



Variation in chromosome number and the basic number of subfamily Epidendroideae (Orchidaceae)

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Received 10 November 2009; revised 2 March 2010; accepted for publication 12 May 2010

The chromosome numbers of 21 genera and 44 species of subfamily Epidendroideae belonging to tribes Sobralieae, Epidendreae, Malaxideae and Vandaeae, and subtribe Dendrobiinae, were determined. Chromosome numbers varied from $2n = 24$ in *Malaxis pubescens* to $2n = c. 240$ in *Epidendrum cinnabarinum*. A revision of the chromosome numbers known for the subfamily was also performed, aimed at determining the basic numbers of the genera, subtribes and tribes. The first counts for 31 species and six genera of tribe Sobralieae and subtribe Ponerinae are presented. The basic number for each genus was evaluated. A predominance of $x = 20$ in genera of Epidendreae and Arethuseae, $x = 19$ in Vandaeae and subtribe Dendrobiinae and $x = 15$ and 21 in Malaxideae was observed. Other tribes were more variable. A wide occurrence of $x = 19$ and 20 in Epidendroideae and of $x = 21$ in at least one genus of all tribes suggests that dispolyploidy of one or a few chromosomes has played a decisive role in the establishment of the basic karyotypes. The karyotype variability observed in the subfamily is discussed in light of current phylogenetic proposals for the family. © 2010 The Linnean Society of London, *Botanical Journal of the Linnean Society*, 2010, **163**, 234–278.

ADDITIONAL KEYWORDS: basic chromosome number – cytogenetics – dispolyploidy – polyploidy.

INTRODUCTION

The analysis of chromosome numbers has been used to evaluate evolutionary and taxonomic relationships in diverse groups of plants. Studies of chromosomal variations in Orchidaceae have contributed to the better understanding of the taxonomy of this family at many hierarchical levels. Arditti (1992) reviewed some of the important aspects of the cytology of the orchid family, with emphasis on chromosomal variation. Brandham (1999) reviewed chromosomal variation in each genus of Apostasioideae Garay and Cyripedioideae Garay, but did not consider the probable basic numbers of higher taxonomic categories. Felix & Guerra (2000, 2005) examined the chromosomal variability in the cymbidioid clade (*sensu* Dressler, 1993) and in Cyripedioideae, Orchidoideae (including Spiranthoideae Dressler) and Vanilloideae Szlach. and

concluded that $x = 7$ is the most probable basic number for the family Orchidaceae. The basic number corresponds to the haploid number encountered in a given taxon that explains in the most parsimonious manner the variation in chromosome numbers seen in that and related taxa (Guerra, 2000).

According to Chase, Freudenstein & Cameron (2003), orchids are subdivided into five subfamilies: Apostasioideae, Cyripedioideae, Vanilloideae, Orchidoideae and Epidendroideae Lindl. Epidendroideae comprise an estimated 18 000 species and 650 genera (Cribb & Chase, 2005), mainly epiphytic plants, distributed in tropical and subtropical regions throughout the world. Epidendroideae are highly diversified and no morphological synapomorphy is shared by all members of the group. They are subdivided into 16 tribes, of which Epidendreae Kunth, Cymbidieae Pfitzer, Dendrobieae Lindl. and Vandaeae Lindl. account for approximately 15 000 species (Chase *et al.*, 2003).

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Cymbidieae have corms or pseudobulbs and two to four pollinia bodies (Chase *et al.*, 2003). The chromosome numbers in this tribe are quite variable, ranging from $n = 6$ in *Erycina pusilla* (L.) N.H. Williams & M.W. Chase (as *Psycmorchis pusilla* (L.) Dodson & Dressler) to $n = 84$ in two species of *Oncidium* Sw. (revised by Felix & Guerra, 2000). Epidendreae are subdivided into two main subtribes: Pleurothallidinae Lindl. and Laeliinae Benth. The former has 28 genera and approximately 4000 species, but chromosome numbers are available only for four genera and 36 species, with a predominance of $n = 20$ in *Pleurothallis* R.Br. *s.l.* and $n = 16$ in *Stelis*. Chromosome numbers are known for 14 out of 45 genera and 94 of 1788 species of Laeliinae, with a predominance of $n = 20$ in the majority of the genera (Tanaka & Kamemoto, 1984). Vandeeae are comprised of two monophyletic subtribes having monopodial growth (Aeridinae Pfitzer with $x = 19$ and Angraecinae Summerh. with $x = 19, 20, 21, 23, 24$ and 25) (Carlswald *et al.*, 2006) and subtribe Polystachiinae Schltr. which has sympodial growth and $x = 20$ (Jones, 1966). Subtribes Agrostophyllinae Szlach., Dendrobiiinae Lindl. and Collabiinae Pfitzer do not have well-defined positions in Epidendroideae (Chase *et al.*, 2003).

Although the molecular phylogenetics of Epidendroideae has been relatively well studied, it has never been cytotaxonomically evaluated. In the present study, we analysed 44 Brazilian species of Epidendroideae (*sensu* Chase *et al.*, 2003) and critically reviewed the chromosome numbers for each genus and subtribe in order to establish the probable basic numbers of the subfamily. These data were compared with the classification system developed by Dressler (1993) and Chase *et al.* (2003), and with recent phylogenetic proposals by Pridgeon, Solano & Chase (2001), Freudenstein *et al.* (2004), Carlswald *et al.* (2006), Cameron (2005), van den Berg & Chase (2004a), van den Berg *et al.* (2005, 2009), among others.

MATERIAL AND METHODS

The large majority of the plants analysed here were collected in north-eastern Brazil. All of the material studied was cultivated at the Federal Rural University of Pernambuco, the Federal University of Paraíba or the Federal University of Pernambuco, except for some plants donated by private collectors. The species analysed, chromosome numbers counted here and previous counts are listed in Table 1. Samples of all materials were deposited in the PEUFR, HST and EAN herbaria. Identifications were based on Pabst & Dungs (1975, 1977), but the binomials were updated according to Govaerts *et al.* (2009; <http://www.kew.org/wcsp/monocots/>).

Chromosome analyses were undertaken using root tips pretreated with 0.002 M 8-hydroxyquinoline at 4 °C for 24 h. The material was then fixed in absolute ethanol/glacial acetic acid (3 : 1 v/v) for 3–24 h at room temperature 25 °C and stored at –20 °C. To prepare slides, root tips were hydrolysed in 5 M HCl at room temperature, frozen in liquid nitrogen to remove the coverslip and stained with 1% acetic haematoxylin (Guerra, 1999) or 2% Giemsa (Guerra, 1983).

The diversity in chromosome numbers in the epidendroid clade was examined by undertaking a revision based on the chromosome numbers compiled by Tanaka & Kamemoto (1984) and the indexes prepared by Fedorov (1969), Moore (1973, 1974, 1977), Goldblatt (1981, 1984, 1985, 1988), Goldblatt & Johnson (1990, 1991, 1994, 1996, 2000, 2003, 2006) and more recent papers. A separate list of chromosome numbers was then prepared, including the data from the present analysis (see also Appendix 1). In this table, the names of the genera, species and authors are cited as in the World Checklist of Monocotyledons (Govaerts *et al.*, 2009) and previous names indicated in parentheses.

The data from Appendix 1 were synthesized in Table 2, showing the chromosome number variation in each genus. The numbers were ordered from the most to the least frequent, and the probable basic number for each genus was underlined, based on the frequency of each number in the genus and in the closest related genera. The chromosome numbers that were considered questionable (as they differed significantly from information available in the literature), and the occasional case of monosomy and trisomy were excluded from Appendix 1 and Table 2, and from the discussion, and are presented separately in Appendix 2.

RESULTS

The interphase nucleus structure and the chromosome number of a total of 44 species belonging to 21 genera, seven subtribes and four tribes of Epidendroideae (*sensu* Chase *et al.*, 2003) were analysed. The structure of the interphase nuclei was quite variable among the species analysed. According to the classification of interphase nuclei suggested by Tanaka (1971) for Orchidaceae, the structural types varied from diffuse nuclei in *Campylocentrum pernambucense* Hoehne (Fig. 1B) and *Cattleya walkeriana* Gardner to complex chromocentric nuclei in *Prosthechea caetensis* (Bicalho) W.E. Higgins and *Malaxis excavata* Kuntze (Fig. 1C).

The species analysed here generally had small chromosomes, varying slightly in length, all species displaying meta- to submetacentric chromosomes and

Table 1. List of species analysed with respective provenances, voucher numbers, chromosome numbers (n and/or $2n$), figures in the text, herbarium where each material was deposited, previous counts and sources

| Taxa | Provenance* | Voucher no. | $2n/n$ | Herbarium | Figs | Previous counts ($2n$) | Sources† |
|--|-------------------------------|------------------|---------------|-----------|--------|--------------------------|-----------|
| Subfamily Epidendroideae | | | | | | | |
| Tribe Sobralieae | | | | | | | |
| <i>Elleanthus brasiliensis</i> (Lindl.) Rchb.f. | Maranguape, CE | L.P.Felix, 8284 | 50 | PEUFR | 1A, 2A | | |
| <i>Sobralia liliastrum</i> Lindl. | Camocim do São Felix, PE | L.P.Felix, 8213 | 48 | PEUFR | 2B | | |
| | Palmeiras, BA | L.P.Felix, 9124 | 48 | PEUFR | | | |
| <i>S. sessilis</i> Lindl. | Morro do Chapéu, BA | L.P.Felix, 7394 | 48 | EAN | 2C | | |
| Tribe Epidendreae | | | | | | | |
| Subtribe Ponerinae | | | | | | | |
| <i>Isochilus linearis</i> (Jacq.) R.Br. | Taquaritinga do Norte, PE | L.P.Felix, 12715 | 40 | EAN | 2D | | |
| Subtribe Bletinae | | | | | | | |
| <i>Bletia catenulata</i> Ruiz & Pav. | Gilbués, PI | L.P.Felix, S/N | 40 | HST | 2E | | |
| Subtribe Laeliinae | | | | | | | |
| <i>Brassavola tuberculata</i> Hook. | Camocim do São Felix, PE | L.P.Felix, 9650 | 40 | PEUFR | | 40 | DA09 |
| | Puxinanã, PB | L.P.Felix, 12728 | 40 | EAN | 2F | | |
| | Cultivated | L.P.Felix, 12725 | 40 | EAN | 2G | 40 | TK84 |
| <i>B. nodosa</i> (L.) Lindl. | | | | | | | |
| <i>Cattleya amethystoglossa</i> Linden & Rchb.f. ex R.Warner | Morro do Chapéu, BA | L.P.Felix, 9651 | 40 | PEUFR | 2H | | |
| <i>C. elongata</i> Barb. Rodr. | Morro do Chapéu, BA | L.P.Felix, 12976 | 80 | EAN | 2I | | |
| <i>C. granulosa</i> Lindl. | Natal, RN | L.P.Felix, 12977 | 40 | EAN | 2J | | |
| | Alcaçuz, RN | L.P.Felix, 12978 | 40 | EAN | | | |
| | Cultivated | Unvouchered | 42 | – | 2K | | |
| <i>C. nobilior</i> Rchb.f. var. <i>amaliae</i> Pabst | Cultivated, Ostetto Orquídeas | Unvouchered | 42 | – | | | |
| <i>C. nobilior</i> var. <i>nobilior</i> | Cultivated, St Cruz 3263 | Unvouchered | 40 | – | | 40 | TK84 |
| <i>C. walkeriana</i> Gardner | Cultivated, St Cruz 3149 | Unvouchered | c. 80 | – | 2L | | |
| <i>C. walkeriana</i> var. <i>princeps</i> L.C.Menezes | | | | | | | |
| <i>Cattleyella araguaiensis</i> (Pabst) Van den Berg & M.W.Chase | Rio Araguaia, TO | L.P.Felix, 9360 | 40 | EAN | 1E, 2M | | |
| <i>Dimerandra emarginata</i> (G.Mey.) Hoehne | Carmópolis, SE | L.P.Felix, 9652 | 40 | PEUFR | 2N | 40 | GJ90 |
| <i>Encyclia advena</i> (Rchb.f.) Porto & Brade | Bonito, PE | L.P.Felix, 9638 | 40 | HST | 3A | 40 | TK84 |
| | Brejo da Madre de Deus, PE | L.P.Felix, 12725 | 40 | EAN | | | |
| | Araguaia, TO | L.P.Felix, 12723 | 40 | EAN | 3B | | |
| <i>E. flava</i> (Lindl.) Porto & Brade | Brejo da Madre de Deus, PE | L.P.Felix, 12727 | 40 | EAN | 3C | | |
| <i>E. oncidoides</i> (Lindl.) Schltr. | Esperança, PB | L.P.Felix, 12731 | 40 | EAN | | | |
| Subtribe Laeliinae (cont.) | | | | | | | |
| <i>Epidendrum avicule</i> Lindl. | Brejo da Madre de Deus, PE | L.P.Felix, 8355 | 40 | EAN | 3G | 40 | TK84 |
| <i>E. cinnabarinum</i> Salzm. ex Lindl. | Camocim do São Felix, PE | L.P.Felix, 9653 | c. 240 | PEUFR | 3D | c. 240 | G00, OL06 |
| | Mamanguape, PB | L.P.Felix, 2165 | c. 240 | EAN | | | |
| | Serraria, PE | L.P.Felix, 11489 | $n = 108-124$ | EAN | | | |
| | Esperança, PB | L.P.Felix, 12989 | c. 240 | EAN | | | |
| <i>E. difforme</i> Jacq. | Cabo, PE | L.P.Felix, 8324 | 40 | PEUFR | 3F | 39–40 | TK84 |
| <i>E. ellipticum</i> Graham | Camocim do São Felix, PE | L.P.Felix, 9435 | 68 | PEUFR | 3E | – | |
| <i>E. latilabrum</i> Lindl. | Taquaritinga do Norte, PE | L.P.Felix, 12736 | 40 | EAN | 3H | – | |
| <i>E. nocturnum</i> Jacq. | Belém, PA | L.P.Felix, 12667 | 80 | EAN | | 40, 80 | TK84 |
| <i>E. rigidum</i> Jacq. | Brejo da Madre de Deus, PE | | | | | – | |
| | | L.P.Felix, 12735 | 40 | EAN | 3I | | |
| <i>Jacquinella globosa</i> (Jacq.) Schltr. | Bonito, PE | L.P.Felix, 8385 | 38 | PEUFR | 3J | – | |
| | Taquaritinga do Norte, PE | L.P.Felix, 12721 | 38 | EAN | | | |
| <i>Laelia marginata</i> (Rchb.f.) L.O.Williams | Bezerras, PE | L.P.Felix, 1038 | 40 | EAN | 3K | 40 | TK84 |
| <i>Prosthechea caetensis</i> (Bicalho) Pabst | Morro do Chapéu, BA | L.P.Felix, 8644 | 80 | PEUFR | 4A | – | |
| <i>P. fragrans</i> (Sw.) W.E.Higgins | Brejo da Madre de Deus, PE | L.P.Felix, 12733 | 40 | EAN | 4B | 40 | TK84 |
| | Alcaçuz, RN | L.P.Felix, 12732 | 40 | EAN | | | |
| <i>P. vespa</i> (Vell.) W.E.Higgins | São Felix do Xingu, PA | L.P.Felix, 12979 | 40 | EAN | 4C | – | |
| <i>Scaphyglottis fusiformis</i> (Griseb.) R.E.Schult. | Bezerras, PE | L.P.Felix, 9640 | 40 | PEUFR | 4D | – | |
| <i>Sophranitis lobata</i> (Lindl.) Van den Berg | Cultivated | Unvouchered | 40 | – | – | – | |
| <i>S. purpurata</i> (Lindl. & Paxton) Van den Berg & M.W.Chase | Cultivated | Unvouchered | 40 | – | – | 40 | M77 |
| Subtribe Pleurothallidinae | | | | | | | |
| <i>Acianthera ochreate</i> (Lindl.) Pridgeon & M.W.Chase | Bezerras, PE | L.P.Felix, 9641 | 40 | PEUFR | 4E | – | |
| <i>Stelis</i> sp. | Ibateguara, AL | L.P.Felix, 8271 | 32 | EAN | 4F | – | |
| Tribe Malaxideae | | | | | | | |
| <i>Malaxis excavata</i> (Lindl.) Kuntze | Bonito, PE | L.P.Felix, 8464 | 30 | PEUFR | 4G | – | |
| <i>M. pubescens</i> (Lindl.) Kuntze | Rio Grande, RS | L.P.Felix, 9022 | 24 | PEUFR | 4H | – | |
| Tribe Vandaeae | | | | | | | |
| Subtribe Polystachiinae | | | | | | | |
| <i>Polystachya estrellensis</i> Rchb.f. | Itapororoca, PB | L.P.Felix, 798 | 80 | EAN | – | 80 | TK84 |
| Subtribe Angraecinae | | | | | | | |
| <i>Campylocentrum amazonicum</i> Cogn. | Acará, PA | L.P.Felix, 8490 | 80 | EAN | 4I | – | |
| <i>C. crassirhizum</i> Hoehne | Bezerras, PE | L.P.Felix, 8919 | 38 | PEUFR | 4J | – | |
| <i>C. pernambucense</i> Hoehne | São Vicente Ferrer, PE | L.P.Felix, S/N | 38 | EAN | 4K | – | |
| | Areia, PB | L.P.Felix, 12982 | | EAN | | | |
| Unplaced subtribes within Epidendroideae | | | | | | | |
| Subtribe Dendrobiinae | | | | | | | |
| <i>Bulbophyllum cribbianum</i> Toscano | Rio de Contas, BA | L.P.Felix, 8831 | 38 | PEUFR | 4L | – | |
| <i>B. sanderianum</i> Rolfe | Brejo da Madre de Deus, PE | L.P.Felix, 12981 | 38 | EAN | 4M | – | |
| <i>Bulbophyllum</i> sp. 1 | Campo Formoso, BA | L.P.Felix, 11802 | 38 | EAN | 4N | – | |
| <i>Bulbophyllum</i> sp. 2 | Morro do Chapéu, BA | L.P.Felix, 11701 | 80 | EAN | 4O | – | |

*Brazilian state abbreviations: AL, Alagoas; BA, Bahia; CE, Ceará; PA, Pará; PB, Paraíba; PE, Pernambuco; PI, Piauí; RN, Rio Grande do Norte; RS, Rio Grande do Sul; SE, Sergipe; TO, Tocantins.

†Sources: TK84, Tanaka & Kamemoto (1984); GJ90, Goldblatt & Johnson (1990); G00, Guerra (2000); M77, Moore (1977); OL06, Conceição *et al.* (2006); DA09, Daviña *et al.* (2009).

