussion by eucalypt workers over the coming years.

A revised version is foreseen and we intend that some formalisation necessary under the International Code of Botanical Nomenclature will be provided in the near future to enable fully practical use at the species and subspecies level. Notes on changes in circumscriptions and distributions from those given by Blakely and more recent authors should appear in this supplementary work. In order to meet the pressing need for a system, we have decided, albeit reluctantly, not to wait for completion of the time-consuming descriptive and nomenclatural work necessary for the naming of the quite numerous undescribed taxa and for changes in taxonomic rank of described ones.

Those who wish to identify eucalypts or to have details of distribution must continue to use other sources for the time being. Really satisfactory dichotomous keys for the whole genus are probably out of the question, but reasonably useful regional keys exist for many parts of the country and "Blakely" can still be used, with due caution, in conjunction with the present work. Given the vital prerequisite of accurate data-input, computer generation of keys may be useful in future but we emphasise that wrong information, however efficiently processed, will lead to wrong results. Multiple-access keys, such as the well-known card-sorting system of Hall and Johnston (1965), are perhaps the most practical, though not necessarily the most instructive, means of identification in large and difficult groups. In this case also, much improvement in accuracy is possible. The same cautionary remarks apply to multiple-access computer identification systems.

Quite certainly, the surest way to identify a eucalypt is to take an adequate specimen, with all possible field information, to an experienced specialist backed by a large and *critically curated* herbarium. Unfortunately there are not many of these.

2.1.2. Basis for Classification and Revision

The general basis for the classification presented has been outlined in 1.1. and 1.2., above. Revision will be possible using the same principles as more data come to hand. The question arises of possibly more efficient analysis of existing and new data and more effective or more "objective" classification. Techniques of taximetrics (so-called "numerical taxonomy") are now available in bewildering variety. Both the technical and the critical literature on this subject are now more than most taxonomists can keep up with, and their significance (and the fallacious "objectivity" of some approaches) is widely misunderstood by practitioners and non-practitioners of the numerical art (see Johnson 1968, 1970, and papers cited therein). We have ourselves not found it necessary to carry out taximetric analyses (the plural is vital, analysis by *one* method can be positively dangerous) and believe that in this field a great deal more progress can come about by increased and well-directed study by old and new *investigative* techniques than by more sophisticated processing of data. Nonetheless, intelligently performed and interpreted numerical analysis may not be wholly sterile in *Eucalyptus*. Where such an analysis shows wide discrepancies from the present (or any) scheme these should certainly be critically investigated, but in themselves they will prove nothing. In particular the notion that there is any generally acceptable meaning in numerical criteria of taxonomic *rank* ("phenon-levels" and so forth) is naïve in the extreme, and in so far as numerical studies are directed along such lines they are an exercise of almost childish futility.

2.1.3. Ranking of Taxa

It is quite possible to draw up a set of criteria for ranking taxa - it is another thing to show that it is better than many other possible sets and another thing again to apply it to sets of essentially incommensurable data. We have in general taken a moderately (but not extremely) narrow view of species since this leads to the least complication in nomenclature and corresponds fairly well to the usage of the last forty years and to the ideas of the critical forester, ecologist, and general field botanist with more than an extremely superficial knowledge of the genus. However, we fully recognise that some of what we call species could well be treated as subspecies and *vice versa*. In fact we would rather like the epithets to be interchangeable between these ranks so that one could speak, say, of *"glaucina"* without any necessary commitment to its being a species or subspecies. This is of course what "eucalypt men" in fact do in conversation. A "species" can be equivalent for some purposes to another "species" for others to a "subspecies", and for others again to what we have called a "superspecies". This category is here applied to a pair or group of reasonably or wholly distinct but closely related taxa which more "lumping" taxonomists than ourselves might with some justification unite into a single polytypic species.

Likewise it may be argued that some of our series are in some ways equivalent to sections in another part of the system. The answer is that they both are and are not, according to the point of view. There is no one right rank. Thus, the system is an attempt to apply the hierarchical structure of nested sets in a "reasonable" way to the array of actual contemporary eucalypt populations. Where it is absurd, this will show up in future work, but we hope that users will not futilely argue, for instance, whether the "Red Mahoganies" (SECC) "should" be treated as one, two, or three species. We only marginally adopt one particular view ourselves in such a case. On the other hand, if it is argued that SIGAA *E. wandoo* ought not to be specifically distinguished from (the various races of) SIGAC *E. redunca* because some unannotated specimens are hard to identify in the herbarium, we would emphatically disagree since, to our knowledge, these are easily distinguished by habit and bark in the field, occupy distinct habitats, and commonly occur in close proximity without breakdown of population distinctness. Taxonomy must apply to living organisms, of which preserved fragments are often inadequate samples (one regrets that it is still necessary to proclaim this).

2.1.4. Level of Certainty

The inherent indeterminacy of classification has been mentioned but there is also a considerable range of certainty in our own minds as to the reasonableness of particular placements or rankings. Until more detailed notes are published we cannot indicate this in detail but more knowledge of variation, breeding behaviour, and field relationships is desirable in some cases. A column in the Table (2.3.) indicates whether or not Pryor (P) and/or Johnson (J) have examined populations in nature. A positive entry may indicate anything from a somewhat hurried examination of a limited stand (in relatively few cases) up to very numerous examinations over an extensive area. Certain other species are known to one or both of us only from trees in cultivation but these cases are not recorded as examined in the field.

2.1.5. Ordering: Lack of Significance

Since a chart-type display is inconvenient for listing and reference in a large group, and in any case could in practice occupy only two dimensions, the names of taxa are here serially presented for convenience, though the multidimensional *structure* of the classification itself should be evident. The order of presentation should not be taken as very significant in relation to supposed "primitiveness", etc. Certainly *Angophora*, for instance, displays some primitive features but we do not agree that it in any sense represents an "ancestral" group. We hope that the classification in some measure reflects "phylogenetic" affinity (a mixture of *cladistic* and *patristic* affinity) (Johnson 1970, Hull 1970), but it does not represent phylogenetic *sequence*.

Unlike a dendrogram, this presentation does not indicate whether any particular affinity exists between successive groups. For example, we consider that there is a considerable affinity between SE *Transversaria* and SI *Bisectaria* which follows it, while SN *Exsertaria* shows no particular affinity with the immediately preceding SL *Dumaria* but considerable affinity with SE *Transversaria*. It is hoped to display or discuss such details in a later publication.

2.1.6. Hierarchy and Nomenclature of Categories

The hierarchy adopted has already been discussed in passing. Every non-hybrid individual is regarded ideally as being referable to a taxon in each of the following categories of ascending rank, except that those categories in brackets are not obligatory in the system but are inserted only when considered useful: [Subspecies], Species, [Superspecies], [Subseries], Series, Section, Subgenus (≡ nominal genus in the case of *Angophora*). Thus it will be seen that the obligatory categories are used even when there is only one taxon at a particular level included in a taxon of the next higher category.

We have become firmly convinced that application of the full requirements of the International Code of Botanical Nomenclature (with respect to priority) to the names of taxa between the ranks of genus and species is mischievously time-wasting and unprofitable. Taxa at these levels, more than at the widely used generic and specific levels, are normally set up and employed very much in relation to a particular published treatment and at least approximately with the circumscription used in that treatment. Their use is often almost meaningless unless accompanied by the appropriate reference (admittedly this can apply at all ranks, but usually to a markedly lesser degree in the "standard" ones of family, genus, and species). Moreover, literature search, typification, and often determination of intended rank are difficult and profitless except to the dedicated delver into biologically unrewarding antiquities. Again, names of taxa published in the same rank by different authors are often quite different in form or termination (and those of different rank are often indistinguishable in this way) and convey nothing of their included taxa of lower rank. There is no doubt that the names used by Blakely are often not the earliest available and that all the above considerations apply in the case of *Eucalyptus*. One also meets such cases as Blakely's subseries *"Sessiles"* or series *"Microcorythae"* (with grammatically wrong termination!) which have nothing to do with *E. sessilis* or *E. microcorys* respectively.

Consequently we have taken the step, which we suggest could be followed to advantage in other groups, of constructing names for taxa of the categories of subgenus, section, series, subseries and superspecies which are *explicitly divorced from the International Code*. These are for use by those who employ our system. They do not affect, and are not affected by, priority considerations concerning any names for taxa in like categories published by other authors. They are constructed on a systematic basis, indicate their "types" by their stems (except for subgenus and section), and are unambiguous to that extent. We see no reason at all to provide diagnoses or descriptions of the corresponding taxa: they are part of a set-inclusion structure and are circumscribed by us, in this classification, by listing their included subtaxa. Therefore reference to these names should be accompanied by a dated citation of the present classification or of its projected revisions. This may not lead to stability - it will lead to clarity, ease of use, and comprehension. To the charge that this procedure tends to undermine an international system, our reply is that the choice between (i) irksome and unprofitable but traditional confusion, and (ii) clear functional common sense, should be made in favour of the latter. One of us (L.J.) is a professional taxonomist not inexperienced in formal nomenclature, and our procedure here is not to be construed as an outsider's attack on the embattled traditional taxonomist but as the fruit of much "inside" experience.

It would be very convenient to apply a similar procedure to our subspecies category, but we are aware that at this date it would probably be more difficult for most taxonomists to accept at this level than at the less generally used infrageneric levels. Burtt (1970) has recently pointed out with great clarity the highly "messy" nature of formal infraspecific taxonomy and nomenclature, and supports the principle of recognising only one infraspecific category, designated by a simple trinomial. This view has much in its favour and only one such category is in fact used herein (see also 1.4.1.3.), namely *subspecies* which is preferred to *variety* because (i) it definitely implies that populations rather than scattered individuals are being classified, and (ii) in general we can thus avoid taking up varietal epithets based on trivial variants since (except for homonymy) priority of varietal names does not affect names in the formally distinct rank of subspecies. We do not especially look forward to having one or both of our names attached as authority to dozens of new combinations or rankings, but this is unavoidable if the International Code is followed, as it will be, in the later publication formalising the necessary changes. The zoologists' practice, in which the authors of such nomenclatural changes of position or rank are not cited, has much to recommend it.

The following exemplifies another deliberate departure from the Code of Nomenclature, aimed at avoiding ambiguity: the word *Eucalyptus* (in works adopting this system) will always mean the genus *sensu latiore*; the "type" subgenus will not also be designated by that word but will be called *Monocalyptus*. Further, so that the latter name will always, within the system, refer to a taxon of subgenus rank its sole section is given the name *Renantheria*. The content (in the language of logic the *extension*) of these two taxa is at present concretely the same. *Intensionally*, however, they are not identical - *Renantheria need* not, conceptually, be the only section in *Monocalyptus*, and the form of its name (see below, 2.1.7.) indicates its rank (see Buck and Hull 1969, Hull and Snyder 1969, Johnson 1970).

Users of the system are enjoined not to try to bring it into line with the International Code in these respects; in so doing the logical value of its reference pattern would be obscured and confusion would result.

2.1.7. Formation of Names

The names are constructed thus:

Subgenus: Specially invented or adopted substantives in "-a", "-es", or "-us" (all feminine in the actual cases) but *not* in "-ria". (*Angophora* has a generic name formally but in the spirit of the system it is equivalent to a subgenus.) *Blakella* is named in honour of Dr Stanley T. Blake of the Queensland Herbarium, who has contributed greatly to understanding of tropical eucalypts (Blake 1953) and who first defined this group as the *"Clavigerae"*. *Corymbia* is derived from the *"Corymbosae"* of earlier authors and ultimately from *E. corymbosa* (synonym of CAFUF *E. gummifera*); a corymb-like inflorescence is frequent in the subgenus. *Eudesmia* is adopted from *Eudesmia* R.Br., originally a generic name based on EAAAA *E. tetragona*. *Gaubaea* is named in honour of our late colleague and field companion Dr Erwin Gauba, whose work on ovule and seed anatomy has been of vital significance and in particular clarified the definition of this subgenus. *Idiogenes*, directly from Greek, signifies one who is of himself alone, being appropriate for IAA:A *E. cloëziana*; the word can have any gender, we here assign it the feminine. *Monocalyptus*, also of Greek derivation, refers to the single (calycine) operculum*; as already stated (2.1.6.) we have not repeated *Eucalyptus* for this but in generic rank that would be the correct name under the International Code. *Symphyomyrtus* is from the generic name *Symphyomyrtus* Schau., originally based upon the single species SICBE *E. lehmannii* (the supposedly distinctive character of which is quite superficial) but, as already stated, providing the earliest generic name for this group constituting well over half of the genus.

Section: These names all end in "-ria" and are thereby of recognisable rank. Some are obvious derivatives of names used by earlier authors or are derived from included species, while others are newly coined. The explanations are: AA *Liberia*, from Latin, referring to the *free* perianth members in *Angophora*. BA *Lemuria*, from Latin, referring to the fact that these white-barked species include the "*Ghost* Gums". CA *Rufaria*, from Latin, these include the "*Red* Bloodwoods". CC *Ochraria*, from neo-Latin ultimately from Greek; these include the "*Yellow* Bloodwoods". EA *Quadraria*, from Latin, referring to the *four* obvious *free* sepals. EF *Apicaria*, from Latin; the sepal-tips are carried up developmentally to the operculum *apex*. GA *Curtisaria*, from GAA:A *E. curtisii*. IA *Gympiaria*, from the "*Gympie* Messmate", its only species. MA *Renantheria*, from *"Renantherae"*, from Latin, referring to the (usually) *kidney*-shaped *anthers*. SB *Equatoria*, from Latin; SBA:A *E. deglupta* has an *equator*-straddling distribution and the other species are tropical. SD *Tingleria*; the sole species is the "Yellow *Tingle*". SE *Transversaria*, from *"Transversae"*, from Latin, referring to the *transverse* leaf-venation

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**Monocalyptus* is, of course, an obvious name and was used in unpublished discussions by one of us (L.J.) before 1958. It was independently published informally by Carr and Carr (1959b) to cover E, G, and M, but later abandoned by them in favour of *"Eucalyptus"* (in the same sense).

SI *Bisectaria*, from *"Bisectae"*, from Latin; the group has characteristically Y-shaped (*"bisected"*) cotyledons. SL *Dumaria*, from *"Dumosae"*, from SLE:G *E. dumosa*; this and many other of the species are mallees (Latin *dumosus* signifies "full of brushwood"). SN *Exsertaria*, from *"Exsertae"*, from Latin; the fruit valves are usually *exserted* and SNEEX *E. exserta* is one of the species (non-Latinists are warned not to omit the "s" after the "x"). SP *Maidenaria*, in honour of Joseph Henry Maiden, of Sydney, greatest of eucalyptologists and author of the still immensely valuable "Critical Revision of the Genus *Eucalyptus*" in eight massive volumes; this section from cool areas of south-eastern Australia is one with which Maiden had much personal experience and includes SPIFI *E. maidenii*. SQ *Umbrawarria*, from the sole species SQA:A *E. umbrawarrensis*; Umbrawarra is a locality in the north of the Northern Territory. SS *Howittaria*, from its only species SSA:A *E. howittiana*; A.W. Howitt was a knowledgeable collector of eucalypts. SU *Adnataria*, from *"Adnatae"*, from Latin; the anthers are *adnate* to the ends of the filaments, rather than "versatile". SW *Sebaria*, from Latin, the only species is the "*Tallow*wood".

Series: The names all end in "-ae" or "-es", which is added to the grammatical stem of the epithet of the *first-described species* referred to the series; "-a", "-on", and "-os" epithets are treated as second declension feminine Latin adjectives, yielding "-ae", while "-is" (normally third declension nominative but a genitive in *"crucis"* and *"comitae-vallis"*) yields "-es". There are a few other third-declension types, as *"microcorys"* (stem *"microcoryth-"* yielding *"Microcorythes"*) and *"cladocalyx"* (yielding *"Cladocalyces"*). Where the specific epithet is a genitive in "-i" or "-ae" then for derivation of the series name it is taken as if it were the adjectival form with stem ending in "-an-", thus *"jacksonii"* yields *"Jacksonianae"*.

Subseries: The names all end in "-inae" added to the stem of the epithet of the earliest-described included species. Note that genitive forms are *not* in this case (for reasons of euphony) converted to the "-an-" form, thus *"dundasii"* yields *"Dundasinae"* which also illustrates the elision of one "i" when the *stem* ends in "-i-". Endings in "-oides" are treated as if they were "-oidea", thus *"eugenioides"* yields *"Eugenioideinae"*.

Superspecies: The specific epithet of the earliest-described species is used, but with a capital initial, and the name as a whole is intended to be written thus: *E.* supersp. *Saligna*. This distinguishes it from *E. saligna* for the species.

Species: The correct epithet (so far as known) under the International Code is used if the combination is already validly published. If it is not so published then the Table lists the existing name in (say) varietal rank but in the "species" column, thus MAKHF *E. pauciflora* var. *nana* is treated herein as a species but for formal purposes will have to await later publication as a *"stat. nov."* or (if the epithet is replaced) as a *"nom. nov."*. We frankly do not mind if for colloquial purposes users anticipate such publication. We hope they will not confuse the issue by formally and validly publishing the names unless, of course, it was intended to do so irrespective of the present publication. A dashed line indicates an undescribed species known to us, and often to others.

Subspecies: The correct epithet under the International Code is used when available (e.g. SUX:IB *E. sideroxylon* ssp. *tricarpa*) but usually if only one word appears in the "subspecies" column it is an epithet at present existing only in specific combination (e.g. MAKHAD *debeuzevillei* under *E. pauciflora*). Reference to the Index will distinguish these cases.

If only a varietal combination exists then the entry is as in SIF:CB *"erythronema* var. *marginata"* and indicates that in our view this should be a subspecies but is not yet formally published as such. Again a dashed line indicates an undescribed subspecies known to us.

2.1.8. The Coded Classification

Throughout the preceding text the code designation of taxa has been freely used to facilitate reference to the Table.

This system has been devised to replace a system of serial numbers, which is both inflexible and information-poor.* It has been designed with a view to easy use in computer information-retrieval systems if desired. The system is in strict alphabetical order (with gaps) and can be used in the same way as a numerical series for storing, listing, indexing, etc. It is, however, much more than a serial index and indeed incorporates the whole classificatory structure so that one *need* not use the names at all.

The system was largely independently devised but possesses the advantages described by Hull (1966, 1968) for his "phylogenetic numericlature", though our system does not imply any attempt at exact representation of cladistic phylogeny. Hull's remarks on the greater information content of standard name-endings for various ranks may also be cited in support of our infrageneric nomenclature.

Gaps are deliberately left at many places in the coded arrangement to allow for considerable future changes (if these prove necessary) of relative position, interpolation, fusion or division of groups, etc., without these necessitating changes in parts of the system not directly involved. In many cases the letter combinations have been consciously chosen to give pronounceable, and therefore memorable, "words". Mnemonic value is also given to the first letter of the code, which is the initial letter of the relevant subgenus (e.g. E for *Eudesmia*).

The code designations range from one to six places, representing respectively the descending levels in the hierarchy from subgenus to subspecies (but omitting superspecies). Where the non-obligatory category of subseries is not employed, a neutral symbol (:) is used as a place-marker; in alphanumeric computer ordering this will come out before any letter. It will be seen that the coding for any taxon embodies that for all higher taxa which include it. Letters are used rather than numerals for the simple reason that there are 26 of them.

