

AN UPDATED LIST OF SPECIES USED IN TREE-RING RESEARCH

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ABSTRACT

During the past 100 years, researchers have investigated the potential of hundreds of tree and shrub species for use in applications of tree-ring research. Although several lists of species known to crossdate have been published, investigated species that do not crossdate are rarely included despite the usefulness of this information for future research. This paper provides a list of the Latin and common names of 573 species that have been investigated in tree-ring research, information on species known to crossdate, and information on species with measurement and/or chronology data in the International Tree-Ring Data Bank. In addition, a measure of the suitability of a species for future tree-ring applications, the Crossdating Index (CDI), is developed and proposed for standard usage.

In den letzten hundert Jahren haben Forscher das Potential von hunderten von Baum- und Buscharten für die Anwendung in der Jahresring-Forschung untersucht. Zahlreiche Listen mit Arten, von denen man weiß, daß sie zeitlich korrespondieren, sind bereits veröffentlicht worden, dagegen sind untersuchte Arten, die nicht zeitlich korrespondieren, selten in Publikationen berücksichtigt worden, obwohl diese Informationen für die künftige Forschung nutzvoll sein könnten. Dieser Artikel legt eine Liste der lateinischen und der gemeinen Namen von 573 Arten vor, die im Rahmen der Jahresring-Forschung untersucht worden sind, Informationen über Arten, die bekannterweise zeitlich korrespondieren sowie Informationen über Arten mit Maß- und/oder Chronologiedaten in der internationalen Jahresring-Datenbank (International Tree-Ring Data Bank). Zudem wird in dem Artikel die Eignung der jeweiligen Art und ihre Bedeutung für die künftige Forschung beurteilt. Der hiermit entwickelte "Crossdating Index" (CDI) wird für den Standardgebrauch vorgeschlagen.

Au cours des cent dernières années, les chercheurs ont examiné le potentiel de certaines d'arbres et d'arbustes utilisables pour diverses applications dendrochronologiques. Bien que plusieurs listes de taxons connus pour être synchronisables aient été publiées, les espèces étudiées et qui se sont révélées non synchronisables, sont rarement mentionnées en dépit de l'utilité d'une telle information pour de futures recherches. Cet article donne la liste des noms latins et vernaculaires de 573 espèces étudiées du point de vue dendrochronologique et fournit des informations à propos de celles dont des mesures et des chronologies sont reprises dans la Banque Internationale de données dendrochronologiques (International Tree-Ring Data Bank). De plus, le coefficient de datation croisée (CDI) qui est une indication de l'utilité d'une espèce pour de futures applications dendrochronologiques est exposé et proposé pour un usage standard.

INTRODUCTION

For nearly 100 years, researchers have evaluated the tree-ring dating potential of hundreds of tree and shrub species for an extraordinarily wide range of applications in the earth and social sciences. These investigations have resulted in the publication of three lists of species used in tree-ring research, the first by Fritts (1976), the second by Cook and Kairiukstis (1990), and the third by Schweingruber (1993). Another comprehensive reference on species useful in tree-ring research is Hughes et al. (1982), whose contributing authors provided details on the crossdating potential and bibliographic references for species from all continents. However, these lists provide little or no information on species that have been investigated in tree-ring studies, but did not crossdate. Providing information on species that are not potentially useful in tree-ring research is important to scientists wishing to conduct research in areas where the major tree species used in dendrochronology may not be found (e.g. in tropical regions). Therefore, listing species that do not crossdate is as important as listing species that *do* crossdate.

The list I have compiled (Table 3) is a composite of all species listed in the previously mentioned volumes. In addition, I have listed additional species uncovered in an exhaustive search of a bibliographic database of more than 5,000 references on tree-ring research maintained and continuously updated on the computer facilities at the Laboratory of Tree-Ring Research in Tucson, Arizona. The purposes of this list are to:

- (1) provide information on species with ring-growth parameters, (e.g. ring width and density) known to crossdate, and for which chronologies have been developed;
- (2) provide information on species that have, at one time or another, been investigated but did not crossdate, or for which no information on crossdating is available;
- (3) provide information on tropical and subtropical tree species that have had growth-ring characteristics examined;
- (4) provide an updated list of standard four-letter codes for all species in the list;
- (5) provide commonly used synonyms for certain species for cross-referencing purposes;
- (6) list species that have had ring measurements and chronologies donated to the International Tree-Ring Data Bank (ITRDB).

The international tree-ring community would benefit greatly if information on species being investigated, or having been investigated, is contributed so that this list can be continuously updated. Contribution of this information is strictly voluntary, and should be sent to the author at the address listed above. For species new to the list, the full Latin name and authority and common name of the species should be contributed as well as information on how well any ring-growth parameters of the species crossdate. The four-letter species code will be designated by personnel of the ITRDB to all species investigated, including those that do not crossdate, should future researchers discover that those species do indeed crossdate. Contribution of ring-growth measurements and final chronologies for the species being investigated to the ITRDB is also voluntary but highly encouraged.

MAJOR TREE GENERA UTILIZED IN TREE-RING RESEARCH

Table 1 lists the major tree genera utilized in dendrochronology. By far, the genus most investigated is *Pinus* totaling 63 species investigated with at least 54 known to crossdate. These figures are not surprising because the pine species are among the world's most widely distributed botanical species with a very high ecological amplitude, capable of growing in all Northern Hemisphere latitudes from the equator to 70° north and all elevations to treeline (Critchfield and Little 1966; Mirov 1967; Vidakovic 1991). The second most investigated tree genus is *Quercus* with 44 species having been investigated in tree-ring studies, 27 of which are known to crossdate. The firs (*Abies*) rank third with 21 species known to crossdate, while the spruces (*Picea*) rank fourth with 19 species known to crossdate. The junipers (*Juniperus*) rank fifth with 15 species known to crossdate. Despite the limited distribution of the southern beech species (*Nothofagus*), the number of species investigated (12) is surprising and illustrates the importance of this genus for investigating the dynamics of Southern Hemisphere hardwood forests (Gutiérrez 1992; Norton 1985; Veblen et al. 1992).

Table 1. Important genera of tree species used in tree-ring research ranked by the number of species currently known to crossdate for each genus.

Rank	Genus	Number of Species Investigated	Number of Species that Crossdate
1	<i>Pinus</i>	63	54
2	<i>Quercus</i>	44	27
3	<i>Abies</i>	34	21
4	<i>Picea</i>	21	19
5	<i>Juniperus</i>	21	15
6	<i>Larix</i>	9	9
7	<i>Populus</i>	10	7
8	<i>Nothofagus</i>	12	7
9	<i>Acer</i>	10	6
10	<i>Dacrydium</i>	5	5
11	<i>Betula</i>	13	5
12	<i>Tsuga</i>	7	5
13	<i>Cedrus</i>	4	4

THE CROSSDATING INDEX (CDI)

The international tree-ring community should develop and standardize usage of an index that indicates the degree and/or strength of crossdating for a particular species. Some indices to measure dendrochronological potential have already been developed (Dyer 1982), but they have not been widely used by dendrochronologists. Such an index should be simple to use and readily interpretable by researchers worldwide. I propose a simple index, known as the Crossdating Index, or CDI, which is outlined in Table 2.

The CDI is based on the ability of a particular species to crossdate between trees at any one site (CDI = 1), and between sites in any one region (CDI = 2). A CDI of one indicates a species of minor importance in dendrochronology yet perhaps capable of yielding information

on a site-by-site basis (e.g. *Juniperus thurifera* and *Tetraclinis articulata* [Schweingruber 1993]). A CDI of two indicates a species that crossdates between sites in a region and therefore exhibits the greatest potential for dendrochronological analyses on a regional basis (e.g. *Picea abies* and *Pseudotsuga menziesii* [Schweingruber 1993]). Two interpretations are possible for species with a CDI of zero. First and foremost, it indicates a species currently not known to crossdate and therefore to be of little or no use in dendrochronology. Second, it may also indicate a species that has been investigated but for which no information on crossdating potential and suitability for dendrochronological analyses was given by the original investigators.

The success of the CDI as a measure of the crossdating ability of a species depends on its continuous use by dendrochronologists. If a new species is being investigated, the principal investigators should report the CDI for the species along with the other pertinent statistical information for the species, such as the mean sensitivity, standard deviation, and autocorrelation of the measured series and final chronology. In addition, the CDI will inform researchers unfamiliar with dendrochronology of the suitability and importance of any particular species for tree-ring dating.

Table 2. The crossdating index, or CDI, indicating the degree to which a ring-growth parameter of a particular species can be crossdated.

CDI Value	Meaning of the CDI
0	Species does not crossdate, or no information on crossdating for this species has been published. NO OR LITTLE IMPORTANCE IN DENDROCHRONOLOGY.
1	Species is known to crossdate between cores from the same tree as well as between trees from the same site (between-tree crossdating), representing a species useful for interpreting local site conditions. MINOR IMPORTANCE IN DENDROCHRONOLOGY.
2	Species is known to crossdate between sites in a region (between-site crossdating), and represents a species of major importance in dendrochronology due to a strong macroclimatic signal that will yield information on a regional scale. MAJOR IMPORTANCE IN DENDROCHRONOLOGY.