Table 2. Chromosome numbers and probable base numbers (underlined) of tribes, subtribes and genera of subfamily Epidendroideae (*sensu* Chase *et al.*, 2003), except those of the cymbidioid phylad previously published by Felix & Guerra (2000), including the number of genera and species in brackets

| Subfamilies, tribes and subtribes, number of genera/species cytologically known and probable base number | Genera with the number of species known/analysed | Chromosome numbers*† and most probable base numbers (underlined) |
|--|---|---|
| TRIBE NEOTIEAE (6/191) | <i>Aphyllorchis</i> Blume (15/1) <i>Cephalanthera</i> L.C.Rich. (14/10) <i>Epipactis</i> Sw. (21/19) <i>Limodorum</i> L. (1/1) <i>Neottia</i> L. (<i>Listera</i> included) (63/30) | c. 18 16–18, 17, 22 <u>20</u> , 18–30, 16–19 28–32 <u>18</u> , 19–20–21, 17, 14–28–23 |
| TRIBE SOBRALIEAE (4/237) Subtribe Sobraliinae (4/237) | <i>Elleanthus</i> Presl. (106/1) <i>Sobralia</i> Ruiz & Pavon (120/2) | 25 <u>24</u> |
| TRIBE GASTRODIEAE (6/70) | <i>Gastrodia</i> R.Br.(41/4) | <u>20</u> , 19 |
| TRIBE CALYPSOE (13/70) | <i>Calypso</i> Salisb. (1/1) | 28 |
| TRIBE EPIDENDREAE (86/5870) Subtribe Ponerinae (22/3) | <i>Isochilus</i> R.Br. (12/1) | 20 |
| Subtribe Bletinae (3/48) | <i>Bletia</i> Ruiz & Pavon (30/2) | <u>20</u> , 30 |
| Subtribe Pleurothallidinae (28/3021) <i>x</i> = 20 | <i>Acianthera</i> Scheidw. (131/7) <i>Anathallis</i> Barb. Rodr. (89/1) <i>Masdevallia</i> Ruiz & Pavon (380/2) <i>Pabstiella</i> Brieger & Senghas (8/1) <i>Pleurothallis</i> R.Br. (1120/10) <i>Scaphosepalum</i> Pfitzer (41/1) <i>Specklinia</i> Lindl. (90/1) <i>Stelis</i> Sw. (370/7) | 20 21 18–22 <u>16</u> 19–20, 18, 34–36–42 32 <u>10</u> <u>16</u> –19, 17–21–32–38–39 |
| Subtribe Laeliinae (van den Berg <i>et al.</i> , 2000) (45/1788) <i>x</i> = 20 | <i>Brassavola</i> R.Br. (20/4) <i>Broughtonia</i> R.Br.(6/1) <i>Cattleya</i> Lindl. (54/26) <i>Catleyella</i> Van den Berg & Chase (1/1) <i>Caularthron</i> Rafin. (4/1) <i>Dimerandra</i> Schltr. (6/2) <i>Encyclia</i> Hook. (154/7) <i>Epidendrum</i> L. (1125/38) <i>Guarianthe</i> Dressler & W.E.Higgins (5/1) <i>Jacquiella</i> Schltr. (6/1) <i>Laelia</i> Lindl. (<i>s.l.</i>) (11/9) <i>Leptotes</i> Lindl. (6/1) <i>Prosthechea</i> (93/14) <i>Psychilis</i> Raf. (17/1) <i>Rhyncholaelia</i> Schltr. (2/1) <i>Scaphyglottis</i> Lindl. (63/4) <i>Sophranitis</i> Lindl. (57/19) | 20 20 20, 40, 21–27–30 20 20 <u>20</u> <u>20</u> <u>20</u> , 14–40, 30–34, 12–15–19–26–35–60, 21–24–45–80–(108–124)–120 20 19 20, 21, 22–30 20 20, 28–40 20 20 20 <u>20</u> , 19 <u>20</u> , 40, 60 |
| TRIBE PODOCHILEAE (21/1232) Subtribe Eriinae (11/725) | <i>Ceratostylis</i> Blume (145/1) <i>Cryptochilus</i> Wallich (4/2) <i>Eria</i> Lindl. (404/48) <i>Mediocalcar</i> J.J.Sm. (24/4) <i>Porpax</i> Lindl. (13/3) <i>Pseuderia</i> Schltr. (19/1) <i>Trichotisia</i> Blume (73/2) | 20 <u>19</u> <u>19</u> , 20, 18–22, 33–38 <u>19</u> <u>12</u> , 21 20 19–22 |
| Subtribe Podochilinae (4/208) | <i>Podochilus</i> Blume (60/1) | 19 |
| Subtribe Thelasiinae (6/299) <i>x</i> = 16 | <i>Phreatia</i> Lindl. (201/1) <i>Thelasis</i> Blume (23/1) | 16 16 |
| TRIBE ARETHUSEAE (24/701) Subtribe Arethusinae (2/3) <i>x</i> = 20 | <i>Anthogonium</i> Lindl. (1/2) <i>Arethusa</i> L. (1/1) <i>Arundina</i> Blume (1/1) <i>Calopogon</i> R.Br. (5/5) <i>Eleorchis</i> Maek. (2/1) | <u>20</u> –19–21 <u>20</u> <u>20</u> , 16–19 <u>21</u> , 13 20 |

Table 2. Continued

| Subfamilies, tribes and subtribes, number of genera/species cytologically known and probable base number | Genera with the number of species known/analysed | Chromosome numbers*† and most probable base numbers (underlined) |
|--|---|--|
| Subtribe Angraecinae (18/445) <i>x</i> = 19 | <i>Angraecum</i> Bory (219/28) <i>Calyptrochilum</i> Kraenzl. (2/2) <i>Campylocentrum</i> Benth. (73/4) <i>Cryptopus</i> Lindl. (4/1) <i>Dendrophylax</i> Rehb.f. (9/1) <i>Jumellea</i> Schltr. (58/1) <i>Listrostachys</i> Rehb.f. (2/1) <i>Oeonilla</i> Schltr. (2/1) | <u>19</u> , 25, 21, 20–23–24, c. 38–46 <u>19</u> <u>19</u> –22–40 38 44 19–22 23 <u>19</u> |
| Subtribe Aerangidinae (32/315) <i>x</i> = 25 | <i>Aerangis</i> Rehb.f. (490/15) <i>Ancistrorhynchus</i> Finet (16/9) <i>Angraecopsis</i> Kraenzl. (21/5) <i>Bolusiella</i> Schltr. (6/1) <i>Chamaeangis</i> Schltr. (10/2) <i>Cribbia</i> Senghas (4/1) <i>Cyrtochis</i> Schltr. (15/9) <i>Diaphananthe</i> Schltr. (24/5) <i>Eggelingia</i> Summ. (3/1) <i>Eurychone</i> Schltr. (2/1) <i>Microcoelia</i> Lindl. (29/14) <i>Microterangis</i> Senghas (7/1) <i>Mystacidium</i> Lindl. (9/1) <i>Podangis</i> Schltr. (1/1) <i>Rangearis</i> Summ. (7/3) <i>Rhipidoglossum</i> Schltr. (37/6) <i>Solenangis</i> Schltr. (6/2) <i>Sphyrarhynchus</i> Mansf. (1/1) <i>Tridactyle</i> Schltr. (43/3) | 25, 21, 23–26–27–100 <u>24</u> , c. 25–36–48 <u>25</u> , 24 25 25–50 <u>25</u> 23, 25–46–69–75 25 23 25 <u>24</u> 25 24 23 23–46–50–54 25, 50 <u>25</u> 25 50, <u>25</u> |
| UNPLACED SUBTRIBES | | |
| Subtribe Agrostophyllinae (8/196) <i>x</i> = 20 | <i>Agrostophyllum</i> Blume (91/5) <i>Earina</i> Lindl. (6/3) <i>Glossorhyncha</i> Ridl. (80/2) | <u>20</u> , 19 <u>20</u> <u>20</u> |
| Subtribe Dendrobiinae (17/3332) <i>x</i> = 19 | <i>Bulbophyllum</i> Thouars (1784/166) <i>Dendrobium</i> Sw. (1184/251) <i>Diplocaulobium</i> Kraenzl. (99/5) <i>Epigeneium</i> Gagnep. (38/5) <i>Flickingeria</i> A.D.Hawkes (69/3) <i>Geniorchis</i> Schltr. (7/1) <i>Saccoglossum</i> Schltr. (5/1) <i>Trias</i> Lindl. (12/1) | <u>19</u> , 20, 18, 21, 10–40 <u>19</u> , 20–18, 38, 10–21–22 <u>19</u> <u>20</u> <u>19</u> <u>19</u> <u>19</u> c. 20 <u>19</u> |
| Subtribe Collabiinae (19/435) <i>x</i> = 20 | <i>Acanthephippium</i> Blume (12/6) <i>Calanthe</i> R.Br. (187/48) <i>Cephalantheropsis</i> Guillaumin (5/2) <i>Chrysoglossum</i> Blume (6/1) <i>Gastrorchis</i> Thouars (8/4) <i>Nephelaphyllum</i> Blume (12/1) <i>Pachystoma</i> Blume (1/1) <i>Phaius</i> Lour. (48/11) <i>Plocoglottis</i> Blume (39/2) <i>Spathoglottis</i> Blume (45/8) <i>Tainia</i> Blume (29/9) | <u>24</u> , 21–23 <u>20</u> , 21, 19–22, 23, 10–30 <u>20</u> , 21 18 <u>20</u> <u>18</u> <u>20</u> <u>21</u> , 22, 14–19–23–24 <u>19</u> <u>20</u> , 18–19 <u>20</u> , 15–16–18–36–38 |

*Chromosome numbers are ordered from the more to the less frequent.

†Numbers connected with a rule (–) have equal frequencies.

symmetrical karyotypes. Chromosome numbers varied from $2n = 24$ in *Malaxis pubescens* Kuntze to $2n = c. 240$ in *Epidendrum cinnabarinum* Salzm. ex Lindl.

In tribe Sobralieae Pfitzer, subtribe Sobraliinae Pfitzer, *Elleanthus brasiliensis* Rehb.f. had $2n = 50$ (Fig. 2A), whereas *Sobralia liliastrum* Lindl. and *S. sessilis* Lindl. had $2n = 48$ (Fig. 2A–C). The proportion

of condensed chromatin per chromosome was more variable in the most asymmetric karyotypes, generally being greater in the largest chromosome pairs, as for example in *E. brasiliensis* (Fig. 1A).

In tribe Epidendreae, *Isochilus linearis* (Jacq.) R.Br. (Fig. 2D) and *Bletia catenulata* Ruiz & Pav. (Fig. 2E), from subtribes Ponerinae and Bletiinae had $2n = 40$, whereas subtribe Laeliinae, the most extensively

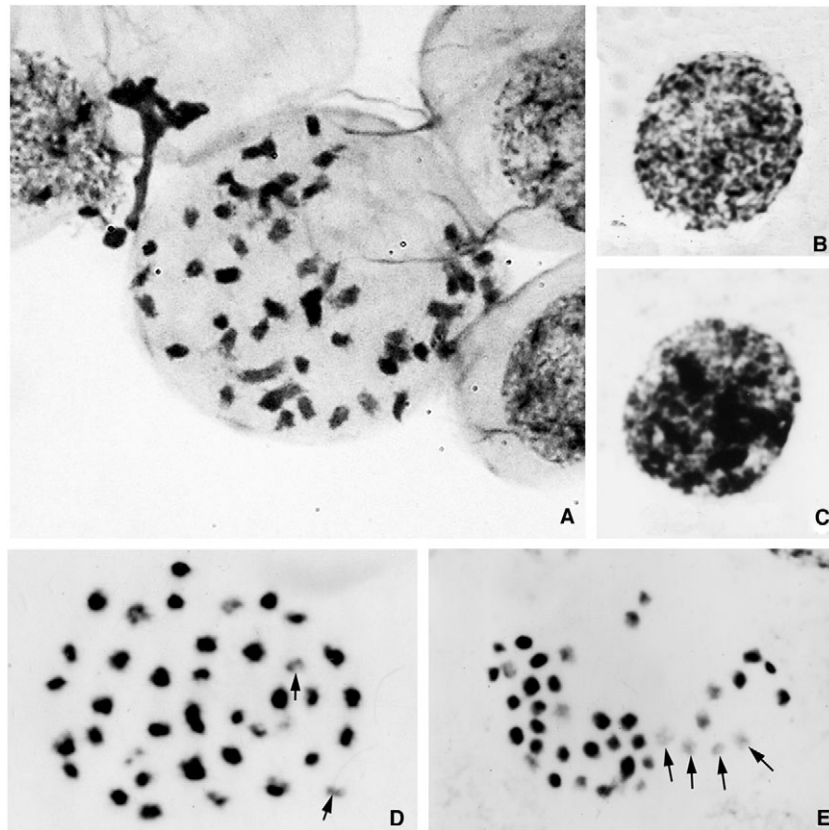


Figure 1. Prometaphase chromosomes and interphase nuclei of representatives of Sobraliinae, Laeliinae and Angraeciinae. A, *Eleanthus brasiliensis* showing more condensed chromatin in two larger and 10 smaller chromosomes. B–C, interphase nuclei of the diffuse type in *Campylocentrum pernambucense* (B) and the complex chromocentric type in *Malaxis excavata* (C). D–E, *Jacquiniella globosa* (D) and *Cattleyella araguaiensis* (E) showing late-condensed chromosomes (arrows).

studied subtribe, exhibited the greatest numerical chromosomal diversity, varying from $2n = 38$ to $2n = c. 240$. These species had generally symmetrical karyotypes, with metacentric and submetacentric chromosomes, and prophase chromosomes with a similar condensation pattern. All species investigated of *Brassavola* R.Br. (Fig. 2F, G), *Encyclia* Hook. (Fig. 3A–C), *Sophronitis* Lindl., *Laelia marginata* (Lindl.) L.O. Williams (Fig. 3K) and *Scaphyglottis fusiformis* (Griseb.) R.E.Schult. (Fig. 4D) had $2n = 40$. In the genus *Cattleya* Lindl., *C. amethystoglossa* Linden & Rehb.f. ex R.Warner (Fig. 2H), *C. granulosa* Lindl. (Fig. 2J) and the accession Santa Cruz 3263 of *C. walkeriana* had $2n = 40$, whereas *C. nobilior* var. *nobilior* Rehb.f. and *C. nobilior* var. *amaliae* Pabst (Fig. 2K) had $2n = 42$. *Cattleya walkeriana* accession Santa Cruz 3149 (Fig. 2L) and *C. elongata* Barb.Rodr. were polyploids with $2n = c. 80$ (Fig. 2I). *Prosthechea fragrans* (Sw.) W.E.Higgins (Fig. 4B) and *P. vespa* (Vell.) W.E.Higgins (Fig. 4C) had $2n = 40$, whereas *P. caetensis* (Fig. 4A) had $2n = 80$. In *Epidendrum* L., $2n = 40$ was observed

in most species [*E. difforme* Jacq. (Fig. 3F), *E. avicula* Lindl. (Fig. 3G), *E. latilabre* Lindl. (Fig. 3H) and *E. rigidum* Jacq. (Fig. 3I)], whereas *E. ellipticum* Sessé & Moc. (Fig. 3E) and *E. cinnabarinum* Salzm. ex Lindl. (Fig. 3D) displayed $2n = 68$ and $2n = c. 240$, respectively. Meiotic analysis of a sample of *E. cinnabarinum* collected in Serraria, Paraíba, revealed the formation of up to five tetravalents during diakinesis, and the occurrence of bridges and lagging chromosomes during anaphases I and II. Haploid numbers ranged from $n = 105$ to $n = 122$, in prometaphase II cells, to $n = 108$ to $n = 124$ in pollen mitosis (in a total of 66 cells analysed). *Jacquiniella globosa* (Jacq.) Schltr. with $2n = 38$ had large and small chromosomes. In several species of subtribe Laeliinae, including *Jacquiniella globosa* (Figs 1D, 3J), *Cattleyella araguaiensis* (Pabst) Van den Berg & M.W.Chase (Figs 1E, 2M) and *Epidendrum cinnabarinum* (Fig. 3D), some entire chromosomes were late condensing. These chromosomes were generally small (approximately $0.5 \mu\text{m}$), difficult to visualize during prophase and apparently did not have

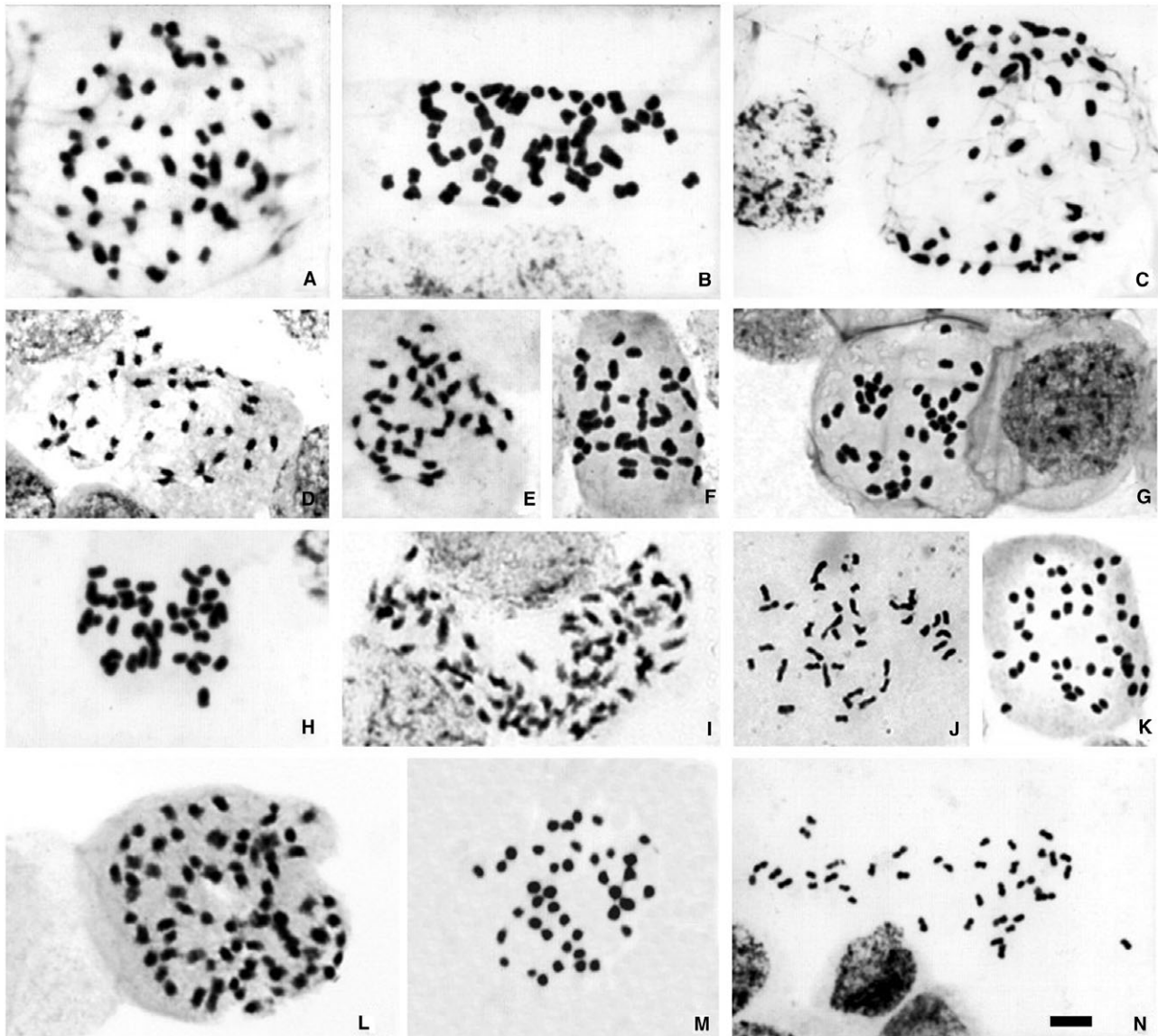


Figure 2. Chromosome complements of subtribes Sobraliinae, Ponerinae, Blettiinae and Laeliinae. A, *Eleanthus brasiliensis* ($2n = 50$). B, *Sobralia liliastrum* ($2n = 48$). C, *S. sessilis* ($2n = 48$). D, *Isochilus linearis* ($2n = 40$). E, *Bletia catenulata* ($2n = 40$). F, *Brassavola tuberculata* ($2n = 40$). G, *B. nodosa* ($2n = 40$). H, *Cattleya amethystoglossa* ($2n = 40$). I, *C. elongata* ($2n = 80$). J, *C. granulosa* ($2n = 40$). K, *C. nobilior* var. *amaliaeae* ($2n = 42$). L, *C. walkeriana* var. *princeps* ($2n = c. 80$). M, *Cattleyella araguaiensis* ($2n = 40$). N, *Dimerandra emarginata* ($2n = 40$). Scale bar in (N), 5 μm .

the condensed proximal chromatin observed in all other chromosomes.

In subtribe Pleurothallidinae, *Acianthera ochreatea* (Lindl.) Pridgeon & M.W.Chase had $2n = 40$ (Fig. 4E) and *Stelis* sp. had $2n = 32$ (Fig. 4F), both with small chromosomes. The latter had a slightly asymmetric karyotype. *Malaxis excavata*, tribe Malaxideae, had $n = 15$ in the first microspore mitosis (Fig. 4G) and $2n = 30$ in somatic mitosis. *Malaxis pubescens* Kuntze showed $2n = 24$ and chromosomes larger than those of *M. excavata* (Fig. 4H). In the tribe Vandeeae, *Polys-*

tachya estrelensis Reichb.f. had $2n = 80$, and, in subtribe Angraecinae, *Campylocentrum crassirhizum* Hoehne (Fig. 4J) and *C. pernambucense* (Fig. 4K) had $2n = 38$, and *C. amazonicum* Cogn. had $2n = c. 80$ (Fig. 4I). In tribe Dendrobieae, *Bulbophyllum cribbianum* Toscano, *B. sanderianum* Rolfe and *Bulbophyllum* sp. 1 had $2n = 38$ (Fig. 4L–N), whereas *Bulbophyllum* sp. 2 (Fig. 4O) had $2n = 80$. In *B. sanderianum* and *Bulbophyllum* sp. 1, two of the four small chromosomes were only partially condensed during metaphase (Fig. 4M–N, arrows).