For clear reading, the codings for subgenera, sections, and series (i.e. 1 to 3 places) are underlined in the Table and the codings for those species which include subspecies are given in parentheses. These underlinings and parentheses are not intended to be used in references in texts, lists, etc., unless especially desired. Undescribed taxa are allotted code designations but will not be further specified or discussed in this publication. Future updating will probably require *some* coding changes, so a dated reference is desirable.

It is hoped that authors of comparative studies will make free use of the coding system because of its high information content. Where the coding and name are used together we recommend the practice used here, viz. coding directly followed by name.

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*It may prove convenient to produce a supplementary serial numbering system later, but a one-dimensional ordering of this kind tends to fix unsatisfactory and out-dated notions of particular affinities. This is most evident in the continued reference to the Blakely ordering. Blakely's classification was not *intended* to be one-dimensional or fixed, but the numbers (unlike the code now proposed) allowed no proper expression of this.

2.1.9. Example of Classification and Coding

The following example, and reference to the Table, should make the system clear:

Rank	Ending	Taxon	Code
Subgenus	-us -a -es	Symphyomyrtus	S
Section	-ria	Exsertaria	SN
Series	-ae -es	Tereticornes	SNE
[Subseries]	-inae	Bancroftinae	SNEC
[Superspecies]		E. supersp. Bancroftii	----
Species		E. parramattensis	SNECF
[Subspecies]		E. parramattensis ssp. parramattensis	SNECFA

2.1.10 Notes on the Synopsis

The Synopsis (2.2.) lists taxa down to the level of subseries, with appropriate coding (underlined for one- and two-place entries) and also tabulates the number of species (not subspecies) found to our knowledge in various regions (chiefly States), the key to which is as follows:

- Q: Queensland
- N: New South Wales
- V: Victoria
- T: Tasmania
- S: South Australia
- W: Western Australia *south of the 26th parallel of south latitude* (continuation of the northern border of South Australia)
- K: Western Australia *north of the 26th parallel* (the K suggests Kimberley but the region extends well to the south of the Kimberley Division)
- Y: Northern Territory
- M: Malesia (Timor and other Lesser Sunda Islands; Celebes; New Guinea and New Britain; Mindanao, southern Philippines)

Note. The column entries of the Distribution table are additive giving totals for a region, but the row entries are not additive since the same species may occur in two or more regions.

2.2. Synopsis of Classification

Subgenus (or Genus)	Section	Series	Subseries	Code	Q	N	V	T	S	W	K	Y	M
ANGOPHORA (retained as genus pro tempore)				A									
	Liberia			AA									
		Costatae		AAA									
			Cordifolinae	AAAA	-	1	-	-	-	-	-	-	-
			Floribundinae	AAAB	3	4	1	-	-	-	-	-	-
			Woodsianinae	AAAC	1	1	-	-	-	-	-	-	-
			Costatinae	AAAD	1	1	-	-	-	-	-	-	-
Genus EUCALYPTUS (all hereunder)													
BLAKELLA				B									
	Lemuria			BA									
		Clavigerae		BAA	6	1	-	-	-	-	6	6	2
CORYMBIA				C									
	Rufaria			CA									
		Setosae		CAA	2	-	-	-	-	-	5	3	-
		Ptychocarpae		CAB	-	-	-	-	-	-	1	1	-
		Gummiferae		CAF									
			Dichromophloinae	CAFE	3	2	-	-	2	2	6	5	1?
			Polycarpinae	CAFI	3	2	-	-	-	-	2	3	1
			Ficifolinae	CAFO	-	-	-	-	-	1	-	-	-
			Gummiferinae	CAFU	3	2	1	-	-	2	1	1	-
		Jacobsianae		CAJ	-	-	-	-	-	-	-	1	-
	Ochraria			CC									
		Eximiae		CCA	3	1	-	-	-	-	-	-	-
		Torellianae		CCB	1	-	-	-	-	-	-	-	-
		Maculatae		CCC	3	2	1	-	-	-	-	-	-
EUDESMIA				E									
	Quadraria			EA									
		Tetragonae		EAA									
			Tetragoninae	EAAA	-	-	-	-	-	3	-	-	-
			Ebbanoensinae	EAAB	-	-	-	-	-	1	-	-	-
			Jucundinae	EAAC	-	-	-	-	-	2	-	-	-
			Odontocarpinae	EAAD	1	-	-	-	2	3?	3	3	-
		Tetrodontae		EAC	1	-	-	-	-	-	1	1	-
	Apicaria			EF									
		Baileyanae		EFA									
			Similinae	EFAA	1	-	-	-	-	-	1	-	-
			Baileyaninae	EFAB	1	1	-	-	-	-	-	-	-
		Miniatae		EFC	2	-	-	-	-	-	2	2	-
GAUBAEA				G									
	Curtisaria			GA									
		Tenuipedes		GAA	2	-	-	-	-	-	-	-	-
IDIOGENES				I									
	Gympiaria			IA									
		Cloëzianae		IAA	1	-	-	-	-	-	-	-	-
MONOCALYPTUS (= EUCALYPTUS s.str.)				M									
	Renantheria			MA									
		Preissianae		MAA	-	-	-	-	-	4	-	-	-

Subgenus (or Genus)	Section	Series	Subseries	Code	Q	N	V	T	S	W	K	Y	M
MONOCALYPTUS (cont'd)													
		Diversifoliae		MAB									
			Diversifolinae	MABA	-	-	1	-	1	3	-	-	-
			Patentinae	MABB	-	-	-	-	-	2	-	-	-
		Marginatae		MAD									
			Buprestinae	MADA	-	-	-	-	-	2	-	-	-
			Marginatinae	MADC	-	-	-	-	-	2	-	-	-
		Jacksonianae		MAF	-	-	-	-	-	1	-	-	-
		Acmenioideae		MAG	2	2	-	-	-	-	-	-	-
		Capitellatae		MAH									
			Macrorhynchinae	MAHA	2	4	2	-	1	-	-	-	-
			Capitellatinae	MAHC	-	5	3	-	1	-	-	-	-
			Eugenioideinae	MAHE	3	14	2	-	-	-	-	-	-
		Pilulares		MAI									
			Pilularinae	MAIA	1	1	-	-	-	-	-	-	-
			Planchonianinae	MAIB	2	1	-	-	-	-	-	-	-
		Obliquae		MAK									
			Obliquinae	MAKA	1	1	1	1	1	-	-	-	-
			Delegatensinae	MAKB	-	1	1	1	-	-	-	-	-
			Regnantinae	MAKC	-	1	2	1	-	-	-	-	-
			Luehmannianinae	MAKD	1	2	-	-	-	-	-	-	-
			Considenianinae	MAKE	-	3	2	1	1	-	-	-	-
			Pauciflorinae	MAKH	1	2	1	1	1	-	-	-	-
			Strictinae	MAKI	1	10	2	-	-	-	-	-	-
			Kybeanensinae	MAKK	-	1	1	-	-	-	-	-	-
			Mitchellianinae	MAKL	-	-	1	-	-	-	-	-	-
			Stellulatinae	MAKM	-	4	1	-	-	-	-	-	-
		Piperitae		MAT									
			Amygdalininae	MATE	-	3	4	6	1	-	-	-	-
			Piperitinae	MATH	1	2	-	-	-	-	-	-	-
			Haemastominae	MATK	1	5	-	-	-	-	-	-	-
SYMPHYOMYRTUS				S									
	Equatoria			SB									
		Degluptae		SBA	1	-	-	-	-	-	1	1	1
	Tingleria			SD									
		Guilfoyleanae		SDA	-	-	-	-	-	1	-	-	-
	Transversaria			SE									
		Diversicolores		SEB	-	-	-	-	-	1	-	-	-
		Salignae		SEC									
			Saligninae	SECA	4	5	1	-	-	-	-	-	-
			Resiniferinae	SECC	3	3	-	-	-	-	-	-	-
			Punctatinae	SECE	3	2	-	-	-	-	-	-	-
			Longifolinae	SECG	-	1	1	-	1	-	-	-	-
	Bisectaria			SI									
		Cornutae		SIC									
			Gomphocephalinae	SICA	-	-	-	-	-	1	-	-	-

Subgenus (or Genus)	Section	Series	Subseries	Code	Q	N	V	T	S	W	K	Y	M
SYMPHYOMYRTUS (cont'd)													
			Cornutinae	SICB	-	-	-	-	-	5	-	-	-
		Occidentales		SID									
			Occidentalinae	SIDA	-	-	-	-	-	8	-	-	-
			Platypodinae	SIDC	-	-	-	-	-	5	-	-	-
		Erythronemae		SIF	-	-	-	-	-	3	-	-	-
		Reduncae		SIG									
			Reduncinae	SIGA	-	-	-	-	-	4	-	-	-
			Desmondensinae	SIGC	-	-	-	-	-	1	-	-	-
		Accedentes		SII	-	-	-	-	1	3	1?	1	-
		Grossae		SIJ	-	-	-	-	-	3	-	-	-
		Salubres		SIK	-	-	-	-	-	5	-	-	-
		Kruseanae		SIM	-	-	-	-	-	1	-	-	-
		Loxophlebae		SIN	-	-	-	-	-	2	-	-	-
		Cneorifoliae		SIP	-	-	-	-	1	7	-	-	-
		Squamosae		SIQ	-	1	-	-	-	-	-	-	-
		Bakeranae		SIR	1	1	-	-	1	1	1	1	-
		Cladocalyces		SIS	-	-	-	-	1	1	-	-	-
		Oleosae		SIT	1	3	2	-	4	11	1?	1	-
		Salmonophloiae		SIU	-	-	-	-	-	1	-	-	-
		Macrocarpae		SIV									
			Leptopodinae	SIVA	-	-	-	-	1	2	1	1	-
			Orbifolinae	SIVC	-	-	-	-	2	4	1	1	-
			Macrocarpinae	SIVE	1	-	-	-	2	9	3?	2	-
		Calycogonae		SIX	-	2	2	-	2	3	-	-	-
		Foecundae		SIZ	-	1	1	-	1	5	-	-	-
	Dumaria			<u>SL</u>									
		Dumosae		SLE	-	1	1	-	3	12	1	-	-
		Torquatae		SLI	-	-	-	-	3	8	-	-	-
		Incrassatae		SLO									
			Incrassatinae	SLOA	-	1	1	-	2	1	-	-	-
			Tetrapterinae	SLOB	-	-	-	-	-	3	-	-	-
		Dundasianae		SLU									
			Ovularinae	SLUA	-	-	-	-	-	3	-	-	-
			Dundasinae	SLUB	-	-	-	-	-	1	-	-	-
	Exsertaria			<u>SN</u>									
		Albae		SNA									
			Urophyllinae	SNAA	-	-	-	-	-	-	-	-	1
			Albinae	SNAB	3	-	-	-	-	-	3	3	1
			Mooreaninae	SNAD	-	-	-	-	-	-	4	1	-
			Herbertianinae	SNAF	-	-	-	-	-	-	2	1	-
			"Colopominae"	SNAG	1	-	-	-	-	-	-	-	-
		Tereticornes		SNE									
			Bancroftinae	SNEC	3	4	-	-	-	-	-	-	-
			Tereticorninae	SNEE	9	10	5?	-	2	2	2	2	1
		Michaelianae		SNI	1	1	-	-	-	-	-	-	-

Subgenus (or Genus)	Section	Series	Subseries	Code	Q	N	V	T	S	W	K	Y	M
SYMPHYOMYRTUS (cont'd)													
	Maidenaria			SP									
		Ovatae		SPE									
			Ovatinae	SPEA	1	3	4	3	1	-	-	-	-
			Manniferinae	SPEC	1	4	2	-	-	-	-	-	-
		Viminales		SPI									
			Neglectinae	SPIA	-	1	2	-	-	-	-	-	-
			Parvifolinae	SPIB	-	1	-	-	-	-	-	-	-
			Crenulatinae	SPIC	-	-	1	-	-	-	-	-	-
			Bridgesianinae	SPID	2	3	2	-	-	-	-	-	-
			Globulinae	SPIF	1	8	7	1	1	-	-	-	-
			Quadrangulatinae	SPIH	1	1	-	-	-	-	-	-	-
			Vernicosinae	SPIJ	-	-	-	1	-	-	-	-	-
			Viminalinae	SPIK	1	6	2	1	1	-	-	-	-
			Cordatinae	SPIN	2	9	6	7	1	-	-	-	-
	Umbrawarria			SQ									
		Umbrawarrenses		SQA	-	-	-	-	-	-	-	1	-
	Howittaria			SS									
		Howittianae		SSA	1	-	-	-	-	-	-	-	-
	Adnataria			SU									
		Oliganthae		SUA									
			Rummeryinae	SUAA	-	1	-	-	-	-	-	-	-
			Oliganthinae	SUAB	1	-	-	-	-	-	3	2	-
			Microthecinae	SUAD	4	1	-	-	1	1	3	4	-
		Largiflorentes		SUD									
			Normantonensinae	SUDA	1	1	-	-	-	2	-	1	-
			Largiflorentinae	SUDE	2	2	1	-	1	-	-	-	-
			Behrianinae	SUDG	-	1	1	-	1	-	-	-	-
		Cambageanae		SUG	1	-	-	-	-	-	-	-	-
		Intertextae		SUH	2	1	-	-	1	1	1	1	-
		Ochrophloiae		SUJ	2	1	-	-	-	-	-	-	-
		Moluccanae		SUL	5	4	2	-	2	-	-	-	-
		Odoratae		SUN									
			Argophloinae	SUNA	1	-	-	-	-	-	-	-	-
			Porosinae	SUNC	-	2	2	-	2	-	-	-	-
			Odoratinae	SUNE	1	2	4	-	3	-	-	-	-
		Pruinosae		SUP	13	4	-	-	-	-	2	2	-
		Polyanthemae		SUT	2	5	3	-	1	-	-	-	-
		Paniculatae		SUV	4	4	-	-	-	-	-	-	-
		Melliodorae		SUX	2	3	3	-	1	-	-	-	-
	Sebaria			SW									
		Microcorythes		SWA	1	1	-	-	-	-	-	-	-

2.3. Table of Classification

GENUS ANGOPHORA

	Subseries	Superspecies	Species	Subspecies (inc. Cline-Form)	Field Examn.	Code
Genus ANGOPHORA						A
Section LIBERIA						AA
Series COSTATAE						AAA
	Cordifolinae					AAAA
			cordifolia		PJ	AAAAA
	Floribundinae					AAAB
		Floribunda	subvelutina		PJ	AAABA
			floribunda		PJ	AAABB
			melanoxylon		-J	AAABC
			bakeri		PJ	AAABD
	Woodsianinae					AAAC
			woodsiana		PJ	AAACA
	Costatinae					AAAD
			costata			(AAADA)
				costata	PJ	AAADAA
				--------	PJ	AAADAB
				--------	-J	AAADAC

	Subseries	Superspecies	Species	Subspecies (inc. Cline-Form)	Field Examn.	Code
Subgenus BLAKELLA						B
Section LEMURIA						BA
Series CLAVIGERAE						BAA
			tessellaris		PJ	BAA:A
			papuana			(BAA:B)
				papuana	PJ	BAA:BA
				--------	PJ	BAA:BB
			grandifolia		PJ	BAA:D
			confertiflora		PJ	BAA:E
			clavigera		PJ	BAA:F
			--------		--	BAA:G
			gilbertensis		PJ	BAA:H
			aspera		PJ	BAA:I
			--------		PJ	BAA:J

	Subseries	Superspecies	Species	Subspecies (inc. Cline-Form)	Field Examn.	Code
Subgenus CORYMBIA						C
Section RUFARIA						CA
Series SETOSAE						CAA
			setosa		PJ	CAA:A
		Ferruginea	ferruginea		PJ	CAA:B
			abbreviata		--	CAA:C
			zygophylla		PJ	CAA:D
			perfoliata		PJ	CAA:E
Series PTYCHOCARPAE						CAB
			ptychocarpa		PJ	CAB:A
Series GUMMIFERAE						CAF
	Dichromophloinae					CAFE
			collina		PJ	CAFEA
			bleeseri		PJ	CAFEC
			foelscheana		PJ	CAFEE
		Dichromophloia	latifolia		PJ	CAFEF
			dichromophloia			(CAFEG)
				dichromophloia	PJ	CAFEGA
				--------	--	CAFEGB
				--------	--	CAFEGC
				erythrophloia	PJ	CAFEGE
				polycarpa var. oligocarpa	PJ	CAFEGG
			--------		--	CAFEM
			terminalis		PJ	CAFEP
	Polycarpinae					CAFI
			polycarpa		PJ	CAFIB
			intermedia		PJ	CAFID
			porrecta		PJ	CAFIF
			cliftoniana		PJ	CAFIJ
			abergiana		PJ	CAFIL
	Ficifolinae					CAFO
			ficifolia		PJ	CAFOA
	Gummiferinae					CAFU
			calophylla		PJ	CAFUA
			haematoxylon		P-	CAFUD
			gummifera		PJ	CAFUF
			trachyphloia		PJ	CAFUJ
			nesophila			(CAFUL)
				nesophila	PJ	CAFULA
				--------	--	CAFULB
Series JACOBSIANAE						CAJ
			jacobsiana		--	CAJ:A
Section OCHRARIA						CC
Series EXIMIAE						CCA

	Subseries	Superspecies	Species	Subspecies (inc. Cline-Form)	Field Examn.	Code
Section OCHRARIA (Cont'd)						
Series EXIMIAE (Cont'd)						
		Peltata	peltata			(CCA:A)
				peltata	PJ	CCA:AA
				leichhardtii	PJ	CCA:AB
			bloxsomei		PJ	CCA:C
			watsoniana		PJ	CCA:D
			eximia		PJ	CCA:E
Series TORELLIANAE						CCB
			torelliana		PJ	CCB:A
Series MACULATAE						CCC
		Maculata	citriodora		PJ	CCC:A
			maculata		PJ	CCC:B
			--------		PJ	CCC:C

	Subseries	Superspecies	Species	Subspecies (inc. Cline-Form)	Field Examn.	Code
Subgenus EUDESMIA						E
Section QUADRARIA						EA
Series TETRAGONAE						EAA
	Tetragoninae					EAAA
			tetragona			(EAAAA)
				tetragona	PJ	EAAAAA
				--------	--	EAAAAB
			erythrocorys		PJ	EAAAC
			eudesmoides			(EAAAE)
				eudesmoides	PJ	EAAAEA
				--------	--	EAAAEB
	Ebbanoensinae					EAAB
			ebbanoensis		PJ	EAABJ
	Jucundinae					EAAC
			roycei		--	EAACL
			jucunda		--	EAACM
	Odontocarpinae					EAAD
			gongylocarpa		--	EAADA
		Odontocarpa	odontocarpa			(EAADC)
		Odontocarpa		odontocarpa	PJ	EAADCA
		Odontocarpa		--------	--	EAADCB
		Odontocarpa	gamophylla		PJ	EAADE
Series TETRODONTAE						EAC
			tetrodonta		PJ	EAC:A
Section APICARIA						EF
Series BAILEYANAE						EFA
	Similinae					EFAA
			similis		P-	EFAAA
			lirata		PJ	EFAAB
	Baileyaninae					EFAB
			baileyana		PJ	EFABA
Series MINIATAE						EFC
			miniata		PJ	EFC:A
			phoenicea		PJ	EFC:B

	Subseries	Superspecies	Species	Subspecies (inc. Cline-Form)	Field Examn.	Code
Subgenus GAUBAEA						G
Section CURTISARIA						GA
Series TENUIPEDES						GAA
			curtisii		PJ	GAA:A
			tenuipes		PJ	GAA:C

	Subseries	Superspecies	Species	Subspecies (inc. Cline-Form)	Field Examn.	Code
*Subgenus IDIOGENES**						I
Section GYMPIARIA						IA
Series CLOËZIANAE						IAA
			cloëziana		PJ	IAA:A

* This name, reflecting the singularity of E. cloëziana, is to be taken as of feminine gender.