SUGGESTIONS FOR RESEARCHERS

The literature on tree-ring research is replete with major inconsistencies in listing tree species, a problem that plagues most biological endeavors as new tree taxa are discovered or reclassified. Researchers should *always*, without fail, list which tree species are being investigated or utilized. This rule is perhaps the easiest to follow, yet is the most violated in tree-ring research. In addition to giving the full Latin name of the species being investigated or used (after which the genus name may be abbreviated), the researcher should also list the author (also called the “authority” or “namer of the tree”) because this is considered part of the full technical name for any particular species. When preparing material for publication, however, researchers should follow guidelines for the particular medium being considered. Researchers should strive to use the most recent nomenclature for a particular taxon, though reclassification and renaming of taxa will always cause some inconsistencies. Archaic names should be avoided (for example, *Sequoiadendron giganteum* should be used instead of *Sequoia gigantea*).

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Table 3. Species used in tree-ring research. Nomenclature follows Boland et al. (1984), Boutelje (1980), Coombs (1992), Little (1979), Perry (1991), Phillips (1978), Poole and Adams (1990), Schweingruber (1993), Vaucher (1986), and Vidakovic (1991). An asterisk (*) indicates that measurements and chronologies for this species are contained in the holdings of the ITRDB.

CDI	Code	Latin Name, Authority, and Common Name
	ABSP	<i>Abies</i> Mill. fir
2	ABAL	<i>Abies alba</i> Mill. silver fir, European fir
1	ABAM*	<i>Abies amabilis</i> Dougl. ex Forbes Pacific silver fir
2	ABBA	<i>Abies balsamea</i> (L.) Mill. balsam fir
1	ABBO*	<i>Abies borisii-regis</i> Matff. Bulgarian fir, King Boris fir
0	ABBN	<i>Abies bommuelleriana</i> Matff. Bommueller's fir
0	ABBR	<i>Abies bracteata</i> (D. Don) Nutt. bristlecone fir
1	ABCE*	<i>Abies cephalonica</i> Loud. Greek fir
0	ABCH	<i>Abies chensiensis</i> van Tiegh Chensien fir
1	ABCI	<i>Abies cilicica</i> (Ant. & Kotschy) Carr. Cilician fir
2	ABCO*	<i>Abies concolor</i> (Gord. & Glend.) Lindl. ex Hildebr. white fir
0	ABEQ	<i>Abies equi-trojani</i> Aschers. & Sintl. <i>Abies ernestii</i> Rehd. = <i>Abies recurvata</i> var. <i>ernestii</i> (Rehd.) Kuan
0	ABFX	<i>Abies faxoniana</i> Rehd. & Wils. Faxon fir
0	ABFI	<i>Abies firma</i> Sieb. & Zucc. Japanese fir, Momi fir
1	ABFO	<i>Abies forestii</i> Rogers Chinese fir
1	ABFR	<i>Abies fraseri</i> (Pursh) Poir. Fraser fir
1	ABGR	<i>Abies grandis</i> (Dougl. ex D. Don) Lindl. grand fir, giant fir
0	ABHO	<i>Abies holophylla</i> Maxim. Manchurian fir
1	ABKO	<i>Abies koreana</i> Wils. Korean fir
2	ABLA*	<i>Abies lasiocarpa</i> (Hook.) Nutt. subalpine fir, corkbark fir

Table 3. (cont.)

CDI	Code	Latin Name, Authority, and Common Name
1	ABMA	<i>Abies magnifica</i> A. Murr. California red fir
1	ABMC	<i>Abies marocana</i> Trabut Moroccan fir
0	ABNB	<i>Abies nebrodensis</i> (Lojac.) Mattei Sicilian fir
0	ABNE	<i>Abies nephrolepis</i> Maxim. East Siberian fir
1	ABNO*	<i>Abies nordmanniana</i> (Stev.) Spach Caucasian fir
1	ABNU	<i>Abies numidica</i> De Lannoy ex. Carr. Algerian fir
1	ABPI*	<i>Abies pindrow</i> (Royle) Spach Himalayan silver fir, West Himalayan fir
1	ABPN*	<i>Abies pinsapo</i> Boiss. Spanish fir
1	ABPR*	<i>Abies procera</i> Rehd. noble fir
1	ABRC	<i>Abies recurvata</i> Mast. Min fir
0	ABRE	<i>Abies religiosa</i> Schlecht. Mexican fir, sacred fir
0	ABSA	<i>Abies sachalinensis</i> (Schmidt) Mast. Sachalin fir, todo
0	ABSI	<i>Abies sibirica</i> Ledeb. Siberian fir
1	ABSB*	<i>Abies spectabilis</i> (D. Don) Spach silver fir, East Himalayan fir
0	ABVI	<i>Abies vietchii</i> Lindl. Vietch's silver fir
0	ACAL	<i>Acacia alpina</i>
0	ACCA	<i>Acacia catechu</i> Willd. cutch, Indian acacia
0	ACGI	<i>Acacia giraffae</i> Willd. camel thorn
0	ACHO	<i>Acacia hotwittii</i>
0	ACME	<i>Acacia melanoxylon</i> R.Br. blackwood
0	ACRA	<i>Acacia raddiana</i> Savia Israeli acacia
	ACSP	<i>Acer</i> L. maple
1	ACCA	<i>Acer campestre</i> L. hedge maple, field maple
0	ACNE	<i>Acer negundo</i> L. boxelder, ash-leaved maple
1	ACOP	<i>Acer opalus</i> Mill. Italian maple
0	ACPE	<i>Acer pensylvanicum</i> L. striped maple
1	ACPL	<i>Acer platanoides</i> L. Norway maple
1	ACPS	<i>Acer pseudoplatanus</i> L. sycamore maple, plane tree
1	ACRU	<i>Acer rubrum</i> L. red maple
0	ACSA	<i>Acer saccharinum</i> L. silver maple

Table 3. (cont.)

CDI	Code	Latin Name, Authority, and Common Name
2	ACSH*	<i>Acer saccharum</i> Marsh. sugar maple
0	ACSC	<i>Acer spicatum</i> Lam. mountain maple
0	ADDI	<i>Adansonia digitata</i> L. baobab, monkey bread tree
0	ADFA	<i>Adenostoma fasciculatum</i> Hook. & Arn. chamise, greasewood
1	ADHO*	<i>Adesmia horrida</i> Gill.
1	ADUS*	<i>Adesmia uspallatensis</i> Gill.
0	AEHI	<i>Aesculus hippocastanum</i> L. horse chestnut
0	AEPU	<i>Aextoxicon punctatum</i> R. & Pav. olivillo, tique
0	AFAF	<i>Azelia africana</i> Smith afzelia, apa, doussie, alinga, papao
2	AGAU*	<i>Agathis australis</i> (D. Don) Lindley kauri pine
0	AGMA	<i>Agathis macrophylla</i> Fijian kauri
0	AGMO	<i>Agathis moorei</i> Mast. kauri
0	AGPA	<i>Agathis palmerstoni</i> F.v.M. North Queensland kauri, Australian agathis
2	AGRO	<i>Agathis robusta</i> (C. Moore ex F. Muell) Bailey kauri pine, Queensland kauri
0	AGVI	<i>Agathis vitiensis</i> (Seeman) Benth. & Hook.f. ex Drake Fiji kauri, dakua
0	AIAL	<i>Ailanthus altissima</i> (Mill.) Swingle Tree of Heaven
	ALSP	<i>Alnus</i> Mill. alder <i>Alnus crispa</i> = <i>Alnus viridis</i> var. <i>crispa</i> (Ait.) Turrill
1	ALGL	<i>Alnus glutinosa</i> (L.) Gaertn. common alder, European alder, black alder
1	ALIN	<i>Alnus incana</i> (L.) Moench grey alder, white alder
0	ALMA	<i>Alnus maximowiczii</i> Callier
0	ALRH	<i>Alnus rhombifolia</i> Nutt. white alder
0	ALRU	<i>Alnus rubra</i> Bong. red alder
0	ALRG	<i>Alnus rugosa</i> (Du Roi) Spreng. speckled alder, rough alder
0	ALSE	<i>Alnus serrulata</i> (Ait.) Willd. hazel alder
0	ALSI	<i>Alnus sinuata</i> (Regel.) Rydb. Sitka alder
1	ALVI	<i>Alnus viridis</i> (Chaix) DC. in Lam. & DC. green alder
0	ALCR	<i>Alnus viridis</i> var. <i>crispa</i> (Ait.) Turrill American green alder
1	AMSP	<i>Amelanchier</i> Medik. serviceberry
0	AMLU	<i>Amomyrtus luma</i> (Mol.) Legr. & Kaus. luma
	ARSP	<i>Araucaria</i> A.L. Juss. araucaria

Table 3. (cont.)