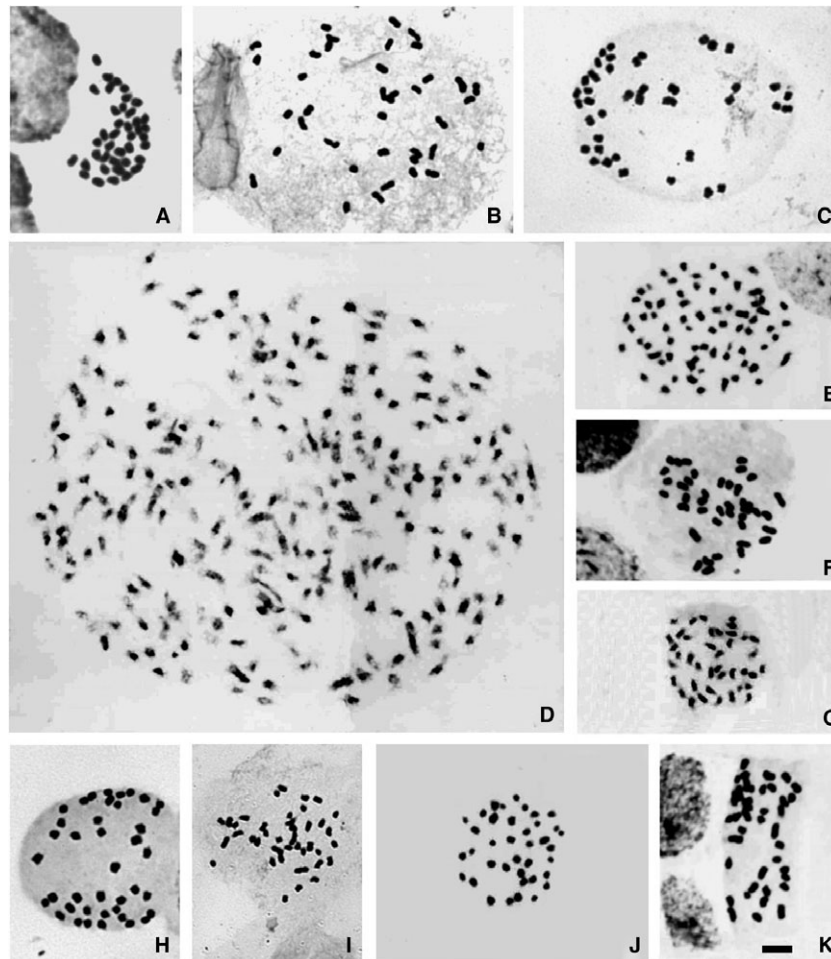


Figure 3. Chromosome complements of subtribe Laeliinae. A, *Encyclia advena* ($2n = 40$). B, *E. flava* ($2n = 40$). C, *E. oncidioides* ($2n = 40$). D, prometaphase of *Epidendrum cinnabarinum* ($2n = c. 240$). E, *E. ellipticum* ($2n = 68$). F, *E. difforme* ($2n = 40$). G, *E. avicula* ($2n = 40$). H, *E. latilabre* ($2n = 40$). I, *E. rigidum* ($2n = 40$). J, *Jacquinella globosa* ($2n = 38$). K, *Laelia marginata* ($2n = 40$). Scale bar in (I), 5 μ m.

Appendix 1 lists the chromosome numbers of 115 genera and 844 species of subfamily Epidendroideae, compiled from the chromosome number indexes and our own data. Counts for the cymbidioid clade (*sensu* Dressler, 1993) published previously (Felix & Guerra, 2000) were not included here. Subfamily Epidendroideae (Table 2) shows a predominance of genera with the basic numbers $x = 19$ (tribes Podochyleae Pfitzer and Vandaeae) and $x = 20$ (tribes Epidendreae, Arethuseae and Colabieae Pfitzer). Some disparate basic numbers are also observed, including $x = 16$ in *Stelis* (subtribe Pleurothallidinae), *Bletilla* Rchb.f. (Coelogyninae), *Phreatia* Lindl. and *Thelasis* Blume (Thelasiinae), and principally $x = 23$, 24 and 25 in various genera of Aerangidinae Summerh. Other tribes, such as Sobralieae and Neottieae, are currently insufficiently sampled or have variable basic numbers among genera.

DISCUSSION

The present work provides the first chromosome counts for 31 species, including the first counts for six genera (*Elleanthus* C.Presl, *Sobralia* Ruiz & Pav., *Isochilus* R.Br., *Cattleyella* Van den Berg & M.W.Chase, *Jacquinella* Schltr. and *Acianthera* Scheidw.) and for subtribe Ponerinae and tribe Sobralieae. Previous chromosome counts were confirmed for *Dimerandra emarginata* (G.Mey.) Hoehne (Guerra, 1986), *Sophronitis purpurata* (Lindl. & Paxton) Van den Berg & M.W.Chase [as *Laelia purpurata* Lindl. & Paxton (Moore, 1977)], *Brassavola tuberculata* Hook. (Daviña *et al.*, 2009), *Encyclia advena* (Rchb.f.) Porto & Brade (as *E. megalantha* (Barb.Rodr.) Porto & Brade), *Epidendrum avicula* (as *Lanium avicula* Lindl. ex Benth.), *Laelia marginata* (Lindl.) L.O.Williams (as *Schomburgkia crispa* Lindl.)

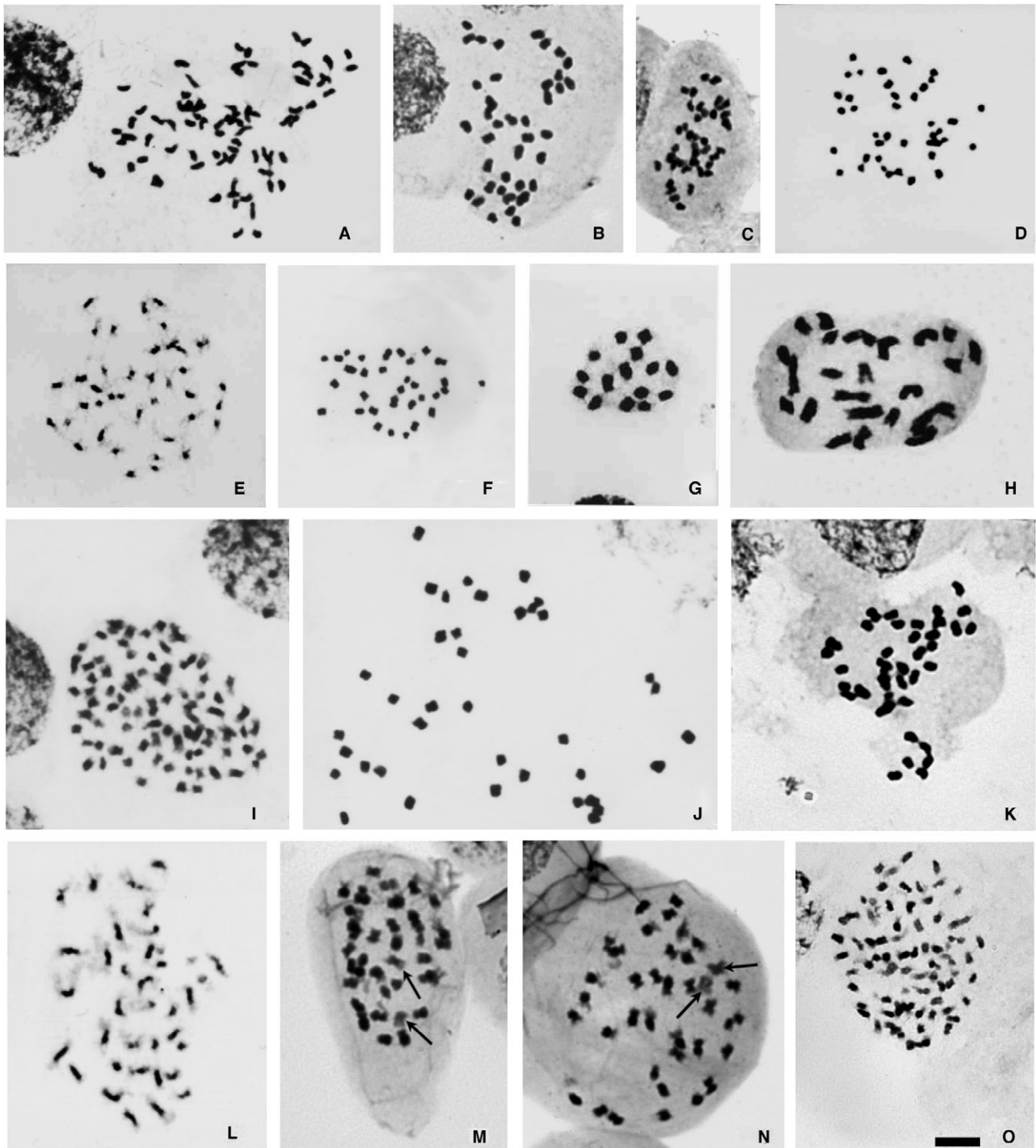


Figure 4. Chromosome complements of tribe Malaxideae, subtribes Laeliinae, Pleurothallidinae, Polystachyinae, Angraecinae and Dendrobiinae. A, *Prosthechea caetensis* ($2n = 80$). B, *P. fragrans* ($2n = 40$). C, *P. vespa* ($2n = 40$). D, *Scaphyglottis fusiformis* ($2n = 40$). E, *Acianthera ochreatea* ($2n = 40$). F, *Stelis* sp. ($2n = 32$). G, metaphase of first mitotic division of microspore of *Malaxis excavata* ($n = 15$). H, *M. pubescens* ($2n = 24$). I, *Campylocentrum amazonicum* ($2n = c. 80$). J, *C. crassirhizum* ($2n = 38$). K, *C. pernambucense* ($2n = 38$). L, *Bulbophyllum cribbianum* ($2n = 38$). M, *B. sanderianum* ($2n = 38$). N, *Bulbophyllum* sp. 1 ($2n = 38$). O, *Bulbophyllum* sp. 2 ($2n = c. 80$). Scale bar in (P), 5 μ m.

and *Prosthechea fragrans* (Sw.) W.E.Higgins (as '*Hormidium fragrans*'), all having $2n = 40$ (Tanaka & Kamemoto, 1984), *Polystachya estrellensis* Rchb.f and *Epidendrum nocturnum* Jacq. with $2n = 80$ (Blumenschein, 1960a), and *E. cinnabarinum*, with $2n = c. 240$ (Guerra, 2000; Conceição, Oliveira & Barbosa, 2006). We found $2n = 40$ for *Epidendrum difforme*, previously reported as $2n = 39-40$ (Tanaka & Kamemoto, 1984). The count of $2n = 40$ for *Cattleya walk-eriana* (accession Santa Cruz 3149) confirmed the only previous count for the species (Blumenschein, 1960a). Additionally, $2n = 80$ was found for another accession of *C. walk-eriana*, indicating that this species has at least two ploidy levels.

There are records of chromosome numbers for five of the six recognized genera of tribe Neottieae, but its basic number is still unclear. According to Chase *et al.* (2003), this tribe comprises an early branching group of Epidendroideae. In Neottieae, $x = 20$ is the basic number in *Epipactis* Sw. and the orthoploid series $x = 14, 21 \pm 1$ occurs in *Neottia* L., *Limodorum* L. and *Cephalanthera* Rich., supporting the hypothesis of an ancestral basic number related to this series in the tribe and to the entire subfamily Epidendroideae (Fig. 5). Tribes Sobralieae and Calypsoeae are also

insufficiently investigated. The numbers of $n = 24$ and 25 for tribe Sobralieae diverge from the lower chromosome numbers observed in the majority of species of Epidendroideae. The count of $2n = 54$ for *Sobralia* \times *amesiana* Hort.Sander (Vij & Shekhar, 1985) from West Bengal, India, was transferred to the table of excluded numbers (see also Appendix 2) as it appears to be a misidentification. This genus is exclusively American (Bechtel, Cribb & Launert, 1992) and this binomial was included by Govaerts *et al.* (2009) in the World Checklist of Orchidaceae as an 'unplaced name'.

Tribe Epidendreae, the largest group of subfamily Epidendroideae (Chase *et al.*, 2003), has karyological reports for 27 genera and 163 species, corresponding to 31% of the genera but less than 3% of the species. These data indicate $n = 20$ as the most widely occurring number among the three subtribes. *Pleurothallis* and *Stelis* display an exceptionally high variation in chromosome numbers, with 13 different numbers among the 17 species investigated here for these genera. The number $2n = 20$ reported for *Specklinia grobyi* (Bateman ex Lindl.) Pridgeon & M.W.Chase (Nakata & Hashimoto, 1983) and for *Liparis cordifolia* Hook.f and *L. glossula* Rchb.f. (Goldblatt &

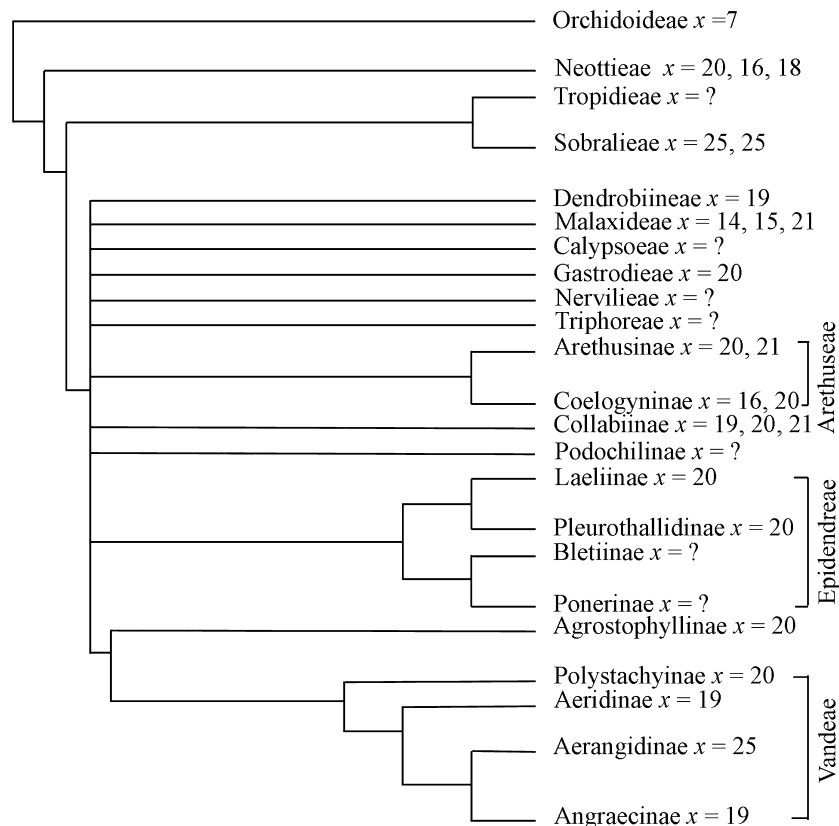


Figure 5. Partial cladogram of subfamily Epidendroideae, based on Chase *et al.* (2003), with the probable basic number indicated for each tribe and subtribe.

Johnson, 1994) is probably the lowest diploid number for the subfamily. It seems to represent two independent examples of intense dysploid reduction rather than the ancestral chromosome number of these genera (Guerra, 2008). Similarly low haploid numbers, not representatives of the basic number, have also been found in a few genera of subtribe Oncidiinae (Felix & Guerra, 1999, 2000) and in other families, for example $n = 6$ in Aristolochiaceae (Ohi-Toma *et al.*, 2006) and $n = 2$ in Cyperaceae (Vanzela, Guerra & Luceño, 1996). Likewise, $n = 10$ in *Specklinia* Lindl. and *Liparis* Rich. can be a dysploid remnant of the ancestral number $x = 7$ or of a tetraploid lineage with $n = 14$.

In subtribe Laeliinae, $n = 20$ is observed in all of the genera, except *Jacquiiniella*, a small genus previously included in subtribe Ponerinae (Dressler, 1993), which also has $n = 20$. Small variations around this number have been observed in some species of *Cattleya*, *Epidendrum*, *Laelia*, *Scaphyglottis*, and *Sophronitis*. *Cattleya nobilior* Rchb.f., for example, which is morphologically close to *C. walkeriana* (Pabst & Dungs, 1975), differs from the other species of *Cattleya* by having $2n = 42$, a rare number in this genus. *Jacquiiniella globosa* (Jacq.) Schltr. and *Scaphyglottis reflexa* Lindl. (Sau & Sharma, 1983), both with $2n = 38$, were included recently in the *Scaphyglottis* alliance by van den Berg *et al.* (2009). Tetraploid species with $2n = 80$ occur in *Cattleya*, *Epidendrum*, *Prosthechea*, and *Sophronitis*. Intraspecific polyploidy occurred in *C. bicolor* Lindl. (Blumenschein, 1960a), in *Sophronitis* (Blumenschein, 1960b; Yamagishi-Costa & Forni-Martins, 2009) and in some species of *Epidendrum* (Blumenschein, 1960a; Pinheiro *et al.*, 2009). This ploidy change seems to be related to morphological variants placed in distinct subspecies, as in *C. bicolor* ssp. *bicolor* with $2n = 40$ and *C. bicolor* ssp. *minasgeraensis* Fowlie with $2n = 80$ (Blumenschein, 1961). In *C. walkeriana* var. *princeps* (accession Santa Cruz 3149), the number $2n = 80$ reported here was observed only in a cultivated specimen.

In some lithophytic species of *Sophronitis*, the intraspecific polyploidy observed seems to be related to the acquisition of this habit, as has been reported for *Sophronitis longipes* (Rchb.f.) Van den Berg & M.W.Chase (Blumenschein, 1960b), *S. rupestris* Cogn. (Yamagishi-Costa & Forni-Martins, 2009), *Oncidium* aff. *flexuosum*, and *O. varicosum* Lindl. (Felix & Guerra, 2000). This tendency was also observed in the polyploids *Epidendrum cinnabarinum*, *C. walkeriana* var. *princeps*, and *C. elongata*, which have the lithophytic or terrestrial habit. Terrestrial species of subfamilies Vanilloideae and Cyripedioideae also have genome sizes notably higher than most epiphytic orchids. Leitch *et al.* (2009) suggested that orchids with large genomes are restricted to a terrestrial

habit because of the water stress associated with the epiphytic habit. As species with large genome size usually have large guard cells and a slower response to water stress, they are better adapted to the terrestrial lifestyle, whereas species with small genome size are free to occupy both habits.

The only population analysed here of *E. elipticum*, from the *Epidendrum secundum* complex showed $2n = 68$. However, an analysis of six populations of this complex displayed $2n = 28, 40, 48, 52, 56, 68$ and 80 (Pinheiro *et al.*, 2009). These data indicate that *E. secundum* is a highly polymorphic complex. It also showed intra- and inter-populational morphological variants (Pinheiro & Barros, 2007). It belongs to the Amphyglottidae group of *Epidendrum* (Pabst & Dungs, 1975), which comprises species with different chromosome numbers ($n = 12, 14, 18, 19$ and 28) (Hágsater & Arenas, 2005). In *E. cinnabarinum*, the count of $2n = c. 240$ in four populations from Pernambuco and Paraíba and at least in one population from Bahia (Conceição *et al.*, 2006) indicates that its ploidy is stable, in spite of some meiotic instability, as the occurrence of ring tetravalents and aneuploid spores, observed here, and anaphase bridges and lagging chromosomes, reported by Conceição *et al.* (2006).

In tribe Podochileae, $n = 19$ occurred in the majority of the genera of subtribe Eriinae and in the sole species of Podochilinae analysed, whereas, in subtribe Thelasiinae, $n = 16$ was found in the only two species studied. In subtribe Eriinae Benth., *Eria* Lindl. had $n = 19$ in 27 of the 54 species investigated. The other four genera, with few species investigated, had $n = 19$ (*Cryptochilus* Wall. and *Mediocalcar* J.J.Sm), $n = 20$ (*Ceratostylis* Blume), and $n = 12$ and 21 (*Porpax* Lindl.).

The tribe Arethuseae is monophyletic (Goldman *et al.*, 2001), but do not have well-defined relationships with other Epidendroideae (Chase *et al.*, 2003). In this tribe, $n = 20$ was the best represented haploid number in the genera of both subtribes that are cytologically known, with the exception of *Bletilla* with $n = 16$, and *Dendrochilum* Blume with $n = 15$ and $n = 19$.

Tribe Malaxideae has a great diversity in chromosome numbers, with $n = 21$ predominating in *Liparis* and *Malaxis* and $n = 15$ in *Oberonia*. The other genera are quite small and insufficiently studied. The most probable basic numbers for the tribe are $x = 15$ and $x = 21$, $n = 21$ being the most frequent haploid number and $n = 15$ the second most frequent and the only one that occurs in all three genera. The occurrence of $n = 14$ in some species of *Liparis* and *Malaxis*, and the high frequency of $n = 21$ in these two genera, suggest that these numbers may be related to the polyploid series $x = 7, 14, 21$ that is quite common in orchids (Felix & Guerra, 2000). *Liparis* and *Malaxis* are arti-

ficial cosmopolitan genera (Cameron, 2005), which may explain their large numerical chromosomal variations. Similarly, the large and chromosomally variable genus *Habenaria* (Orchidoideae) (Felix & Guerra, 1998, 2005) was also recognized as polyphyletic (Bateman *et al.*, 2003). *Oberonia*, which is exclusively epiphytic (a type of habitat that is considered primitive in this subtribe), has $n = 15$ or 30 and is related to a group of 'primitive' epiphytic *Liparis* (Cameron, 2005). At least one of these *Liparis* species (*L. viridiflora*) has $n = 15$ (Mehra & Sehgal, 1980), indicating the karyological affinity between these two genera. The occurrence of $n = 15$ in Malaxideae further supports the hypothesis that the karyological evolution of the family was principally through dysploidy of approximately one chromosome in the three principal ploidy levels, $n = 7, 14, 21 \pm 1$ (Felix & Guerra, 2000, 2005).

In tribe Vandaeae, a group of orchids principally known from the Old World, $n = 19$ predominates in subtribes Aeridinae and Angraecinae, whereas $n = 25$ predominates in Aerangidinae and $n = 20$ in Polystachyinae (*sensu* Chase *et al.*, 2003). The latter is considered the sister group of the other subtribes of Vandaeae (Chase *et al.*, 2003; van den Berg *et al.*, 2005; Carlswald *et al.*, 2006). *Polystachya*, the largest genus of Polystachyinae and the only one with known chromosomal counts, had $n = 20$ in 35 of the 41 species analysed. This haploid number also occurred in various genera of Aeridinae and in some Angraecinae, suggesting that $x = 20$ is the basic number for the tribe Vandaeae and that $x = 19$ represents a secondary basic number. Subtribes Aerangidinae and Angraecinae are considered individually to be polyphyletic, but together they form the more widely circumscribed monophyletic clade Angraecinae *s.l.* (Carlswald *et al.*, 2006). Cytologically, the two tribes have shown a distinct base number ($x = 19$ and $x = 25$) and at least Aerangidinae, with $x = 25$, seems to represent a well-defined branch of Epidendroideae.