	Subseries	Superspecies	Species	Subspecies (inc. Cline-Form)	Field Examn.	Code
Subgenus MONOCALYPTUS						M
Section RENANTHERIA						MA
Series PREISSIANAE						MAA
			megacarpa		PJ	MAA:A
			preissiana		PJ	MAA:B
			coronata		--	MAA:C
			--------		--	MAA:D
Series DIVERSIFOLIAE						MAB
	Diversifolinae					MABA
			pachyloma		PJ	MABAA
			--------		--	MABAB
			diversifolia		PJ	MABAC
	Patentinae					MABB
			patens		PJ	MABBA
			todtiana		PJ	MABBB
Series MARGINATAE						MAD
	Buprestinae					MADA
			buprestium		PJ	MADAA
			sepulcralis		--	MADAC
	Marginatinae					MADC
		Marginata	marginata		PJ	MADCA
			staeri		PJ	MADCB
Series JACKSONIANAE						MAF
			jacksonii		PJ	MAF:A
Series ACMENIOIDEAE						MAG
		Acmenioides	umbra			(MAG:A)
				umbra	PJ	MAG:AA
				carnea	PJ	MAG:AB
			acmenioides		PJ	MAG:C
Series CAPITELLATAE						MAH
	Macrorhynchinae					MAHA
			muellerana		PJ	MAHAA
			laevopinea		PJ	MAHAB
		Macrorhyncha	macrorhyncha			(MAHAC)
				macrorhyncha	PJ	MAHACA
				cannonii	PJ	MAHACB
			youmanii		PJ	MAHAE
	Capitellatinae					MAHC
		Alpina	baxteri			(MAHCA)
				baxteri	PJ	MAHCAA
				baxteri var. pedicellata	--	MAHCAB
			alpina		PJ	MAHCC
			blaxlandii		PJ	MAHCD

	Subseries	Superspecies	Species	Subspecies (inc. Cline-Form)	Field Examn.	Code
Section RENANTHERIA (Cont'd)						
Series CAPITELLATAE (Cont'd)						
		Capitellata	camfieldii		PJ	MAHCE
			capitellata		PJ	MAHCF
			agglomerata		PJ	MAHCG
			tindaliae		PJ	MAHCI
	Eugenioideinae					MAHE
		Eugenioides	eugenioides		PJ	MAHEA
			nigra		-J	MAHEB
			phaeotricha		PJ	MAHEC
			caliginosa		PJ	MAHED
		Globoidea	globoidea		PJ	MAHEF
			--------		-J	MAHEG
			cameronii		PJ	MAHEH
			--------		-J	MAHEI
			conglomerata		PJ	MAHEJ
			--------		-J	MAHEK
		Oblonga	oblonga			(MAHEL)
				oblonga	PJ	MAHELA
				deformis	-J	MAHELB
			--------		-J	MAHEN
			--------		-J	MAHEO
			ligustrina		PJ	MAHEQ
			mckieana		-J	MAHER
Series PILULARES						MAI
	Pilularinae					MAIA
			pilularis			(MAIAA)
				pilularis	PJ	MAIAAA
				pilularis var. pyriformis	PJ	MAIAAB
	Planchonianinae					MAIB
		Planchoniana	--------		PJ	MAIBA
			planchoniana		PJ	MAIBB
Series OBLIQUAE						MAK
	Obliquinae					MAKA
			obliqua		PJ	MAKAA
	Delegatensinae					MAKB
			delegatensis		PJ	MAKBE
	Regnantinae					MAKC
		Regnans	regnans		PJ	MAKCA
			fastigata		PJ	MAKCB
	Luehmannianinae					MAKD
		Luehmanniana	oreades		PJ	MAKDA
			luehmanniana			(MAKDB)
				luehmanniana	PJ	MAKDBA
				--------	PJ	MAKDBB

	Subseries	Superspecies	Species	Subspecies (inc. Cline-Form)	Field Examn.	Code
Section RENANTHERIA (Cont'd)						
Series OBLIQUAE (Cont'd)						
	Considenianinae					MAKE
		Consideniana	consideniana		PJ	MAKEA
			remota		P-	MAKEB
		Multicaulis	sieberi		PJ	MAKED
			multicaulis		PJ	MAKEE
	Pauciflorinae					MAKH
		Pauciflora	pauciflora			(MAKHA)
				pauciflora	PJ	MAKHAA
				--------	PJ	MAKHAB
				niphophila	PJ	MAKHAC
				debeuzevillei	PJ	MAKHAD
			pauciflora var. nana		PJ	MAKHF
	Strictinae					MAKI
			--------		-J	MAKIA
			fraxinoides		PJ	MAKIB
			triflora		PJ	MAKIC
		Stricta	obtusiflora var. dendromorpha		PJ	MAKID
			obtusiflora		PJ	MAKIE
			-------- burgessiana		-J	MAKIF
			stricta		PJ	MAKIG
			apiculata			(MAKIH)
				apiculata	PJ	MAKIHA
				--------	-J	MAKIHB
			-------- [illegible]		PJ	MAKIJ
			approximans			(MAKIK)
				approximans	--	MAKIKA
				--------	PJ	MAKIKB
				codonocarpa	--	MAKIKC
	Kybeanensinae					MAKK
			kybeanensis		PJ	MAKKA
	Mitchellianinae					MAKL
			mitchelliana		PJ	MAKLA
	Stellulatinae					MAKM
		Stellulata	stellulata		PJ	MAKMA
			moorei var. latiuscula		P-	MAKMB
			moorei		PJ	MAKMC
			--------		-J	MAKMD
Series PIPERITAE						MAT
	Amygdalininae					MATE
		Risdonii	risdonii		PJ	MATEB
			tenuiramis		PJ	MATEC

Subseries	Superspecies	Species	Subspecies (inc. Cline-Form)	Field Examn.	Code
Section RENANTHERIA (Cont'd)					
Series PIPERITAE (Cont'd)					
Amygdalininae (Con'd)		pulchella		PJ	MATEG
	Amygdalina	amygdalina			(MATEH)
	Amygdalina		amygdalina	PJ	MATEHA
	Amygdalina		--------	P-	MATEHB
	Amygdalina	nitida		PJ	MATEJ
	Amygdalina	radiata			(MATEL)
	Amygdalina		radiata	PJ	MATELA
	Amygdalina		robertsonii	PJ	MATELC
		elata		PJ	MATEN
		dives		PJ	MATEP
		coccifera		PJ	MATES
Piperitinae					MATH
		piperita			(MATHA)
			piperita	PJ	MATHAA
			urceolaris	PJ	MATHAC
		andrewsii			(MATHD)
			andrewsii	PJ	MATHDA
			campanulata	PJ	MATHDB
Haemastominae					MATK
	Haemastoma	haemastoma		PJ	MATKA
	Haemastoma	haemastoma var. sclerophylla		PJ	MATKB
	Haemastoma	signata		PJ	MATKD
	Haemastoma	racemosa		PJ	MATKE
	Haemastoma	rossii		PJ	MATKF

	Subseries	Superspecies	Species	Subspecies (inc. Cline-Form)	Field Examn.	Code
Subgenus SYMPHYOMYRTUS						S
Section EQUATORIA						SB
Series DEGLUPTAE						SBA
			deglupta		P-	SBA:A
			raveretiana		PJ	SBA:C
			brachyandra		PJ	SBA:D
Section TINGLERIA						SD
Series GUILFOYLEANAE						SDA
			guilfoylei		PJ	SDA:A
Section TRANSVERSARIA						SE
Series DIVERSICOLORES						SEB
			diversicolor		PJ	SEB:A
Series SALIGNAE						SEC
	Saligninae					SECA
			deanei		PJ	SECAA
			grandis		PJ	SECAB
		Saligna	saligna		PJ	SECAC
		Saligna	botryoides		PJ	SECAD
			robusta		PJ	SECAF
	Resiniferinae					SECC
		Resinifera	pellita		PJ	SECCA
		Resinifera	notabilis		PJ	SECCB
		Resinifera	resinifera		PJ	SECCC
	Punctatinae					SECE
		Propinqua	propinqua		PJ	SECEA
		Propinqua	major		PJ	SECEB
			punctata			(SECED)
				punctata	PJ	SECEDA
				canaliculata	-J	SECEDC
				punctata var. didyma	-J	SECEDD
				punctata var. longirostrata	PJ	SECEDE
	Longifolinae					SECG
			longifolia		PJ	SECGA
			cosmophylla		PJ	SECGB
Section BISECTARIA						SI
Series CORNUTAE						SIC
	Gomphocephalinae					SICA
			gomphocephala		PJ	SICAA
	Cornutinae					SICB
		Cornuta	cornuta		PJ	SICBA
		Cornuta	macrocera		--	SICBB

Series	Subseries	Superspecies	Species	Subspecies (inc. Cline-Form)	Field Examn.	Code
Section BISECTARIA (Cont'd)						
Series CORNUTAE (Cont'd)						
	Cornutinae (Cont'd)	Burdettiana	burdettiana		--	SICBC
			megacornuta		--	SICBD
			lehmannii		P-	SICBE
Series OCCIDENTALES						SID
	Occidentalinae					SIDA
			occidentalis		PJ	SIDAA
		Astringens	astringens		PJ	SIDAB
			--------		PJ	SIDAC
			sargentii		PJ	SIDAE
			stowardii		--	SIDAG
			occidentalis var. stenantha		--	SIDAH
			macrandra		--	SIDAJ
			annulata			(SIDAK)
				annulata	PJ	SIDAKA
				--------	PJ	SIDAKB
	Platypodinae					SIDC
			nutans		PJ	SIDCA
			platypus		PJ	SIDCB
		Spathulata	spathulata			(SIDCD)
				spathulata	PJ	SIDCDA
				spathulata var. grandiflora	PJ	SIDCDB
			steedmanii		--	SIDCF
			eremophila			(SIDCH)
				eremophila	PJ	SIDCHA
				eremophila var. pterocarpa	--	SIDCHB
Series ERYTHRONEMAE						SIF
			cylindriflora		PJ	SIF:A
			erythronema			(SIF:C)
				erythronema	PJ	SIF:CA
				erythronema var. marginata	PJ	SIF:CB
			dielsii		--	SIF:F
Series REDUNCAE						SIG
	Reduncinae					SIGA
		Redunca	wandoo		PJ	SIGAA
			redunca			(SIGAC)
				redunca	PJ	SIGACA
				redunca var. subangusta	PJ	SIGACB
				redunca var. melanophloia	--	SIGACE
			xanthonema		--	SIGAG
			gardneri		PJ	SIGAJ

	Subseries	Superspecies	Species	Subspecies (inc. Cline-Form)	Field Examn.	Code
Section BISECTARIA (Cont'd)						
Series REDUNCAE (Cont'd)						
	Desmondensinae					SIGC
			desmondensis		PJ	SIGCA
Series ACCEDENTES						SII
			laeliae		--	SII:A
			accedens		PJ	SII:C
			trivalvis		PJ	SII:E
Series GROSSAE						SIJ
			grossa		PJ	SIJ:A
		Stricklandii	stricklandii		PJ	SIJ:C
		Stricklandii	carnei		--	SIJ:D
Series SALUBRES						SIK
		Salubris	salubris		PJ	SIK:A
		Salubris	salubris var. glauca		PJ	SIK:B
		Salubris	campaspe		PJ	SIK:C
			diptera			(SIK:F)
				diptera	PJ	SIK:FA
				--------	--	SIK:FB
			--------		--	SIK:I
Series KRUSEANAE						SIM
			kruseana		--	SIM:A
Series LOXOPHLEBAE						SIN
		Loxophleba	loxophleba			(SIN:A)
		Loxophleba		loxophleba	PJ	SIN:AA
		Loxophleba		--------	PJ	SIN:AB
		Loxophleba	--------		PJ	SIN:C
Series CNEORIFOLIAE						SIP
			doratoxylon		P-	SIP:A
			decurva		PJ	SIP:B
			goniantha		PJ	SIP:D
		Decipiens	falcata		PJ	SIP:E
		Decipiens	decipiens		PJ	SIP:G
			micranthera		PJ	SIP:I
			cneorifolia		P-	SIP:K
			angustissima		--	SIP:M
Series SQUAMOSAE						SIQ
			squamosa		PJ	SIQ:A
Series BAKERANAE						SIR
			jutsonii			(SIR:A)
				jutsonii	PJ	SIR:AA
				--------	--	SIR:AB
				mannensis	PJ	SIR:AC
			bakeri		-J	SIR:E

	Subseries	Superspecies	Species	Subspecies (inc. Cline-Form)	Field Examn.	Code
Section BISECTARIA (Cont'd)						
Series CLADOCALYCES						SIS
			cladocalyx		P-	SIS:A
			brockwayi		PJ	SIS:C
Series OLEOSAE						SIT
		Oleosa	longicornis		PJ	SIT:A
		Oleosa	grasbyi		PJ	SIT:B
		Oleosa	oleosa		PJ	SIT:C
			kochii		--	SIT:E
			peeneri		--	SIT:H
			transcontinentalis		PJ	SIT:K
		Socialis	socialis		PJ	SIT:L
		Socialis	gillii		PJ	SIT:N
		Socialis	--------		PJ	SIT:O
			oleosa var. borealis		PJ	SIT:Q
		Cooperana	cooperana		--	SIT:S
		Cooperana	flocktoniae		PJ	SIT:T
Series SALMONOPHLOIAE						SIU
			salmonophloia		PJ	SIU:A
Series MACROCARPAE						SIV
	Leptopodinae					SIVA
			leptopoda		PJ	SIVAA
			oxymitra		-J	SIVAC
	Orbifolinae					SIVC
			ewartiana		-J	SIVCA
			orbifolia			(SIVCC)
				orbifolia	--	SIVCCA
				websterana	PJ	SIVCCB
			crucis		--	SIVCE
			caesia		--	SIVCG
	Macrocarpinae					SIVE
			lane-poolei		P-	SIVEA
			drummondii		PJ	SIVEC
			macrocarpa		PJ	SIVEE
		Oldfieldii	oldfieldii		PJ	SIVEH
		Oldfieldii	burracoppinensis		PJ	SIVEJ
		Oldfieldii	rameliana		--	SIVEK
		Pyriformis	pyriformis		PJ	SIVEM
		Pyriformis	youngiana		P-	SIVEN
		Pyriformis	pachyphylla		PJ	SIVEO
		Pyriformis	kingsmillii		PJ	SIVEQ
		Pyriformis	sessilis		PJ	SIVES

	Subseries	Superspecies	Species	Subspecies (inc. Cline-Form)	Field Examn.	Code
Section BISECTARIA (Cont'd)						
Series CALYCOGONAE						SIX
		Calycogona	gracilis			(SIX:A)
				gracilis	PJ	SIX:AA
				gracilis var. yilgarnensis	PJ	SIX:AB
			calycogona		PJ	SIX:D
			celastroides		PJ	SIX:F
Series FOECUNDAE						SIZ
		Foecunda	rigidula		PJ	SIZ:A
			foecunda		PJ	SIZ:B
			formanii		--	SIZ:D
			uncinata		PJ	SIZ:E
			albida		PJ	SIZ:G
Section DUMARIA						SL
Series DUMOSAE						SLE
			woodwardii		P-	SLE:A
			sheathiana		PJ	SLE:C
		Dumosa	dongarraensis		PJ	SLE:D
			striaticalyx		PJ	SLE:F
			dumosa			(SLE:G)
				dumosa	PJ	SLE:GA
				pileata	PJ	SLE:GB
			conglobata			(SLE:I)
				conglobata	PJ	SLE:IA
				anceps	PJ	SLE:IB
			--------		PJ	SLE:J
		Clelandii	kondininensis		PJ	SLE:K
			--------		--	SLE:L
			clelandii		PJ	SLE:M
			lesouefii		PJ	SLE:N
			--------		--	SLE:O
Series TORQUATAE						SLI
		Melanoxylon	rugosa		PJ	SLI:A
			brachycalyx		--	SLI:B
			melanoxylon		--	SLI:C
		Merrickiae	merrickiae			(SLI:D)
				merrickiae	PJ	SLI:DA
				platycorys	--	SLI:DB
			leptocalyx		PJ	SLI:F
		Griffithsii	comitae-vallis			(SLI:G)
				comitae-vallis	PJ	SLI:GA
				brachycorys	--	SLI:GB
			concinna		PJ	SLI:I
			griffithsii			(SLI:J)
				griffithsii	PJ	SLI:JA
				griffithsii var. angustiuscula	PJ	SLI:JB

	Subseries	Superspecies	Species	Subspecies (inc. Cline-Form)	Field Examn.	Code
Section DUMARIA (Cont'd)						
Series TORQUATAE (Cont'd)						
			corrugata		--	SLI:K
			torquata		PJ	SLI:M
Series INCRASSATAE						SLO
	Incrassatinae					SLOA
			pimpiniana		--	SLOAA
			incrassata		PJ	SLOAB
	Tetrapterinae					SLOB
			stoatei		--	SLOBA
			tetraptera		PJ	SLOBC
			forrestiana			(SLOBE)
				forrestiana	--	SLOBEA
				--------	PJ	SLOBEB
Series DUNDASIANAE						SLU
	Ovularinae					SLUA
			ovularis		PJ	SLUAA
			--------		--	SLUAC
			oraria		PJ	SLUAE
	Dundasinae					SLUB
			dundasii		PJ	SLUBA
Section EXSERTARIA						SN
Series ALBAE						SNA
	Urophyllinae					SNAA
			--------		P-	SNAAA
	Albinae					SNAB
		Alba	alba			(SNABA)
				alba	PJ	SNABAA
				platyphylla	PJ	SNABAC
				platyphylla var. tintinnans	PJ	SNABAD
			bigalerita		PJ	SNABE
			brevifolia			(SNABG)
				brevifolia	PJ	SNABGA
				confluens	PJ	SNABGB
	Mooreaninae					SNAD
		Mooreana	mooreana		--	SNADA
			--------		PJ	SNADB
		Houseana	houseana		PJ	SNADD
			apodophylla		P-	SNADE
	Herbertianinae					SNAF
			herbertiana		PJ	SNAFA
			cupularis		PJ	SNAFB
	"Colopominae"					SNAG
			--------		-J	SNAGA