CDI	Code	Latin Name, Authority, and Common Name
1	ARAN	<i>Araucaria angustifolia</i> (Bertol.) Kuntze Parana araucaria, Parana pine, candelabra tree
2	ARAR*	<i>Araucaria araucana</i> (Molina) K. Koch monkey puzzle, araucaria, pehuen, Chile pine
0	ARBI	<i>Araucaria bidwilli</i> Hook. bunya pine, bunya
0	ARCU	<i>Araucaria cunninghamii</i> Aiton ex D. Don hoop pine, Moreton bay pine, colonial pine
0	ARHE	<i>Araucaria heterophylla</i> (Salisb.) Franco Norfolk Island pine
0	ARHU	<i>Araucaria hunsteinii</i> Klinki pine
0	ARGL	<i>Arctostaphylos glauca</i> Lindl. bigberry manzanita
1	ARTR	<i>Artemisia tridentata</i> Nutt. big sagebrush
2	ATCU*	<i>Athrotaxis cupressoides</i> D. Don pencil pine, smooth Tasmanian cedar
2	ATSE*	<i>Athrotaxis selaginoides</i> D. Don King Billy pine
2	AUCH*	<i>Austrocedrus chilensis</i> (D. Don) Florin & Boutelje Chilean cedar, cipres de la cordillera, Chilean incense cedar
0	BAAE	<i>Balanites aegyptiaca</i> Del. Jericho balsam, heglig
0	BLTA	<i>Beilschmiedia tawa</i> (A. Cunn.) Kirk tawa
0	BTEX	<i>Bertholletia excelsa</i> H.B.K. Brazil nut, yuvia, turury, para nut tree
0	BESP	<i>Betula</i> L. birch
0	BEAB	<i>Betula albosinensis</i> Burk. Chinese birch
1	BEAL	<i>Betula alleghaniensis</i> Britton yellow birch <i>Betula carpatica</i> Walldst. & Kit. ex Willd. = <i>Betula pubescens</i> var. <i>carpatica</i> (Willd.) Ascherson & Graebner Carpathian birch
0	BEER	<i>Betula ermanii</i> Cham. Japanese birch, dakekaba
0	BEGL	<i>Betula glandulosa</i> Michx. bog birch, dwarf birch
0	BELE	<i>Betula lenta</i> L. sweet birch, black birch
0	BENI	<i>Betula nigra</i> L. river birch
1	BEPA	<i>Betula papyrifera</i> Marsh. paper birch
1	BEPE	<i>Betula pendula</i> Roth = <i>Betula verrucosa</i> Ehrh. silver birch, European white birch
0	BEPL	<i>Betula platyphylla</i> Suk. jagjag-namu, Japanese birch
0	BEPO	<i>Betula populifolia</i> Marsh. gray birch
1	BEPU	<i>Betula pubescens</i> Ehrh. downy birch, mountain birch, white birch
0	BEUT	<i>Betula utilis</i> D. Don Himalayan birch

Table 3. (cont.)

CDI	Code	Latin Name, Authority, and Common Name
1	BEVE	<i>Betula verrucosa</i> Ehl. silver birch, European white birch
0	BOMA	<i>Bombax malabaricum</i> DC. semul, ngiu, ngiew, gon run do
0	BUSI	<i>Bursera simaruba</i> (L.) Sarg. gumbo-limbo, West-Indian birch
1	BUSE	<i>Buxus sempervirens</i> L. common box, boxwood
	CASP	<i>Callitris</i> Ventenat
0	CACO	<i>Callitris columellaris</i> F. Muell. cypress pine
0	CAIN	<i>Callitris intratropica</i> R.T. Baker & H.G. Smith cypress pine
0	CAMA	<i>Callitris macleayana</i> (F. Muell.) F. Muell. brush cypress pine
1	CAPR	<i>Callitris preissii</i> Miq. Rottneist Island pine
1	CARO	<i>Callitris robusta</i> R. Br. ex Bailey = <i>Callitris preissii</i> Miq. Rottneist Island pine
1	CADE	<i>Calocedrus decurrens</i> (Torr.) Florin California incense cedar
0	CPBE	<i>Carpinus betulus</i> L. hornbeam
	CYSP	<i>Carya</i> Nutt. hickory
0	CYCO	<i>Carya cordoformis</i> (Wangenh.) K. Koch bitternut hickory
1	CYGL	<i>Carya glabra</i> (Mill.) Sweet pignut hickory
1	CYIL	<i>Carya illinoensis</i> (Wagenh.) K. Koch pecan
0	CYOV	<i>Carya ovata</i> (Mill.) K. Koch shagbark hickory
0	CYTO	<i>Carya tomentosa</i> (Poir.) Nutt. mockernut hickory
0	CACR	<i>Castanea crenata</i> Sieb. & Zucc. Japanese chestnut
1	CASA	<i>Castanea sativa</i> Mill. sweet chestnut, European chestnut
0	CSLI	<i>Casuarina litoralis</i> Salisb. black she-oak
0	CSVE	<i>Casuarina verticillata</i>
0	CTSP	<i>Catalpa speciosa</i> Warder ex Engelm. northern catalpa
0	CNCR	<i>Ceanothus crassifolius</i> Torr. hoaryleaf ceanothus
	CESP	<i>Cedrela</i> spp.
1	CEAN*	<i>Cedrela angustifolia</i> Sesse & Mocino ex DC. cedro salteno <i>Cedrela balansae</i> C. DC. = <i>Cedrela angustifolia</i> Sesse & Mocino
0	CEFI	<i>Cedrela fissilis</i> Vell. central American cedar, cigarbox cedar
1	CELI*	<i>Cedrela lilloi</i> C. DC. cedro salteno
0	CETO	<i>Cedrela toona</i> Roxb. ex. Rottler = <i>Toona australis</i> (F. Muell.) Harms red cedar, Australian cedar, toon, yomhom

Table 3. (cont.)

CDI	Code	Latin Name, Authority, and Common Name
	CDSP	<i>Cedrus</i> Trew cedar
2	CDAT	<i>Cedrus atlantica</i> (Endl.) Manetti Atlantic cedar, Atlas cedar
1	CDBR*	<i>Cedrus brevifolia</i> Henry = <i>Cedrus libani</i> var. <i>brevifolia</i> Cyprian cedar
1	CDDE	<i>Cedrus deodara</i> (D. Don) G. Don deodar cedar, Himalayan cedar
1	CDLI	<i>Cedrus libani</i> A. Richard Cedar of Lebanon
	CLSP	<i>Celtis</i> L. hackberry
0	CLLA	<i>Celtis laevigata</i> Willd. sugarberry
1	CLOC	<i>Celtis occidentalis</i> L. hackberry
0	CEOC	<i>Cephalanthus occidentalis</i> L. buttonbush
	CRSP	<i>Cercocarpus</i> Kunth cercocarpus
0	CRBE	<i>Cercocarpus betuloides</i> Nutt. birchleaf mountain-mahogany
0	CRLE	<i>Cercocarpus ledifolius</i> Nutt. curleaf mountain-mahogany
1	CRMO	<i>Cercocarpus montanus</i> Raf. alderleaf cercocarpus
0	CHNO	<i>Chamaecyparis nootkatensis</i> (D. Don) Spach Alaska yellow-cedar, Nootka cypress
1	CHOB	<i>Chamaecyparis obtusa</i> (Sieb. & Zucc.) Endl. hinoki cypress, Formosan cypress
0	CHTH	<i>Chamaecyparis thyoides</i> (L.) B.S.P. Atlantic white-cedar
0	CLEX	<i>Chlorophora excelsa</i> Benth. & Hook.f. iroko, kambala, mvule
0	CHSP	<i>Chorisia speciosa</i> St. Hil. paneira
0	CIFR	<i>Citharexylum fruticosum</i> L. Florida fiddlewood
0	COCO	<i>Copaifera coleosperma</i> Benth. Rhodesian copalwood, mehibi
	CONI	Various conifers
0	COTR	<i>Cordia trichotoma</i> Vell. lauro pardo, peterebi
0	COAL	<i>Cordia alliodora</i> Oken laurel corriente, lauro amarillo, ajo ajo
	COSP	<i>Cornus</i> L. dogwood
0	COFL	<i>Cornus florida</i> L. flowering dogwood
0	COAV	<i>Corylus avellana</i> L. common hazel
0	CRAZ	<i>Crataegus azarolus</i> L. azarole
2	CMJA*	<i>Cryptomeria japonica</i> (L. f.) D. Don Japanese cedar, sugi, cryptomeria
1	CUAZ	<i>Cupressus arizonica</i> Greene Arizona cypress
0	CUDU	<i>Cupressus dupreziana</i> Camus

Table 3. (cont.)