Among the subtribes with undefined taxonomic positions (Chase *et al.*, 2003), Agrostophyllinae and Collabinae predominantly have $n = 20$, whereas in Dendrobiinae $n = 19$ predominates in all genera except *Epigeneium* and *Saccoglossum* (both with $n = 20$ in the single species analysed). Therefore, Dendrobiinae may be cytologically related to tribe Vandaeae, which includes some subtribes with $x = 19$. Among Dendrobiinae, the two genera largely investigated, *Bulbophyllum* and *Dendrobium*, showed relatively little variation. In contrast, in Collabiinae, the two genera with many species investigated, *Calanthe* and *Phaius*, exhibited a large variation in chromosome numbers.

A karyotypic aspect observed in four genera and seven species of subfamily Epidendroideae is the

presence of one or more pairs of late-condensing chromosomes. Among orchids, this type of chromosome was recorded for the genus *Habenaria* (Felix & Guerra, 1998), in some species of subtribe Oncidiinae (Felix & Guerra, 2000) and in the genus *Spiranthes* of New Zealand (Dawson, Maloy & Beuzember, 2007). Late-condensing chromosomes have also been observed in other angiosperms, e.g. in some Velloziaceae (Melo *et al.*, 1997) or in species of *Arachis* L. (Fabaceae) with the A genome, where they are used as a cytogenetic marker (Fernandez & Krapovickas, 1994). *Cattleyella araguaiensis*, a species recently separated from *Cattleya* (van den Berg & Chase, 2004b) stood out from the other species of *Cattleya* that were analysed by having at least one pair of late-condensing chromosomes.

The data presented here reaffirm the extensive variation in chromosome numbers encountered in subfamily Epidendroideae. Only five of the 128 genera with chromosome records for more than five species have stable chromosome numbers. As the large majority of these genera have haploid numbers between 15 and 25 (principally 19 and 20), each of these numbers may have arisen independently several times during the evolution of the family.

The principal karyological difference between tribes Epidendreae, Cymbidieae, Podochileae and Vandaeae, together comprising the large majority of the Epidendroideae orchids, is the predominance of $n = 20$ in Epidendreae, $n = 21$ in Cymbidieae (Felix & Guerra, 2000) and $n = 19$ in the last two tribes. Multiples of $n = 7$, especially $n = 21$ or nearly 21, also predominate in the majority of the genera of subfamily Orchidoideae (Martínez, 1985; Yokota, 1990; Pridgeon *et al.*, 1997; Felix & Guerra, 2005). Among orchids in general, $n = 21$ is a recurring chromosome number that appears to be related to the probable basic number of the family $x_1 = 7$ (Felix & Guerra, 1999, 2000, 2005). The principal polyploid series has been hypothesized to be $n = 7, 14, 21$, with a variation of ± 1 at each ploidy level (Felix & Guerra, 2005). According to this assumption, dysploid reduction occurred in the large majority of the tribes of Epidendroideae ($x = 21, 20, 19$), whereas ascending dysploidy occurred only in the subtribe Angraecinae *sl.* ($x = 25$).

ACKNOWLEDGEMENTS

The authors would like to thank CAPES (Coordenação de Aperfeiçoamento de Pessoal de Nível Superior) and CNPq (Conselho Nacional de Desenvolvimento Científico e Tecnológico) for their financial support and Celso Pires from Taquaritinga do Norte, Pernambuco, for granting us access to his private collection to perform the karyological analyses.

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Appendix 1. Chromosome numbers in epidendroid orchids, organized according to Chase *et al.* (2003), except the cymbidioid phylad *sensu* Dressler (1993).

| TAXON | <i>n</i> | <i>2n</i> | Source |
|---|-------------|----------------|----------------------------------|
| TRIBE NEOTTIEAE | | | |
| <i>Aphyllorchis caudata</i> Rolfe ex Downie | | ca. 36 | TK84 |
| <i>Cephalanthera damasonium</i> (Mill.) Druce (as <i>C. alba</i>) | | 36 | F69 |
| <i>C. damasonium</i> (Mill.) Druce | 18 | 36 | TK84, G84, 88, GJ91, GJ96 |
| <i>C. longifolia</i> (L.) Fritsch (as <i>C. ensifolia</i>) | 16, 17 | 32, 34 | TK84, G84, GJ90 |
| <i>C. epipactoides</i> Fisch. & Meyer | | 32 | G85, G88 |
| <i>C. erecta</i> (Thunb.) Blume | | 34 | TK84, G88, GJ91 |
| <i>C. erecta</i> (Thunb.) Blume (as <i>C. shizuoi</i>) | | 32 | F69, TK84 |
| <i>C. erecta</i> f. <i>subaphylla</i> (Miyabe & Kudô) M.Hiroe (as <i>C. subaphylla</i>) | | 34 | G85 |
| <i>C. falcata</i> (Thunb.) Blume | | 34 | TK84, G88, GJ91 |
| <i>C. longibracteata</i> Blume | | 32 | TK84, G88, GJ91 |
| | | 34, 36 | GJ94 |
| <i>C. longifolia</i> (L.) Fritsch (as <i>C. grandiflora</i>) | 18 | 36 | TK84, G88 |
| <i>C. longifolia</i> (L.) Fritsch (= <i>C. ensifolia</i>) | 16 | 32 | TK84, G84, G85, G88, GJ91 |
| <i>C. rubra</i> (L.) Rich. | | 36 | TK84, G84, G88, GJ91 |
| | | 44 | G85 |
| | | 32, 36 | F69 |
| <i>Epipactis atrorubens</i> (Hoff.) Schult. (as <i>E. atropurpurea</i>) | 20 | 30, 38, 40, 60 | TK84, G84, 85, 88, GJ03 |
| <i>E. atrorubens</i> (Hoff.) Schult. (as <i>E. rubiginosa</i>) | | 40 | F69 |
| <i>E. exilis</i> P.Delforge (as <i>E. gracilis</i> B.Baumann & H.Baumann) | | 40 | GJ03 |
| <i>E. fageticola</i> (C.E.Hermos.) Devillers-Tersch. | | | |
| <i>E. falcata</i> Sw. | | 24 | TK84 |
| <i>E. gigantea</i> Dougl. ex Hook. | 20 | 40 | TK84 |
| <i>E. helleborine</i> (L.) Crantz | 20 | 40 | G81, G84, G84, GJ91, GJ96, GJ03 |
| | 18, 18 + 2B | 32, 38, 40 | GJ06 |
| <i>E. helleborine</i> subsp. <i>latina</i> Rossi & Klein | 19 | | GJ91 |
| <i>E. helleborinae</i> subsp. <i>tremolsii</i> Klein | | 40 | G88, GJ91 |
| <i>E. helleborine</i> subsp. <i>orbicularis</i> (K.Richt.) E.Klein (as <i>E. distans</i>) | | 40 | GJ03 |
| <i>E. latifolia</i> Sw. | 20 | 40 | G81, TK84, G84, GJ90, GJ94 |
| <i>E. leptochilla</i> (Godf.) Godf. | | 36 | TK84 |
| <i>E. leptochila</i> subsp. <i>futakii</i> (Mered'a & Potucek) Kreutz (as <i>E. futakii</i>) | | 40 | GJ03 |
| <i>E. microphylla</i> (Ehrh.) Sw. | | 40 | TK84, GJ03 |
| <i>E. muelleri</i> Godfrey | | 38 | GJ03 |
| <i>E. palustris</i> (L.) Crantz | 20 | 40 | G81, TK84, G84, GJ91, GJ00, GJ03 |
| <i>E. papillosa</i> Franch. & Savat. | 20 | 40 | TK84, GJ94 |
| <i>E. papillosa</i> Franch. & Savat. (as <i>E. sayekiana</i>) | | 40 | TK84 |
| <i>E. persica</i> (Soó) Hausskn. ex Nannf. | 20 | 40 | TK84 |
| <i>E. phyllanthes</i> G.E.Sm. | | 36 | TK84 |
| <i>E. phyllanthes</i> var. <i>phyllanthes</i> (as <i>E. confusa</i>) | 20 | 40 | TK84 |
| <i>E. placentina</i> L.Bongiorni & P.Grunanger | | 38 | GJ03 |
| <i>E. purpurata</i> Sm. (as <i>E. pseudopurpurata</i>) | | 40, ca. 40 | G88, GJ96, GJ03 |
| <i>E. royleana</i> Lindl. | 20 | 40 | TK84, G84, GJ90 |
| <i>E. veratrifolia</i> Boiss. & Hohen. (as <i>E. consimilis</i>) | 20 | 40 | TK84, G85, GJ90, GJ91, GJ94 |
| <i>Limodorum abortivum</i> (L.) Sw. | | 56, 64 | GJ03 |
| <i>Neottia asiatica</i> Ohwi | | 36 | TK84 |
| | | 50 | A08 |
| <i>N. camtschatea</i> (L.) Rchb. | | 40 | G88 |
| <i>N. cordata</i> (L.) Rich. (as <i>Epipactis cordata</i>) | | 40 (34 + 6B) | G85 |
| <i>N. inayatii</i> (Duthie) Beavard | 21 | 42 | TK84, G84, GJ90 |
| <i>N. listeroides</i> Lindl. | 20 | 40 | TK84, GJ90, GJ94 |
| <i>N. nidus-avis</i> (L.) Rich. | 18 | 36 | TK84, G88, GJ91, |
| TRIBE SOBRALIEAE | | | |
| <i>Elleanthus brasiliensis</i> Rchb.f. | | 50 | PW |
| <i>Sobralia sessilis</i> Lindl. | | 48 | PW |

Appendix 1. *Continued*

| TAXON | <i>n</i> | <i>2n</i> | Source |
|---|----------|----------------|-----------|
| TRIBE GASTRODIEAE | | | |
| <i>Gastrodia cunninghamii</i> Hook.f. | | 40 | D07 |
| <i>G. minor</i> Petrie | | 40 | D07 |
| <i>G. aff. sesamoides</i> | | 38–40 | D07 |
| <i>Gastrodia</i> sp. | | 38–40 | D07 |
| TRIBE CALYPSOEAE | | | |
| <i>Calypso bulbosa</i> (L.) Oakes | | 28 | G84 |
| TRIBE EPIDENDREAE | | | |
| Subtribe Ponerineae | | | |
| <i>Isochilus linearis</i> (Jacq.) R.Br. | | 40 | PW |
| Subtribe Blettiinae | | | |
| <i>Bletia catenulata</i> Ruiz & Pavon | | 40 | PW |
| <i>B. catenulata</i> (as <i>B. rodriguesii</i> Cogn.) | | 40 | TK84 |
| <i>B. purpurea</i> (Lam.) DC. (as <i>B. verecunda</i>) | | 60 | TK84 |
| Subtribe Pleurothallidinae | | | |
| <i>Acianthera ochreatea</i> (Lindl.) Pridgeon & M.W.Chase | | 40 | PW |
| <i>A. aurantiolateritia</i> (Speg.) Pridgeon & M.W.Chase (as <i>Pleurothallis aurantiolateritia</i>) | | 40 | G85 |
| <i>A. brevipes</i> (H. Focke) Pridgeon & M.W.Chase (as <i>P. brevipes</i>) | | 43 | G85 |
| <i>A. aff. casapensis</i> (Lindl.) Pridgeon & M.W.Chase (as <i>Pleurothallis aff. cofeicola</i>) | | 40 | G85 |
| <i>A. luteola</i> (Lindl.) Pridgeon & M.W.Chase (as <i>Pleurothallis luteola</i>) | | 40 | G85 |
| <i>A. teres</i> (Lindl.) Borba (as <i>Pleurothallis teres</i>) | | 40 | G85 |
| <i>A. pubescens</i> (Lindl.) Pridgeon & M.W.Chase (as <i>Pleurothallis vittata</i>) | 21 | | TK84 |
| <i>Anathallis obovata</i> (Lindl.) Pridgeon & M.W.Chase (as <i>P. obovata</i>) | | 43, 42, 45 | G85 |
| <i>Masdevallia civilis</i> Rchb.f. & Warsc. | | 36 | G85 |
| <i>M. coccinea</i> Linden ex. Lindl. | | 44 | TK84 |
| <i>Pabstiella tripterantha</i> (Rchb.f.) F. Barros (as <i>P.procumbens</i>) | 16 | | TK84 |
| <i>Pleurothallis alopec Luer</i> | | 36 | G85 |
| <i>P. bivalvis</i> Lindl. | | 77 | G85 |
| <i>P. bivalvis</i> Lindl. (as <i>P. chanchamayoensis</i>) | | 84 | G85 |
| <i>P. carinata</i> Schweinf. | | 40 | G85 |
| <i>P. matudana</i> C.Schweinf. | | 68, 72 | G85 |
| <i>P. revoluta</i> (Ruiz. & Pav.) Garay | | 40, 80, ca. 80 | G85, GJ94 |
| <i>P. ruscifolia</i> (Jacq.) R.Br. | | 38 | G85 |
| <i>P. saccatilabia</i> Schweinf. | | 38 | G85 |
| <i>P. tridentata</i> Klotz | | 36 | G85 |
| <i>P. xanthochlora</i> Rchb.f. | | 40 | G85 |
| <i>Pleurothallis</i> sp. | | 38 | G85 |
| <i>Scaphosepalum verrucosum</i> (Rchb.f.) Pfitzer (as <i>Masdevallia ochthodes</i>) | | 64 | TK84 |
| <i>Specklinia grobyi</i> (Bateman ex Lindl.) F.Barros (as <i>Pleurothallis grobyi</i>) | | 20 | G85 |
| <i>Stelis argentata</i> Lindl. | | 38 | G85 |
| <i>S. ciliaris</i> Lindl. | 16 | | TK84 |
| <i>S. gelida</i> (Lindl.) Pridgeon & M.W.Chase (as <i>Pleurothallis gelida</i>) | | 32, 64 | G85 |
| <i>S. pachyglossa</i> (Lindl.) Pridgeon & M.W.Chase (as <i>Pleurothallis pachyglossa</i>) | | 38 | G85 |
| <i>S. restrepioides</i> (Lindl.) Pridgeon & M.W.Chase (as <i>Pleurothallis restrepioides</i>) | | 76, 78 | G85 |
| <i>S. segoviensis</i> (Rchb.f.) Pridgeon & M.W.Chase (as <i>Pleurothallis segoviensis</i>) | | 42 | G85 |
| <i>S. velaticaulis</i> (Rchb.f.) Pridgeon & M.W.Chase (as <i>Pleurothallis velaticaulis</i>) | | 34 | G85 |
| Subtribe Laeliinae | | | |
| <i>Brassavola cucullata</i> R.Br. | | 40 | TK84 |
| <i>B. grandiflora</i> Lindl. | 20 | | TK84 |
| <i>B. nodosa</i> Hook. | | 40 | TK84, PW |
| <i>B. tuberculata</i> Hook. | | 40 | DA09, PW |
| <i>B. tuberculata</i> Hook. (as <i>Brassavola perrinii</i>) | 20 | | TK84 |
| <i>Broughtonia sanguinea</i> (Sw.) R.Br. | 20 | | TK84 |
| <i>Cattleya amethystoglossa</i> Linden & Rchb.f. ex R.Warner | | 40 | PW |
| <i>C. bicolor</i> Lindl. | | 40, 80 | TK84 |
| <i>C. bicolor</i> var. <i>bicolor</i> (as <i>C. bicolor</i> var. <i>measuresiana</i>) | | 80 | TK84 |
| <i>C. dorminiana</i> Rchb.f. | | 40 | TK84 |
| <i>C. dowiana</i> Bateman | 20 | | TK84 |
| <i>C. dowiana</i> var. <i>aurea</i> (Linden) B.S.Williams & Moore | | 40 | TK84 |
| <i>C. elongata</i> Barb. Rodr. | | 80 | PW |
| <i>C. forbesii</i> Lindl. | | 54–60 | TK84 |
| <i>C. gaskelliana</i> (N.E.Br.) B.S.Williams | 20 | | TK84 |

Appendix 1. Continued

| TAXON | <i>n</i> | <i>2n</i> | Source |
|---|----------|-------------|------------------------|
| <i>Cattleya granulosa</i> Lindl. | | 40 | PW |
| <i>C. guttata</i> Lindl. | | 40 | TK84 |
| <i>C. harrisoniana</i> Bateman ex Lindl. | 20 | 40 | TK84 |
| <i>C. intermedia</i> Graham ex Hook. | | 40 | TK84 |
| <i>C. intermedia</i> var. <i>alba</i> | | 41 + 1f | TK84 |
| <i>C. labiata</i> Lindl. | 20 | 40 | M73, TK84 |
| | | 46 | TK06 |
| <i>C. labiata</i> var. <i>amesiana</i> | 20, 21 | 40, 41 | TK84 |
| <i>C. lueddemanniana</i> Rchb.f. | | 40 | TK84 |
| <i>C. mossiae</i> C.Parker ex Hook. | 20 | 40 | TK84 |
| <i>C. nobilior</i> Rchb.f. | | 42 | PW |
| <i>Cattleya nobilior</i> var. <i>amaliae</i> Pabst | | 42 | PW |
| <i>C. percivaliana</i> (Rchb.f.) O'Brien | 20 | 40 | TK84 |
| <i>C. tigrina</i> Rich. (as <i>C. leopoldii</i>) | | 40 | TK84 |
| <i>C. trianae</i> Linden & Rchb.f. | 20 | 40 | TK84 |
| <i>C. velutina</i> Rchb.f. | | 40 | TK84 |
| <i>C. walkeriana</i> Gardn. | | 40 | TK84, PW |
| <i>C. walkeriana</i> var. <i>princeps</i> L.C.Menezes | | 80 | PW |
| <i>C. warnerii</i> T.Moore ex Warner | | 40 | TK84 |
| <i>Cattleya warscewiczii</i> Rchb.f. (as <i>C. gigas</i>) | 20 | 40 | TK84 |
| <i>Cattleya</i> sp. | | 46, 56, 76 | GJ91 |
| <i>Cattleyella araguiensis</i> (Pabst) van den Berg | | 40 | PW |
| <i>Caularthron bicornutum</i> (Hook.) Raf. | 20 | 40 | M73 |
| <i>Dimerandra emarginata</i> (Meyer) Hoehne | | 40 | G88, PW |
| <i>D. stenopetala</i> Schltr. | | 40 | TK84 |
| <i>Encyclia advena</i> (Rchb.f.) Porto & Brade | | 40 | PW |
| <i>Encyclia advena</i> (as <i>E. megalantha</i>) | | 40 | TK84 |
| <i>E. flava</i> (Lindl.) Porto & Brade | | 40 | PW |
| <i>E. patens</i> Hook. (as <i>E. odoratissima</i>) | | 40 | TK84 |
| <i>E. oncioides</i> (Lindl.) Schltr. | | 40 | PW |
| <i>E. serroniana</i> (Barb. Rodr.) Hoehne (as <i>E. odoratissima</i> var. <i>serroniana</i>) | | 40 | TK84 |
| <i>E. tampensis</i> (Lindl.) Small (as <i>Epidendrum tampense</i>) | 20 | 40 | TK84 |
| <i>Epidendrum angustatum</i> (T.Hashim.) Dodson (as <i>Neolehmannia angustata</i>) | | 36 | GJ94 |
| <i>Epidendrum appendiculatum</i> T.Hashimoto | | 38 | GJ94 |
| <i>E. avicula</i> Lindl. | | 38, 40 | TK84, G, J94, DA09, PW |
| <i>E. avicule</i> Lindl. (as <i>Lanium avicula</i>) | | 40 | |
| <i>E. blepharistes</i> Barker ex Lindl. (as <i>E. funkii</i>) | | 40 | GJ94 |
| <i>E. calanthum</i> Rchb.f. & Warsc. | | 30 | PI09 |
| <i>E. ciliare</i> L. | 20 | 40 | TK84, G85 |
| | 20 | 40, 80, 160 | TK84 |
| <i>E. cinnabarinum</i> Salzm. | 108–124 | ca. 240 | PW |
| <i>E. cochlidium</i> Lindl. | | 28 | PI09 |
| <i>E. cooperianum</i> Bateman (as <i>E. longispathum</i> Barb. Rodr.) | | 40 | TK84 |
| <i>E. cristatum</i> Ruiz & Pavon (as <i>E. raniferum</i> Lindl.) | 20 | 40 | TK84 |
| <i>E. denticulatum</i> Barb. Rodr. | | 40 | TK84, PI09 |
| <i>E. difforme</i> Jacq. | | 39–40 | TK84 |
| | | 40 | PW |
| <i>E. diffusum</i> Sw. | 20 | 40 | TK84 |
| <i>E. ellipticum</i> Grah. | | 56 | TK84 |
| | | 68 | PW |
| <i>E. elongatum</i> Jacq. | | | |
| <i>E. flexuosum</i> G.Mey | | 24 | PI09 |
| <i>E. fulgens</i> Brongn. | | 28 | PI09 |
| <i>E. fulgens</i> Brongn. (as <i>E. mosenii</i>) | | 24 | TK84 |
| <i>E. ibaguense</i> Kunth | | 70 | PI09 |
| <i>E. lanipes</i> Lindl. | | 40 | G85 |
| <i>E. latilabrum</i> Lindl. | | 40 | PW |
| <i>E. loefgrenii</i> Cogn. | | 40 | TK84 |
| <i>E. magnoliae</i> Muhl. (as <i>E. conopseum</i>) | 20 | 40 | TK84 |
| <i>E. myrmecophorum</i> Barb. Rodr. | | 120 | PI09 |
| <i>E. munroeanum</i> | | 40 | TK84 |