	Subseries	Superspecies	Species	Subspecies (inc. Cline-Form)	Field Examn.	Code
Section EXSERTARIA (Cont'd)						
Series TERETICORNES						SNE
	Bancroftinae					SNEC
		Bancroftii	seeana			(SNECA)
				seeana	PJ	SNECAA
				--------	PJ	SNECAB
			--------		PJ	SNECC
			bancroftii		PJ	SNECE
			parramattensis			(SNECF)
				parramattensis	PJ	SNECFA
				--------	-J	SNECFB
			pumila		-J	SNECH
	Tereticorninae					SNEE
			amplifolia		PJ	SNEEA
		Tereticornis	tereticornis		PJ	SNEEB
			glaucina		-J	SNEEC
			blakelyi			(SNEEF)
				blakelyi	PJ	SNEEFA
				blakelyi var. irrorata	PJ	SNEEFB
			dealbata var. chloroclada		PJ	SNEEH
			dealbata		PJ	SNEEJ
			dwyeri		PJ	SNEEL
		Camaldulensis	camaldulensis			(SNEEP)
				camaldulensis	PJ	SNEEPA
				camaldulensis var. obtusa	PJ	SNEEPE
			rudis		PJ	SNEER
		Exserta	--------		P-	SNEET
			exserta		PJ	SNEEX
			morrisii		PJ	SNEEZ
Series MICHAELIANAE						SNI
			michaeliana		PJ	SNI:A
Section MAIDENARIA						SP
Series OVATAE						SPE
	Ovatinae					SPEA
		Ovata	camphora		PJ	SPEAA
			ovata		PJ	SPEAB
			yarraensis		PJ	SPEAC
			--------		PJ	SPEAF
		Aggregata	aggregata		PJ	SPEAG
			rodwayi		PJ	SPEAH
	Manniferinae					SPEC
			aromaphloia		PJ	SPECA
			acaciiformis		PJ	SPECC

	Subseries	Superspecies	Species	Subspecies (inc. Cline-Form)	Field Examn.	Code
Section MAIDENARIA (Cont'd)						
Series OVATAE (Cont'd)						
	Manniferinae (Cont'd)		nicholii		PJ	SPECE
		Mannifera	mannifera			(SPECH)
				mannifera	PJ	SPECHA
				praecox	PJ	SPECHB
				elliptica	PJ	SPECHC
				maculosa	PJ	SPECHD
				gullickii	PJ	SPECHE
			scoparia		-J	SPECM
Series VIMINALES						SPI
	Neglectinae					SPIA
			neglecta		P-	SPIAA
			kitsoniana		PJ	SPIAC
			--------		PJ	SPIAF
	Parvifolinae					SPIB
			parvifolia		PJ	SPIBA
	Crenulatinae					SPIC
			crenulata		PJ	SPICA
	Bridgesianinae					SPID
			dunnii		PJ	SPIDA
		Bridgesiana	angophoroides		PJ	SPIDB
			bridgesiana			(SPIDC)
				bridgesiana	PJ	SPIDCA
				malacoxylon	PJ	SPIDCB
	Globulinae					SPIF
		Goniocalyx	banksii		PJ	SPIFA
			goniocalyx		PJ	SPIFB
			nortonii		PJ	SPIFC
			cypellocarpa		PJ	SPIFE
			nitens		PJ	SPIFG
		Globulus	maidenii		PJ	SPIFI
			pseudoglobulus		PJ	SPIFJ
			st-johnii		PJ	SPIFK
			globulus		PJ	SPIFL
	Quadrangulatinae					SPIH
			quadrangulata		PJ	SPIHA
	Vernicosinae					SPIJ
			vernicosa			(SPIJA)
				vernicosa	-J	SPIJAA
				subcrenulata	PJ	SPIJAB
				johnstonii	PJ	SPIJAC
	Viminalinae					SPIK
			macarthurii		PJ	SPIKC
			smithii		PJ	SPIKE

Subseries	Superspecies	Species	Subspecies (inc. Cline-Form)	Field Examn.	Code
Section MAIDENARIA (Cont'd)					
Series VIMINALES (Cont'd)					
Viminalinae (Cont'd)		viminalis			(SPIKK)
			viminalis	PJ	SPIKKA
			--------	-J	SPIKKB
			--------	PJ	SPIKKD
			--------	PJ	SPIKKE
			--------	P-	SPIKKG
			pryoriana	PJ	SPIKKI
	Baeuerlenii	badjensis		PJ	SPIKN
		baeuerlenii		PJ	SPIKO
		benthamii		-J	SPIKQ
Cordatinae					SPIN
		--------		PJ	SPINB
	Rubida	dalrympleana			(SPINC)
			dalrympleana	PJ	SPINCA
			--------	PJ	SPINCB
			heptantha	PJ	SPINCC
		rubida		PJ	SPINF
		chapmaniana		PJ	SPING
	Gunnii	glaucescens		PJ	SPINH
		gunnii			(SPINI)
			gunnii	PJ	SPINIA
			archeri	PJ	SPINIB
		morrisbyi		PJ	SPINK
		urnigera		PJ	SPINL
		perriniana		PJ	SPINN
		cordata		PJ	SPINO
		pulverulenta		PJ	SPINQ
	Cinerea	nova-anglica		PJ	SPINS
		cinerea			(SPINU)
			cinerea	PJ	SPINUA
			--------	PJ	SPINUB
			cephalocarpa	PJ	SPINUC
			--------	PJ	SPINUD
Section UMBRAWARRIA					SQ
Series UMBRAWARRENSES					SQA
		umbrawarrensis		-J	SQA:A
Section HOWITTARIA					SS
Series HOWITTIANAE					SSA
		howittiana		PJ	SSA:A
Section ADNATARIA					SU
Series OLIGANTHAE					SUA
Rummeryinae					SUAA
		rummeryi		-J	SUAAA

	Subseries	Superspecies	Species	Subspecies (inc. Cline-Form)	Field Examn.	Code
Section ADNATARIA (Cont'd)						
Series OLIGANTHAE (Cont'd)						
	Oliganthinae					SUAB
			leptophleba		PJ	SUABB
			patellaris		PJ	SUABC
		Oligantha	oligantha		PJ	SUABE
			fitzgeraldii		--	SUABF
	Microthecinae					SUAD
			tectifica		PJ	SUADA
		Argillacea	argillacea			(SUADC)
				argillacea	PJ	SUADCA
				--------	PJ	SUADCB
			microneura		PJ	SUADE
		Microtheca	microtheca			(SUADF)
				microtheca	PJ	SUADFA
				coolabah	PJ	SUADFB
				coolabah var. arida	PJ	SUADFC
				coolabah var. rhodoclada	PJ	SUADFD
			cyanoclada (doubtful species)		--	SUADJ
Series LARGIFLORENTES						SUD
	Normantonensinae					SUDA
			largeana		-J	SUDAA
			normantonensis			(SUDAB)
				normantonensis	PJ	SUDABA
				--------	PJ	SUDABB
		Lucasii	lucasii		--	SUDAD
			--------		--	SUDAE
	Largiflorentinae					SUDE
			populnea			(SUDEA)
				populnea	PJ	SUDEAA
				brownii	PJ	SUDEAB
			largiflorens		PJ	SUDEC
	Behrianinae					SUDG
			behriana		PJ	SUDGA
Series CAMBAGEANAE						SUG
			cambageana		PJ	SUG:A
Series INTERTEXTAE						SUH
			intertexta		PJ	SUH:A
			orgadophila		PJ	SUH:C
Series OCHROPHLOIAE						SUJ
		Ochrophloia	thozetiana		PJ	SUJ:A
			ochrophloia		PJ	SUJ:B

Subseries	Superspecies	Species	Subspecies (inc. Cline-Form)	Field Examn.	Code
Section ADNATARIA (Cont'd)					
Series MOLUCCANAE					SUL
	Moluccana	--------		PJ	SUL:A
		moluccana		PJ	SUL:B
		woollsiana			(SUL:D)
			woollsiana	PJ	SUL:DA
			microcarpa	PJ	SUL:DB
		pilligaensis		PJ	SUL:F
		albens		PJ	SUL:G
Series ODORATAE					SUN
Argophloinae					SUNA
		argophloia		PJ	SUNAA
Porosinae					SUNC
		bosistoana		PJ	SUNCA
	Porosa	porosa		PJ	SUNCC
		--------		—	SUNCD
Odoratinae					SUNE
		lansdowneana		PJ	SUNEA
	Odorata	odorata			(SUNEB)
			odorata	PJ	SUNEBA
			odorata var. angustifolia	PJ	SUNEBB
		polybractea		PJ	SUNED
		froggattii		PJ	SUNEF
		viridis		PJ	SUNEH
Series PRUINOSAE					SUP
		fibrosa			(SUP:A)
			fibrosa	PJ	SUP:AA
			nubila	PJ	SUP:AB
		decorticans		PJ	SUP:D
		drepanophylla		PJ	SUP:E
		--------		PJ	SUP:G
		siderophloia		PJ	SUP:I
		cullenii		PJ	SUP:K
		whitei		PJ	SUP:M
		--------		--	SUP:N
		staigerana		P-	SUP:Q
		crebra		PJ	SUP:S
		jensenii		PJ	SUP:U
		melanophloia		PJ	SUP:V
		shirleyi		PJ	SUP:W
		pruinosa		PJ	SUP:Y
Series POLYANTHEMAE					SUT
		rudderi		-J	SUT:A
		conica		PJ	SUT:B

Subseries	Superspecies	Species	Subspecies (inc. Cline-Form)	Field Examn.	Code
Section ADNATARIA (Cont'd)					
Series POLYANTHEMAE (Cont'd)					
	Polyanthemos	bauerana		PJ	SUT:C
	Polyanthemos	polyanthemos		PJ	SUT:D
		dawsonii		PJ	SUT:E
		fasciculosa		PJ	SUT:F
Series PANICULATAE					SUV
	Paniculata	--------		PJ	SUV:A
	Paniculata	tetrapleura		PJ	SUV:C
	Paniculata	paniculata		PJ	SUV:D
	Paniculata	beyeri			(SUV:E)
	Paniculata		beyeri	PJ	SUV:EA
	Paniculata		panda ssp. illaquens	-J	SUV:EB
	Paniculata	panda		-J	SUV:G
	Paniculata	--------		--	SUV:H
		caleyi		PJ	SUV:K
Series MELLIODORAE					SUX
		melliodora		PJ	SUX:A
		leucoxylon			(SUX:C)
			leucoxylon	PJ	SUX:CA
			leucoxylon var. macrocarpa	P-	SUX:CB
			leucoxylon var. pruinosa	PJ	SUX:CC
			leucoxylon var. pauperita	PJ	SUX:CD
		sideroxylon			(SUX:I)
			sideroxylon	PJ	SUX:IA
			tricarpa	PJ	SUX:IB
Section SEBARIA					SW
Series MICROCORYTHES					SWA
		microcorys		PJ	SWA:A

3. THE INDEX

3.1. Explanation of the Index

If authority or bibliographic references are desired, this Index should be used in conjunction with Forestry and Timber Bureau Leaflet No. 92 (Johnston and Marryatt 1962, reprinted in Blakely 1965) and then in turn with the index in Blakely (l.c.). Pre-1934 names relegated to synonymy by Blakely (1934) are mostly omitted, unless they have been important in more recent literature or are now revived. All names given by Johnston and Marryatt are listed and any variations or additions are marked with an asterisk (*); these include projected new combinations in square brackets (see below).

The following conventions are used:

Column I: The coding is given for all accepted species and subspecies and (in parentheses) for synonyms directly referable to an accepted taxon (on the basis of the nomenclatural type concept, i.e. *not* necessarily without change of circumscription or traditional interpretation). It is omitted for hybrids and for names of doubtful or very confused application, where reference to the Notes is essential.

Column II: (i) *Italic* type indicates a name here relegated to synonymy or otherwise eliminated from the classification (e.g. as applying to material of hybrid origin).

(ii) Square brackets [] surround an epithet in species or subspecies rank for which valid publication is to follow later. The procedure for entries for such cases in the Table of Classification is explained above (2.1.7.); the projected new combination is not given as such in the Table but only in the Index. For example, the validly published SNEEPE *E. camaldulensis* var. *obtusa* is entered in the Table in the Subspecies column to indicate that we regard it as a subspecies of *E. camaldulensis* but that a valid combination in that position does not yet exist. In the Index this varietal name appears *as a synonym* while the projected *E. camaldulensis* ssp. [*obtusa*] is entered as the name of an accepted taxon but with the final epithet in square brackets to indicate that formal publication is for the future. An equivalent procedure is followed for infraspecific names which we would refer to taxa of species status, in which validation is to follow. Already validated combinations *accepted by us* in subspecies rank exist within the following species only: MAG:A *E. umbra*, SPECH *E. mannifera*, SPINC *E. dalrympleana*, SUP:A *E. fibrosa*, SUX:I *E. sideroxylon*. In the case of SUV:E *E. beyeri* one existing subspecies is to be transferred from SUV:G *E. panda*.

Column III: Some idea of distribution is given for accepted taxa by the same regional symbols as used in the Synopsis (see 2.1.10), in parentheses in the case of total distribution of a species divided into subspecies.

Column IV: Here are indicated:

(i) Synonymy, by the Type concept, with brief explanation where necessary;

(ii) other brief comments as needed;

(iii) the nature of our investigations where names are referred to synonymy or to material considered to be of hybrid origin, or otherwise eliminated or specifically commented upon.

The symbols refer to study (naturally at various levels of intensity) in the following categories:

h: Herbarium (including laboratory)

f: Field

p: Progeny testing

m: Manipulated cross-pollination

(iv) References; these are relevant but need not imply that the cited author has explicitly made or would agree with the particular assignment here adopted.

3.2. Annotated Index

Code	Name and Distribution		Notes
CAA:C	E. abbreviata	KY	
CAFIL	E. abergiana	Q	
SPECC	E. acaciiformis	N	
SII:C	E. accedens	W	
(MAHEA)	*E. acervula*		= E. eugenioides (hf) (Johnson 1962)
MAG:C	E. acmenioides	QN	
	E. adjuncta		= hybrid, E. longifolia x a species of Punctatinae (h)
	E. aequans		= hybrid, E. ligustrina x moorei (hf)
	E. affinis		= hybrid, E. albens x sideroxylon ssp. sideroxylon (hfp)
MAHCG	E. agglomerata	NV	
SPEAG	E. aggregata	NV	
SNABA	E. alba	(QKYM)	
SNABAA	*E. alba ssp. [alba]	QKYM	
SNABAC	*E. alba ssp. [platyphylla]	QM	
SNABAD	*E. alba ssp. [tintinnans]	Y	
(SNABAA)	*E. alba var. australasica*		= E. alba ssp. [alba] (hf)
SUL:G	E. albens	QNVS	
(SUL:G)	*E. albens var. elongata*		= E. albens, minor variant (hf)
SIZ:G	E. albida	W	
	E. x algeriensis		= hybrid, E. camaldulensis x rudis (hfp)
MAHCC	E. alpina	V	
(MAKDA)	*E. altior*		= E. oreades (h)
SNEEA	E. amplifolia	QN	

Code	Name and Distribution		Notes
(SNEEA)	*E. amplifolia var. sessiliflora*		= E. amplifolia, local variant (hf)
MATEH	E. amygdalina	T	
(SLE:IB)	*E. anceps*		= E. conglobata ssp. [anceps] (hf)
(MATEN)	*E. andreana*		= E. elata (hf) (Agostini 1958)
(MATEN)	*E. andreana var. stenophylla*		= E. elata, local variant (hf)
MATHD	E. andrewsii	(QN)	
MATHDA	*E. andrewsii ssp. [andrewsii]	QN	
MATHDB	*E. andrewsii ssp. [campanulata]	QN	
SPIDB	E. angophoroides	NV	
(SLOAB)	*E. angulosa*		= E. incrassata, local variants (hf)
(SLOAB)	*E. angulosa var. ceratocorys*		= E. incrassata, local variants (hf)
(SLOAB)	**E. angulosa var. costata*		= E. incrassata, local variants (hf)
SIP:M	E. angustissima	W	
SIDAK	E. annulata	W	
	E. anomala		= hybrid, E. racemosa x umbra (hf)
	E. x antipolitensis		= hybrid, probably E. globulus x viminalis (h)
MAKIH	E. apiculata	N	
SNADE	E. apodophylla	KY	
	E. apodophylla var. brachyphylla		= hybrid, E. alba x apodophylla (h)
MAKIK	E. approximans	(QN)	
MAKIKA	*E. approximans ssp. [approximans]	N	
MAKIKC	*E. approximans ssp. [codonocarpa]	N	
(SPINIB)	*E. archeri*		= E. gunnii ssp. [archeri] (hf)
(CAFEGA)	*E. arenaria*		= E. dichromophloia ssp. [dichromophloia] (h) (Blake 1953)

Code	Name and Distribution		Notes
SUADC	E. argillacea	QKY	
SUNAA	E. argophloia	Q	
SPECA	E. aromaphloia	NV	
BAA:I	E. aspera	QKY	
SIDAB	E. astringens	W	
	E. x auburnensis		= hybrid, E. melanophloia x melliodora (h)
(MATELA)	*E. australiana*		= E. radiata ssp. [radiata], local variant (hf)
SPIKN	E. badjensis	N	
SPIKO	E. baeuerlenii	N	
EFABA	E. baileyana	QN	
AAABD	*Angophora bakeri	N	
SIR:E	E. bakeri	QN	
SNECE	E. bancroftii	QN	
SPIFA	E. banksii	QN	
	E. x barmedmanensis		= hybrid, E. sideroxylon ssp. sideroxylon x woollsiana ssp. [woollsiana] (h)
SUT:C	E. bauerana	QNV	
MAHCA	E. baxteri	(VS)	
MAHCAA	*E. baxteri ssp. [baxteri]	VS	
MAHCAB	*E. baxteri ssp. [pedicellata]	V	
(MAHCAB)	*E. baxteri var. pedicellata*		= E. baxteri ssp. [pedicellata] (h)
	E. beasleyi		= hybrid, E. melanophloia x populnea ssp. [populnea] (h)
SUDGA	E. behriana	NVS	
SPIKQ	E. benthamii	N	

Code	Name and Distribution		Notes
(SPIKQ)	*E. benthamii var. dorrigoensis*		= E. benthamii (h)
SUV:E	E. beyeri	(N)	Referred by Johnson (1962) to E. crebra but this was due to misinterpretation of type material. (hf)
SUV:EA	*E. beyeri ssp. [beyeri]	N	
SUV:EB	*E. beyeri ssp. [illaquens]	N	
	E. biangularis		= hybrid, E. globulus x urnigera (h) (Brett 1938)
(SUDEC)	*E. bicolor*		= E. largiflorens (hf) (Cameron 1946)
(SUDAB)	*E. bicolor var. xanthophylla*		= E. normantonensis (hf) (Cameron 1946)
(SPIFK)	*E. bicostata*		= E. st-johnii (hf)
SNABE	E. bigalerita	KY	
	E. bipileata		= hybrid, E. crebra x melanophloia (hf)
	E. x blackburniana		= hybrid, E. sideroxylon ssp. sideroxylon x viridis or x odorata (h) (Pryor 1953)
SNEEF	E. blakelyi	(QNV)	
SNEEFA	*E. blakelyi ssp. [blakelyi]	QNV	
SNEEFB	*E. blakelyi ssp. [irrorata]	N	
(SNEEFB)	*E. blakelyi var. irrorata*		= E. blakelyi ssp. [irrorata] (hf)
(SNEEFA)	*E. blakelyi var. parvifructa*		= E. blakelyi ssp. [blakelyi] minor variant (hf)
MAHCD	E. blaxlandii	N	
CAFEC	E. bleeseri	KY	
CCA:D	E. bloxsomei	Q	
	E. boormanii		= hybrid, E. fibrosa ssp. fibrosa x moluccana (hf)
SIT:Q	*E. ["borealis"]	W	Note. This epithet cannot be used in specific rank because of the earlier homonym *E. borealis* Heer (1882); a supposed eucalypt fossil species.