CDI	Code	Latin Name, Authority, and Common Name
1	CUGI	<i>Cupressus gigantea</i> Cheng & L.K. Fu
0	CUGL	<i>Cupressus glabra</i> Sudworth smooth Arizona cypress
0	CULU	<i>Cupressus lusitanica</i> Mill. Mexican cypress
2	CUSE	<i>Cupressus sempervirens</i> L. Italian cypress, Mediterranean cypress
0	CYRA	<i>Cyrilla racemiflora</i> L. swamp cyrilla, leatherwood
0	DADA	<i>Dacrycarpus dacrydioides</i> (A. Rich.) Laubenf. kahikatea, white pine
1	DABD	<i>Dacrydium bidwillii</i> New Zealand mountain pine
1	DABI*	<i>Dacrydium biforme</i> (Hook.) Pilger = <i>Halocarpus biformis</i> Hook. pink pine
1	DACO*	<i>Dacrydium colensoi</i> Hook. = <i>Lagarostrobos colensoi</i> (Hook.) C.J. silver pine
2	DACU	<i>Dacrydium cupressinum</i> Lamb. rimu, red pine
1	DAFR	<i>Dacrydium franklinii</i> Hook f. Huon pine
0	DSVI	<i>Diospyros virginiana</i> L. common persimmon
0	DITO	<i>Discaria toumatou</i> Raoul matagouri, tumatu-kuru, wild Irishman
1	DITR	<i>Discaria trinervis</i> Reiche.
0	DRLA	<i>Dracophyllum latifolium</i> Cunn. neinei
0	DRWI	<i>Drimys winteri</i> J.R. & G. Forst canelo, winter bark
1	DUVI	<i>Duschenkia viridis</i> Opiz = <i>Betula ovata</i> Schrank.
0	DYMA	<i>Dysoxylum malabaricum</i> Bedd. Bombay white cedar, Indian white cedar
0	ELGL	<i>Elaeoloma glabrescens</i>
1	EMRU	<i>Empetrum rubrum</i> Vahl ex. Willd. murtilla
0	ENAN	<i>Entandrophragma angolense</i> C.DC. gedu nohor, kalungi, tiama, edinam
0	ENCA	<i>Entandrophragma candollei</i> Harms kosipo, omu, entandrophragma mahogany
0	ENCY	<i>Entandrophragma cylindricum</i> Sprague sapeli, sapele, sapelli, assi <i>Entandrophragma macrophyllum</i> A. Chev. = <i>Entandrophragma angolense</i> C.DC.
0	ENUT	<i>Entandrophragma utile</i> Sprague sipo, utile
0	EPSP	<i>Ephedra</i> L.
0	EUCA	<i>Eucalyptus camaldulensis</i> Dehnh. river red gum
0	EUDE	<i>Eucalyptus delegatensis</i> R. Baker alpine ash
0	EUMI	<i>Eucalyptus miniata</i> Cunn. ex Shauer Darwin woollybutt
0	EUNE	<i>Eucalyptus nesophila</i> Blakely Melville Island bloodwood

Table 3. (cont.)

CDI	Code	Latin Name, Authority, and Common Name
0	EUOR	<i>Eucalyptus oreades</i> R.T. Baker Blue Mountains ash
0	EUPA	<i>Eucalyptus pauciflora</i> Sieb. snow gum, cabbage gum
0	EUST	<i>Eucalyptus stellulata</i> Sieb. ex DC black salee
0	EUTE	<i>Eucalyptus tetradonta</i> F. Muell. Darwin stringybark
0	EUVI	<i>Eucalyptus viminalis</i> Labill. ribbongum
0	EUCO	<i>Eucryphia cordifolia</i> Cav. ulmo, muermo
0	EUJA	<i>Eugenia jambolana</i> Lam. jaman, kelat eugenia
0	EXCU	<i>Exocarpus cupressiforme</i> Labill. native cherry
	FASP	<i>Fagus</i> L. beech
1	FAGR*	<i>Fagus grandifolia</i> Ehrh. American beech
1	FAOR	<i>Fagus orientalis</i> Lipsky Oriental beech, eastern beech
2	FASY	<i>Fagus sylvatica</i> L. European beech, common beech
	FCSP	<i>Ficus</i> L. fig
2	FICU*	<i>Fitzroya cupressoides</i> (Molina) Johnston alerce, Patagonian cypress
	FRSP	<i>Fraxinus</i> L. ash
1	FRAM	<i>Fraxinus americana</i> L. white ash
0	FRCA	<i>Fraxinus caroliniana</i> Mill. Carolina ash
1	FREX	<i>Fraxinus excelsior</i> L. European ash, common ash
1	FRNI	<i>Fraxinus nigra</i> Marsh. black ash
0	FRPE	<i>Fraxinus pennsylvanica</i> Marsh. green ash, red ash
0	GEAV	<i>Gevuina avellana</i> avellano
0	GIBI	<i>Ginkgo biloba</i> L. maidenhair tree, ginkgo
0	GLTR	<i>Gleditsia triacanthos</i> L. honey locust
0	GMAR	<i>Gmelina arborea</i> Roxb. gumari, gumbar, yemane, gmelina, gamari
0	GOLA	<i>Gordonia lasianthus</i> (L.) Ellis loblolly-bay
0	GRVI	<i>Grevillea victoriae</i> F. Muell.
0	GUCE	<i>Guarea cedrata</i> Pellegr. bosse, guarea, white guarea, scented guarea
0	HABD	<i>Halocarpus bidwillii</i> bog pine
1	HABI*	<i>Halocarpus biformis</i> (Hook.) Quinn pink pine
0	HAKI	<i>Halocarpus kirkii</i> manoa
0	HAVI	<i>Hamamelis virginiana</i> L. witch hazel

Table 3. (cont.)

CDI	Code	Latin Name, Authority, and Common Name
0	HEAN	<i>Hedycaria angustifolia</i> A. Cunn. native mulberry
0	HEAR	<i>Heteromeles arbutifolia</i> (Lindl.) M.J. Roem. toyon
0	ILAQ	<i>Ilex aquifolium</i> L. English holly
0	ILCA	<i>Ilex cassine</i> L. dahoon, dahoon holly
0	ILCO	<i>Ilex coriacea</i> (Pursh) Chapm. large gallberry, sweet gallberry
0	ILGL	<i>Ilex glabra</i> (L.) Gray inkberry, gallberry
0	ILIN	<i>Ilex inundata</i>
0	ILOP	<i>Ilex opaca</i> Ait. American holly
0	JACO	<i>Jacaranda copaia</i> D. Don copaia, gobaja, futui, caroba
1	JGAU*	<i>Juglans australis</i> Griseb. Argentine walnut
0	JGCI	<i>Juglans cinerea</i> L. butternut
0	JGNI	<i>Juglans nigra</i> L. black walnut
0	JGRE	<i>Juglans regia</i> L. common walnut
	JUSP	<i>Juniperus</i> L. juniper
0	JUCH	<i>Juniperus chinensis</i> L. Chinese juniper
1	JUCO	<i>Juniperus communis</i> L. common juniper
0	JUDE	<i>Juniperus deppeana</i> Steud. alligator juniper
1	JUDR	<i>Juniperus drupacea</i> Labill. Syrian juniper
1	JUEX	<i>Juniperus excelsa</i> Bieb. Greek juniper, Grecian juniper
1	JUFO	<i>Juniperus foetidissima</i> Willd. stinking juniper
0	JUMA	<i>Juniperus indica</i> = <i>Juniperus semiglobosa</i> Regel <i>Juniperus macropoda</i> Boiss. Himalayan pencil pine
0	JUMO	<i>Juniperus monosperma</i> (Emgelm.) Sarg. one-seed juniper
2	JUOC*	<i>Juniperus occidentalis</i> Hook. western juniper
1	JUOS	<i>Juniperus osteosperma</i> (Torr.) Little Utah juniper
1	JUOX	<i>Juniperus oxycedrus</i> L. prickly juniper <i>Juniperus palycarpos</i> = <i>Juniperus seravschanica</i> Komar.
1	JUPH	<i>Juniperus phoenicea</i> L. Phoenician juniper
0	JUPI	<i>Juniperus pinchotii</i> Sudw. redberry juniper, Pinchot juniper
1	JUPR	<i>Juniperus przewalskii</i> Kom. Qilianshan juniper

Table 3. (cont.)

CDI	Code	Latin Name, Authority, and Common Name
1	JURE	<i>Juniperus recurva</i> Buch.-Ham. ex D. Don drooping juniper
2	JUSC*	<i>Juniperus scopulorum</i> Sarg. Rocky Mountain juniper
1	JUSM	<i>Juniperus semiglobosa</i> Regel
1	JUSE	<i>Juniperus seravschanica</i> Komar.
0	JUTH	<i>Juniperus thurifera</i> L. Spanish juniper
1	JUTU	<i>Juniperus turkestanica</i> Komar. Turkestan juniper
2	JUVI*	<i>Juniperus virginiana</i> L. eastern redcedar
0	KHGR	<i>Khaya grandifolia</i> C.DC. acajou, Benin mahogany, African mahogany
0	KRDR	<i>Krenevaja drevesina</i>
0	KUER	<i>Kunzea ericoides</i> (A. Rich.) J. Thompson kanuka, white tea tree
0	LBGL	<i>Labatia glomerata</i>
0	LBAN	<i>Laburnum anagyroides</i> Medik. common laburnum
1	LGCO*	<i>Lagarostrobus colensoi</i> (Hook.) C.J. Quinn = <i>Dacrydium colensoi</i> Hook.
1	LGFR	<i>Lagarostrobus franklinii</i> C.J. Quinn huon pine
0	LSFL	<i>Lagerstroemia flos-reginae</i> Retz. pyinma, banaba, banglang, jarul
0	LSPA	<i>Lagerstroemia parviflora</i> Roxb. lendia
0	LSLA	<i>Lagerstroemia lanceolata</i> Wall. benteak, nana
	LASP	<i>Larix</i> Mill. larch <i>Larix cajanderi</i> Mayr = <i>Larix gmelinii</i> <i>Larix dahurica</i> Turcz. ex Trautv. = <i>Larix</i> <i>gmelinii</i> (Rupr.) Litvin.
2	LADE*	<i>Larix decidua</i> Mill. European larch
1	LAGM*	<i>Larix gmelinii</i> (Rupr.) Litvin. Dahurian larch
1	LAGR	<i>Larix griffithiana</i> (Lindl. & Gord.) Carr. Himalayan larch
1	LAJA	<i>Larix japonica</i> Carr. Japanese larch <i>Larix kaempferi</i> (Lamb.) Carr. = <i>Larix japonica</i> Carr. <i>Larix kurilensis</i> Mayr = <i>Larix gmelinii</i> var. <i>japonica</i> (Regel) Pilg.
2	LALA*	<i>Larix laricina</i> (Du Roi) K. Koch tamarack, eastern larch
2	LALY*	<i>Larix lyalli</i> Parl. subalpine larch
2	LAOC*	<i>Larix occidentalis</i> Nutt. western larch
1	LAPO	<i>Larix potaninii</i> Batal. Chinese larch <i>Larix russica</i> (Endl.) Sabine ex Trautv. = <i>Larix sibirica</i> Ledeb.
2	LASI*	<i>Larix sibirica</i> Ledeb. Siberian larch <i>Larix sukachevii</i> Džil. = <i>Larix sibirica</i> Ledeb. Ural larch

Table 3. (cont.)