Appendix 1. *Continued*

| TAXON | <i>n</i> | <i>2n</i> | Source |
|--|----------|----------------------------|----------------------------|
| <i>E. nocturnum</i> Jacq. | 20 | ca. 80 40, 80 80 | TK84 TK84 TK84 PW |
| <i>Epidendrum nocturnum</i> var. <i>guadeloupense</i> | | 42–48 | TK84 |
| <i>E. obrienianum</i> Rolfe | | 40 | G81 |
| <i>E. paniculatum</i> Barb. Rodr. (as <i>E. floribundum</i> Kunth) | | 40 | TK84 |
| <i>E. patens</i> Sw. | | 40 | TK84 |
| <i>E. propinquum</i> Rich. & Gall. | | 40 | TK84 |
| <i>E. puniceoluteum</i> F.Pinheiro and F.Barros | | 52 | PI09 |
| <i>E. purpureum</i> Barb. Rodr. | | 56 120 | TK84 PI09 |
| <i>E. radicans</i> Pav. | 19 | 40, 70 60 | M73 TK84 PI09 |
| <i>E. rigidum</i> Jacq. | | 40 | TK84, PW |
| <i>E. secundum</i> Jacq. | | 28, 40, 48, 52, 68, | PI09 |
| <i>E. secundum</i> Jacq. (as <i>E. brachyphyllum</i>) | 30 | | TK84 |
| <i>E. secundum</i> Jacq. | | 56 | TK84 |
| <i>Epidendrum aff secundum</i> (as <i>Epidendrum aff. brachyphyllum</i>) | 14 | | TK84 |
| <i>E. xanthinum</i> Lindl. | | ca. 80 40 28, 30, 60 | TK84 G88 PI09 |
| <i>Guarlanthe aurantiaca</i> (Bateman ex Lindl.) Dressler & W.E.Higgins (as <i>Cattleya aurantiaca</i>) | | 40 | TK84 |
| <i>G. bowringiana</i> (O'Brien) Dressler & W.E.Higgins (as <i>Cattleya bowringiana</i>) | 20 | 40 | TK84 |
| <i>Jacquiella globosa</i> (Jacq.) Schltr. | | 38 | PW |
| <i>Laelia albida</i> Bateman ex Lindl. | | 42, ca. 63 | TK84 |
| <i>L. anceps</i> Lindl. | | 40 | TK84 |
| <i>Laelia anceps</i> subsp. <i>dawsonii</i> (J.Anderson) Rolfe (as <i>L. anceps</i> var. <i>sanderiana</i>) | | 40 | TK84 |
| <i>L. autumnalis</i> (Lex.) Lindl. | | 41, 42 | TK84 |
| <i>L. gouldiana</i> Rchb.f. | | 40, 60 | TK84 |
| <i>L. peciosa</i> (Kunth) Schltr. (as <i>L. grandiflora</i>) | 20 | | TK84 |
| <i>L. marginata</i> (Lindl.) L.O.Williams | | 40 | PW |
| <i>L. marginata</i> (Lindl.) L.O.Williams (as <i>Schomburgkia crispa</i> Lindl.) | | 40 | TK84 |
| <i>L. rubescens</i> Lindl. | 20 | 40 | TK84 |
| <i>L. rubescens</i> Lindl. (as <i>L. peduncularis</i>) | | 40–44 | TK84 |
| <i>Leptotes unicolor</i> Barb. Rodr. | | 40 | TK84, DA09 |
| <i>Prosthechea brassavolae</i> (Rchb. f.) W. E. Higgins (as <i>Epidendrum brassavolae</i>) | 20 | 40 | TK84 |
| <i>P. caetensis</i> (Bicalho) W.E.Higgins | | 80 | PW |
| <i>P. calamaria</i> (Lindl.) W.E.Higgins (as <i>Hormidium calamarium</i>) | | 40 | TK84 |
| <i>P. campylostalix</i> (Rchb. f.) W.E.Higgins (as <i>Epidendrum campylostalix</i>) | 20 | 40 | TK84 |
| <i>P. citrina</i> (Lex.) W.E.Higgins (as <i>Cattleya citrina</i>) | | | |
| <i>P. cochleata</i> (L.) W.E.Higgins (as <i>E. cochleatum</i>) | 20 | 40 | TK84 |
| <i>P. fragrans</i> (Sw.) W.E.Higgins | | 40 | PW |
| <i>P. fragrans</i> (Sw.) W.E.Higgins (as <i>Hormidium fragrans</i>) | | 40 | TK84 |
| <i>P. glumacea</i> (Lindl.) W.E.Higgins (as <i>Hormidium glumaceum</i>) | | 40 | TK84 |
| <i>P. lindenii</i> (Lindl.) W.E.Higgins (as <i>E. lindenii</i>) | | 56 | TK84 |
| <i>P. linkiana</i> (Klotzsch) W.E.Higgins (as <i>Epidendrum linkianum</i>) | ca. 20 | | TK84 |
| <i>P. mariae</i> (Ames) W.E.Higgins (as <i>E. mariae</i>) | 20 | 40 | TK84 |
| <i>P. ochracea</i> (Lindl.) W.E.Higgins (as <i>Epidendrum ochraceum</i>) | 20 | 40 | TK84 |
| <i>P. prismatocarpa</i> (Rchb.f.) W.E.Higgins (as <i>Epidendrum prismatocarpum</i>) | | 40 | TK84 |
| <i>P. vespa</i> (Vell.) W E Higgins | | 40 | PW |
| <i>Prosthechea vespa</i> (Vell.) W E Higgins (as <i>Hormidium variegatum</i>) | | 40 | TK84 |
| <i>Psychilis atropurpurea</i> (Willd.) Saulea (as <i>Epidendrum atropurpureum</i>) | 20 | 40 | TK84 |
| <i>Rhyncholaelia digbyana</i> (Lindl.) Schltr. (as <i>Brassavola digbyana</i>) | | 40 | TK85 |
| <i>Scaphyglottis reflexa</i> Lindl. (as <i>Hexisea reflexa</i>) | 19 | 38 | G85 |
| <i>S. prolifera</i> (R.Br.) ex Lindl.) Cogn. | | 40 | GJ94 |
| <i>S. fusiformis</i> (Griseb.) R.E.Schult. | | 40 | PW |
| <i>Sophronitis briegeri</i> (Blumensch. ex Pabst) Van den Berg & M.W.Chase (as <i>Laelia briegeri</i>) | | 80 | TK84 |
| <i>S. caulescens</i> (Lindl.) Van den Berg & M.W.Chase (as <i>Laelia caulescens</i>) | | 80 | TK84 |

Appendix 1. Continued

| TAXON | <i>n</i> | <i>2n</i> | Source |
|--|----------|------------|----------------------|
| <i>S. cernua</i> Lindl. | | 40 | TK84, DA090 |
| <i>S. cinnabarina</i> (Bateman ex Lindl.) Van den Berg & M.W.Chase (as <i>Laelia cinnabarina</i>) | | 40 | TK84 |
| <i>S. crispata</i> (Thunb.) Van den Berg & M.W.Chase (as <i>Laelia crispilabia</i>) | | 80 | TK84 |
| <i>S. crispata</i> (Thunb.) Van den Berg & M.W.Chase (as <i>Laelia flava</i>) | | 40 | TK84 |
| <i>S. crispata</i> (Thunb.) Van den Berg & M.W.Chase (as <i>Laelia rupestris</i>) | | 80 | TK84 |
| <i>S. esalqueana</i> (Blumensch. ex Pabst) Van den Berg & M.W.Chase (as <i>Laelia esalqueana</i>) | | 40 | TK84 |
| <i>S. fournieri</i> (Cogn.) Van den Berg & M.W.Chase (as <i>Laelia oestemayeri</i>) | | 40 | TK84 |
| <i>S. harpophylla</i> (Rchb. f.) Van den Berg & M.W.Chase (as <i>Laelia harpophylla</i>) | | 40 | TK84 |
| <i>S. lobata</i> (Lindl.) van den Berg & M.W.Chase | | 40 | PW |
| <i>S. longipes</i> (Rchb. f.) Van den Berg & M.W.Chase (as <i>Laelia longipes</i>) | | 40, 60, 80 | TK84 |
| <i>S. milleri</i> (Blumensch. ex Pabst) Van den Berg & M.W.Chase (as <i>Laelia milleri</i>) | | 40 | TK84 |
| <i>S. mixta</i> (Hoehne) Van den Berg & M.W.Chase (as <i>Laelia mixta</i>) | | 40 | TK84 |
| <i>S. perrinii</i> (Lindl.) Van den Berg & M.W.Chase (as <i>Laelia perrinii</i>) | 20 | | TK84 |
| <i>S. pumila</i> (Hook.) Van den Berg & M.W.Chase (as <i>Laelia pumila</i>) | | 40 | TK84 |
| <i>S. purpurata</i> (Lindl. & Paxton) van den Berg & M.W.Chase | | 40 | PW |
| <i>S. purpurata</i> (Lindl. & Paxton) van den Berg & M.W.Chase (as <i>Laelia purpurata</i>) | | 40 | M77 |
| <i>S. tereticaulis</i> (Hoehne) Van den Berg & M.W.Chase (as <i>Laelia tereticaulis</i>) | | 80 | TK84 |
| TRIBE PODOCHILEAE | | | |
| Subtribe Eriinae | | | |
| <i>Ceratostylis subulata</i> Blume | | 40 | G88 |
| <i>Cryptochilus lutea</i> Lindl. | 19 | | M73 |
| <i>C. sanguineus</i> Wall. | 19 | | M73 |
| <i>Eria acervata</i> Lindl. | | 38 | G85, G88, GJ91, GJ96 |
| <i>E. alba</i> L. | | 40 | G81 |
| <i>E. amica</i> Rchb.f. (as <i>E. confusa</i>) | 20 | | M77 |
| | 18 | | G88, GJ94 |
| <i>E. bambusifolia</i> Lindl. | 19 | 38 | G81, GJ91 |
| <i>E. biflora</i> Griff. | 21 | 42 | G81, G84 |
| <i>E. brachystachya</i> Rchb.f. | | 44 | TK84 |
| <i>E. bractescens</i> Lindl. | | 40 | TK84 |
| | | 38 | G88 |
| <i>E. bulbophylloidea</i> Tang & Wang | | 42 | GJ91, GJ96 |
| <i>E. clemensiae</i> Leavitt | | 44 | TK84 |
| <i>E. corneri</i> Rchb.f. | | 36 | TK84, G88 |
| <i>E. corneri</i> Rchb. f. (as <i>E. yakuschimensis</i>) | | 36 | TK84 |
| <i>E. coronaria</i> (Lindl.) Rchb.f. | 18 | 36 | M73, G88 |
| <i>E. crassicaulis</i> Hook.f. | 19 | | G81 |
| <i>E. crassipes</i> Ridl. (as <i>E. reptans</i>) | | 40 | TK84 |
| | | 76 | G88 |
| <i>E. cymbidifolia</i> Ridl. | | 42 ± 2 | TK84 |
| <i>E. dalzellii</i> Lindl. | | 24 + 5–7B | TK84 |
| | | 24 + 10B | G84 |
| | | 24 + 5B | G84 |
| | | 42 | G84 |
| <i>E. excavata</i> Lindl. | 20 | | M73 |
| | | 38 | G84 |
| <i>E. exilis</i> Hook.f. | | 38 | TK84 |
| <i>E. feddeana</i> Schltr. | | 38 | G88 |
| <i>E. ferruginea</i> Lindl. | | 38 | G84 |
| <i>E. fitzalanii</i> F.Muell. (as <i>E. solomonensis</i>) | | 38 | G88 |
| <i>Eria floribunda</i> Lindl. | | 44 | TK84 |
| | | 38 | G88 |
| <i>E. floribunda</i> Lindl. (as <i>E. giungii</i>) | 20 | | TK84 |
| <i>E. gigantea</i> Ames | | 66 | TK84 |
| <i>E. graminifolia</i> Lindl. | 19 | 38 | M73, G84 |
| <i>E. hyacinthoides</i> (Blume) Lindl. | | 38 | G88 |
| <i>E. japonica</i> Maxim. (as <i>E. arisanensis</i>) | | 40 | TK84 |
| <i>E. javanica</i> (Sw.) Blume | | 36 | G88 |
| <i>Eria lasiopetala</i> (Willd.) Ormerod (as <i>E. flava</i>) | | 40 | G81 |
| | | 38 | G84 |
| <i>E. microchilos</i> Lindl. | | 24 + 5–11B | TK84, G84 |
| <i>E. muscicola</i> Lindl. | 18 | | G81 |

Appendix 1. *Continued*

| TAXON | <i>n</i> | <i>2n</i> | Source |
|--|-----------|-----------|--------------------------|
| <i>E. mysorensis</i> Lindl. | | 38 | TK84 |
| <i>E. ovata</i> Lindl. | | 38 | G88 |
| <i>E. ovata</i> Lindl. (<i>E. luehensis</i>) | 18 | 36 | M77, TK84 |
| <i>E. ovata</i> var. <i>retroflexa</i> (Lindl.) Garay & H.R.Sweet (as <i>E. nudicaulis</i>) | | 40 | G85 |
| <i>E. pachystachya</i> Lindl. | | 38 | G88 |
| <i>E. paniculata</i> Lindl. | 19 + 0–2B | | G81, GJ91 |
| <i>E. pannea</i> Lindl. | | 38 | G88, GJ91 |
| <i>E. philippinensis</i> Ames | | 40 | TK84 |
| | | 38 | TK84 |
| <i>E. queenslandica</i> T.E.Hunt | | 38 | G88 |
| <i>E. reticosa</i> Wight | | 42 | TK84 |
| <i>E. retusa</i> (Blume) Rchb.f. | | 38 | G88 |
| <i>E. ringens</i> Rchb.f. | | 44 | TK84 |
| <i>E. spicata</i> (D.Don) Hand-Mazz. | | 38 | G81, GJ94 |
| <i>E. spicata</i> (D.Don) Hand-Mazz. (as <i>E. convallarioides</i>) | 20 | | M73 |
| | 19 | 38 | TK84, G88 |
| <i>E. stricta</i> Lindl. | | 40 | G88 |
| <i>E. tomentosa</i> Hayata | | 38 | G88 |
| <i>E. woodiana</i> Ames | | 44 | TK84 |
| <i>E. yakushimensis</i> Nakai | | | |
| <i>Eria</i> sp. | | 38 | G84 |
| <i>Eria</i> sp. | | 38 | GJ91 |
| <i>Eria</i> sp. | | 38 | GJ96 |
| <i>Mediocalcar agathodaemonis</i> J.J.Sm. | | 38 | G88 |
| <i>M. latifolium</i> Schltr. | | | |
| <i>M. paradoxum</i> subsp. <i>latifolium</i> (Schltr.) Schuit. (as <i>M. latifolium</i>) | | 38 | G88 |
| <i>M. aff. pygmaeum</i> | | 85 | G88 |
| <i>M. uniflorum</i> Schltr. (as <i>M. sepikanum</i>) | | 38 | G88 |
| <i>Porpax fibuliformis</i> King & Pantl. | | 24 | G85 |
| <i>P. jerdoniana</i> (Wight) Rolfe | | 42 | G84 |
| <i>P. meriix</i> King & Pantl. | 12 | | TK84 |
| <i>Pseuderia smithiana</i> C.Schweinf. | | 40 | GJ03 |
| <i>Trichotosia lagunensis</i> (Ames) Schuit. & de Vogel (as <i>Eria lagunensis</i>) | | 44 | TK84 |
| <i>T. pulvinata</i> (Lindl.) Kraenzl. (as <i>Eria rufinula</i>) | | 38 | G88 |
| Subtribe Podochilinae | | | |
| <i>Podochilus cultratus</i> Lindl. | 19 | | M73 |
| Subtribe Thelasiinae | | | |
| <i>Phreatia elegans</i> Lindl. | | 32 | G81 |
| <i>Thelasis capitata</i> Blume | | 32 | G88 |
| TRIBE ARETHUSEAE | | | |
| Subtribe Arethusinae | | | |
| <i>Anthogonium gracile</i> Lindl. | | 42 | M73 |
| | 20 | | M73 |
| | 19 | 38 | M73, G84 |
| <i>Anthogonium</i> sp. | | 42 | G84 |
| <i>Arethusa bulbosa</i> L. | | 40 | G84 |
| <i>Arundina graminifolia</i> (D.Don) Hochr. | 20 | 40 | M73, G81, G84, G85, GJ90 |
| <i>A. graminifolia</i> (D.Don) Hochr. (as <i>A. bambusifolia</i>) | 20 | 40 | G84, G85 |
| <i>A. graminifolia</i> (D.Don) Hochr. (as <i>A. chinensis</i>) | | 38 | GJ91, GJ96 |
| <i>Arundina</i> sp. | 16 | 32 | TK84 |
| <i>Arundina</i> spp. | | 40 | G84 |
| <i>Calopogon barbatus</i> (Walter) Ames | | 42 | M77 |
| <i>C. multiflorus</i> Lindl. | | 42 | M77 |
| <i>C. pallidus</i> Chapm. | | 42 | M77 |
| <i>C. pulchellus</i> (Salisb.) R.Br. | | | |
| <i>Calopogon tuberosus</i> (L.) Britton, Sterns & Poggenberg | | 42 | M77 |
| <i>C. tuberosus</i> (L.) Britton (as <i>C. pulchellus</i>) | ca. 13 | ca. 26 | TK84 |
| <i>Eleorchis japonica</i> (A.Gray) Maek. | | 40 | M73 |
| Subtribe Coelogykinae | | | |
| <i>Bletilla formosana</i> (Hayata.) Schltr. | | 36 | M73 |
| | 18 | | TK84 |
| <i>B. hyacinthia</i> | 16 | | TK84 |