Code	Name and Distribution		Notes
SUNCA	E. bosistoana	NV	
SECAD	E. botryoides	NV	
	E. botryoides var. lynei		= hybrid, E. resinifera x saligna (h)
	E. botryoides var. platycarpa		= hybrid, E. botryoides x robusta (hf)
(MATHAA)	*E. bottii*		= E. piperita ssp.[piperita], as to type. The name has also been applied to the hybrid E. pilularis ssp. [pilularis] x piperita ssp. [piperita] (hf)
	E. x bourlieri		= hybrid, E. globulus or related species x unidentified species (h)
(SUP:AA)	*E. bowmanii*		= E. fibrosa ssp. fibrosa (h)
SBA:D	E. brachyandra	KY	
SLI:B	E. brachycalyx	S	
(SLI:B)	*E. brachycalyx var. chindoo*		= E. brachycalyx, minor variant (h)
(SLI:GB)	*E. brachycorys*		= E. comitae-vallis ssp. [brachycorys] (hf)
	E. brachyphylla		= hybrid, E. kruseana x ovularis (h)
SNABG	E. brevifolia	(QKY)	
SNABGA	*E. brevifolia ssp. [brevifolia]	QKY	
SNABGB	*E. brevifolia ssp. [confluens]	K	
	E. x brevirostris		= hybrid, E. macrorhyncha ssp. [macrorhyncha] x muellerana (h)
SPIDC	E. bridgesiana	(QNV)	
SPIDCA	*E. bridgesiana ssp. [bridgesiana]	QNV	
SPIDCB	*E. bridgesiana ssp. [malacoxylon]	N	
(SPIDCA)	*E. bridgesiana var. amblycorys*		= E. bridgesiana ssp. [bridgesiana] minor variant (hf)
SIS:C	E. brockwayi	W	

Code	Name and Distribution		Notes
(SUDEAB)	*E. brownii*		= E. populnea ssp. [brownii] (hf) (Pedley 1969)
	E. bucknellii		= hybrid, E. microtheca ssp. [coolabah] x populnea
MADAA	E. buprestium	W	
SICBC	E. burdettiana	W	Note. The type specimens of this species and of E. megacornuta consist of mixed material, which it has been possible to separate, and it is now clear that two distinct taxa may be distinguished. (h)
SIVEJ	E. burracoppinensis	W	
SIVCG	E. caesia	W	
(SUNCC)	*E. calcicultrix*		= E. porosa (hf) (Burbidge 1947)
	E. calcicultrix var. obscura		= hybrid, E. albens x porosa or x odorata (hf)
(SUNCC)	*E. calcicultrix var. porosa*		= E. porosa (hf) (Burbidge 1947)
SUV:K	E. caleyi	QN	
MAHED	E. caliginosa	QN	
	E. callanii		= hybrid, E. globoidea x pauciflora ssp. [pauciflora] (hf)
CAFUA	E. calophylla	W	
	E. calophylla var. hawkeyi		= hybrid, E. calophylla x ficifolia (h)
(CAFUD)	*E. calophylla var. maideniana*		= E. haematoxylon (h)
(CAFUA)	*E. calophylla var. parviflora*		= E. calophylla, minor variant (h)
SIX:D	E. calycogona	NVSW	
(SIX:D)	*E. calycogona var. spaffordii*		E. calycogona, minor variant (hf) Blakely's original publication as "staffordi" should be corrected as an unintentional misreading of the collector's name. (Black 1952)
SNEEP	E. camaldulensis	(QNVSWKY)	
SNEEPA	*E. camaldulensis ssp. [camaldulensis]	QNVS	

Code	Name and Distribution		Notes
SNEEPE	*E. camaldulensis ssp. [obtusa]	QNSWKY	
	E. camaldulensis var. acuminata		Requires further study (h)
(SNEEPA)	*E. camaldulensis var. brevirostris*		= E. camaldulensis ssp. [camaldulensis], minor variant (hf)
(SNEEPE)	*E. camaldulensis var. obtusa*		= E. camaldulensis ssp. [obtusa] (hf), (Pryor and Byrne 1969)
(SNEEPE)	*E. camaldulensis var. pendula*		= E. camaldulensis ssp. [obtusa], local variant (hf)
(SNEEPE)	*E. camaldulensis var. subcinerea*		= E. camaldulensis ssp. [obtusa], local variant (hf)
SUG:A	E. cambageana	Q	
MAHEH	E. cameronii	N	
MAHCE	E. camfieldii	N	
	E. campanifructa		= probably hybrid, but obscure (h)
(MATHDB)	*E. campanulata*		= E. andrewsii ssp. [campanulata] (hf)
SIK:C	E. campaspe	W	
SPEAA	E. camphora	QNV	
(SECEDC)	*E. canaliculata*		= E. punctata ssp. [canaliculata] (hf)
(MAHACB)	*E. cannonii*		= E. macrorhyncha ssp. [cannonii] (hf)
MAHCF	E. capitellata	N	
	E. x carnabyi		= hybrid, E. drummondii x macrocarpa (h)
(MAGAB)	*E. carnea*		= E. umbra ssp. carnea (hf) (Johnson 1962)
SIJ:D	E. carnei	W	
SIX:F	E. celastroides	W	
(SPINUC)	*E. cephalocarpa*		= E. cinerea ssp. [cephalocarpa] (hf) but E. Victorian and N.S.W. populations are an unnamed subspecies.
SPING	E. chapmaniana	NV	

Code	Name and Distribution		Notes
	E. chisholmii		= hybrid, E. piperita x rossii (h)
SNEEH	*E. [chloroclada]	QN	
	E. chrysantha		= hybrid, E. preissiana x sepulcralis (h)
SPINU	E. cinerea	(NV)	
SPINUA	*E. cinerea ssp. [cinerea]	N	
SPINUC	*E. cinerea ssp. [cephalocarpa]	V	
(SPINUC)	*E. cinerea var. multiflora*		= E. cinerea ssp.[cephalocarpa](hf) (Blakely 1934)
CCC:A	E. citriodora	Q	
SIS:A	E. cladocalyx	S	
(SIS:A)	*E. cladocalyx var. nana*		= E. cladocalyx, possibly local variant but needs further study (hf)
BAA:F	E. clavigera	KY	
(BAA:E)	*E. clavigera var. diffusa*		= E. confertiflora (hf) (Blake 1953)
(BAA:H)	*E. clavigera var. gilbertensis*		= E. gilbertensis (hf) (Blake 1953)
SLE:M	E. clelandii	W	
CAFIJ	E. cliftoniana	KY	
IAA:A	E. cloëziana	Q	
SIP:K	E. cneorifolia	S	
MATES	E. coccifera	T	
	E. coccifera var. parviflora		Probably = E. coccifera, but obscure
(MAKIKC)	*E. codonocarpa*		= E. approximans ssp. [codonocarpa] (h)
CAFEA	E. collina	K	
SLI:G	E. comitae-vallis	(W)	
SLI:GA	*E. comitae-vallis ssp. [comitae-vallis]	W	

Code	Name and Distribution		Notes
SLI:GB	*E. comitae-vallis ssp. [brachycorys]	W	
SLI:I	E. concinna	SW	
BAA:E	E. confertiflora	QKYM	
(SNABGB)	*E. confluens*		= E. brevifolia ssp. [confluens] (hf)
	E. congener		= hybrid, E. piperita ssp. [urceolaris] x [sclerophylla] (h)
SLE:I	E. conglobata	SW	
SLE:IA	*E. conglobata ssp. [conglobata]	SW	
SLE:IB	*E. conglobata ssp. [anceps]	SW	
MAHEJ	E. conglomerata	Q	
SUT:B	E. conica	QN	
MAKEA	E. consideniana	NV	
(SUADFB)	*E. coolabah*		= E. microtheca ssp. [coolabah] (hf) (Blake 1953)
(SUADFC)	*E. coolabah var. arida*		= E. microtheca ssp. [arida] (hf)
(SUADFD)	*E. coolabah var. rhodoclada*		= E. microtheca ssp. [rhodoclada] (hf)
SIT:S	E. cooperana	W	
SPINO	E. cordata	T	
	E. cordieri		Hybrid, confused concept, see Johnson (1962) and see E. nortonii
(SPIFB)	*E. cordieri var. brachypoma*		= E. goniocalyx (hf) (Johnson 1962)
(SPIFC)	*E. cordieri var. nortonii*		= E. nortonii (hf) (Johnson 1962)
AAAAA	Angophora cordifolia	N	
SICBA	E. cornuta	W	
MAA:C	E. coronata	W	
SLI:K	E. corrugata	W	

Code	Name and Distribution		Notes
(SPECA)	*E. corticosa*		= E. aromaphloia (hf) Further investigation in the field indicates the conspecificity of these two taxa.
(CAFUF)	*E. corymbosa*		= E. gummifera (Blakely 1934)
(SIS:A)	*E. corynocalyx*		= E. cladocalyx (Blakely 1934) ("cladocalyx" could be regarded as an error of transcription, the "correct" orthography will be discussed in a later publication.)
SECGB	E. cosmophylla	S	
(SECGB)	**E. cosmophylla var. leprosula*		= E. cosmophylla, minor variant (h)
(SECGB)	**E. cosmophylla var. rostrigera*		= E. cosmophylla, minor variant (h)
AAADA	*Angophora costata	QN	
(SLOAB)	*E. costata*		= E. incrassata, local variants (hf)
	E. crawfordii		= hybrid, E. acaciiformis x E. saligna (h)
SUP:S	E. crebra	QN	
(SUP:F)	*E. crebra var. macrocarpa*		= E. drepanophylla (hf) (Blake 1953)
SPICA	E. crenulata	V	
SIVCE	E. crucis	W	
SUP:K	E. cullenii	Q	
(SUP:K)	*E. cullenii var. trivalvis ("trivalva")*		= E. cullenii (hf)
SNAFB	E. cupularis	K	
	E. currabubula		= hybrid, E. albens x E. viridis (h)
GAA:A	E. curtisii	Q	
SUADJ	E. cyanoclada	Y	Needs further study (h)
(MAHED)	*E. cyathiformis*		= E. caliginosa (hf)
SIF:A	E. cylindriflora	W	
(SLUAA)	*E. cylindrocarpa*		= E. ovularis, but the latter name is misapplied by some writers to an undescribed species. (hf)

Code	Name and Distribution		Notes
SPIFE	E. cypellocarpa	NV	
SPINC	E. dalrympleana	(NVT)	
SPINCA	E. dalrympleana ssp. dalrympleana	NVT	See Johnson (1962)
SPINCC	E. dalrympleana ssp. heptantha	N	See Johnson (1962)
SUT:E	E. dawsonii	N	
SNEEJ	E. dealbata	QN(V?)	
(SNEEH)	*E. dealbata var. chloroclada*		= E. [chloroclada] (hfp)
	E. dealbata var. populnea		Needs further investigation (h)
SECAA	E. deanei	QN	
(MAKHAD)	*E. debeuzevillei*		E. pauciflora ssp. [debeuzevillei] (hfp) (Pryor 1957)
(SUP:I)	*E. decepta*		= E. siderophloia (hf) (Johnson 1962)
SIP:G	E. decipiens	W	
(SIP:G)	*E. decipiens var. angustifolia*		E. decipiens, minor variant (hf)
SUP:D	E. decorticans	Q	
SIP:B	E. decurva	W	
(MAHELB)	*E. deformis*		= E. oblonga ssp. [deformis] (hfp)
SBA:A	E. deglupta	M	
MAKBE	E. delegatensis	NVT	
MAKID	*E. [dendromorpha]	N	
SIGCA	E. desmondensis	W	
CAFEG	E. dichromophloia	(QNSW?KYM?)	
CAFEGA	*E. dichromophloia ssp. [dichromophloia]	KY	
CAFEGE	*E. dichromophloia ssp. [erythrophloia]	QNKYM?	
CAFEGG	*E. dichromophloia ssp. [oligocarpa]	SW?KY	

Code	Name and Distribution		Notes
SIF:F	E. dielsii	W	
SIK:F	E. diptera	W	
(SPINIA)	*E. divaricata*		= E. gunnii ssp. [gunnii] minor variant (hf) (Curtis 1956)
SEB:A	E. diversicolor	W	
MABAC	E. diversifolia	VSW	
MATEP	E. dives	NV	
	E. x dixsonii		= probable hybrid, E. dives x radiata ssp. [radiata], needs further study (h)
SLE:D	E. dongarraensis	W	
SIP:A	E. doratoxylon	W	
	E. dorisiana		= hybrid, E. intertexta x viridis (h)
SUP:F	E. drepanophylla	Q	See Johnson (1962)
SIVEC	E. drummondii	W	
SLE:G	E. dumosa	(NVSW)	
SLE:GA	*E. dumosa ssp. [dumosa]	NVS	
SLE:GB	*E. dumosa ssp. [pileata]	SW	
SLUBA	E. dundasii	W	
SPIDA	E. dunnii	QN	
SNEEL	E. dwyeri	NV	
EAABJ	E. ebbanoensis	W	
	E. ednaeana		= hybrid, E. intertexta x sideroxylon ssp. sideroxylon (h)
(SPIFB)	*E. elaeophora*		E. goniocalyx (hf) (Johnson 1962)
MATEN	*E. elata	NV	(Replaces E. andreana, Agostini 1958)
SIDCH	E. eremophila	(W)	

Code	Name and Distribution		Notes
SIDCHA	*E. eremophila ssp. [eremophila]	W	
SIDCHB	*E. eremophila ssp. [pterocarpa]	W	
(SIDAH)	*E. eremophila var. grandiflora*		= E. [stenantha] (h)
(SIDCHB)	*E. eremophila var. pterocarpa*		= E. eremophila ssp. [pterocarpa] (h)
	E. erythrandra		= hybrid, E. incrassata x tetraptera (hfp)
EAAAC	E. erythrocorys	W	
SIF:C	E. erythronema	(W)	
SIF:CA	*E. erythronema ssp. [erythronema]	W	
SIF:CB	*E. erythronema ssp. [marginata]	W	
(SIF:CB)	*E. erythronema var. marginata*		= E. erythronema ssp. [marginata] (hf)
(CAFEGE)	*E. erythrophloia*		= E. dichromophloia ssp. [erythrophloia] (hf) (Blake 1953)
EAAAE	E. eudesmoides	W	Note. The epithet was originally spelt "eudesmoides", <u>not</u> "-ioides".
(EAAAE)	*E. eudesmoides var. globosa*		= E. eudesmoides, minor variant (h)
MAHEA	E. eugenioides	QN	Note. Formerly misapplied to *E. globoidea*, see Johnson (1962)
SIVCA	E. ewartiana	SWKY	
CCA:E	E. eximia	N	
SNEEX	E. exserta	QN	
(SNEEX)	*E. exserta var. parvula*		= E. exserta, minor variant (h)
SIP:E	E. falcata	W	
(SIP:E)	*E. falcata var. ecostata*		= E. falcata, local variant (hf)
SUT:F	E. fasciculosa	VS	
MAKCB	E. fastigata	NV	
(SUV:D)	*E. fergusonii*		= E. paniculata, minor variant, as to type (hf) (Johnson 1962)

Code	Name and Distribution		Notes
CAA:B	E. ferruginea	KY	
SUP:A	E. fibrosa	(QN)	
SUP:AA	E. fibrosa ssp. fibrosa	QN	
SUP:AB	E. fibrosa ssp. nubila	QN	
CAFOA	E. ficifolia	W	
	E. ficifolia var. alba		= hybrid, E. calophylla x ficifolia (h)
(CAFOA)	*E. ficifolia var. carmina*		= E. ficifolia, minor variant (h)
	E. ficifolia var. guilfoylei		= hybrid, E. calophylla x ficifolia (h)
SUABF	E. fitzgeraldii	K	
SIT:T	E. flocktoniae	SW	Note. May not be distinct from E. cooperana.
SIZ:B	E. foecunda	NVSW	
CAFEE	E. foelscheana	QKY	
SIZ:D	E. formanii	W	
SLOBE	E. forrestiana	W	
	E. forsythii		= E. melliodora, as to type. Not a hybrid (h)
	E. forthiana		= hybrid, E. moluccana x siderophloia (hf)
MAKIB	E. fraxinoides	NV	
SUNEF	E. froggattii	V	
	E. fruticetorum		= E. odorata, as to type. As used by Blakely the name applied to E. polybractea (J.H. Willis, pers. comm.) (hf)
EAADE	E. gamophylla	SWKY	
SIGAJ	E. gardneri	W	
(MAKBE)	*E. gigantea*		= E. delegatensis (hfp) (Cameron 1946)

Code	Name and Distribution		Notes
BAA:H	E. gilbertensis	Q	
SIT:N	E. gillii	NS	
	E. gillii var. petiolaris		= hybrid (or derivatives), E. gillii x socialis (hf)
SIK:B	*E. ["glauca"]	W	Note. This epithet cannot be used because of an earlier homonym.
SPINH	E. glaucescens	NV	
SNEEC	E. glaucina	N	
MAHEF	E. globoidea	NV	
	E. globoidea var. largifructa		Needs further study, perhaps a hybrid of E. globoidea (h)
(MAHEF)	*E. globoidea var. subsphaerica*		= E. globoidea, minor variant (h)
SPIFL	E. globulus	VT	
	E. globulus var. compacta		Hybrid, E. globulus (probably) x indeterminate species (h)
SICAA	E. gomphocephala	W	
(SICAA)	*E. gomphocephala var. rhodoxylon*		= E. gomphocephala, minor variant (h)
	E. x gomphocornuta		= hybrid, E. cornuta x gomphocephala (h)
EAADA	E. gongylocarpa	SWKY	
SIP:D	E. goniantha	W	
SPIFB	E. goniocalyx	NVS	Note. Formerly misapplied to E. cypellocarpa, see Johnson (1962)
(SPIFE)	*E. goniocalyx var. parviflora*		= E. cypellocarpa, minor variant (hf) (Johnson 1962)
SIX:A	E. gracilis	(NVSW)	
SIX:AA	*E. gracilis ssp. [gracilis]	NVSW	
SIX:AB	*E. gracilis ssp. [yilgarnensis]	W	
(SIX:AA)	*E. gracilis var. erecta*		= E. gracilis ssp. [gracilis], minor variant (h)