CDI	Code	Latin Name, Authority, and Common Name
0	LAPH	<i>Laurelia philippiana</i> Looser tepa
0	LASE	<i>Laurelia sempervirens</i> Tul. laurelia, Chilean laurel, huahuan
0	LEIN	<i>Lepidothamnus intermedius</i> (Kirk) Quinn yellow-silver pine
0	LEFL	<i>Leptospermum ericoides</i> = <i>Kunzea ericoides</i> <i>Leptospermum flavescens</i> tea tree
0	LESC	<i>Leptospermum scoparium</i> Forster & Forster f. manuka, red tea tree, black manuka, red manuka
	LISP	<i>Libocedrus</i> Endl. incense-cedar
2	LIBI*	<i>Libocedrus bidwillii</i> Hook. f. New Zealand cedar, pahautea, kaikawaka <i>Libocedrus decurrens</i> Torr. = <i>Calocedrus decurrens</i> (Torr.) Florin
0	LIPL	<i>Libocedrus plumosa</i> (D. Don) Sarg. kawaka, plume incense cedar
1	LIST	<i>Liquidambar styraciflua</i> L. sweetgum
1	LITU	<i>Liriodendron tulipifera</i> L. tuliptree, yellow-poplar, tulip-poplar
0	LOFR	<i>Lomatia fraseri</i> R.Br. silky lomatia, tree lomatia
0	LOHI	<i>Lomatia hitsuta</i> (Lam.) Diel ex. Macbr. radal
0	LOTR	<i>Lovoa trichilioides</i> Harms dibetou
0	MAAC	<i>Magnolia accuminata</i> L. cucumbertree
0	MAGR	<i>Magnolia grandiflora</i> L. southern magnolia
0	MAVI	<i>Magnolia virginiana</i> L. sweetbay, swampbay
0	MASY	<i>Malus sylvestris</i> L. apple tree
0	MICH	<i>Michelia champaca</i> L. champak
0	MINI	<i>Michelia nilagirica</i> Zenker pilachampa, champak
	MIX	Various taxa
0	MOAL	<i>Morus alba</i> L. white mulberry
0	MORU	<i>Morus rubra</i> L. red mulberry
0	MYCE	<i>Myrica cerifera</i> L. southern bayberry, bayberry
0	MYGA	<i>Myrica gale</i> L. sweet gale, bog myrtle
0	NEAM	<i>Nectandra amazonum</i>
0	NTLO	<i>Notelaea longifolia</i> Vent. large mock-olive
0	NOAL	<i>Nothofagus alpina</i> (Poepp. & Endl.) OErst. rauli
1	NOAN	<i>Nothofagus antarctica</i> (Forst) Oerst. Antarctic beech, nirre
1	NOBE*	<i>Nothofagus betuloides</i> (Mirb.) Blume coihue de Magalanes, guindo

Table 3. (cont.)

CDI	Code	Latin Name, Authority, and Common Name
0	NOCU	<i>Nothofagus cunninghamii</i> Oerst. Australian nothofagus, myrtle beech
0	NODO	<i>Nothofagus dombeyi</i> (Mirb.) Blume coihue, Dombey's southern beech
0	NOFU	<i>Nothofagus fusca</i> (Hook. f.) Oerst. red beech, New Zealand red beech
1	NOGU*	<i>Nothofagus gunnii</i> (Hook. f.) Oerst. tanglefoot beech
2	NOME*	<i>Nothofagus menziesii</i> (Hook. f.) Oerst. silver beech, Menzies's red beech
0	NONI	<i>Nothofagus nitida</i> Reiche roble chicote
1	NOOB	<i>Nothofagus obliqua</i> (Mirb.) Blume southern beech, roble
1	NOPU*	<i>Nothofagus pumilio</i> (Poepp. & Endl.) Oerst. lenga
2	NOSO*	<i>Nothofagus solandri</i> (Hook. f.) Oerst. mountain beech, black beech
0	NYOG	<i>Nyssa ogeche</i> Bartr. ex Marsh. Ogeechee tupelo
0	NYSY	<i>Nyssa sylvatica</i> Marsh. black tupelo, blackgum
0	OSCA	<i>Ostrya carpinifolia</i> Scop. hop hornbeam
0	OXAR	<i>Oxydendrum arboreum</i> (L.) DC sourwood
0	PARI	<i>Parapiptadenia rigida</i> Benth.
0	PAAU	<i>Parkia auriculata</i>
0	PATO	<i>Paulownia tomentosa</i> (Thumb.) Steud. empress tree
0	PECA	<i>Peronema canescens</i> Jack. sunkai, koeroes
0	PEBO	<i>Persea borbonia</i> (L.) Spreng. redbay, shorebay
0	PELI	<i>Persea lingue</i> Nees lingue
0	PELN	<i>Petrophile linearis</i> R.Br. pixie mops
0	PBPO	<i>Phoebe portiria</i> Mez.
1	PHAL*	<i>Phyllocladus alpinus</i> Hook. f. mountain toatoa, alpine celery top pine
1	PHAS*	<i>Phyllocladus aspleniifolius</i> (Labill.) Hook. f. celery top pine
1	PHGL*	<i>Phyllocladus glaucus</i> Carr. toatoa
1	PHTR*	<i>Phyllocladus trichomanoides</i> D. Don in Lamb. tanekaha, celery pine
	PCSP	<i>Picea</i> A. Dietr. spruce
2	PCAB*	<i>Picea abies</i> (L.) Karst. Norway spruce <i>Picea ajanensis</i> Fisch. = <i>Picea jezoensis</i> (Sieb. & Zucc.) Carr.
0	PCAS	<i>Picea asperata</i> Mast. dragon spruce
1	PCBA	<i>Picea balfouriana</i>
1	PCCA	<i>Picea cajanensis</i> Lindl. et Gord.
1	PCCH	<i>Picea chihuahuana</i> Martinez chihuahua spruce

Table 3. (cont.)

CDI	Code	Latin Name, Authority, and Common Name
2	PCEN*	<i>Picea engelmannii</i> Parry ex Engelm. Engelmann spruce <i>Picea excelsa</i> (Lam.) Link = <i>Picea abies</i> (L.) Karst
2	PCGL*	<i>Picea glauca</i> (Moench) Voss white spruce
1	PCGN	<i>Picea glehnii</i> (Fr. Schmidt) Mast. Sakhalin spruce
0	PCJE	<i>Picea jezoensis</i> (Sieb. & Zucc.) Carr. Yezo spruce, Hondo spruce
1	PCLI	<i>Picea likiangensis</i> (Franchet) Pritzell Likiang spruce
2	PCMA*	<i>Picea mariana</i> (Mill.) Britt., Stearns & Poggenb. black spruce
2	PCOB	<i>Picea obovata</i> Ledeb. Siberian spruce
1	PCOM*	<i>Picea omorika</i> (Panc.) Purk. Serbian spruce, Pancic spruce
1	PCOR*	<i>Picea orientalis</i> (L.) Link eastern spruce, Oriental spruce
2	PCPU*	<i>Picea pungens</i> Engelm. blue spruce, Colorado spruce
1	PCPR	<i>Picea purpurea</i> Mast.
2	PCRU*	<i>Picea rubens</i> Sarg. red spruce
1	PCSH	<i>Picea shrenkiana</i> Fisch. & Meyer Shrenk's spruce
2	PCSI*	<i>Picea sitchensis</i> (Bong.) Carr. Sitka spruce
1	PCSM	<i>Picea smithiana</i> (Wall.) Boiss. Himalayan spruce
1	PCTI	<i>Picea tienschanica</i> Rupr. Tien-shan spruce
2	PLUV*	<i>Pilgerodendron uviferum</i> (Pilger) Florin cipres de las Guaytecas
	PISP	<i>Pinus</i> L. pine
2	PIAL*	<i>Pinus albicaulis</i> Engelm. whitebark pine
2	PIAR*	<i>Pinus aristata</i> Engelm. in Parry & Engelm. Rocky Mountain bristlecone pine <i>Pinus aristata</i> var. <i>longaeva</i> = <i>Pinus longaeva</i> D.K. Bailey
1	PIAM	<i>Pinus armandii</i> Franchet David's pine, Armand's pine
2	PIBA*	<i>Pinus balfouriana</i> Grev. & Balf. in A. Murr. foxtail pine
2	PIBN	<i>Pinus banksiana</i> Lamb. jack pine
1	PIBR*	<i>Pinus brutia</i> Ten Calabrian pine, brutia pine, see kiefer
0	PIBU	<i>Pinus bungeana</i> Zucc. lacebark pine
0	PICN	<i>Pinus canariensis</i> Chr. Sm. ex DC Canary Island pine
0	PICA	<i>Pinus caribea</i> Mor. Caribbean pine, Cuban pine

Table 3. (cont.)