Appendix 1. Continued

| TAXON | <i>n</i> | <i>2n</i> | Source |
|--|-------------|------------|--------------------------|
| <i>B. striata</i> (Thunb.) Rehb.f. | 16 | 32 | M73, TK84 G88, GJ90 |
| | | 32, 64 | GJ90 |
| | | 32, 76 | GJ91, GJ96 |
| <i>B. striata</i> (Thunb.) Rehb.f. (as <i>B. striata</i> var. <i>albomarginata</i>) | | 32 | TK84 |
| <i>Coelogyne barbata</i> Griff. | 20 | | M73, G84 |
| <i>C. beccarii</i> Rehb.f. | | 40 | G88 |
| <i>C. corymbosa</i> Lindl. | 20 | | M73 |
| <i>C. cristata</i> Lindl. | 20 | 40 | M73, M77, G88, GJ94 |
| <i>C. fimbriata</i> Lindl. | 20 + 1f | 40 | G81, GJ90, GJ91, GJ96 |
| <i>C. flaccida</i> Lindl. | 20 | 40 | M73, G84, G85 |
| <i>C. fragrans</i> Schltr. | | 40 | G88 |
| <i>C. fuscescens</i> Lindl. | 20 | 40 | M73, G85, GJ06 |
| <i>C. longipes</i> Lindl. | 20 | 40 | M73, G84, GJ91 |
| <i>C. macdonaldii</i> F.Muell. & Kraenzl. | | 40 | GJ03 |
| <i>C. macdonaldii</i> (as <i>C. lamellata</i>) | | 40 | G88 |
| <i>C. micranta</i> Lindl. | 21 | | M77 |
| <i>C. nitida</i> Lindl. | 20 | | G85 |
| <i>C. nitida</i> (Wall. ex D.Don) Lindl. (as <i>C. ochracea</i>) | 20 | | M73, G85 |
| <i>C. oculata</i> Hook.f. | 20 | | M73 |
| | | 38 | G81 |
| <i>C. ovalis</i> Lindl. | 20 | 40 | M73, G84 G88, GJ90, GJ94 |
| | | 80 | GJ96 |
| <i>C. prolifera</i> Lindl. | 20 | | M77 |
| <i>C. prolifera</i> Lindl. (as <i>C. flavida</i>) | 20 | | M73 |
| <i>C. punctulata</i> Lindl. | 19 + (0–2B) | 38 | M77, GJ91, GJ96 |
| <i>C. speciosa</i> (Blume) Lindl. (as <i>Pleione speciosa</i>) | | 80 | GJ91 |
| <i>C. stricta</i> (D.Don) Schltr. (as <i>C. elata</i>) | 20 | | M73 |
| <i>C. viscosa</i> Rehb.f. | | 40 | G88 |
| <i>Dendrochilum longifolium</i> Rehb.f. (as <i>D. bartonii</i> (Ridl.) Schltr.) | | 38 | G88 |
| <i>D. uncatum</i> Rehb.f. (as <i>D. formosanum</i>) | | 30 | M74 |
| <i>Neogyne gardneriana</i> (Lindl.) Rehb.f. (as <i>Coelogyne gardneriana</i>) | 21 | | M77 |
| <i>Otochilus albus</i> Lindl. | 20 | | M73 |
| <i>O. fuscus</i> Lindl. | 20 | 40 | M73, G85 |
| <i>O. porrectus</i> Lindl. | 20 | 40 | M73, G85, G88 |
| <i>Panisea demissa</i> (D.Don) Pfitzer (as <i>P. parviflora</i> Rehb.) | | 40 | G85 |
| <i>P. tricallosa</i> Rolfe | | 40 | GJ91 |
| <i>P. uniflora</i> (Lindl.) Lindl. (as <i>Coelogyne uniflora</i>) | 20 | | M73 |
| <i>Pholidota articulata</i> Lindl. | 20 + O-3B | 40 | M73, TK84, GJ96 |
| | | 38 | GJ96 |
| <i>P. articulata</i> Lindl. (as <i>P. articulata</i> var. <i>griffithii</i> Lindl.) | 20 | | G81, GJ91 |
| <i>P. articulata</i> Lindl. (as <i>P. griffithii</i> Hook.) | | 40 | G85 |
| <i>P. chinensis</i> Lindl. | | 40 | M73 |
| <i>P. imbricata</i> Lindl. (as <i>P. conchoidea</i>) | 20 | | TK84 |
| <i>P. imbricata</i> (Roxb.) Lindl. | 20 | 40 | M73, G84, GJ94 |
| <i>P. imbricata</i> Lindl. (as <i>P. calceata</i>) | | 40 | G85 |
| <i>P. pallida</i> Lindl. | | 40 | G84 |
| <i>P. protracta</i> Hook.f. | 20 | 40 | M73, G85 |
| <i>P. recurva</i> Lindl. | 20 | | M73, TK84 |
| <i>P. rubra</i> Lindl. | | 40 | G85 |
| <i>Pleione bulbocodioides</i> (Franch.) Rolfe | | 40 | G88, GJ91, GJ96 |
| <i>P. bulbocodioides</i> (Franch.) Rolfe (as <i>P. pogonioides</i>) | | 80 | M73 |
| <i>P. coronaria</i> P.J.Cribb & C.Z.Tang | | 40 | GJ96 |
| <i>P. formosana</i> Hayata | | 40 + 0–2B | M73, GJ90, GJ91 |
| | | 40 | GJ06 |
| <i>P. formosana</i> Hayata (as <i>P. priscei</i>) | | 38, 40, 42 | GJ91, GJ96 |
| <i>P. forrestii</i> Schltr. | | 40 | M73, GJ91 |
| <i>P. hookeriana</i> (Lindl.) B. S. Williams | 20 | 40 | M73, G84, GJ91 |
| <i>Pleione humilis</i> Lindl. | 20 | 40 + 0–1B | M73, G84, GJ91 |
| <i>P. limprichtii</i> Schltr. | | 40, 80 | M73, GJ91 |
| <i>P. maculata</i> Lindl. | | 40 | M73, G84, GJ91 |
| <i>P. praecox</i> Lindl. | 20 | 40 | M73, G84, GJ91, GJ94 |
| | 20 + 0–3B | | G81 |
| <i>P. scopulorum</i> W.W.Sm. | | 40 | GJ91 |

Appendix 1. *Continued*

| TAXON | <i>n</i> | <i>2n</i> | Source |
|---|----------|-----------|-----------------|
| <i>P. yunnanensis</i> (Rolfe) Rolfe | | 40 | GJ91, GJ96 |
| <i>Thunia alba</i> Rchb.f. | 20 | 40 | M73, GJ90, GJ94 |
| | ca. 40 | | G81 |
| | | ca. 40 | G85 |
| <i>T. alba</i> Rchb.f. (as <i>T. marshalliana</i> Rchb.f.) | 20 | | M73 |
| | | 38 | G81 |
| <i>T. alba</i> (Lindl.) Rchb.f. (as <i>Phaius albus</i>) | | 42 | G84 |
| | | 40 | G85 |
| <i>T. alba</i> var. <i>bracteata</i> (Roxb.) N.Pearce & P.J.Cribb (as <i>T. venosa</i> Rolfe) | 20 | | G81 |
| TRIBE VANDEAE | | | |
| Subtribe Polystachyinae | | | |
| <i>Polystachya adansoniae</i> Rchb.f. | | 40 | M73, G84 |
| <i>P. affinis</i> Lindl. | | 40 | M73, G84 |
| <i>P. albescens</i> Summerh. | | 40 | M73 |
| <i>P. albescens</i> subsp. <i>imbricata</i> (Rolfe) Summerh. | | ca. 40 | TK84 |
| <i>P. bancoensis</i> Van der Burg | | 40 | G84 |
| <i>P. bennettiana</i> Rchb.f. (as <i>P. stricta</i>) | | 40 | TK84 |
| <i>P. caespitifica</i> subsp. <i>hollandii</i> (L. Bolus) P.J.Cribb & Podz. (as <i>P. hollandii</i>) | | 40 | TK84 |
| <i>P. caloglossa</i> Rchb.f. | | 40 | M73 |
| <i>P. campyloglossa</i> Rolfe | | ca. 80 | TK84 |
| <i>P. concreta</i> (Jacq.) Garay & H.R.Sweet (as <i>P. extinctoria</i>) | 40 | 80 | TK84 |
| <i>P. cooperi</i> Summerh. | | 40 | TK84 |
| <i>P. coriscensis</i> Rchb.f. | | 40 | M73 |
| <i>P. cultriformis</i> Lindl. | | 38, 39 | TK84 |
| <i>P. dendrobiiiflora</i> Rchb.f. (as <i>P. tayloriana</i>) | | 40 | TK84 |
| <i>P. doggettii</i> Rendle & Rolfe | | 81 | TK84 |
| <i>P. dolichophylla</i> Schltr. | | 40 | M73 |
| <i>P. estrellensis</i> Rchb.f. | | 80 | TK84, PW |
| <i>P. eurygnatha</i> Summerh. | | 40 | TK84 |
| <i>P. falax</i> Kraenzl. | | 40 | TK84 |
| <i>P. foliosa</i> (Hook.) Rchb.f. (as <i>P. clavata</i>) | | ca. 80 | TK84 |
| <i>P. fulvilabia</i> Schltr. | | 40 | TK84 |
| <i>P. fusiformis</i> Lindl. | | ca. 40 | TK84 |
| <i>P. galeata</i> (Sw.) Rchb.f. | | 40 | M73, G84, TK84 |
| <i>P. isochiloides</i> Summerh. | | 40 | TK84 |
| <i>P. laxiflora</i> Lindl. | | 40 | M73, TK84 |
| <i>P. mauritiana</i> Spreng. (as <i>P. tessellata</i>) | | 40 | TK84 |
| <i>P. modesta</i> Rchb.f. | | ca. 40 | TK84 |
| <i>P. mukandaensis</i> De Wild. | | 40 | M73 |
| <i>P. nyanzoensis</i> Rendle | | 40 | M73 |
| <i>P. odorata</i> Lindl. | | 40, 80 | M73 |
| | | 40 | TK84 |
| <i>P. polychaete</i> Kraenzl. | | 40 | M73, G84 |
| | ca. 20 | | TK84 |
| <i>P. pubescens</i> Rchb.f. | | ca. 120 | TK84 |
| <i>P. ramulosa</i> Lindl. | | 40 | M73, TK84 |
| <i>P. rhodoptera</i> Rchb.f. | | 40, 41 | M73 |
| | 19 | | TK84 |
| <i>P. ruwenzoriensis</i> Rendle | | 40 | TK84 |
| <i>P. stauroglossa</i> Kraenzl. | | 40 | TK84 |
| <i>P. stuhlmanii</i> Kraenzl. | | 40 | TK84 |
| <i>P. subulata</i> Finet | | 40 | TK84 |
| <i>P. supfiana</i> Schltr. | | 40 | M73 |
| <i>P. transvaalensis</i> Schltr. | | 40 | TK84 |
| <i>P. zambesiaca</i> Rolfe (as <i>P. hislopii</i>) | | 80 | TK84 |
| <i>Polystachya</i> sp. | | 40 | M73 |
| Subtribe Aeridinae | | | |
| <i>Acampe ochracea</i> (Lindl.) Hochr. | | 38 | TK84, G88 |
| <i>A. pachyglossa</i> Rchb.f. | | 38 | G85 |
| <i>A. praemorsa</i> (Roxb.) Blatter & McCann | | 38 | TK84 |
| <i>A. praemorsa</i> (Roxb.) Blatt. & McCann (as <i>A. papillosa</i>) | | 38 | M73 |
| | 18 | 36 | G81, GJ94 |
| | 18, 19 | | TK84 |
| <i>Acampe praemorsa</i> (Roxb.) Blatter & McCann (as <i>A. wightiana</i>) | | 38 | TK84 |

Appendix 1. Continued

| TAXON | <i>n</i> | <i>2n</i> | Source |
|---|----------|------------|----------------------|
| <i>A. praemorsa</i> (Roxb.) Blatter & McCann (as <i>Saccolabium papulosum</i>) | | 38 | M73 |
| <i>A. rigida</i> Buch.-Ham. ex Sm.) P.F.Hunt | 19 | | G85 |
| <i>A. rigida</i> (Buch.-Ham. ex Sm.) P.F.Hunt (as <i>A. longifolia</i>) | 19 | 38 | G81, TK84 |
| <i>A. rigida</i> (Buch.-Ham. ex Sm.) P.F.Hunt (as <i>Aerides rigida</i>) | 19 | | G84 |
| <i>A. rigida</i> (Buch.-Ham. ex Sm.) P.F.Hunt (as <i>Saccolabium longifolium</i>) | 19 | | M73 |
| <i>Aerides crassifolia</i> Par & Rchb.f. | | 38 | TK84 |
| <i>A. crispa</i> Lindl. | 19 | 38 | TK84, G85 |
| <i>A. falcata</i> Lindl. & Paxt. | 19 | 38 | TK84 |
| <i>A. houlettiana</i> Rchb.f. | | | |
| <i>A. lawrenceae</i> Rchb.f. | | 40 | TK84 |
| | 19 | 38 | TK84 |
| <i>A. maculosa</i> Lindl. | | 38 | M73, TK84, G84 |
| <i>A. multiflora</i> Roxb. | 19 | 38 | M73, TK84 |
| <i>A. multiflora</i> Roxb. (as <i>A. affine</i>) | | 38 | G85 |
| <i>A. odorata</i> Lour. | 19 | 38 | M73, TK84, G85, GJ94 |
| <i>A. odorata</i> Lour. (as <i>A. suavissima</i>) | | ca. 38 | M73 |
| | | 38 | TK84 |
| <i>A. odorata</i> Lour. (as <i>A. odorata</i> var. <i>immaculata</i>) | | 76 | TK84 |
| <i>A. ringens</i> Fischer | | 38 | TK84 |
| <i>A. rosea</i> Lodd. ex Lindl. & Paxton (as <i>A. fieldingii</i>) | | 38 | G85 |
| <i>A. rosea</i> Lodd. ex Lindl. & Paxton (as <i>A. williamsii</i>) | | 38 | M73, G88 |
| <i>Arachnis labrosa</i> (Lindl. & Paxton) Rchb.f. (as <i>Armadorum labrosum</i>) | | 38 | G88 |
| <i>Ascocentrum ampulaceum</i> (Roxb.) Schltr. | | 38 | M73 |
| <i>A. curvifolium</i> (Lindl.) Scltr. | | 38 | M73 |
| <i>A. himalaicum</i> (Deb, Sengupta & Malick) Christenson (as <i>Holcoglossum junceum</i>) | | 38 | GJ96 |
| <i>A. miniatum</i> (Lindl.) Schltr. | | 38, ca. 38 | M73 |
| <i>A. rubescens</i> (Rolfe) P.F.Hunt (as <i>Saccolabium rubescens</i>) | 19–20 | | TK84 |
| <i>Biermannia bimaculata</i> (King & Pantl.) King & Pantl. | 18 | | G81 |
| <i>Calymmanthera major</i> Schltr. | | 38 | G88 |
| <i>C. paniculata</i> J.J.Sm. | | 38 | G88 |
| <i>Chilochista lunifera</i> J.J.Sm. | | 38 | TK84 |
| <i>C. usneoidese</i> (Don) Lindl. | | 38 | M73 |
| <i>C. lunifera</i> (Rchb.f.) J.J.Sm. (as <i>Sarcophilus luniferum</i>) | 19 | | M73 |
| <i>Cleisostoma appendiculata</i> (Hook.f.) (as <i>Sarcanthus appendiculatus</i>) | | 38 | M73, TK84 |
| <i>C. discolor</i> Lindl. (as <i>Sarcanthus termissus</i>) | | 38 | M77 |
| <i>C. duplicilobum</i> (J.J.Sm.) Garay (as <i>Sarcanthus carinatum</i>) | | 38 | M73 |
| <i>C. filiforme</i> (Lindl.) Garay (as <i>S. filiformis</i>) | 19 | | M73 |
| <i>C. fuerstenbergianum</i> Kraenzl. (as <i>Sarcanthus flagelliformis</i>) | | 38 | M73 |
| <i>C. paniculatum</i> (Ker Gawler) Garay | | 38 | GJ91 |
| <i>C. peninsularis</i> (Dalz.) (as <i>S. peninsularis</i>) | | 38 | G81, G85 |
| <i>C. recemiferum</i> (Lindl.) Garay | | 38 | G88 |
| <i>C. recemiferum</i> (Lindl.) Garay (as <i>S. recemiferum</i>) | 19 | | G81 |
| <i>Cleisostoma racemiferum</i> (Lindl.) Garay (as <i>Sarcanthus palidus</i>) | | 38 | M73 |
| <i>C. recurvum</i> (Hook.) ined. (as <i>C. rostratum</i>) | | 38 | GJ91 |
| <i>C. striatum</i> (Rchb.f.) Garay | 19, 20 | | TK84 |
| <i>C. striatum</i> (Rchb.f.) N. E. Br. (as <i>Cleisostoma brevipes</i>) | 36 | | M77 |
| <i>C. stronglyloides</i> (Ridl.) Garay (as <i>S. stroyloides</i>) | | 38 | M73 |
| <i>C. subulatum</i> (Blume) as (<i>S. subulatus</i>) | 19 | 38 | M73, G88 |
| <i>C. williamsonii</i> (Rchb.f.) Garay (as <i>S. williamsonii</i>) | 19 | | M77 |
| <i>Cleisostoma</i> sp. as (<i>Sarcanthus</i> sp.) | | 38 | TK84 |
| <i>Cleisostomopsis eberhardtii</i> (Finet) Seidenf. (as <i>Saccolabium eberhardtii</i>) | 19–20 | | TK84 |
| <i>Cottonia peduncularis</i> (Lindl.) Rchb.f. | 19 | 38 | G88, GJ90 |
| <i>C. peduncularis</i> (Lindl.) Rchb.f. (as <i>C. macrostachya</i>) | | 40 | G84 |
| <i>Diplocentrum congestum</i> Wight | 19 | 38 | TK84, G88, GJ90 |
| <i>D. recurvum</i> Lindl. | | 38 | TK84 |
| <i>Diploprora championii</i> (Lindl.) Hook.f. (as <i>D. uraiense</i>) | | 16 | M74 |
| <i>Drymoanthus adversus</i> (Hook.f.) Dockrill | | 76 | D07 |
| <i>D. flavus</i> St.George & Molloy | | 38 | D07 |
| <i>D. minimus</i> (Schltr.) Garay | | 38 | D07 |
| <i>Esmeralda clarkei</i> Rchb.f. (as <i>Arachnis clarkei</i>) | | 42 | GJ91, GJ96 |
| <i>Euanthe sanderiana</i> (Rchb.f.) Schltr. (as <i>Vanda sanderiana</i>) | 19 | 38 | TK84 |
| <i>Gastrochilus calceolaris</i> (Sm.) D.Don | 19 | 38 | M73, GJ94 |
| <i>G. dasypogon</i> (Lindl.) Ktze. | | 38 | M73 |
| <i>G. dasypogon</i> (as <i>Saccolabium dasypogon</i>) | | 38 | TK84 |

Appendix 1. *Continued*

| TAXON | <i>n</i> | <i>2n</i> | Source |
|---|----------|------------|----------------|
| <i>G. distichus</i> (Lindl.) Kuntze (as <i>Saccolabium distichum</i>) | 19 | | M73 |
| <i>G. inconspicuus</i> (Hook.f.) Kuntze (as <i>L. inconspicua</i> Hook.f.) | 19 | | M73, G85, G88 |
| <i>G. intermedius</i> (Griff. ex Lindl.) Kuntze (as <i>Saccolabium calceolare</i>) | 38 | | M73 |
| <i>G. japonicus</i> Schltr. | | 40 | TK84 |
| | | 38 | TK84 |
| <i>G. japonicus</i> (Makino) Schltr. (as <i>G. somai</i>) | | 30 | M74 |
| <i>G. maculatus</i> Kuntze | | | |
| <i>G. matsuran</i> (Makino) Schltr. | | 34 | TK84 |
| <i>G. pseudodistichus</i> (King & Pantl.) Schltr. (as <i>Saccolabium pseudodistichus</i>) | 19 | | M73 |
| <i>Gunnarella robertsii</i> (Schltr.) Senghas (as <i>Chamaeanthus robertsii</i>) | | 38 | G88 |
| <i>Holcoglossum amesianum</i> (Rchb.f.) Christenson (as <i>Vanda amesiana</i>) | | 38 | TK84 |
| <i>H. kimballianum</i> (Rchb.f.) Garay (as <i>V. kimballiana</i>) | | 38 | TK84 |
| <i>Hygrochilus parishii</i> (Veitch & Rchb.f.) Pfitzer (as <i>Vanda parishii</i>) | 19 | 38 | M73, TK84 |
| <i>Luisia boninensis</i> Schltr. | | 40 | TK84 |
| <i>L. brachystachys</i> (Lindl.) Blume | 20 | | M73 |
| <i>L. liukuensis</i> Schltr. | | 38 | M73 |
| <i>L. macrantha</i> Blatt. & McC. | | 38 | TK84, G88 |
| <i>L. tenuifolia</i> Blume | 19 | 38 | TK84, G88 |
| <i>L. tenuifolia</i> (as <i>L. tenuifolia</i> var. <i>evangelinae</i>) | | 38 | G88 |
| <i>L. teres</i> Blume (= <i>L. teretifolia</i>) | 18 | | TK84 |
| <i>L. trichorhiza</i> Blume | 19 | 38 | M73, G81, G88 |
| <i>L. tristis</i> (G. Forst.) Hook.f. (as <i>L. teretifolia</i>) | 19 | 38, ca. 38 | M73, G88 |
| <i>L. volucris</i> Lindl. | 19 | | G85 |
| <i>Micropera manni</i> (Hook.f.) Tang & F.T.Wang (as <i>Sarcochilus manni</i>) | | 38 | G85 |
| <i>M. rostrata</i> (Roxb.) N.P.Balakr. (as <i>Sarcochilus purpureus</i>) | | 38 | M73, TK84 |
| <i>Neofinetia falcata</i> (Thunb.) Hu | | 38 | TK84 |
| <i>Ornithochilus difformis</i> (Wall. ex Lindl.) Schltr. (as <i>Ornithochilus fuscus</i> Wall.) | 19 | 38 | G81, TK84, G88 |
| <i>Papilionanthe biswasiana</i> (Ghose & Mukerjee) Garay (as <i>Aerides biswasianum</i>) | 19 | | M73 |
| <i>P. hookeriana</i> (Rchb.f.) Schltr. (as <i>Vanda hookeriana</i>) | 19 | 38 | TK84 |
| <i>P. teres</i> (Roxb.) Schltr. | | 38 | G88 |
| <i>P. teres</i> (Roxb.) Schltr. (as <i>Vanda teres</i>) | 19 | 38 | TK84, G85 |
| | | 40 | GJ91, GJ96 |
| <i>Papilionanthe tricuspidata</i> (J.J.Sm.) Garay (as <i>Vanda tricuspidata</i>) | | 76 | TK84 |
| <i>P. uniflora</i> (Lindl.) Garay (as <i>A. longicornu</i>) | 19 | 38 | M73, G85 |
| <i>Papilionanthe vandaram</i> (Rchb.f.) Garay (as <i>Aerides vandaram</i>) | | 38 | G85 |
| <i>Paraphalaenopsis denevei</i> (J.J.Sm.) A.D.Hawkes | | 38 | G84 |
| <i>P. serpentina</i> (J.J.Sm.) A.D.Hawkes | | 38 | G84 |
| <i>Pelatantheria ctenoglossa</i> Ridl. | | 38 | M73 |
| <i>P. scolopendrifolia</i> (Makino) Aver. (as <i>Sarcanthus scolopendrifolium</i>) | | 38 | TK84 |
| <i>Phalaenopsis amabilis</i> Blume | 19 | 38 | M73, G81, TK84 |
| <i>P. amabilis</i> var. <i>grandiflora</i> | | 38 | TK84 |
| <i>P. amboinensis</i> T.J.Sm. | 19 | 38 | M73, G81 |
| <i>P. aphrodite</i> Rchb.f. | 19 | 38 | M73, G81 |
| <i>P. buyssoniana</i> Rchb.f. (as <i>Doritis buyssoniana</i>) | | 76 | TK84 |
| <i>P. cornu-cervi</i> Blume & Rchb.f. | | 38 | G81 |
| <i>P. deliciosa</i> Rchb.f. (as <i>Doritis wightii</i>) | 19 | | M73 |
| <i>P. equestris</i> Rchb.f. (= <i>P. rosea</i>) | 19 | 38 | M73, G81 |
| <i>P. equestris</i> (Schauer) Rchb.f. (as <i>P. rosea</i>) | 19 | | G81 |
| <i>P. esmeralda</i> Rchb.f. (= <i>Doritis pulcherrima</i>) | 19 | 38 | TK84 |
| <i>P. fuscata</i> Rchb.f. | | 38 | G81 |
| <i>P. gigantea</i> J.J.Sm. | | 38 | G81 |
| <i>P. lindenii</i> Loker | | 38 | TK84 |
| <i>P. luedemanniana</i> Rchb.f. | 19 | 38 | M73, G81 |
| <i>P. luedemanniana</i> var. <i>boxallii</i> | | 38 | G81 |
| <i>P. luedemanniana</i> var. <i>ochracea</i> | | 38 | G81 |
| <i>P. manni</i> Rchb.f. | 19 | 38 | M73, G81 |
| <i>P. manni</i> Rchb.f. (as <i>P. boxallii</i>) | | 38 | TK84 |
| <i>P. mariae</i> Burbidge | | 38 | G81 |
| <i>P. parishii</i> Rchb.f. | | 38 | G81 |
| <i>P. parishii</i> Rchb.f. (as <i>P. decumbens</i>) | | 38 | TK84 |
| <i>P. pulcherrima</i> (Lindl.) J.J.Sm. (as <i>Doritis pulcherrima</i>) | 19 | 38 | TK84 |
| <i>P. pulcherrima</i> var. <i>buyssoniana</i> | | 76 | TK84 |
| <i>P. sandariana</i> Rchb.f. | 19 | 38 | M73, G81 |
| <i>P. schilleriana</i> Rchb.f. | | 38 | G81, TK84 |