Code	Name and Distribution		Notes
(SIX:AA)	*E. gracilis var. viminea*		= E. gracilis ssp. [gracilis], minor variant (h)
(SIX:AB)	**E. gracilis var. yilgarnensis*		= E. gracilis ssp. [yilgarnensis] (hf)
BAA:D	E. grandifolia	QKY	
SECAB	E. grandis	QN	
	E. grandis var. grandiflora		= hybrid, E. grandis x robusta (hfp)
SIT:B	E. grasbyi	W	Note. Not identical with *E. longicornis* as claimed by Gardner (1948) (hf)
SLI:J	E. griffithsii	(W)	
SLI:JA	*E. griffithsii ssp. [griffithsii]	W	
SLI:JB	*E. griffithsii ssp. [angustiuscula]	W	
(SLI:JB)	*E. griffithsii var. angustiuscula*		= E. griffithsii ssp. [angustiuscula] (hf)
SIJ:A	E. grossa	W	
SDA:A	E. guilfoylei	W	
(SPECHE)	*E. gullickii*		= E. mannifera ssp. gullickii (hf) (Johnson 1962)
CAFUF	E. gummifera	QNV	
SPINI	E. gunnii	(T)	
SPINIA	*E. gunnii ssp. [gunnii]	T	
SPINIB	*E. gunnii ssp. [archeri]	T	
MATKA	E. haemastoma	N	
(MATKB)	*E. haemastoma var. capitata*		= E. [sclerophylla] (hf)
(MATKB)	*E. haemastoma var. sclerophylla*		= E. [sclerophylla] (hf)
CAFUD	E. haematoxylon	W	
(SLI:DB)	*E. helmsii*		= E. merrickiae ssp. [platycorys] (hf)

Code	Name and Distribution		Notes
(SUL:B)	*E. hemiphloia*		= E. moluccana (hf) (Johnson 1962)
(SUL:G)	*E. hemiphloia var. albens*		= E. albens (hf)
(SUL:DB)	*E. hemiphloia var. microcarpa*		= E. woollsiana ssp. [microcarpa] (hf)
SNAFA	E. herbertiana	KY	
(SUABE)	*E. hillii*		= E. oligantha (hf) (Blake 1953)
(SUABE)	*E. hillii var. alleniana*		= E. oligantha (hf) (Blake 1953)
SNADD	E. houseana	K	
SSA:A	E. howittiana	Q	
	E. huberana ("huberiana")		Type from a cultivated plant, may not be possible to relate to a natural population. As used by Blakely the name applies to various hybrids and forms of E. viminalis (hfp) (for part explanation see Pryor and Willis 1954).
	E. hybrida		= hybrid, E. moluccana x paniculata (hf)
SLOAB	E. incrassata	NVSW	
(SLOAB)	*E. incrassata var. angulosa*		= E. incrassata, local variants (hf)
(SLOAB)	*E. incrassata var. costata*		= E. incrassata, local variants (hf)
	E. x insizwaensis		= hybrid, probably E. globulus x robusta (h)
(SNEEX)	*E. insulana*		= E. exserta (h)
(AAABB)	**Angophora intermedia*		= Angophora floribunda (hf)
CAFID	E. intermedia	QN	
SUH:A	E. intertexta	QNSWKY	
(SUH:A)	*E. intertexta var. diminuta*		= E. intertexta, minor variant, as to type (h)
(SUH:A)	*E. intertexta var. fruticosa*		= E. intertexta, minor variant (hf)

Code	Name and Distribution		Notes
(SUH:C)	*E. intertexta var. magna*		= E. orgadophila (hf)
	E. irbyi		= hybrid, E. dalrympleana ssp. dalrympleana x gunnii ssp.[gunnii](hf)
MAF:A	E. jacksonii	W	
CAJ:A	E. jacobsiana	Y	
SUP:U	E. jensenii	KY	
(SPIJAC)	*E. johnstonii*		= E. vernicosa ssp. [johnstonii] (hfp) (W.D. Jackson pers. comm.)
	E. joyceae		= hybrid, E. haemastoma x piperita ssp. [piperita] (hf)
EAACM	E. jucunda	W	
	E. jugalis		Hybrid, probably of E. leucoxylon, but the type is from a cultivated plant and it may not be possible to establish the parentage. As used by Blakely the same applied to E. leucoxylon ssp. [pauperita] (Pryor 1955a) (h)
SIR:A	E. jutsonii	(SWK?Y)	
SIR:AA	*E. jutsonii ssp. [jutsonii]	W	
SIR:AC	*E. jutsonii ssp. [mannensis]	SWK?Y	
	E. x kalangadooensis		= hybrid, E. ovata x viminalis (hf)
	E. kalganensis		= hybrid, E. marginata x preissiana (h) (Pryor and Johnson 1963)
(SIP:D)	*E. kesselii*		= E. goniantha, local variant (hf)
SIVEQ	E. kingsmillii	WK	
	E. kirtoniana		= hybrid, E. robusta x tereticornis = E. x patentinervis (hfp)
SPIAC	E. kitsoniana	V	
SIT:E	E. kochii	W	
SLE:K	E. kondininensis	W	

Code	Name and Distribution		Notes
SIM:A	E. kruseana	W	
MAKKA	E. kybeanensis	NV	
SII:A	*E. laeliae	W	(Podger and Chippendale 1968)
MAHAB	E. laevopinea	Q?N	
(MAHEA)	*E. laevopinea var. minor* R.T. Bak.		= E. eugenioides, as to type. The name was also applied by Blakely to forms of E. laevopinea. (Johnson 1962) (h)
	E. laevopinea var. turbinata		Probable hybrid, requires further study(h)
	E. lamprocalyx		= hybrid, E. collina x perfoliata (h)
(AAADA)	**Angophora lanceolata*		= Angophora costata (hf)
SIVEA	E. lane-poolei	W	
(SIS:A)	*E. x langii*		= E. cladocalyx, anomalous variant (h)
SUNEA	E. lansdowneana	S	
(SUNEA)	*E. lansdowneana var. leucantha*		= E. lansdowneana, flower colour variant (hf)
SUDAA	E. largeana	N	
SUDEC	E. largiflorens	QNVS	
(SUDAB)	*E. largiflorens var. xanthophylla*		= E. normantonensis (hf) (Blake 1953)
	E. laseronii		= hybrid, E. caliginosa x stellulata (hfp)
	E. laseronii var. doleiformis		= hybrid, probably E. stellulata x a species of the series Capitellatae (h)
	E. laseronii var. maxima		= hybrid, probably E. stellulata x a species of the series Capitellatae (h)
CAFEF	E. latifolia	KY	
MAKMB	*E. [latiuscula]	N	
SICBE	E. lehmannii	W	
(CCA:AB)	**E. leichhardtii*		= E. peltata ssp. [leichhardtii] (hf)

Code	Name and Distribution		Notes
(CAFEE)	*E. leiophloia*		= E. foelscheana (Blake 1953) (hf)
(CAFEE)	*E. leiophloia var. lepidophloia*		= E. foelscheana (Blake 1953) (hf)
SLI:F	E. leptocalyx	W	
	E. leptocarpa		= hybrid, probably E. crebra x viridis
SUABB	E. leptophleba	Q	
(SIZ:B)	*E. leptophylla*		= E. foecunda (Johnson 1962) (hf)
(SIZ:B)	*E. leptophylla var. densa*		= E. foecunda, minor variant (Johnson 1962) (h)
(SIZ:B)	*E. leptophylla var. floribunda*		= E. foecunda, local variant (Johnson 1962) (h)
(SIZ:B)	*E. leptophylla var. leptorrhyncha*		= E. foecunda, minor variant (Johnson 1962) (hf)
SIVAA	E. leptopoda	W	
SLE:N	E. lesouefii	W	
(SUADC)	*E. leucophylla*		= E. argillacea (hf) (Blake 1953)
SUX:C	E. leucoxylon	(NVS)	
SUX:CA	*E. leucoxylon ssp. [leucoxylon]	VS	
SUX:CB	*E. leucoxylon ssp. [macrocarpa]	VS	
SUX:CC	*E. leucoxylon ssp. [pruinosa]	NVS	
SUX:CD	*E. leucoxylon ssp. [pauperita]	S	
(SUX:CA)	*E. leucoxylon var. angulata*		= E. leucoxylon ssp. [leucoxylon], local variant (h)
(SUX:CB)	*E. leucoxylon var. macrocarpa*		= E. leucoxylon ssp. [macrocarpa] (hf)
(SUX:CD)	*E. leucoxylon var. pauperita*		= E. leucoxylon ssp. [pauperita] (hf)
(SUX:CC)	*E. leucoxylon var. pruinosa		= E. leucoxylon ssp. [pruinosa] (hf) (Bentham 1867)
MAHEQ	E. ligustrina	N	

Code	Name and Distribution		Notes
	E. lindleyana		Type of uncertain identity. As used by Blakely it was used for E. elata (h) (Cameron 1946, Agostini 1958)
((MATEN)	*E. lindleyana var. stenophylla*		= E. elata, local variant (hf)
((MATEG)	*E. linearis*		= E. pulchella (hf)
EFAAB	E. lirata	K	
SIT:A	E. longicornis	W	
SECGA	E. longifolia	NV	
	E. longifolia var. multiflora		= hybrid, E. longifolia x robusta (hf)
	E. longifolia var. turbinata		= hybrid, E. longifolia x tereticornis(hf)
SIN:A	E. loxophleba	W	
((SIN:A)	*E. loxophleba var. fruticosa*		= E. loxophleba, minor variant
SUDAD	E. lucasii	W(K?)	
MAKDB	E. luehmanniana	N	
SPIKC	E. macarthurii	N	
SIDAJ	E. macrandra	W	
SIVEE	E. macrocarpa	W	
SICBB	*E. macrocera	W	Note. Stirling Range, distinct from E. cornuta (h)
(CAFEA)	*E. macropoda*		= E. collina (hf)
MAHAC	E. macrorhyncha	(NVS)	
MAHACA	*E. macrorhyncha ssp. [macrorhyncha]	NVS	
MAHACB	*E. macrorhyncha ssp. [cannonii]	N	
(MAHACA)	*E. macrorhyncha var. minor*		= E. macrorhyncha ssp. [macrorhyncha] minor variant (hf)
CCC:B	E. maculata	QNV	
(SPECHD)	*E. maculosa*		= E. mannifera ssp. maculosa (hf) (Johnson 1962)

Code	Name and Distribution		Notes
SPIFI	E. maidenii	N	
	E. maidenii var. williamsonii		= hybrid, E. botryoides x pseudoglobulus (h)
SECEB	E. major	Q	Note. As used by Blakely this included E. [didyma] and some hybrid material (hf)
(SPIDCB)	*E. malacoxylon*		= E. bridgesiana ssp. [malacoxylon] (hf)
(SIR:AC)	**E. mannensis*		= E. jutsonii ssp. [mannensis] (hf) (Boomsma 1964)
SPECH	E. mannifera	(NV)	
SPECHA	E. mannifera ssp. mannifera	NV	
SPECHC	E. mannifera ssp. elliptica	N	
SPECHE	E. mannifera ssp. gullickii	N	
SPECHD	E. mannifera ssp. maculosa	N	
SPECHB	E. mannifera ssp. praecox	N	
MADCA	E. marginata	W	
	E. x macclatchie		= hybrid, probably E. globulus x ovata (h)
	E. mcintyrensis		= E. camaldulensis ssp. [camaldulensis] x ovata (hf)
MAHER	E. mckieana	(Q?)N	
(SLI:I)	*E. meeboldii*		= E. concinna (hf)
MAA:A	E. megacarpa	W	
SICBD	E. megacornuta	W	
SUP:V	E. melanophloia	QN	
	E. melanophloia var. senta		= hybrid, E. melanophloia x an unidentified species (hf)
AAABC	Angophora melanoxylon	QN	
SLI:C	E. melanoxylon	W	

Code	Name and Distribution		Notes
SUX:A	E. melliodora	QNV	
(SUX:A)	*E. melliodora var. brachycarpa*		= E. melliodora, minor variant (hf)
(SUX:A)	*E. melliodora var. elliptocarpa*		= E. melliodora, minor variant (hf)
	E. melliodora var. murrurundi		= hybrid, E. albens x melliodora (hf)
SLI:D	E. merrickiae	(W)	
SLI:DA	*E. merrickiae ssp. [merrickiae]	W	
SLI:DB	*E. merrickiae ssp. [platycorys]	W	
SNI:A	E. michaeliana	QN	
(MATKE)	*E. micrantha*		= E. racemosa (hf) (Cameron 1955)
(MATKD)	*E. micrantha var. signata*		= E. signata (hf)
SIP:I	E. micranthera	W	
(SUL:DB)	*E. microcarpa*		= E. woollsiana ssp. [microcarpa] (hf)
SWA:A	E. microcorys	QN	
SUADE	E. microneura	Q	
SUADF	E. microtheca	(QNSWKY)	
SUADFA	*E. microtheca ssp. [microtheca]	QKY	
SUADFC	*E. microtheca ssp. [arida]	S(W?)(K?)Y	
SUADFB	*E. microtheca ssp. [coolabah]	QNS	
SUADFD	*E. microtheca ssp. [rhodoclada]	WK	
	E. microtheca var. cymbaliformis		= probable hybrid, E. cyanoclada x microtheca ssp. [microtheca], but needs further study (h)
EFC:A	E. miniata	QKY	
MAKLA	E. mitchelliana	V	
(MAA:C)	*E. mitrata*		= E. coronata (Gardner 1959) (h)

Code	Name and Distribution		Notes
SUL:B	E. moluccana	QN	
	E. montana		= hybrid, E. moorei x [sclerophylla] (hfp)
SNADA	E. mooreana	K	
MAKMC	E. moorei	N	
	E. moorei var. arborea		= hybrid, E. moorei x piperita ssp. [bottii] (hfp)
(MAKMB)	*E. moorei var. latiuscula*		= E. [latiuscula]
SPINK	E. morrisbyi	T	
SNEEZ	E. morrisii	QNS(W?)KY	
	E. x mortoniana		= hybrid, probably E. globulus x unidentified species (h)
MAHAA	E. muellerana	NV	
MAKEE	E. multicaulis	N	
(SECAF)	*E. multiflora*		= E. robusta (hf) (Osborn 1937)
	E. mundijongensis		= hybrid, E. gomphocephala x wandoo (h)
	E. murphyi		= hybrid, probably E. conica x fibrosa ssp. nubila (hf)
MAKHF	*E. ["nana"]	N	Note. Another epithet will be used. (hf)
(SUP:I)	**E. nanglei*		= E. siderophloia (not E. paniculata as stated by Blakely) (hf)
(SBA:A)	*E. naudiniana*		= E. deglupta (hf)
SPIAA	E. neglecta	V	
CAFUL	E. nesophila	KY	
SPECE	E. nicholii	N	
MAHEB	E. nigra	N	
(MAKHAC)	*E. niphophila*		= E. pauciflora ssp. [niphophila] (hfp) (Pryor 1957)

Code	Name and Distribution		Notes
(CAFEGA)	*E. niphophloia*		= E. dichromophloia ssp. [dichromophloia] (hf)
SPIFG	E. nitens	NV	
MATEJ	E. nitida	VTS	Note. See E. simmondsii, Blakely applied the name E. nitida to hybrids between this species and E. coccifera (hfp)
SUDAB	E. normantonensis	QY	
SPIFC	E. nortonii	NV	See Johnson (1962)
SECCB	E. notabilis	QN	
SPINS	E. nova-anglica	QN	
	E. nowraensis		= hybrid, E. gummifera x maculata (hf)
(SUP:AB)	*E. nubila*		= E. fibrosa ssp. nubila(hfp)(Johnson 1962)
(MATEN)	*E. numerosa*		= E. elata. See note under E. andreana (hf)
SIDCA	E. nutans	W	
MAKAA	E. obliqua	QNVTS	
(MAKAA)	*E. obliqua var. degressa*		= E. obliqua, minor variant (hf)
	E. obliqua var. discocarpa		= hybrid, probably E. muellerana x obliqua (h)
	E. obliqua var. megacarpa		= hybrids or minor variant of *E. obliqua* requiring investigation (h)
	**E. obliqua var. microstoma*		= hybrids or minor variant of *E. obliqua* requiring investigation (h)
	E. obliqua var. pilula		= hybrids or minor variant of *E. obliqua* requiring investigation (h)
MAHEL	E. oblonga	(N)	
MAHELA	*E. oblonga ssp. [oblonga]	N	
MAHELB	*E. oblonga ssp. [deformis]	N	
MAHEL	*E. oblonga var. rugulosa*		= E. oblonga, probably minor variant (h)

Code	Name and Distribution		Notes
MAKIE	E. obtusiflora	N	
(MAKID)	*E. obtusiflora var. dendromorpha*		= E. [dendromorpha] (hf)
SIDAA	E. occidentalis	W	
	E. occidentalis var. oranensis		Obscure, possibly hybrid of E. occidentalis
(SIDAH)	*E. occidentalis var. stenantha*		= E. [stenantha] (h)
SUJ:B	E. ochrophloia	QN	
(SLI:I)	*E. ochrophylla*		= E. concinna (hf) (Burbidge 1947)
EAADC	E. odontocarpa	Q(W?)KY	
SUNEB	E. odorata	(VS)	
SUNEBA	*E. odorata ssp. [odorata]	VS	
SUNEBB	*E. odorata ssp. [angustifolia]	S	
(SUNEBB)	*E. odorata var. angustifolia*		= E. odorata ssp. [angustifolia] (hf)
(SUNEBA)	*E. odorata var. erythrandra*		= E. odorata ssp. [odorata], minor variant (h)
	E. odorata var. macrocarpa		Probable hybrid, E. leucoxylon ssp. ? x odorata ssp. [odorata] (h)
(SUNEBA)	*E. odorata var. refracta*		= E. odorata ssp. [odorata],teratological variant (h)
SIVEH	E. oldfieldii	W	
SIT:C	E. oleosa	NVSW	Note. Misapplied by Blakely to *E. socialis* and other spp. (Brooker 1968) (hfp)
(SIT:C)	*E. oleosa var. angustifolia*		= E. oleosa (hfp) (Brooker 1968)
(SIT:Q)	*E. oleosa var. borealis*		= E. ["borealis"] (hf)
(SIT:K)	*E. oleosa var. glauca*		= E. transcontinentalis, (limited to W.A.) (hfp)
(SIT:E)	*E. oleosa var. kochii*		= E. kochii (h)
(SIT:A)	*E. oleosa var. longicornis*		= E. longicornis (hfp)

Code	Name and Distribution		Notes
(SIT:C)	*E. oleosa var. obtusa*		= E. oleosa (hfp)(Brooker 1970)
(SIT:H)	*E. oleosa var. peeneri*		= E. [peeneri] (h)
(SIT:E)	*E. oleosa var. plenissima*		= E. kochii (h)
SUABE	E. oligantha	KY	
SLUAE	E. oraria	W	
SIVCC	E. orbifolia	(SW(K?)Y)	
SIVCCA	*E. orbifolia ssp. [orbifolia]	SW(K?)Y	
SIVCCB	*E. orbifolia ssp. [websterana]	W	
MAKDA	E. oreades	QN	
SUH:C	E. orgadophila	Q	
SPEAB	E. ovata	NVTS	
	E. ovata var. aquatica		= E. camphora (hf)
(SPEAB)	*E. ovata var. grandiflora*		= E. ovata, local variant (hf)
	E. oviformis		= hybrid, E. pseudoglobulus x tereticornis (h)
SLUAA	E. ovularis	W	
SIVAC	E. oxymitra	SWKY	
	E. oxypoma		= hybrid, E. camaldulensis ssp. [camaldulensis] x largiflorens (hf)
(SNABAA)	*E. pachycalyx*		= perhaps E. alba ssp. [alba] (h) but possibly a distinct taxon. study needed.
MABAA	E. pachyloma	W	
SIVED	E. pachyphylla	QKY	
(SNABGA)	*E. pallidifolia*		= E. brevifolia ssp. [brevifolia] (hf) (Blake 1953)
SUV:G	E. panda	Q	
(SUV:G)	*E. panda ssp. panda*		= E. panda (h)