CDI	Code	Latin Name, Authority, and Common Name
2	PICE*	<i>Pinus cembra</i> L. Swiss stone pine, Arolla pine
2	PICM*	<i>Pinus cembroides</i> Zucc. Mexican pinyon, Mexican nut pine
1	PICH	<i>Pinus chihuahuana</i> Engelm. chihuahua pine
2	PICO*	<i>Pinus contorta</i> Dougl. ex Loud. lodgepole pine
0	PICL	<i>Pinus coulteri</i> D. Don Coulter pine, bigcone pine
1	PIDN	<i>Pinus densata</i> ¹
1	PIDE	<i>Pinus densiflora</i> Sieb. & Zucc. Japanese red pine
2	PIEC*	<i>Pinus echinata</i> Mill. shortleaf pine
2	PIED*	<i>Pinus edulis</i> Engelm. in Wislitz. pinyon, Colorado pinyon
1	PIEL	<i>Pinus elliotii</i> Engelm. slash pine
1	PIEN	<i>Pinus engelmannii</i> Carr. Apache pine
2	PIFL*	<i>Pinus flexilis</i> James limber pine
1	PIGE	<i>Pinus gerardiana</i> Wall. ex D. Don. chilgoza pine, Gerard's pine
2	PIHA*	<i>Pinus halepensis</i> Mill. Aleppo pine, Jerusalem pine <i>Pinus hallii</i> = <i>Podocarpus hallii</i> Kirk
1	PIHE	<i>Pinus heldreichii</i> Christ Heldreich's pine, panzer fohre
2	PIJE*	<i>Pinus jeffreyi</i> Grev. & Balf. in A. Murr. Jeffrey pine
1	PIKE	<i>Pinus kesiya</i> Royle ex Gordon Khasi pine
1	PIKO	<i>Pinus koraiensis</i> Sieb. & Zucc. Korean pine
2	PILA*	<i>Pinus laricio</i> Poir. = <i>Pinus nigra</i> Arnold <i>Pinus lambertiana</i> Dougl. sugar pine <i>Pinus lelophylla</i> var. <i>chihuahuana</i> (Engelm.) Shaw = <i>Pinus chihuahuana</i> chihuahua pine
2	PILE*	<i>Pinus leucodermis</i> Ant. Bosnian pine, greybark pine, pino loricato
2	PILO*	<i>Pinus longaeva</i> D.K. Bailey Intermountain bristlecone pine <i>Pinus longifolia</i> Roxb. = <i>Pinus roxburghii</i> Sarg.
1	PIMK	<i>Pinus merkusii</i> Jungh. & De Vriese Merkus pine, mindoro pine, Tenasserim pine
1	PIME	<i>Pinus mesogeensis</i> Fieschi & Gaussen cluster pine
2	PIMO*	<i>Pinus monophylla</i> Torr. & Frem. in Frem. singleleaf pinyon <i>Pinus montana</i> Mill. = <i>Pinus mugo</i> Turra
1	PIMC	<i>Pinus monticola</i> Dougl. ex D. Don in Lamb. western white pine
1	PIMU*	<i>Pinus mughus</i> Scop. = <i>Pinus mugo</i> Turra krumholz pine

Table 3. (cont.)

CDI	Code	Latin Name, Authority, and Common Name
1	PIMG	<i>Pinus mugo</i> Turra mountain pine, stone pine
0	PIMR	<i>Pinus muricata</i> D. Don bishop pine
2	PINI*	<i>Pinus nigra</i> Arnold Austrian pine, black pine
0	PIOC	<i>Pinus occidentalis</i> Swartz West Indian pine
0	PIOO	<i>Pinus oocarpa</i> Schiede Nicaraguan pitch pine, ocote pine
1	PIPA	<i>Pinus pallasiana</i> Lamb. = <i>Pinus nigra</i> Arnold <i>Pinus palustris</i> Mill. longleaf pine
0	PIPT	<i>Pinus patula</i> Schiede & Deppe Mexican weeping pine
1	PIPE*	<i>Pinus peuce</i> Griseb. Macedonian pine, Balkan pine
1	PIPI	<i>Pinus pinaster</i> Ait. maritime pine, cluster pine
2	PIPN*	<i>Pinus pinea</i> L. Italian stone pine, umbrella pine
2	PIPO*	<i>Pinus ponderosa</i> Dougl. ex Laws. ponderosa pine, western yellow pine
1	PIPM	<i>Pinus pumila</i> (Pall.) Regel dwarf Siberian pine, Japanese stone pine
1	PIPU*	<i>Pinus pungens</i> Lamb. Table Mountain pine
1	PIQU	<i>Pinus quadrifolia</i> Parl. ex Sudw. Parry pinyon
1	PIRA	<i>Pinus radiata</i> D. Don Monterrey pine
2	PIRE*	<i>Pinus resinosa</i> Ait. red pine
1	PIRI*	<i>Pinus rigida</i> Mill. pitch pine
1	PIRO	<i>Pinus roxburghii</i> Sarg. chir pine
1	PISI	<i>Pinus sibirica</i> Du Tour Siberian stone pine
2	PISF	<i>Pinus strobiformis</i> Engelm. in Wisliz. southwestern white pine
2	PIST*	<i>Pinus strobus</i> L. eastern white pine, Weymouth pine
2	PISY*	<i>Pinus sylvestris</i> L. Scots pine, Scotch pine
1	PITB	<i>Pinus tabulaeformis</i> Carr. Chinese pine
2	PITA	<i>Pinus taeda</i> L. loblolly pine
0	PITH	<i>Pinus thunbergii</i> Parl. Japanese black pine
2	PIUN	<i>Pinus uncinata</i> Mill. ex Mirb. in Buffon mountain pine
1	PIVI	<i>Pinus virginiana</i> Mill. Virginia pine, scrub pine
1	PIWA	<i>Pinus wallichiana</i> A.B. Jackson Himalayan pine, kail pine, blue pine
0	PSGR	<i>Pisonia grandis</i>
	PTSP	<i>Pistacia</i> L. pistache

Table 3. (cont.)

CDI	Code	Latin Name, Authority, and Common Name
0	PTAT	<i>Pistacia atlantica</i> Desf. Atlas pistache, betoum
0	PTKH	<i>Pistacia khinjuk</i> Stocks. kakkar
0	PTPA	<i>Pistacia palaestina</i> Boiss. Israeli pistache
0	PTVE	<i>Pistacia vera</i> L. green mastic, real mastictree
0	PLAC	<i>Platanus acerifolia</i> (Ait.) Willd. London plane tree
1	PLOC	<i>Platanus occidentalis</i> L. American sycamore
1	PLOR	<i>Platyeladus orientalis</i> Chinese pine
0	PYSA	<i>Polyscias sambucifolius</i> (Sieber ex DC.) Hams elderberry panax, elderberry ash
	POSP	<i>Podocarpus</i> L'Heritier ex Persoon <i>Podocarpus dactyloides</i> = <i>Dacrycarpus dactyloides</i>
0	POFA	<i>Podocarpus falcatus</i> (Thumb.) Br. yellowwood, oteniqua <i>Podocarpus ferrugineus</i> = <i>Prumnopitys ferruginea</i> (D. Don) Laubenf.
0	POHA	<i>Podocarpus hallii</i> Kirk Hall's totara
0	POLA	<i>Podocarpus lawrencei</i> Hook. f. Tasmanian podocarpus
0	PONI	<i>Podocarpus nivalis</i> Hook. snow totara
1	PONU	<i>Podocarpus nubigenus</i> Lindl. ex Paxt manio de hojas punzantes, manio macho
0	POPA	<i>Podocarpus parlatorei</i> <i>Podocarpus spicatus</i> = <i>Prumnopitys taxifolia</i> (D. Don) Laubenf.
0	POTO	<i>Podocarpus totara</i> D. Don totara
	PPSP	<i>Populus</i> L. cottonwood, poplar
1	PPAL	<i>Populus alba</i> L. white poplar
0	PPAN	<i>Populus angustifolia</i> James narrowleaf cottonwood
1	PPBA	<i>Populus balsamifera</i> L. balsam poplar
0	PPDE	<i>Populus deltoides</i> Bartr. ex Marsh. eastern cottonwood
1	PPEU	<i>Populus euphratica</i> Oliv. charab poplar, Indian poplar
1	PPFR	<i>Populus fremontii</i> Wats. Fremont cottonwood
1	PPGR	<i>Populus grandidentata</i> Michx. bigtooth aspen
1	PPNI	<i>Populus nigra</i> L. black poplar
1	PPTR	<i>Populus tremuloides</i> Michx. quaking aspen
0	PPTC	<i>Populus trichocarpa</i> Torr. & Gray. black cottonwood
	PROS	<i>Prosopis</i> L. mesquite

Table 3. (cont.)