Appendix 1. Continued

| TAXON | <i>n</i> | <i>2n</i> | Source |
|---|----------|-----------|-----------------------|
| <i>P. speciosa</i> Rchb.f. | | 38 | G81 |
| <i>P. stuartniana</i> Rchb.f. | 19 | 38 | M73, G81 |
| <i>P. taenialis</i> (Lindl.) Christenson & Pradhan (as <i>Doritis taenialis</i>) | | 40 | M73, G81, GJ94 |
| <i>P. tetraspis</i> Rchb.f. | | 38 | G81 |
| <i>P. violacea</i> Teijsm. & Binn. | | 38 | G81 |
| <i>Pomatocalpa marsupiale</i> (Kraenzl.) J.J.Sm. | | 38 | G88 |
| <i>P. kunstleri</i> (Hook.f.) J.J.Sm. (as <i>Sarcanthus kunstleri</i>) | | 38 | TK84 |
| <i>P. spicatum</i> Breda (as <i>Cleisostoma mannii</i>) | | 38 | G85 |
| <i>Pteroceras longicalcareum</i> (Ames & Rolfe) Garay (as <i>Sarcochilus longicalcareum</i>) | | 38 | TK84 |
| <i>Pteris</i> (Blume) Holttum (as <i>Sarcochilus palawanensis</i>) | | 38 | TK84 |
| <i>Renanthera coccinea</i> Lour. | | 38 | TK84, GJ96 |
| <i>R. elongata</i> Lindl. | 19 | 38 | TK84 |
| <i>R. histrionica</i> Rchb.f. | 19 | 38 | TK84 |
| <i>R. imschootiana</i> Rolfe | 19 | | TK84 |
| <i>R. matutina</i> Lindl. | 19 | 38 | TK84 |
| <i>R. monachica</i> Ames | 19 | 38 | TK84 |
| <i>R. storiei</i> Rchb.f. | 19 | 38 | M73, TK84 |
| <i>Rhynchosstylis coelestis</i> Rchb.f. | | 38 | M73 |
| <i>R. gigantea</i> Ridl. | | 38 | TK84 |
| <i>R. gigantea</i> (as <i>Saccolabium albo-lineatum</i>) | 19–20 | | TK84 |
| <i>R. gigantea</i> (as <i>V. densiflora</i>) | | 38 | TK84 |
| <i>R. retusa</i> (L.) Blume | 19 | 38 | G81, TK84, G88, |
| <i>Robiquetia bertoldii</i> (Rchb.f.) Scltr. | | 38 | GJ03 |
| <i>R. bertoldii</i> (as <i>R. mimus</i> (Rchb.f.) Garay) | | 38 | G88 |
| <i>R. mooreana</i> (Rolfe) J.J.Sm. | | 38 | G88 |
| <i>R. spathulata</i> (Blume) J.J.Sm. | | 38 | TK84 |
| <i>R. succisa</i> (Lindl.) Seidenf. & Garay (as <i>R. paniculata</i>) | | 38 | M73 |
| <i>R. wassellii</i> Dockr. | | 38 | G88 |
| <i>Sarcochilus fitzgeraldii</i> F.Muell. | | 76 | GJ96 |
| <i>S. hartmannii</i> F.Muell. | | 38 | D07 |
| <i>Schoenorchis gemmata</i> (Lindl.) J.J.Sm. (as <i>Cleisostoma gemmatum</i>) | 20 | | TK84 |
| <i>Sedirea japonica</i> (Rchb.f.) Garay & H.R.Sweet (as <i>Aerides japonica</i>) | | 38 | M73 |
| <i>Schoenorchis gemmata</i> (Lindl.) Sm. | | 38 | G88 |
| <i>S. micrantha</i> Reinw. ex Blume (as <i>Ascocentrum micranthum</i>) | 19 | 38 | G81, M73 |
| <i>Seidenfadenia mitrata</i> (Rchb.f.) Garay (as <i>Aerides mitrata</i>) | | 38 | M73 |
| <i>Smitinandia micrantha</i> (Lindl.) Holttum | | 38 | G88 |
| <i>S. micrantha</i> (Lindl.) Holttum (as <i>Cleisostoma micranthum</i>) | 19 | 38 | TK84, G88, GJ94 |
| <i>Smithsonia maculata</i> (Dalzell) C.J.Saldanha (as <i>Gastrochilus maculatus</i>) | | 38 | GJ90 |
| <i>S. viridiflora</i> (Dalzell) C.J.Saldanha (as <i>Gastrochilus dalzielianus</i>) | | 38 | GJ90 |
| <i>Staurochilus fasciatus</i> (Rchb.f.) Ridl. (as <i>Trichoglottis fasciata</i>) | | 38 | M73 |
| <i>Stereochilus erinaceus</i> (Rchb.f.) Garay (as <i>Sarcanthus erinaceus</i>) | | 38 | TK84 |
| <i>Taeniophyllum crepidiforme</i> King. & Pantl. | 19 | | TK84 |
| <i>T. elmeri</i> Ames | | 40 | TK84 |
| <i>T. fasciola</i> (G.Forst.) Rchb.f. | | 56 | G88 |
| <i>T. glandulosum</i> Blume (as <i>T. aphyllum</i>) | | 38 | TK84 |
| <i>T. philippinensis</i> Rchb.f. | | 40 | TK84 |
| <i>Thrixspermum acuminatissimum</i> (Blume) Rchb.f. | | 38 | M73 |
| <i>T. carinatifolium</i> Ridl. | | 38 | G88 |
| <i>T. centipeda</i> Lour. | | 38 | GJ96 |
| <i>T. graeffei</i> Rchb.f. | | 38 | G88 |
| <i>T. japonicum</i> Rchb.f. (as <i>Sarcochilus japonicum</i>) | | 38 | TK84 |
| <i>T. pygmaeum</i> (King & Pantl.) Holttum (as <i>Sarcochilus pigmaeum</i>) | 19 | | G81 |
| <i>Trichoglottis cirrhifera</i> Teijsm. & Binn. | | 38 | M73 |
| <i>T. rosea</i> (Lindl.) Ames | | 38 | M73 |
| <i>T. tenera</i> (Lindl.) Rchb.f. (as <i>Saccolabium tenerum</i>) | | ca. 38 | M73 |
| <i>T. triflora</i> (Guillaumin) Garay & Seidenf. (as <i>Saccolabium triflorum</i>) | 19–20 | | TK84 |
| <i>. kotoense</i> Yamam. (as <i>Saccolabium kotoense</i>) | | 30 | M74 |
| <i>T. rhopalorrhachis</i> (Rchb.f.) J.J.Wood (as <i>Saccolabium rhopalorrhachis</i>) | | 38 | G88 |
| <i>Uncifera obtusifolia</i> Lindl. | 19 | | G84 |
| <i>U. obtusifolia</i> (as <i>Saccolabium obtusifolia</i>) | 19 | | M73 |
| <i>Uncifera</i> sp. | | 38 | TK84 |
| <i>Vanda alpina</i> Lindl. | 19 | 38 | TK84, G85 |
| <i>V. coerulea</i> Griffith | 19 | 38 | TK84, G85, GJ91, GJ96 |

Appendix 1. *Continued*

| TAXON | <i>n</i> | <i>2n</i> | Source |
|--|----------|------------|---------------------------|
| <i>V. coeruleascens</i> Griff. | 19 | 38 | M73, TK84, GJ91, GJ96 |
| <i>V. concolor</i> Blume | | 76 | TK84 |
| | | 38, 76 | GJ91, GJ96 |
| <i>V. cristata</i> Lindl. | 19 | ca. 38, 38 | M73, G81, TK84, G85, GJ00 |
| | | | GJ00 |
| <i>V. dearei</i> Rchb.f. | | 38 | TK84 |
| <i>V. denisoniana</i> Benson & Rchb.f. | | 38, 76 | TK84 |
| <i>V. denisoniana</i> (as <i>V. denisoniana</i> var. <i>hebraica</i> Rchb. f. | | 76 | GJ91, GJ96 |
| <i>V. flabellata</i> (Rolfe ex Downie) Christenson (as <i>Aerides flabellata</i>) | | 38 | TK84, GJ91, GJ96 |
| <i>V. lamellata</i> Lindl. | | 38 | TK84 |
| <i>V. lamellata</i> var. <i>boxallii</i> Rchb.f. | 19 | 38 | TK84 |
| <i>V. lilacina</i> Teijsm. & Binn. (as <i>V. laotica</i>) | | 38 | TK84 |
| <i>V. luzonica</i> Loher ex Rolfe | 19 | 38 | TK84 |
| <i>V. pumila</i> Hook.f. | | 38 | GJ91, GJ96 |
| <i>V. spatulata</i> Spreng. | 38 | 76 | TK84, G88 |
| | | 114, 115 | TK84 |
| <i>V. stangeana</i> Rchb.f. | 19 | 38 | M73, G85, G88 |
| <i>V. subconcolor</i> Tang & Wang | | 38 | GJ91, GJ96 |
| <i>V. tessellata</i> (Roxb.) Hook. | | 38 | TK84 |
| <i>V. tessellata</i> (Roxb.) Hook. ex G.Don (as <i>V. roxburghii</i>) | 19 | 38 | G81, TK84, G85 |
| <i>V. testacea</i> (Lindl.) Rchb.f. | 19 | 38 | M73, GJ90 |
| <i>V. testacea</i> (Lindl.) Rchb.f. (as <i>A. wrightiana</i>) | | 38 | M77 |
| <i>V. testacea</i> (Lindl.) Rchb.f. (as <i>V. parviflora</i>) | 19 | 38 | G81, G88, G85, GJ94 |
| <i>V. tricolor</i> Lindl. | 19 | 38 | TK84 |
| <i>V. tricolor</i> Lindl. (as <i>V. suavis</i>) | | 38 | TK84 |
| <i>V. tricolor</i> var. <i>suavis</i> | 19 | 38 | TK84 |
| <i>Vanda</i> sp. | | 38 | GJ96 |
| <i>Vanda</i> sp. | | 57 | GJ96 |
| <i>Vandopsis gigantea</i> (Lindl.) Pfitzer | | 38 | M73 |
| <i>V. lisochiloides</i> Pfitzer | | 38 | TK84 |
| <i>V. undulata</i> (Lindl.) J.E.Sm. | 19 | 38 | G84, GJ06 |
| <i>V. undulata</i> (Lindl.) J.J.Sm. as <i>Stauroopsis undulatum</i>) | | 38 | GJ96 |
| Subtribe Angraeacinae | | | |
| <i>Angraecum aichlerianum</i> Kraenzl. | | 38 | M73 |
| <i>A. aporoides</i> Summerh. | | 48 | G85 |
| <i>A. arachnites</i> Schltr. | | 38 | M73 |
| <i>A. bancoense</i> Burg | | 50 | G50 |
| <i>A. birrimense</i> Rolfe | | 38 | G84 |
| <i>A. calceolus</i> Thouars | | 38 | M73, G85 |
| <i>A. calceolus</i> Thouars (as <i>A. onocentrum</i>) | | 38 | M73 |
| <i>A. caricifolium</i> Perrier | | 38 | G85 |
| <i>A. compressicaule</i> H.Perrier | | 42–48 | TK84 |
| <i>A. cultriforme</i> Summerh. | | 38 | G85 |
| <i>A. distichum</i> Lindl. | | 50 | G84 |
| <i>A. doratophyllum</i> Summerh. | | 92 | G85 |
| <i>A. eburneum</i> Bory | | 40 | TK84 |
| <i>Angraecum eburneum</i> subsp. <i>giryamae</i> (Rendle) Senghas & P.J.Cribb (as <i>A. giryamae</i>) | | 38 | M73 |
| <i>A. eichlerianum</i> Kraenzl. | | 38 | TK84, GJ91 |
| <i>A. erectum</i> Summerh. | | 63 | M73 |
| | | 42 | G85 |
| <i>A. gabonens</i> Summerh. | | 46 | G85 |
| <i>A. guillauminii</i> H.Perrier | | 50 | TK84 |
| <i>A. infundibulare</i> Lindl. | | 38 | M73 |
| <i>A. leonis</i> (Rchb.f.) Vietch | | 38 | G85 |
| | | 40 | TK84 |
| <i>A. moandense</i> De Wild. (as <i>A. chevaleri</i>) | | ca. 38 | M73 |
| <i>A. multinominatum</i> Rendle | | 42 | M73 |
| <i>A. podoichiloides</i> Schltr. | | 50 | G85 |
| <i>A. pungens</i> Schltr. | | 46 | G85 |
| <i>A. sacciferum</i> Lindl. | | ca. 76 | M73 |
| <i>A. scottianum</i> Rchb.f. | | 38 | M73 |

Appendix 1. Continued

| TAXON | <i>n</i> | <i>2n</i> | Source |
|--|----------|--------------------|-----------|
| <i>A. sesquipedale</i> Thouars | | 38 | G85 |
| <i>A. subulatum</i> Lindl. | | 50 | G84 |
| <i>Calyptrochilum christianum</i> (Rchb.f.) Summerh. | | 38 | G84 |
| <i>C. emarginatum</i> (Sw.) Schltr. | | 38 | G84 |
| <i>Campylocentrum amazonicum</i> Cogn. | | 80 | PW |
| <i>C. crassirhizum</i> Hoehne | | 38 | PW |
| <i>C. neglectum</i> (Rchb.f. & Warm.) Cogn. | | 38 | DA09 |
| <i>C. pernambucense</i> Hoehne | | 38 | PW |
| <i>Cryptopus elatus</i> (Thouars) Lindl. | | 95 | M73 |
| | | 76 | G85 |
| <i>Dendrophylax monteверdi</i> (Rchb.f.) Ackerman & Nir (as <i>Campylocentrum monteверdi</i>) | | 44 | G88 |
| <i>Jumellea walleri</i> (Rolfe) la Croix (as <i>Jumellea filicornoides</i>) | | 38–40 | M73 |
| <i>Listrostachys pertusa</i> (Lindl.) Rchb.f. | | 46 | G84 |
| <i>Oeoniella stachys</i> Schltr. | | 38 | TK84 |
| Subtribe Aerangidinae | | | |
| <i>Aerangis biloba</i> (Lindl.) Schltr. | | 50 | M73 |
| <i>A. biloba</i> (Lindl.) Schltr. (as <i>Angraecum bilobum</i>) | 25 | 50 | TK84 |
| <i>A. brachycarpa</i> (A.Rich.) Durand & Schinz | | 50 | G85 |
| <i>A. calantha</i> (Schltr.) Schltr. | | 46 | G85 |
| <i>A. citrata</i> (Thouars) Schltr. | | ca. 50, ca. 50 | M73, G85 |
| <i>A. collum-cygni</i> Summerh. (as <i>A. compta</i>) | | 51 | M73 |
| <i>A. cryptodon</i> Rchb.f. | | 50 | G85 |
| <i>A. kirkii</i> (Rchb.f.) Schltr. | | 52 | G85 |
| <i>A. kotschyana</i> (Rchb.f.) Schltr. | | 50, ca. 50 | M73 |
| <i>A. luteoalba</i> var. <i>rhodosticta</i> (Kraenzl.) | | | |
| J. Stewart | | 42 | G85 |
| <i>Aerangis luteoalba</i> var. <i>rhodosticta</i> (Kraenzl.) J.Stewart (as <i>A. rhodosticta</i>) | | 42 | M73, G85 |
| <i>A. modesta</i> (Hook.f.) Schltr. (as <i>Angraecum sanderianum</i>) | 25 | | TK84 |
| <i>A. somalensis</i> (Schltr.) Schltr. | | 54 | G85 |
| <i>A. ugandensis</i> Summerh. | | ca. 50, 50 | M73, G85 |
| <i>Aerangis</i> sp. | | 50, ca. 50, 200 | M73 |
| <i>Ancistrorhynchus capitatus</i> (Lindl.) Summerh. | | 72 | G85 |
| <i>A. clandestinus</i> (Lindl.) Schltr. | | 48 | M73, G85 |
| <i>A. crystalensis</i> Crib & Van der Lan | | 48 | GJ91 |
| <i>A. metteniae</i> (Kraenzl.) Summerh. | | 48 | G85 |
| <i>A. ovatus</i> Summerh. | | 48 | G85 |
| <i>Ancistrorhynchus recurvus</i> Finet | | ca. 50 | M73 |
| <i>A. straussii</i> (Schltr.) Schltr. | | 48 | GK91 |
| <i>A. tenuicaulis</i> Summerh. | | 48 | GJ91 |
| <i>Ancistrorhynchus</i> sp. | | 96 | G85 |
| <i>Angraecopsis amaniensis</i> Summerh. | | 48 | G88 |
| <i>A. breviloba</i> Summerh. | | 50 | M73 |
| <i>A. gracillima</i> (Rolfe) Summerh. | | 50 | G85 |
| <i>A. pusilla</i> Summerh. | | 50 | G85 |
| <i>A. trifurcata</i> Schltr. | | 50 | GJ91 |
| <i>Bolusiella batesii</i> (Rolfe) Schltr. | | 50 | G84 |
| <i>Chamaeangis odoratissima</i> (Rchb.f.) Schltr. | | 50 | M73, G85 |
| <i>C. vesicata</i> (Lindl.) Schltr. | | 95–100 | M73 |
| <i>Cribbia brachyceras</i> (Summerh.) Senghas (as <i>Rangaeris brachyceras</i>) | | 50 | M73, G85 |
| <i>Cyrtorchis arcuata</i> (Lindl.) Schltr. | | ca. 150 | M73 |
| <i>C. arcuata</i> subsp. <i>arcuata</i> (as <i>C. arcuata</i> subsp. <i>variabilis</i>) | | 46 | G85, GJ91 |
| <i>C. arcuata</i> subsp. <i>whytei</i> (Rolfe) Schltr. | | 138 | G85 |
| <i>C. aschersonii</i> (Kraenzl.) Schltr. | | 46 | G84 |
| <i>C. brownii</i> (Rolfe) Schltr. | | 46 | G85 |
| <i>C. chailluana</i> (Hook.f.) Schltr. | 22–23 | | TK84 |
| <i>C. hamata</i> (Rolfe) Schltr. | | 46 | G84 |
| <i>C. monteiroae</i> (Rchb.f.) Schltr. | | 46 | G85 |
| <i>C. praetermissa</i> Summerh. | | 46, 92 | G85 |
| <i>C. ringeus</i> (Rchb.f.) Summerh. | | 46 | G85 |
| <i>Cyrtorchis</i> spp. | | 46, 50 | M73 |
| <i>Diaphanthe fragrantissima</i> (Lindl.) Schltr. | | 50 | G85 |