Code	Name and Distribution		Notes
(SUV:EB)	*E. panda ssp. illaquens*		= E. beyeri ssp. [illaquens] (hf)
SUV:D	E. paniculata	N	
BAA:B	E. papuana	QKYM	
(BAA:B)	*"E. papuana var. aparrerinja"*		= E. papuana. Note. Published without Latin description, so invalid. Variants of this species need further investigation (hf)
	E. paradoxa		= hybrid, E. pseudoglobulus x tereticornis (h)
SNECE	E. parramattensis	N	
(SNECE)	*E. parramattensis var. sphaerocalyx*		= E. parramattensis, minor variant (hf)
SPIBA	E. parvifolia	N	
(SNABE)	*E. pastoralis*		= E. bigalerita (hf) (Blake 1953)
SUABC	E. patellaris	KY	
MABBA	E. patens	W	
	E. x patentinervis		= hybrid, E. robusta x tereticornis (hf)
MAKHA	E. pauciflora	(QNVTS)	
MAKHAA	*E. pauciflora ssp. [pauciflora]	QNVTS	
MAKHAD	*E. pauciflora ssp. [debeuzevillei]	N	
MAKHAC	*E. pauciflora ssp. [niphophila]	NV	
(MAKHAC)	*E. pauciflora var. alpina*		= E. pauciflora ssp. [niphophila] (hfp)
	E. pauciflora var. cylindrocarpa		= hybrid, probably; further investigation required (h)
	E. pauciflora var. densiflora		= hybrid, probably; further investigation required (h)
(MAKHF)	*E. pauciflora var. nana*		= E. ["nana"] (hf)
	E. pauciflora var. rusticata		= hybrid, probably; further investigation required (h)

Code	Name and Distribution		Notes
	E. x peacockeana		= hybrid, E. crebra x melliodora (h)
SIT:J	*E. [peeneri]	SW(K?)	
SECCA	E. pellita	QN	
CCA:A	E. peltata	(Q)	
CCA:AA	*E. peltata ssp. [peltata]	Q	
CCA:AB	*E. peltata ssp. [leichhardtii]	Q	
	E. penrithensis		= hybrid, E. eugenioides x [sclerophylla] (h)
CAA:E	E. perfoliata	K	Note. Nomenclature will be adjusted.
	E. perplexa		= E. jensenii (hf) (Blake 1953)
SPINN	E. perriniana	NVT	
	E. petrophila		= hybrid, probably E. blaxlandii x [sclerophylla] (hf)
MAHEC	E. phaeotricha	QN	
(MATELA)	*E. phellandra*		= radiata ssp. [radiata] (hf)
EFC:B	E. phoenicea	QKY	
(SLE:GB)	*E. pileata*		= E. dumosa ssp. [pileata] (hf)
SUL:F	E. pilligaensis	QN	
MAIAA	E. pilularis	(QN)	
MAIAAA	*E. pilularis ssp. [pilularis]	QN	
MAIAAB	*E. pilularis ssp. [pyriformis]	N	
(MAIAAB)	*E. pilularis var. pyriformis*		= E. pilularis ssp. [pyriformis] (hfp)
SLOAA	E. pimpiniana	S	
MATHA	E. piperita	(N)	
MATHAA	*E. piperita ssp. [piperita]	N	

Code	Name and Distribution		Notes
MATHAC	*E. piperita ssp. [urceolaris]	N	
	E. piperita var. orophila		= hybrid (as to type), E. oreades x piperita ssp. [piperita]. Note. Blakely used the name also for ssp. [piperita in part] (hf)
MAIBB	E. planchoniana	QN	
(SLI:DB)	*E. platycorys*		= E. merrickiae ssp. [platycorys] (h)
(SNABAC)	*E. platyphylla*		= E. alba ssp. [platyphylla] (hf)
(SNABAD)	*E. platyphylla var. tintinnans*		= E. alba ssp. [tintinnans] (hf)
SIDCB	E. platypus	W	
	E. platypus var. heterophylla		Probably = hybrid, E. platypus x spathulata ssp. [grandiflora]
SUT:D	E. polyanthemos	NV	
SUNED	*E. polybractea	NV	See note on E. fruticetorum (hf)
CAFIB	E. polycarpa	QNKYM	See Blake (1953) on former misapplication (hf)
(CAFEGG)	*E. polycarpa var. oligocarpa*		= E. dichromophloia ssp. [oligocarpa] (hf) (Blake 1953)
(SUDEAA)	*E. populifolia*		= E. populnea ssp. [populnea] (hf) (Cameron 1946)
	E. populifolia var. obconica		= hybrid, probably E. microtheca ssp. [coolabah] x populnea ssp. [populnea](h)
SUDEA	E. populnea	(QN)	
SUDEAA	*E. populnea ssp. [populnea]	QN	
SUDEAB	*E. populnea ssp. [brownii]	Q	
	E. populnea var. obconica		= hybrid, probably E. microtheca ssp. [coolabah] x populnea ssp. [populnea](h)
SUNCC	E. porosa	NVS	
CAFIF	E. porrecta	Y	
(SPECHB)	*E. praecox*		= E. mannifera ssp. praecox (hf) (Johnson 1962)

Code	Name and Distribution		Notes
MAA:B	E. preissiana	W	
SECEA	E. propinqua	QN	
SUP:Y	E. pruinosa	QKY	
(SPIKKI)	*E. pryoriana*		= E. viminalis ssp. [pryoriana] (hf)
SPIFJ	E. pseudoglobulus	NV	Not a hybrid as stated by Blakely (hf)
	E. pseudopiperita		= hybrid, E. capitellata x piperita ssp. [piperita] (h)
CAB:A	E. ptychocarpa	KY	
MATEG	*E. pulchella	T	This replaces E. linearis (hf)
SPINQ	E. pulverulenta	N	
SNECH	E. pumila	N	
SECED	E. punctata	(QN)	
SECEDA	*E. punctata ssp. [punctata]	N	
SECEDC	*E. punctata ssp. [canaliculata]	N	
SECEDD	*E. punctata ssp. [didyma]	QN	
SECEDE	*E. punctata ssp. [longirostrata]	Q	
(SECEDD)	**E. punctata var. didyma*		= E. punctata ssp. [didyma] (hf)
(SECEDE)	*E. punctata var. longirostrata*		= E. punctata ssp. [longirostrata] (hfp)
	E. puncticulata		Obscure, needs further investigation
	E. pygmaea		= hybrid, E. camfieldii x haemastoma (h)
SIVEM	E. pyriformis	W	
(SIVEM)	*E. pyriformis var. elongata*		= E. pyriformis (hf)
(SIVEN)	**E. pyriformis ssp. youngiana*		= E. youngiana (hf) (Boomsma 1969)
(CAFEP)	*E. pyrophora*		= E. terminalis (hf) (Blake 1953)
SPIHA	E. quadrangulata	QN	

Code	Name and Distribution		Notes
MATKE	E. racemosa	N	
(MATKD)	*E. racemosa var. signata*		= E. signata (hf)
(SUP:S)?	*E. racemosa var. longiflora*		Obscure, perhaps = E. crebra, local variant (h)
(SUP:F)	*E. racemosa var. macrocarpa*		= E. drepanophylla (hf) (Blake 1953)
MATEL	E. radiata	(Q?NV)	
MATELA	*E. radiata ssp. [radiata]	(Q?)NV	
MATELC	*E. radiata ssp. [robertsonii]	NV	
(MATELA)	*E. radiata var. australiana*		= E. radiata ssp. [radiata], chemical variant (hf)
(MATELA)	*E. radiata var. subexserta*		= E. radiata ssp. [radiata], minor variant (hf)
(MATELA)	*E. radiata var. subplatyphylla*		= E. radiata ssp. [radiata], local variant (hf)
	E. x radiodives		= hybrid, E. dives x radiata ssp. [robertsonii] (h)
SIVEK	E. rameliana	K	
	E. rariflora		= hybrid, E. crebra x populnea ssp. [populnea] (hf)
SBA:C	E. ravertiana	Q	
(SUADFB)	*E. raveretiana var. jerichoensis*		= E. microtheca ssp. [coolabah], (hf) (Blake 1953)
SIGAC	E. redunca	(W)	
SIGACA	*E. redunca ssp. [redunca]	W	
SIGACE	*E. redunca ssp. [melanophloia]	W	
SIGACB	*E. redunca ssp. [subangusta]	W	
(SIGAA)	*E. redunca var. elata*		= E. wandoo (hf)
(SIGACE)	*E. redunca var. melanophloia*		= E. redunca ssp. [melanophloia] (as to type) (h)

	Name and Distribution		Notes
	edunca var. oxymitra		= E. gardneri (hf)
	edunca var. subangusta		= E. redunca ssp. [subangusta] (hf)
	gnans	VT	
	mota	S	
	inifera	QN	
	dantha		= hybrid, E. macrocarpa x pyriformis, perhaps partly stabilised (h)
	antha var. petiolaris		= hybrid, or derivative, E. macrocarpa x pyriformis (h)
	E. rhodophloia		Note. The type material is a mixture of E. macrandra (fruit) and E. conglobata ssp. [anceps] (buds). A lectotype will have to be chosen. (h)
	E. rigescens		= hybrid, E. moorei x stricta (h)
SIZ:A	E. rigidula	W	
MATEB	E. risdonii	T	
(MATEC)	**E. risdonii var. elata*		= E. tenuiramis (hf) (Willis 1967)
	E. rivularis		= hybrid, E. melanophloia x microtheca ssp. [coolabah] (hf)
(MATELC)	*E. robertsonii*		= E. radiata ssp. [robertsonii] (hfp)
	E. robsoniae		= hybrid, E. albens x melliodora (h)
SECAF	E. robusta	QN	
(SECAF)	*E. robusta var. bivalvis* ("bivalva")		= E. robusta, minor variant (h)
SPEAH	E. rodwayi	T	See Johnson (1962) (hf)
MATKF	E. rossii	N	
(SNEGAA)	*E. rostrata*		= E. camaldulensis ssp. [camaldulensis] (hf)
EAACL	*E. roycei	W	See Carr, Carr, and George (1970)
SPINF	E. rubida	NVTS	

Code	Name and Distribution		Notes
SUT:A	E. rudderi	N	
SNEER	E. rudis	W	
SLI:A	E. rugosa	SW	
SUAAA	E. rummeryi	N	
(MATEH)	*E. salicifolia*		= E. amygdalina (hf) (Blake 1953)
	E. salicifolia var. hypericifolia		= hybrid, E. amygdalina x risdonii (hf)
SECAC	E. saligna	QN	
(SECAC)	*E. saligna var. protrusa*		= E. saligna, minor variant (h)
SIU:A	E. salmonophloia	W	
SIK:A	E. salubris	W	
(SIK:B)	*E. salubris var. glauca*		= E. ["glauca"] (hf)
SIDAE	E. sargentii	W	
	E. scabra		Obscure, see Johnson (1962)
(SBA:A)	*E. schlechteri*		= E. deglupta (hf)
MATKB	*E. [sclerophylla]	N	
SPECM	E. scoparia	Q	
(SLI:DA)	*E. scyphocalyx*		= E. merrickiae ssp. [merrickiae] (hf)
SNECA	E. seeana	QN	
(SNECE)	*E. seeana var. constricta*		= E. bancroftii (hf)
MADAC	E. sepulcralis	W	
	E. sepulcralis var. robusta		= hybrid, E. preissiana x sepulcralis. See E. chrysantha (h)
SIVES	E. sessilis	Y(K?)	
CAA:A	E. setosa	QKY	

Code	Name and Distribution		Notes
SLE:C	E. sheathiana	W	
(SECED)	*E. shiressii*		= E. punctata ssp. [punctata], minor variant (hf)
SUP:W	E. shirleyi	Q	
SUP:I	E. siderophloia	QN	See Johnson (1962)
(SUP:AA)	*E. siderophloia var. rostrata*		= E. fibrosa ssp. fibrosa (hf) (Johnson 1962)
SUX:I	E. sideroxylon	(QNV)	
SUX:IA	E. sideroxylon ssp. sideroxylon	QNV	See Johnson (1962)
SUX:IB	E. sideroxylon ssp. tricarpa	NV	See Johnson (1962)
(SUX:IA)	*"E. sideroxylon var. rosea"*		= E. sideroxylon ssp. sideroxylon (Johnson 1962)
(MAKED)	*E. sieberana*		Illegitimate name (= E. sieberi) (hf) (Johnson 1962)
MAKED	E. sieberi	NVT	See Johnson 1962
MATKD	*E. signata	QN	
EFAAA	E. similis	Q	
(MATEJ)	*E. simmondsii*		= E. nitida (in the original sense) (hf)
SPIKE	E. smithii	NV	
SIT:L	E. socialis	NVSW	See Johnson in Brooker (1968). (Does not include "Central Australian" species)
(MAHELA)	*E. sparsifolia*		= E. oblonga ssp. [oblonga] (hf) (Johnson 1962)
SIDCD	E. spathulata	(W)	
SIDCDA	*E. spathulata ssp. [spathulata]	W	
SIDCDB	*E. spathulata ssp. [grandiflora]	W	
(SIDCDB)	*E. spathulata var. grandiflora*		= E. spathulata ssp. [grandiflora] (hf)
(SUADA)	*E. spencerana*		= E. tectifica (hf) (Blake 1953)

Code	Name and Distribution		Notes
SIQ:A	E. squamosa	N	
MADCB	E. staeri	W	
SUP:Q	E. staigerana	Q	
SIDCF	E. steedmanii	W	
	E. stellaris		= hybrid, E. blaxlandii x moorei (hfp)
MAKMA	E. stellulata	NV	
(MAKMB)	**E. stellulata var. latiuscula*		= E. [latiuscula] (hf)
SIDAH	*E. [stenantha]	W	
SPIFK	E. st-johnii	NV	Includes E. bicostata (hfp)
SLOBA	E. stoatei	W	
(SUX:A)?	*E. stopfordii*		= E. melliodora, or perhaps a hybrid derivative (h)
SIDAG	E. stowardii	W	
SLE:F	E. striaticalyx	SWK	
SIJ:C	E. stricklandii	W	
MAKIG	E. stricta	NV	
	E. stricta var. pyrifera		= hybrid, E. sieberi x stricta (hf)
	E. stricta var. subcampanulata		= E. stricta, minor variant (h)
	E. stuartiana		= E. ovata, as to type. Misapplied to E. bridgesiana (hf) (Cameron 1945)
(SPIDCA)	*E. stuartiana var. amblycorys*		= E. bridgesiana ssp. [bridgesiana], minor variant (hf)
	E. x studleyensis		= hybrid, E. camaldulensis ssp. [camaldulensis] x ovata (hfp) (Pryor 1951)
(SPIJAB)	*E. subcrenulata*		= E. vernicosa ssp. [subcrenulata] (hf) (W.D. Jackson pers. comm.)
AAABA	*Angophora subvelutina	QN	

Code	Name and Distribution		Notes
	E. subviridis		= hybrid, E. blakelyi ssp. [blakelyi] x cinerea ssp. [cinerea] (hfpm) (Pryor 1956b)
	E. taeniola		= hybrid, E. amygdalina x sieberi (h) (Jackson 1958)
(MATEC)	*E. tasmanica*		= E. tenuiramis (hf) (Willis 1967)
	E. x taylorii		= hybrid, E. conica x crebra (hf)
SUADA	E. tectifica	QKY	
	E. x tenandrensis		= hybrid, E. crebra x melliodora (h)
GAA:C	E. tenuipes	Q	
MATEC	E. tenuiramis	T	See Willis (1967)
	E. tephrophloia		= hybrid, E. [sclerophylla] x stricta (hf)
SNEEB	E. tereticornis	QNVM	
(SNEEC)	*E. tereticornis var. glaucina*		= E. glaucina (hf) (Johnson 1962)
	E. tereticornis var. latifolia		= hybrid, E. alba ssp. [platyphylla] x tereticornis (hf)
	E. tereticornis var. media		= hybrid, E. camaldulensis ssp. [camaldulensis] x tereticornis (hf)
(SNEEB)	*E. tereticornis var. pruiniflora*		= E. tereticornis, minor variant (h)
CAFEP	E. terminalis	QNS(W?)KY	See Blake (1953) for former confusion
BAA:A	E. tessellaris	QN	
EAAAA	E. tetragona	W	
SUV:C	E. tetrapleura	N	
SLOBC	E. tetraptera	W	
EAC:A	E. tetrodonta	QKY	
SUJ:A	E. thozetiana	QY	
MAHCI	E. tindaliae	N	
	E. tinghaensis		= hybrid swarm, E. caliginosa x mckieana (hf)

Code	Name and Distribution		Notes
MABBB	E. todtiana	W	
CCB:A	E. torelliana	Q	
SLI:M	E. torquata	W	
	E. x trabutii		= hybrid, E. botryoides x camaldulensis ssp. [camaldulensis] (hfp)
CAFUJ	E. trachyphloia	QN	
SIT:K	E. transcontinentalis	W	
	E. triantha		Note. The type is of uncertain identity but is not E. acmenioides, to which the name E. triantha was applied by Blakely. (h) (Blake 1953, Johnson 1962)
MAKIC	E. triflora	N	
SII:E	E. trivalvis	SW(K?)Y	Note. The *grammatically* correct form is "trivalvis", not "trivalva", as originally published.
(SUADC)	*E. tropica*		= E. argillacea (hf) (Blake 1953)
	E. umbellata		Note. The type does not belong to E. tereticornis to which the name was applied by Blakely (Cameron 1947, Blake 1953).
(SNEEC)	*E. umbellata var. glaucina*		= E. glaucina (hf) (Johnson 1962)
	E. umbellata var. latifolia		= hybrid, E. alba ssp. [platyphylla] x tereticornis (hf)
	E. umbellata var. media		= hybrid, E. camaldulensis ssp. [camaldulensis] x tereticornis (h)
(SNEEB)	*E. umbellata var. pruiniflora*		= E. tereticornis, minor variant (h)
MAG:A	E. umbra	(QN)	
MAG:AA	E. umbra ssp. umbra	QN	See Johnson (1962)
MAG:AB	E. umbra ssp. carnea	QN	See Johnson (1962)
SQA:A	E. umbrawarrensis	Y	
SIZ:E	E. uncinata	W	