CDI	Code	Latin Name, Authority, and Common Name
1	PRFL	<i>Prosopis flexuosa</i> DC.
0	PRGL	<i>Prosopis glandulosa</i> Torr. honey mesquite
0	PMAN	<i>Prumnopitys andina</i> = <i>Podocarpus andinus</i> lleuque
0	PMFE	<i>Prumnopitys ferruginea</i> (D. Don) Laubenf. miro
0	PMTA	<i>Prumnopitys taxifolia</i> (D. Don) Laubenf. matai, black pine
0	PNAM	<i>Prunus americana</i> Marsh. American plum
0	PNAV	<i>Prunus avium</i> L. wild cherry
0	PNIL	<i>Prunus ilicifolia</i> (Nutt. ex Hook & Arn.) D. Dietr. hollyleaf cherry
0	PNPE	<i>Prunus pennsylvanica</i> L.f. pin cherry
1	PNSE	<i>Prunus serotina</i> Ehrh. black cherry
0	PSMU	<i>Pseudobombax munguba</i> Mart. & Zucc. muguba, huira
1	PSMA*	<i>Pseudotsuga macrocarpa</i> (Vasey) Mayr bigcone Douglas-fir
2	PSME*	<i>Pseudotsuga menziesii</i> (Mirb.) Franco Douglas-fir
0	PSAX	<i>Pseudowintera axillaris</i> (Forster & Forster f.) Dandy horopito
0	PSCO	<i>Pseudowintera colorata</i> (Raoul) Dandy mountain horopito, pepper tree
0	PSXA	<i>Pseudoxandra polyphleba</i>
0	PTAN	<i>Pterocarpus angolensis</i> DC. muninga, mninga, brown African padauk
	PUSP	<i>Purshia</i> DC. ex Poir.
1	PUTR	<i>Purshia tridentata</i> (Pursh) DC. bitter brush
	QUSP	<i>Quercus</i> L. oak
0	QUAF	<i>Quercus afares</i> Pomel
2	QUAL*	<i>Quercus alba</i> L. white oak
0	QUBO	<i>Quercus boissieri</i> Reut. Israelian oak
0	QUCL	<i>Quercus calliprinos</i> Webb Kermes oak, Israelian oak
1	QUCA	<i>Quercus canariensis</i> Willd. Mirbeck's oak, Algerian oak
1	QUCE	<i>Quercus cerris</i> L. Turkey oak, Austrian oak
1	QUCO	<i>Quercus coccinea</i> Muenchh. scarlet oak
0	QUCP	<i>Quercus copeyensis</i>
0	QUCR	<i>Quercus costaricensis</i>
1	QUDG	<i>Quercus douglasii</i> Hook. and Arn. blue oak
1	QUDS	<i>Quercus dschoruchensis</i> K. Koch
1	QUEL	<i>Quercus ellipsoidalis</i> E.J. Hill northern pin oak
0	QUEM	<i>Quercus emoryi</i> Torr. in Emory Emory oak

Table 3. (cont.)

CDI	Code	Latin Name, Authority, and Common Name
0	QUEN	<i>Quercus engelmannii</i> Greene Engelmann oak
1	QUFG	<i>Quercus faginea</i> Lam. Portuguese oak
1	QUFA	<i>Quercus falcata</i> Michx. southern red oak
0	QUFR	<i>Quercus frainetto</i> Ten. Hungarian oak
2	QUGA	<i>Quercus gambelii</i> Nutt. Gambel oak
1	QUGR	<i>Quercus grisea</i> Liebm. gray oak
1	QUHA	<i>Quercus hartwissiana</i>
0	QUIL	<i>Quercus ilex</i> L. holm oak, holly oak
0	QUIT	<i>Quercus ithaburensis</i> (Decne.) Boiss. Mt. Tabor oak
0	QUKE	<i>Quercus kelloggii</i> Newb. California black oak
1	QULA	<i>Quercus laurifolia</i> Michx. laurel oak
1	QULO	<i>Quercus lobata</i> Nee valley oak
1	QULY*	<i>Quercus lyrata</i> Walt. overcup oak
1	QUMA*	<i>Quercus macrocarpa</i> Michx. bur oak
0	QUML	<i>Quercus marilandica</i> Muenchh. blackjack oak
0	QUMI	<i>Quercus michauxii</i> Walt. swamp chestnut oak
0	QUMO	<i>Quercus mongolica</i> Fisch. ex Turcz. Mongolian oak
0	QUMU	<i>Quercus muehlenbergii</i> Engelm. chinkapin oak
1	QUNI	<i>Quercus nigra</i> L. water oak <i>Quercus pagodaefolia</i> (Ell.) Ashe = <i>Quercus falcata</i> var. <i>pagodifolia</i> Ell.
0	QUPA	<i>Quercus palustris</i> Muenchh. pin oak <i>Quercus pedunculata</i> Ehrl. = <i>Quercus robur</i> L.
1	QUPS	<i>Quercus persica</i>
2	QUPE*	<i>Quercus petraea</i> (Mattuschka) Liebl. durmast oak, sessile oak
1	QUPO	<i>Quercus pontica</i> K. Koch Armenian oak
1	QUPR*	<i>Quercus prinus</i> L. chestnut oak
2	QUPU	<i>Quercus pubescens</i> Willd. downy oak, pubescent oak
2	QURO*	<i>Quercus robur</i> L. English oak
1	QURU*	<i>Quercus rubra</i> L. red oak <i>Quercus sessiliflora</i> Salisb. = <i>Quercus petraea</i> (Mattuschka) Liebl.
1	QUSH	<i>Quercus shumardii</i> Buckl. Shumard oak
2	QUST*	<i>Quercus stellata</i> Wangenh. post oak

Table 3. (cont.)

CDI	Code	Latin Name, Authority, and Common Name
0	QUSU	<i>Quercus suber</i> L. cork oak, cork tree
1	QUVE*	<i>Quercus velutina</i> Lam. black oak
0	QUAC	<i>Quintinia acutifolia</i> Kirk. Westland quintinia
0	RAGU	<i>Rapanea guianensis</i> Aubl. guiana rapanea
0	RHCA	<i>Rhamnus caroliniana</i> Walt. Carolina buckthorn
0	RHCR	<i>Rhamnus crocea</i> Nutt. hollyleaf buckthorn
0	RHOV	<i>Rhus ovata</i> Wats. sugar sumac
1	RONE	<i>Robinia neomexicana</i> Gray New Mexico locust
0	ROPS	<i>Robinia pseudoacacia</i> L. black locust
0	SBPI	<i>Sabina pingu</i> <i>Sabina przewalskii</i> Kom. = <i>Juniperus przewalskii</i> Komarov
0	SBRE	<i>Sabina recurva</i>
1	SBSA	<i>Sabina saltuaria</i>
1	SBTI	<i>Sabina tibetica</i>
1	SBWA	<i>Sabina wallichiana</i>
	SASP	<i>Salix</i> L. willow
0	SAAC	<i>Salix acutifolia</i> Willd. pointed-leaved willow
1	SAAL	<i>Salix alba</i> L. white willow
0	SAAM	<i>Salix amygdalina</i> L. almond-leaved willow, peachleaf willow
0	SAAD	<i>Salix amygdaloides</i> Anderss. peachleaf willow
0	SAAR	<i>Salix arbusculoides</i> Anderss. littletree willow
0	SAAT	<i>Salix arctica</i> Pall. Arctic willow
0	SABA	<i>Salix babylonica</i> L. weeping willow
0	SACN	<i>Salix candida</i> Fluegge sage-leaf willow, silver willow
0	SACA	<i>Salix caprea</i> L. pussy willow, goat willow
0	SACR	<i>Salix caroliniana</i> Michx. Coastal Plain willow
0	SADI	<i>Salix discolor</i> Muhl. pussy willow, glaucous willow
0	SAEL	<i>Salix elaeagnos</i> Scop. hoary willow
0	SAEX	<i>Salix exigua</i> Nutt. sandbar willow
0	SAGL	<i>Salix glauca</i> L. grayleaf willow <i>Salix interior</i> Rowlee = <i>Salix exigua</i> Nutt.
0	SALA	<i>Salix lanata</i> L. Richardson's willow
0	SALS	<i>Salix lasiolepis</i> Benth. arroyo willow, white willow

Table 3. (cont.)

CDI	Code	Latin Name, Authority, and Common Name
0	SAMY	<i>Salix myrsinifolia</i> Salisb.
0	SAPH	<i>Salix phylicifolia</i> L. tea-leaf willow
0	SAPL	<i>Salix planifolia</i> Pursh sandbar willow, lakeshore willow, diamondleaf willow
0	SAPU	<i>Salix purpurea</i> L. purple willow, purple osier <i>Salix triandra</i> L. = <i>Salix amygdalina</i> L.
0	SAVI	<i>Salix viminalis</i> L. basket willow, common osier
0	SNAL	<i>Santalum album</i> L. sandalwood, santalin, chandal
0	SSAL	<i>Sassafras albinum</i> (Nutt.) Nees sassafras
1	SACO	<i>Saxegothea conspicua</i> Lindl. Prince Albert's yew, manio de hojas cortas, manio hembra
0	SCTR	<i>Schleichera trijuga</i> Willd. ta-kro, kusum, kusamo
0	SCMI	<i>Scleronema micranthum</i> Ducke. cordeiro, scleronema
1	SESE	<i>Sequoia sempervirens</i> (D. Don) Endl. coast redwood
2	SEGI	<i>Sequoiadendron giganteum</i> (Lindl.) Buchholz giant sequoia
0	SHRO	<i>Shorea robusta</i> Gaertn.f. sal
0	SOAM	<i>Sorbus americana</i> Marsh. mountain ash
0	SOAR	<i>Sorbus aria</i> (L.) Crantz whitebeam
0	SOAU	<i>Sorbus aucuparia</i> L. mountain ash, rowan
1	SOTE	<i>Sorbus torminalis</i> (L.) Crantz chequer tree, wild service tree
0	SODU	<i>Sorocea duckei</i>
0	SWLA	<i>Swartzia laeviscarpa</i> Amsh. saboarana
0	SWMA	<i>Swietenia mahagoni</i> Jacq. West Indies mahogany
0	TABA	<i>Tabebuia barbata</i> (E. Mey) Sandw. lgapo-tree
0	TMAP	<i>Tamarix aphylla</i> Lanza dur
0	TMCH	<i>Tamarix chinensis</i> Lour. tamarisk, salt cedar
0	TMJO	<i>Tamarix jordanis</i>
0	TPGU	<i>Tapirira guianensis</i> Aubl. tapirira, cedroi, jobo
0	TMXE	<i>Tasmannia xerophila</i>
0	TAAS	<i>Taxodium ascendens</i> Brong. pond cypress
2	TADI*	<i>Taxodium distichum</i> (L.) Rich. baldcypress
1	TABA	<i>Taxus baccata</i> L. common yew, English yew
1	TACU	<i>Taxus cuspidata</i> Sieb. & Zucc. Japanese yew

Table 3. (cont.)

CDI	Code	Latin Name, Authority, and Common Name
1	TEGR	<i>Tectona grandis</i> L. f. teak
0	TETO	<i>Terminalia tomentosa</i> W. & A. Indian laurel, taukkyan, sain
1	TEAR	<i>Tetrclinis articulata</i> (Vahl) Mast. Arar tree, African thuya
	THSP	<i>Thuja</i> L. thuja
2	THOC*	<i>Thuja occidentalis</i> L. northern white-cedar, American arborvitae
0	THOR	<i>Thuja orientalis</i> L. Chinese arborvitae, Oriental arborvitae
1	THPL*	<i>Thuja plicata</i> Donn ex D. Don western redcedar, giant arborvitae
	TISP	<i>Tilia</i> L. linden, lime tree
1	TIAM	<i>Tilia americana</i> L. American basswood
1	TICO	<i>Tilia cordata</i> Mill. littleleaf linden, winter linden, small-leaved lime
1	TIPL	<i>Tilia platyphyllos</i> Scop. broad-leaved linden, summer linden
0	TRSC	<i>Triplochiton schleroxylon</i> K. Schum. abachi, obeche, wawa, arere
0	TRCO	<i>Tristania conferta</i> R.Br. Queensland box tree
	TSSP	<i>Tsuga</i> Carr. hemlock
2	TSCA*	<i>Tsuga canadensis</i> (L.) Carr. eastern hemlock
1	TSCR*	<i>Tsuga caroliniana</i> Engelm. Carolina hemlock
0	TSDI	<i>Tsuga diversifolia</i> (Maxim.) Mast. Japanese hemlock
1	TSDU	<i>Tsuga dumosa</i> (D. Don) Eichl. East Himalayan hemlock
2	TSHE*	<i>Tsuga heterophylla</i> (Raf.) Sarg. western hemlock
2	TSME*	<i>Tsuga mertensiana</i> (Bong.) Carr. mountain hemlock
0	TSSI	<i>Tsuga sieboldii</i> Carr. southern Japanese hemlock
	ULSP	<i>Ulmus</i> L. elm <i>Ulmus caprinifolia</i> G. Suckow = <i>Ulmus minor</i> Mill.
1	ULGL	<i>Ulmus glabra</i> Hudson Wych elm, Scots elm, mountain elm
1	ULLA	<i>Ulmus laevis</i> Pall. European white elm
1	ULMI	<i>Ulmus minor</i> Mill. smooth-leaved elm, field elm, common elm
0	ULPU	<i>Ulmus pumila</i> L. Siberian elm
1	ULRU	<i>Ulmus rubra</i> Muhl. slippery elm
	UNKN	Unknown
0	WERA	<i>Weinmannia racemosa</i> L.f. kamahi

Table 3. (cont.)

CDI	Code	Latin Name, Authority, and Common Name
0	WETR	<i>Weinmannia trichosperma</i> Cav. tineo, tenio, palo santo
1	WICE*	<i>Widdringtonia cedarbergensis</i> J.A. Marsh Cianwilliam cedar
0	ZISP	<i>Zizyphus spina-christi</i> Judas tree, Christ thorn
	ZYSP	<i>Zygophyllum</i> L.
0	ZYDU	<i>Zygophyllum dumosum</i> Boiss.

¹ *Pinus densata* actually refers to two separate pine species that overlap in west-central China, *Pinus tabulaeformis* (Chinese pine) in the northern region and *Pinus yunnanensis* (Yunnan pine) in the south (Mirov and Hasbrouck 1976).

REFERENCES CITED

- Boland, D.J., M.I.H. Brooker, G.M. Chippendale, N. Hall, B.P.M. Hyland, R.D. Johnston, D.A. Kleinig, and J.D. Turner
1984 *Forest Trees of Australia*. Thomas Nelson Publishers, Melbourne, and CSIRO, East Melbourne.
- Boutelje, J.B.
1980 *Encyclopedia of World Timbers: Names and Technical Literature*. Swedish Forest Products Research Laboratory, Stockholm.
- Cook, E.R., and L.A. Kairiukstis, Editors
1990 *Methods in Dendrochronology: Applications in the Environmental Sciences*. Kluwer Academic Publishers, Dordrecht, The Netherlands.
- Coombs, A.J.
1992 *Eyewitness Handbook of Trees*. Dorling Kindersley Limited, London.
- Critchfield, W.B., and E.L. Little, Jr.
1966 Geographic Distribution of the Pines of the World. *United States Department of Agriculture, Forest Service Miscellaneous Publication 991*. Washington.
- Dyer, T.G.J.
1982 Southern Africa. In *Climate from Tree Rings*, edited by M.K. Hughes, P.M. Kelly, J.R. Pilcher, and V.C. LaMarche, Jr., pp. 82-83. Cambridge University Press, New York.
- Fritts, H.C.
1976 *Tree Rings and Climate*. Academic Press, London.
- Gutiérrez, E.
1992 Dendrochronological analysis of *Nothofagus pumilio* along an altitudinal gradient in a *Nothofagus* forest in Tierra del Fuego, Argentina. In "Tree Rings and Environment: Proceedings of the International Symposium, Ystad, South Sweden, 3-9 September, 1990," edited by T.S. Bartholin, B.E. Berglund, D. Eckstein, F.H. Schweingruber, and O. Eggertsson, pp. 137-141. *Lundqua Report*, No. 34. Lund.
- Hughes, M.K., P.M. Kelly, J.R. Pilcher, and V.C. LaMarche, Jr., Editors
1982 *Climate from Tree Rings*. Cambridge University Press, New York.
- Little, E.L., Jr.
1979 Checklist of United States Trees (Native and Naturalized). *United States Department of Agriculture, Forest Service Agricultural Handbook 541*.
- Mirov, N.T.
1967 *The Genus Pinus*. The Ronald Press, New York.
- Mirov, N.T., and J. Hasbrouck
1976 *The Story of Pines*. Indiana University Press, Bloomington.
- Norton, D.A.
1985 A dendrochronological study of *Nothofagus solandri* tree growth along an elevational gradient, South Island, New Zealand. In "Establishment and tending of subalpine forests: research and management", edited by H. Turner and W. Tranquillini, pp. 159-171. *Eidgenössische Anstalt für das forstliche Versuchswesen, Berichte 270*. Zurich.

- Perry, J.P., Jr.
1991 *The Pines of Mexico and Central America*. Timber Press, Portland.
- Phillips, R.
1978 *Trees in Britain, Europe and North America*. Pan Books Ltd., London.
- Poole, A.L., and N.M. Adams
1990 *Trees and Shrubs of New Zealand*. DSIR Publishing, Wellington.
- Schweingruber, F.H.
1993 *Trees and Wood in Dendrochronology*. Springer-Verlag, Berlin.
- Vaucher, H.
1986 *Elsevier's Dictionary of Trees and Shrubs*. Elsevier Science Publishers B.V., Amsterdam.
- Veblen, T.T., T. Kitzberger, and A. Lara
1992 Disturbance and forest dynamics along a transect from Andean forest to Patagonian shrubland. *Journal of Vegetation Science* 3: 507-520.
- Vidakovic, M.
1991 *Conifers: Morphology and Variation*. Graficki Zavod Hrvatske, Croatia.