Code	Name and Distribution		Notes
	E. unialata		= hybrid, E. globulus x viminalis (hfp) (Brett 1938)
(MATHAC)	*E. urceolaris*		= E. piperita ssp. [urceolaris] (hf)
SPINL	E. urnigera	T	
(SPINL)	*E. urnigera var. elongata*		= E. urnigera, minor variant (hf)
SPIJA	E. vernicosa	(T)	
SPIJAA	*E. vernicosa ssp. [vernicosa]	T	(W.D. Jackson pers. comm.) (hf)
SPIJAC	*E. vernicosa ssp. [johnstonii]	T	(W.D. Jackson pers. comm.) (hf)
SPIJAB	*E. vernicosa ssp. [subcrenulata]	T	(W.D. Jackson pers. comm.) (hf)
SPIKK	E. viminalis	QNVTS	
SPIKKA	*E. viminalis ssp. [viminalis]	QNVTS	
SPIKKI	*E. viminalis ssp. [pryoriana]	V	
(SPIKKI)	*E. viminalis var. racemosa*		= E. viminalis ssp. [pryoriana] (hf) (Johnson 1962)
(SPIKKA)	*E. viminalis var. rhynchocorys*		= E. viminalis ssp. [viminalis] minor variant (h)
	E. virgata		= hybrid, E. luehmanniana x obtusiflora as to type; misapplied by Blakely to the former (h)
SUNEH	E. viridis	QNVS	
	E. viridis var. latiuscula		= hybrid, E. viridis x woollsiana ssp. [woollsiana] (hf)
(SUNEH)	*E. viridis var. ovata*		= E. viridis, minor variant (h)
(MATEG)	*E. vitellina*		= E. pulchella (hf)
	E. vitrea		= hybrid, E. pauciflora ssp. [pauciflora] x radiata ssp. [radiata], as to type. Also misapplied to E. nitida (hfpm)
	E. vitrea var. thryptomena		= hybrid, E. pauciflora ssp. [pauciflora] x radiata ssp. [robertsonii] (hf)
SIGAA	E. wandoo	W	

Code	Name and Distribution		Notes
	E. wardii		= hybrid, E. oblonga ssp. [oblonga] x E. pilularis ssp. [pilularis] (hf)
CCA:D	E. watsoniana	Q	
(SIVCCB)	*E. websterana*		= E. orbifolia ssp. [websterana] (hf)
	E. x westonii		= hybrid, E. goniocalyx x mannifera ssp. maculosa (hfp) (Pryor 1951)
SUP:M	E. whitei	Q	
(MAHEA)	*E. wiburdii*		= E. eugenioides (hf) (Johnson 1962)
(MAHEA)	*E. wilkinsoniana*		= E. eugenioides (hf) (Johnson 1962)
(MAHEA)	*E. wilkinsoniana var. crassifructa*		= E. eugenioides (h) (Johnson 1962)
AAACA	*Angophora woodsiana	QN	
SLE:A	E. woodwardii	W	
SUL:D	E. woollsiana	(QNV)	
SUL:DA	*E. woollsiana ssp. [woollsiana]	N	
SUL:DB	*E. woollsiana ssp. [microcarpa]	QNV	
SIGAG	E. xanthonema	W	Note. Needs further investigation (h)
	E. x yagobiei		= hybrid, E. albens x microtheca ssp. [coolabah]
(MAHEF)	*E. yangoura*		= E. globoidea (hf) (Johnson 1962)
SPEAC	E. yarraensis	V	Note. Not a hybrid, distinct populations (hf)
MAHAE	E. youmanii	QN	
	E. youmanii var. sphaerocarpa		= hybrid, probably E. stellulata x youmanii (h)
SIVEN	*E. youngiana	SW(K?)(hf)	
CAA:D	E. zygophylla	K	

4. REFERENCES

Agostini, R. (1958). - Considerazioni sulla sinonimia di *Eucalyptus elata* Dehnh. (1828) con *Eucalyptus Lindleyana* DC. (1828). *Bull. Ist. Orto Bot. Univ. Napoli*, Ser. 2, 11: 223-241.

Anderson, E. (1953). - Introgressive hybridisation. *Biol. Rev.* 28: 28-307.

Andrews, E.C. (1913). - The development of the natural order Myrtaceae. *Proc. Linn. Soc. N.S.W.* 38: 529-568.

Bamber, R.K. (1962). - The anatomy of the barks of Leptospermoideae. *Aust. J. Bot.* 10: 25-54.

Barber, H.N. (1954). - A sterile eucalypt. *Pap. Proc. Roy. Soc. Tasmania* 88: 285-286.

Barber, H.N. (1955). - Adaptive gene substitutions in Tasmanian eucalypts: I. Genes controlling the development of glaucousness. *Evolution* 9: 1-14.

Barber, H.N. (1965). - Selection in natural populations. *Heredity* 20: 551-572.

Barber, H.N., and Jackson, W.D. (1957). - Natural selection in action in *Eucalyptus*. *Nature* 179: 1267-1269.

Bentham, G. (1867). - "Flora Australiensis". Vol. 3 (Reeve: London).

Black, J.M. (1952). - "Flora of South Australia". 2nd ed. Part 3: 623.

Blake, S.T. (1953). - Studies on northern Australian species of *Eucalyptus*. *Aust. J. Bot.* 1: 185-352.

Blakely, W.F. (1934). - "A Key to the Eucalypts". 1st ed. (The Worker Trustees: Sydney).

Blakely, W.F. (1955). - "A Key to the Eucalypts". 2nd ed. (Commonwealth of Australia Forestry and Timber Bureau: Canberra).

Blakely, W.F. (1965). - "A Key to the Eucalypts". 3rd ed. (Commonwealth of Australia Forestry and Timber Bureau: Canberra).

Boomsma, C.D. (1964). - A description of a new mallee species of *Eucalyptus* from Central Australia. *Trans. Roy. Soc. S. Aust.* 88: 115-116.

Boomsma, C.D. (1969). - Contributions to the records of *Eucalyptus* L'Héritier in South Australia. *Trans. Roy. Soc. S. Aust.* 93: 157-162.

Brett, R.G. (1938). - A survey of *Eucalyptus* species in Tasmania. *Pap. Proc. Roy. Soc. Tasmania* ("1937"): 75-109.

Brooker, M.I.H. (1968). - Phyllotaxis in *Eucalyptus socialis* F. Muell. and *E. oleosa* F. Muell. *Aust. J. Bot.* 16: 455-468.

Brooker, M.I.H. (1970). - Seedling morphology and classification in the *Bisectae* group of eucalypts. *Aust. J. Bot.* 18: 67-75.

Buck, R.C., and Hull, D.L. (1969). - Reply to Gregg. *Syst. Zool.* 18: 354-357.

Burbidge, Nancy T. (1947). - Key to the South Australian species of *Eucalyptus*. *Trans. Roy. Soc. S. Aust.* 71: 137-163.

Burtt, B.L. (1970). - Infraspecific categories in flowering plants. *Biol. J. Linn. Soc.* 2: 233-238.

Cameron, A.K. (1945). - The apple-box of Victoria. *Vict. Nat.* 62: 47-48.

Cameron, A.K. (1946). - The legitimate specific names of certain eucalypts. *Vict. Nat.* 63: 40-44

Cameron, A.K. (1955). - The *Eucalyptus* species of Cavanilles. *Muelleria* 1: 34-42.

Carr, D.J., and Carr, Stella G.M. (1959a). - Developmental morphology of the floral organs of *Eucalyptus*. I. The inflorescence. *Aust. J. Bot.* 7: 109-141.

Carr, D.J., and Carr, Stella G.M. (1959b). - Floral morphology and the taxonomy of *Eucalyptus*. *Nature* 184: 1549-1552.

Carr, D.J., and Carr, Stella G.M. (1962a). - Natural groups within the genus *Eucalyptus*. In "The Evolution of Living Organisms". (Symposium) (Royal Society of Victoria: Melbourne).

Carr, Stella G.M., and Carr, D.J. (1962b). - Convergence and progression in *Eucalyptus* and *Symphyomyrtus*. *Nature* 196: 969-972.

Carr, Stella G.M., and Carr, D.J. (1963). - The taxonomic position of certain eucalypts. *Proc. Roy. Soc. Victoria* 77: 207-216.

Carr, Stella G.M., and Carr, D.J. (1968). - Operculum development and the taxonomy of eucalypts. *Nature* 219: 513-515.

Carr, Stella G.M., and Carr, D.J. (1969). - Oil glands and ducts in *Eucalyptus* L'Hérit. I. The phloem and the pith. *Aust. J. Bot.* 17: 471-513.

Carr, Stella G.M., Carr, D.J., and George, A.S. (1970). - A new eucalypt from Western Australia. *Proc. Roy. Soc. Victoria* 83: 159-169.

Chattaway, M. Margaret, (1953). - The anatomy of bark. I. The genus *Eucalyptus*. *Aust. J. Bot.* 1: 402-433.

Chattaway, M. Margaret, (1955a). - The anatomy of bark. II. Oil glands in *Eucalyptus* species. *Aust. J. Bot.* 3: 21-27.

Chattaway, M. Margaret, (1955b). - The anatomy of bark. III. Enlarged fibres in the bloodwoods (*Eucalyptus* spp.). *Aust. J. Bot.* 3: 28-38.

Chattaway, M. Margaret, (1955c). - The anatomy of bark. IV. Radially elongated cells in the phelloderm of species of *Eucalyptus*. *Aust. J. Bot.* 3: 39-47.

Curtis, Winifred M. (1956). - "The Student's Flora of Tasmania". Vol. 1 (Government Printer: Hobart).

Duffield, J.W. (1952). - Relationships and species hybridization in the genus *Pinus*. *Zeitschr. Forstgenetik Forstpflanzenzüchtung* 1: 93-97.

Gardner, C.A. (1948). - In Gardner, C.A., and Watson, E.M. - The Western Australian varieties of *Eucalyptus oleosa* F. Muell. ex Miq. and their essential oils. *Proc. Roy. Soc. W. Aust.* 34: 73-86.

Gardner, C.A. (1959). - Trees of Western Australia. Nos. 35-38. *J. Agr. W. Aust.* Ser. 3, 8: 456-464.

Gauba, E., and Pryor, L.D. (1958). - Seed coat anatomy and taxonomy in *Eucalyptus*. 1. *Proc. Linn. Soc. N.S.W.* 83: 20-31.

Gauba, E., and Pryor, L.D. (1959). - Seed coat anatomy and taxonomy in *Eucalyptus*. 2. *Proc. Linn. Soc. N.S.W.* 84: 278-291.

Gauba, E., and Pryor, L.D. (1961). - Seed coat anatomy and taxonomy in *Eucalyptus*. 3. *Proc. Linn. Soc. N.S.W.* 86: 96-111.

Gregor, J.W. (1938). - Experimental taxonomy, II. *New Phytol.* 37: 15-49.

Hall, N., and Johnston, R.D. (1965). - "Card Sorting Key for the Identification of *Eucalyptus*". 2nd ed. (Commonwealth of Australia Forestry and Timber Bureau: Canberra).

Hartley, J. (1965). - Coherence in *Eucalyptus*. *Aust. J. Biol. Sci.* 18: 190-192.

Hillis, W.E. (1966a). - Variation in polyphenol composition within species of *Eucalyptus* L'Hérit. *Phytochemistry* 5: 541-556.

Hillis, W.E. (1966b). - Polyphenols in the leaves of *Eucalyptus* L'Hérit.: a chemotaxonomic survey. I. *Phytochemistry* 5: 1075-1090.

Hillis, W.E. (1967a). - Polyphenols in the leaves of *Eucalyptus* L'Hérit.: a chemotaxonomic survey. II. *Phytochemistry* 6: 259-274.

Hillis, W.E. (1967b). - Polyphenols in the leaves of *Eucalyptus* L'Hérit.: a chemotaxonomic survey. III. *Phytochemistry* 6: 275-286.

Hillis, W.E. (1967c). - Polyphenols in the leaves of *Eucalyptus* L'Hérit.: a chemotaxonomic survey. IV. *Phytochemistry* 6: 373-382.

Hillis, W.E. (1967d). - Polyphenols in the leaves of *Eucalyptus* L'Hérit.: a chemotaxonomic survey. V. *Phytochemistry* 6: 845-856.

Hull, D.L. (1966). - Phylogenetic numericlature. *Syst. Zool.* 15: 14-17.

Hull, D.L. (1968). - The syntax of numericlature. *Syst. Zool.* 17: 472-474.

Hull, D.L. (1970). - Contemporary systematic philosophies. *Ann. Rev. Ecol. Syst.* 1: 19-54.

Hull, D.L., and Snyder, D.P. (1969). - Contemporary logic and evolutionary taxonomy: a reply to Gregg. *Syst. Zool.* 18: 347-354.

Huxley, J. (1940). - "The New Systematics". (Oxford University Press: London, etc.).

Ingle, H.D., and Dadswell, H.E. (1953). - The anatomy of the timbers of the South-West Pacific area. III. Myrtaceae. *Aust. J. Bot.* 1: 353-400.

Jackson, W.D. (1958). - Natural hybrids in eucalypts, Part I. *E.* x *taeniola* (= *E. salicifolia* x *sieberiana*). *Pap. Proc. Roy. Soc. Tasmania* 92: 141-146.

Jacobs, M.R. (1955). - "Growth Habits of the Eucalypts". (Commonwealth of Australia Forestry and Timber Bureau: Canberra).

Johnson, L.A.S. (1962). - Studies in the taxonomy of *Eucalyptus*. *Contrib. N.S.W. Nat. Herb.* 3: 103-126.

Johnson, L.A.S. (1968). - Rainbow's end: the quest for an optimal taxonomy. (Presidential address) *Proc. Linn. Soc. N.S.W.* 93: 8-45.

Johnson, L.A.S. (1970). - Rainbow's end: the quest for an optimal taxonomy. *Syst. Zool.* 19:203-239 (Reprint of Johnson 1968, with addendum).

Johnston, R.D., and Marryatt, Rosemary (1962). - Taxonomy and nomenclature of eucalypts. Commonwealth of Australia Forestry and Timber Bureau Leaflet No. 92: 1-24.

Larsen, E. (1965). - A study of the variability of *Eucalyptus maculata* Hook. and *Eucalyptus citriodora* Hook. Commonwealth of Australia Forestry and Timber Bureau Leaflet No. 95: 1-23.

Maiden, J.H. (1903-1931). - "A Critical Revision of the Genus *Eucalyptus*". Vols. 1-8. (Government Printer: Sydney).

McKern, H.H.G. (1965). - Volatile oils and plant taxonomy. (Presidential address) *J. Roy. Soc. N.S.W.* 98: 1-10.

Mirov, N.T. (1967). - "The Genus *Pinus*". (Ronald Press: New York).

Moggi, G. (1963). - L'infiorescenza del genere *Eucalyptus* e la sua interpretazione. *Giorn. Bot. Ital.* 70: 1-20.

Moore, K.M. (1970). - Observations on some Australian forest insects. 24. Results from a study of the genus *Glycaspis* (Homoptera: Psyllidae). *Aust. Zoologist* 15: 343-376.

Osborn, T.G.B. (1937). - Some notes on the nomenclature of certain common species of *Eucalyptus*. *Proc. Linn. Soc. N.S.W.* 62: 73-77.

Pedley, L. (1969). - Intermediates between *Eucalyptus populnea* F. Muell. and *E. brownii* Maid. and Cambage. *Contrib. Queensl. Herb.* No. 5: 1-6.

Penfold, A.R., and Willis, J.L. (1961). - "The Eucalypts". (World Crops Series, Leonard Hill: London, and Interscience Publishers: New York).

Pike, Kathleen M. (1956). - Pollen morphology of Myrtaceae from the South-West Pacific area. *Aust. J. Bot.* 4: 13-53.

Podger, F.D., and Chippendale, G.M. (1968). - A new species of *Eucalyptus* from Western Australia. *J. Roy. Soc. W. Aust.* 51: 65-67.

Pryor, L.D. (1951). - A genetic analysis of some *Eucalyptus* species. *Proc. Linn. Soc. N.S.W.* 76: 140-148.

Pryor, L.D. (1953). - Anther shape in *Eucalyptus* genetics and systematics. *Proc. Linn. Soc. N.S.W.* 78: 43-48.

Pryor, L.D. (1954). - The inheritance of inflorescence characters in *Eucalyptus*. *Proc. Linn. Soc. N.S.W.* 79: 79-89.

Pryor, L.D. (1955a). - A hybrid swarm between *Eucalyptus odorata* Behr and *Eucalyptus leucoxylon* F. Muell. *Trans. Roy. Soc. S. Aust.* 78: 92-96.

Pryor, L.D. (1955b). - The genetic and systematic status of *Eucalyptus Huberiana* Naudin, *E. viminalis* Labill. and *E. aromaphloia* Pryor and Willis. *Trans. Roy. Soc. S. Aust.* 78: 156-164.

Pryor, L.D. (1956a). - An F_1 hybrid between *Eucalyptus pulverulenta* and *E. caesia*. *Proc. Linn. Soc. N.S.W.* 81: 97-100.

Pryor, L.D. (1956b). - The identity of *Eucalyptus subviridis* Maiden and Blakely. *Proc. Linn. Soc. N.S.W.* 81: 101-104.

Pryor, L.D. (1957). - Variation in snow gum (*Eucalyptus pauciflora* Sieb.). *Proc. Linn. Soc. N.S.W.* 81: 299-305.

Pryor, L.D. (1959). - Species distribution and association in *Eucalyptus*. In "Biogeography and Ecology in Australia". *Monogr. Biol.* 8: 461-471.

Pryor, L.D. and Byrne, O.R. (1969). - Variation and taxonomy in *Eucalyptus camaldulensis*. *Silvae Genetica* 18: 57-96.

Pryor, L.D., and Johnson, L.A.S. (1962). - The status and significance of the hybrid *Eucalyptus marginata* Sm. x *E. megacarpa* F. Muell. *Aust. J. Bot.* 10: 129-133.

Pryor, L.D., Johnson, L.A.S., Whitecross, M.I., and McGillivray, D.J. (1967). - The perianth and the taxonomic affinities of *Eucalyptus cloëziana* F. Muell. *Aust. J. Bot.* 15: 145-149.

Pryor, L.D. and Knox, R.B. (1971). - Operculum development and evolution in eucalypts. *Aust. J. Bot.* 19: 143-171.

Pryor, L.D., and Willis, J.H. (1954). - A new Victorian (and South Australian) eucalypt. *Vict. Nat.* 71: 125-129.

Ruggeri, Cecilia (1960a). - Primo contributo alla conoscenza cariologica del genere *Eucalyptus* (Myrtaceae). *Pubbl. Centr. Sperim. Agric. Forest. (Roma)* 4: 121-126.

Ruggeri, Cecilia (1960b). - Secondo contributo alla conoscenza cariologica del genere *Eucalyptus* (Myrtaceae). *Pubbl. Centr. Sperim. Agric. Forest. (Roma)* 4: 139-150.

Ruggeri, Cecilia (1960c). - Il numero cromosomico di *Eucalyptus flocktoniae* Maiden (Myrtaceae). *Pubbl. Centr. Sperim. Agric. Forest. (Roma)* 4: 211-223.

Ruggeri, Cecilia (1962). - Terzo contributo alla conoscenza cariologica del genere *Eucalyptus* (Myrtaceae). *Pubbl. Centr. Sperim. Agric. Forest. (Roma)* 6: 39-45.

Schauer, J.C. (1844). - Myrtaceae R. Br. In Lehmann, C. (ed.) - "Plantae Preissianae". Vol. 1: 96-158 (Meissner: Hamburg).

Stebbins, G.L. (1950). - "Variation and Evolution in Plants". (Columbia University Press: New York).

Walker, J., and Bertus, A.L. (in press). - Shoot blight of *Eucalyptus* spp., caused by an undescribed species of *Ramularia*. *Proc. Linn. Soc. N.S.W.*

Willis, J.H. (1967). - Systematic notes on the indigenous Australian flora. *Muelleria* 1: 117-163.