Appendix 1. *Continued*

| TAXON | <i>n</i> | <i>2n</i> | Source |
|--|----------|-----------|---------------------|
| <i>D. pellucida</i> (Lindl.) Schltr. | | 50 | G85, GJ91 |
| <i>D. plehniana</i> (Schltr.) Schltr. | | 50 | M73 |
| <i>Diaphananthe</i> sp. | | ca. 50 | M73 |
| <i>Diaphananthe</i> sp. | | 50 | GJ91 |
| <i>Eggelingia gabonensis</i> Cribb & Van der Lan | | 46 | GJ91 |
| <i>Eurychone rothschildiana</i> (O' Br.) Schltr. | | 50 | M73, GJ91 |
| <i>Microcoelia bispiculata</i> L.Jonsson | | 48 | G84 |
| <i>M. bulbocalcarata</i> L.Jonsson | | 48 | G84 |
| <i>M. caespitosa</i> (Rolfe) Summerh. | | 48 | G84 |
| <i>M. exilis</i> Lindl. | | 48 | G84, G85, G88, GJ91 |
| <i>M. gilpiniae</i> (Rchb.f. & S.Moore) Summerh. | | 48 | G84 |
| <i>M. globulosa</i> (Hochst.) L.Jonsson | | 48 | G84 |
| <i>M. hirschbergii</i> Summerh. | | 48 | G84 |
| <i>M. koeleri</i> (Schltr.) Summerh. | | 48 | G84 |
| <i>M. macrantha</i> (H.Perr.) Summerh. | | 48 | G84 |
| <i>M. macrorhynchia</i> (Schltr.) Summerh. | | 48 | G85 |
| <i>M. megalorrhiza</i> (Rchb.f.) Summerh. | | 48 | G88 |
| <i>M. obovata</i> Summerh. | | 48 | G84 |
| <i>M. physophora</i> (Rchb.f.) Summerh. | | 48 | G84 |
| <i>M. stolzii</i> (Schltr.) Summerh. | | 48 | G84, G88 |
| <i>Microterangis hildebrandtii</i> (Rchb.f.) Senghas (as <i>Chameangis hildebrandtii</i>) | | 50 | G85 |
| <i>Mystacidium capense</i> (L.f.) Schltr. | | 48 | G85 |
| <i>Podangis dactyloceras</i> (Rchb.f.) Schltr. | | 46 | GJ91 |
| <i>Rangaeris amaniensis</i> (Kraenzl.) Summerh. | | 92 | GJ91 |
| <i>R. musicola</i> (Rchb.f.) Summerh. | | ca. 100 | M73 |
| <i>R. rhipsalisocia</i> (Rchb.f.) Summerh. | 54II | ca. 108 | M73 |
| | | 46 | G84 |
| <i>Rhipidoglossum brevifolium</i> Summerh. (as <i>Diaphananthe brevifolia</i>) | | 50 | G85 |
| <i>R. cuneatum</i> (Summerh.) Garay (as <i>Diaphananthe cuneata</i>) | | ca. 50 | M73 |
| <i>R. densiflorum</i> Summerh. (as <i>Diaphananthe densiflora</i>) | | 50 | M73 |
| <i>R. pulchellum</i> (Summerh.) Garay (as <i>Diaphananthe pulchella</i>) | | 50 | G85 |
| <i>R. rutilum</i> (Rchb.f.) Schltr. (as <i>Diaphananthe rutila</i>) | | 100 | M73, G85 |
| <i>R. xanthopollinium</i> (Rchb.f.) Schltr. (as <i>Diaphananthe xanthopollinia</i>) | | 50 | G85 |
| <i>Solenangis clavata</i> (Rolfe) Schltr. | | 50 | G84 |
| <i>S. scandens</i> (Schltr.) Schltr. | | 50 | G84 |
| <i>Sphyrarhynchus achiliebenii</i> Mansf. | | 50 | GJ91 |
| <i>Tridactyle anthomaniaca</i> (Rchb.f.) Summerh. | | ca. 100 | M73 |
| <i>T. tridactylites</i> (Rolfe) Schltr. | | ca. 100 | M73 |
| <i>Tridactyle</i> sp. | | ca. 50 | M73 |
| UMPLACED SUBTRIBES | | | |
| Subtribe Agrostophyllinae | | | |
| <i>Agrostophyllum brevipes</i> King & Pantl. | 20 | | M73 |
| <i>A. callosum</i> Rchb.f. | 20 | 40 | M73, G85 |
| | | 38 | TK84 |
| <i>A. myrianthum</i> King & Pantl | 20 | | M73 |
| <i>A. planicaule</i> (Wall. ex Lindl.) Rchb.f. (as <i>A. khasianum</i>) | 20 | 40 | M73, G85 |
| <i>A. uniflorum</i> Schltr. | | 38 | G88 |
| <i>Earina aestivalis</i> Cheeseman | | 40 | D07 |
| <i>E. autumnalis</i> (G.Forst.) Hook.f. | | 40 | D07 |
| <i>E. mucronata</i> Lindl. | | 40 | D07 |
| <i>Glossorhyncha chlorantha</i> van Royen | | 40 | G88 |
| <i>G. macdonaldii</i> Schltr. | | 40 | GJ06 |
| Subtribe Dendrobiinae | | | |
| <i>Bulbophyllum acuminatum</i> (Ridl.) Ridl. (as <i>Cirrhopetalum acuminatum</i>) | | 38 | TK84 |
| <i>B. aff. acuminatum</i> | | 38 | G88 |
| <i>B. acutibracteatum</i> var. <i>rubrobrunneopapillosum</i> (De Wild.) J.J.Verm. (as <i>B. fuscoides</i>) | | ca. 38 | M73 |
| <i>B. acutissepalum</i> De Willd. | | 38 | G88 |
| <i>B. adenopetalum</i> Lindl. | | 38 | M73 |
| <i>B. aeolium</i> Ames | | 40 | TK84 |
| <i>B. andersonii</i> J.J.Sm. (as <i>C. andersonii</i>) | | 38 | TK84 |
| <i>B. affini</i> Lindl. | | 36 | TK84 |
| | 20 | | M73 |

Appendix 1. Continued

| TAXON | <i>n</i> | <i>2n</i> | Source |
|---|-----------|-----------|-----------------|
| <i>B. alagense</i> Ames | | 40 | TK84 |
| <i>B. ambrosia</i> (Hance) Schltr. | | 38 | G88, GJ91, GJ96 |
| <i>B. andersonii</i> Kurz. | | 38 | G85 |
| <i>B. anteniferum</i> Rchb.f. | | 40 | TK84 |
| <i>B. apodum</i> Hook.f. | | 38 | M73 |
| <i>B. apodum</i> Hook.f. (as <i>B. ebulbum</i>) | | 38 | G85 |
| <i>B. argyropus</i> (Endl.) Rchb.f. (as <i>Adelopetalum argyropus</i>) | | 36 | D07 |
| <i>B. aurantiacum</i> F.Muell. | | 38 | G85 |
| <i>B. auratum</i> Rchb.f. | 20 | | TK84 |
| <i>B. aureolabellum</i> T.P.Lin (as <i>C. gracillimum</i>) | | ca. 38 | TK84 |
| <i>B. baileyi</i> F.Muell. | | 38 | G85 |
| <i>B. barbigerum</i> Lindl. | | 38 | M73, G85 |
| <i>B. biantennatum</i> Schltr. | | 38 | G85 |
| <i>B. biflorum</i> Teijsm. & Binn., | | 38 | G88 |
| <i>B. bisetum</i> Lindl. | | 40 | G84 |
| <i>B. boninense</i> J.J.Sm. (as <i>C. boninense</i>) | | 20 | TK84 |
| <i>B. braccatum</i> Rchb.f. | 20 | | TK84 |
| <i>B. caespitosum</i> Thou (as <i>B. Caespitosum</i>) | 20 | | TK84 |
| <i>B. canlanoense</i> Ames | | 40 | TK84 |
| <i>B. cauliflorum</i> Hook.f. | 21 | | TK84 |
| <i>B. careyanum</i> Spreng. | 19 + 0–1B | 38 | M73, TK84 |
| <i>B. cauliflorum</i> Hook.f. | 21 | | G81 |
| <i>B. cerinum</i> Schltr. | | 38 | G88 |
| <i>B. clandestinum</i> Lindl. (as <i>B. sparsifolium</i>) | | 38 | G85 |
| <i>B. clavatum</i> Thouars | | 38 | G88 |
| <i>B. cochleatum</i> var. <i>tenuicaule</i> (Lindl.) J.J.Verm. (as <i>B. tenuicaule</i>) | 19 | 38 | TK84 |
| <i>B. cocoinum</i> Bateman ex Lindl. | | 38 | M73, G85 |
| <i>B. congolanum</i> Schltr. | | 38 | M73, G85 |
| <i>B. cornutum</i> Ridl. | | 38 | TK84 |
| <i>B. cornutum</i> (as <i>C. cornutum</i>) | 19 | | TK84 |
| <i>B. crassifolium</i> Thouars | | 38 | G88 |
| <i>B. crassipes</i> Hook.f. | | 38 | G88 |
| <i>B. cribbianum</i> Toscano | | 38 | PW |
| <i>B. cumingii</i> (Lindl.) Rchb.f. | | 40 | TK84 |
| <i>B. cumingii</i> (Lindl.) Rchb.f. (as <i>C. cumingii</i>) | | 38 | TK84 |
| <i>B. cumingii</i> (Lindl.) Rchb.f. (as <i>C. stramineum</i>) | | 38–40 | TK84 |
| <i>B. cylindraceum</i> Lindl. | 19 | | G84 |
| | 20 | | M73 |
| <i>B. daloaense</i> Cribb & Perez-Vera | | 38 | G85 |
| <i>B. denisii</i> J.J.Wood. | | 38 | G88 |
| <i>B. densiflorum</i> Rolfe | 19 | | M73 |
| <i>B. drymoglossum</i> Maxim. | | 40 | TK84 |
| <i>B. elassonotum</i> Summerh. | | 38 | G85 |
| <i>B. elliottii</i> Rolfe (as <i>B. malawiense</i>) | | 38 | G85 |
| <i>Bulbophyllum elisae</i> F.Muell. | | 38 | G88 |
| <i>B. emiliorum</i> Ames & Quisumb. | | 40 | TK84 |
| <i>B. encephalodes</i> Summerh. | | 38 | G85 |
| <i>B. eublepharum</i> Rchb.f. | 19 | | M73 |
| <i>B. evrardii</i> Gagnep. | | 38–42 | TK84 |
| <i>B. exiguum</i> F.Muell. | | ca. 38 | G88 |
| <i>B. falcatum</i> (Lindl.) Rchb.f. | | 38 | M73 |
| <i>B. falcatum</i> var. <i>velutinum</i> (Lindl.) J.J.Verm. (as <i>B. melanorhachis</i>) | | 38 | G88 |
| <i>B. falcatum</i> var. <i>velutinum</i> (Lindl.) J.J.Verm. (as <i>B. rhizophorae</i>) | | 38 | G88 |
| <i>B. fascinator</i> (Rolfe) Rolfe | | 38 | G88 |
| <i>B. flavidum</i> Lindl. | | 40 | M73 |
| | | 38 | G84 |
| <i>B. fletcherianum</i> Rolfe | | 38 | G88 |
| <i>B. formosum</i> Schltr. | | 38 | G88 |
| <i>B. fritillariflorum</i> J.J.Sm. | | 38 | G88 |
| <i>B. frostii</i> Summerh. | | 38 | M73 |
| <i>B. gamblei</i> Hook.f. | 20 | | M73 |
| | 19 | | G88 |
| <i>B. gibbosum</i> (Blume) Lindl. | | 38 | G85 |
| <i>B. grandiflorum</i> Blume | | 38 | M73, G85 |

Appendix 1. *Continued*

| TAXON | <i>n</i> | <i>2n</i> | Source |
|--|----------|-----------|-----------|
| <i>B. grandiflorum</i> Blume | | 38 | M73 |
| <i>B. griffithii</i> Rehb.f. | 19 | | G81 |
| <i>B. gymnopus</i> Hook.f. | 19 | | M77 |
| <i>B. imbricatum</i> Lindl. | | 38 | M73, G84 |
| <i>B. imbricatum</i> Lindl. (as <i>B. linderi</i>) | | 38 | G88 |
| <i>B. inconspicuum</i> Maxim. | | 38 | M73 |
| <i>B. intertextum</i> Lindl. | | 38 | M73, G85 |
| <i>B. intricatum</i> Seidenf. | | 38 | G88 |
| <i>B. ipanemense</i> Hoehne | | 38 | G85 |
| <i>B. japonicum</i> Makino | | 40 | M73 |
| <i>B. khasyanum</i> Griff. | 20 | | G84 |
| <i>B. lasiochilum</i> Par. & Rehb.f.(as <i>Cirrhopetalum lasiochilum</i>) | | 38 | TK84 |
| <i>B. leopardinum</i> Lindl. | 19 | | M73 |
| <i>B. leptanthum</i> Hook.f. | 19 | | G81 |
| <i>B. lepidum</i> (Blume) J.J.Sm. | | 38 | G85 |
| <i>B. lepidum</i> (as <i>C. lepidum</i>) | | 38 | TK84 |
| <i>B. levanae</i> var. <i>giganteum</i> Quisumb. & C. Schweinf. | | 60 | TK84 |
| <i>B. aff. levatii</i> | | | |
| <i>B. lobbi</i> Lindl. | | 39 | M73 |
| <i>B. logiflorum</i> Thouars | | 38 | G85 |
| <i>B. logiflorum</i> Thouars (as <i>C. longiflorum</i>) | | 38–40 | TK84 |
| <i>B. longiscapum</i> Rolfe | | 38 | G88 |
| <i>B. lupulinum</i> Lindl. | | 38 | M73 |
| | | 40 | M73 |
| <i>B. macraei</i> (Lindl.) Rehb.f. | | 38 | G88 |
| <i>B. macranthum</i> Lindl. | | 38 | G85 |
| <i>B. maculosum</i> Ames (as <i>C. maculosum</i>) | | 38 | TK84 |
| <i>B. mahonii</i> Rolfe | | 38 | G85 |
| <i>B. makoyanum</i> Rehb.f. | | 38–40 | TK84 |
| <i>B. mandibulare</i> Rehb.f. | | 38 | G88 |
| <i>B. mastersianum</i> J.J.Sm. (as <i>C. mastersianum</i>) | | 38 | TK84 |
| <i>B. maximum</i> (Lindl.) Rehb.f. | | 38 | G85 |
| <i>B. maximum</i> (Lindl.) Rehb.f. (as <i>B. oxypterum</i>) | | 38 | G85 |
| <i>B. medusae</i> (Lindl.) Rehb.f. | | 38 | G85 |
| <i>B. miniatum</i> Hort. ex F. Moore | | 38 | G85 |
| <i>B. minutipetalum</i> Schltr. | | 38 | M73 |
| | | 36 | GJ96 |
| <i>B. morphologorum</i> Kraenzl. | | 38 | G88 |
| <i>B. mundulum</i> (W. Bull) J.J.Sm. (as <i>C. mundulum</i>) | | 38 | TK84 |
| <i>B. mysorensis</i> (Rolfe) J.J.Sm. (as <i>C. mysorensis</i>) | | ca. 38 | TK84 |
| <i>B. neilgherense</i> Wight | | 40 | TK84 |
| <i>B. nutans</i> Thou. | | 38 | M73 |
| <i>B. odoratissimum</i> (Sm.) Lindl. | 19 | 38 | TK84, G88 |
| <i>B. odoratum</i> var. <i>odoratum</i> (as <i>B. elatius</i>) | | 38 | M73 |
| <i>B. oreonastes</i> Rehb.f. | | 38 | G85 |
| <i>B. oreonastes</i> Rehb.f. (as <i>B. zenkerianum</i>) | | 38 | G85 |
| <i>Bulbophyllum ornatissimum</i> J.J.Sm. (as <i>C. ornatissimum</i>) | | 38–40 | TK84 |
| | | ca. 38 | TK84 |
| <i>B. orthoglossum</i> Kraenzl. | | 38 | G85 |
| <i>B. oxychilum</i> Schltr. (as <i>B. buntingii</i>) | | 38 | G88 |
| <i>B. pallidiflorum</i> Schltr. | | 38 | G88 |
| <i>B. parvulum</i> Lindl. (as <i>C. parvulum</i>) | 19 | | TK84 |
| <i>B. patens</i> King | | 57 | G85 |
| <i>B. pahudii</i> (de Vriese) Rehb.f. (as <i>B. virescens</i>) | | 38 | M73 |
| <i>B. penicillium</i> Par. & Rehb.f. | 19 | | G81 |
| <i>B. peninsulare</i> Seidenf. | | 38 | G88 |
| <i>B. phalaenopsis</i> J.J.Sm. | | 38 | G85 |
| <i>B. picturatum</i> Rehb.f. | | 38 | G85 |
| <i>B. picturatum</i> (as <i>C. picturatum</i>) | | 48 | TK84 |
| <i>B. pipio</i> Rehb.f. | | 38 | G84 |
| <i>B. polyrhizum</i> Lindl. | 19 | | M73 |
| <i>B. protractum</i> Hook.f. | 19 | 38 | G84, G85 |
| <i>B. pulchrum</i> (N.E.Br.) J.J.Sm. | | 38 | G85 |

Appendix 1. Continued

| TAXON | <i>n</i> | <i>2n</i> | Source |
|---|-----------|-----------|--------------------|
| <i>B. pulchrum</i> (as <i>C. pulchrum</i>) | | 38 | TK84 |
| <i>B. purpureorhachis</i> (De Willd) Schltr. | | 38 | G85 |
| <i>B. raii</i> Arora | | 40 | TK84, G88, GJ94 |
| <i>B. reflexiflorum</i> H.Perrier | | 38 | TK84 |
| <i>B. refractum</i> Rchb.f. | | 38 | G88 |
| <i>B. refractum</i> Rchb.f. (as <i>C. refractum</i>) | 19 | | G88, GJ94 |
| <i>B. reptans</i> Lindl. | 19 + 0–1B | 38 | G81, G88, GJ94 |
| <i>B. retusiusculum</i> Rchb.f. | 19 | | G84 |
| <i>B. retusiusculum</i> Rchb.f. as <i>B. micholitzii</i> | | 38 | M73, G85 |
| <i>B. rigidum</i> King & Pantl. | | 38 | G85 |
| <i>B. robustum</i> Rolfe (as <i>C. robustum</i>) | | 38 | TK84 |
| <i>B. rothchildianum</i> (O'Brien) J.J.Sm. | | 38 | G88 |
| <i>B. roxburghii</i> (Lindl.) Rchb.f. | | 38 | G88 |
| <i>B. rufinum</i> Rchb.f. | | 38 | G88 |
| <i>B. rugosibulbon</i> Summerh. | | 38 | G88 |
| <i>B. saltatorium</i> Lindl. | | 38 | G85 |
| <i>B. saltatorium</i> var. <i>calamarium</i> (Lindl.) J.J.Verm. (as <i>B. calamarium</i>) | 19 | 38 | M73, G85 |
| <i>B. saltatorium</i> var. <i>albociliatum</i> (Finet) J.J.Verm. (as <i>B. distans</i>) | | 38 | G85 |
| <i>B. saltatorium</i> var. <i>albociliatum</i> (Finet) J.J.Verm. (as <i>B. nudiscapum</i>) | | 38 | G85 |
| <i>B. sanderianum</i> Rolfe | | 38 | PW |
| <i>B. sandersonii</i> (Oliv.) Rchb.f. | | 38 | G85 |
| <i>B. saurocephalum</i> Rchb.f. | 20 | | TK84 |
| <i>B. schinzianum</i> Kraenzl. | | 38 | G85 |
| <i>B. schiazianum</i> Kraenzl. (as <i>B. phaepogon</i>) | | 38 | M73, G85 |
| <i>B. secundum</i> Hook.f. | 19 | | M73 |
| | 20 | | TK84 |
| <i>B. sociale</i> Rolfe | | 38 | M73 |
| <i>B. stenobulbon</i> E.C.Parish & Rchb.f. | | 38 | G88 |
| <i>B. stenobulbon</i> E.C.Parish & Rchb.f. (as <i>B. clarkeanum</i>) | 19 | | M73 |
| <i>B. sterile</i> (Lam.) Suresh (as <i>C. caudatum</i>) | 19 | | TK84 |
| <i>B. striatum</i> Rchb.f. | 19 | | M73 |
| <i>B. tentaculgerum</i> Rchb.f. | | 38 | G84 |
| <i>B. tetragonum</i> Lindl. (as <i>B. wrightii</i>) | | 38 | G84 |
| <i>B. trachyantum</i> Kraenzl. | | 38 | G85 |
| <i>B. tricanaliferum</i> J.J.Sm. | | 38 | G88 |
| <i>B. tridentatum</i> Kraenzl. | | 38 | G88 |
| <i>B. trimeni</i> (Hook.f.) J.J.Sm. | | 38 | G88 |
| <i>B. triste</i> Rchb.f. | 19 | | M73, G81 |
| <i>B. tseanum</i> Hu & Barr. | | 39 | G88 |
| <i>B. tuberculatum</i> Colenso (as <i>Adenopetalum tuberculatum</i>) | | 38 | D07 |
| <i>B. umbellatum</i> Lindl. | | 38 | TK84, GJ94 |
| <i>B. umbellatum</i> Lindl. (as <i>C. umbellatum</i>) | | 38 | TK84, G88 |
| <i>B. unicaudatum</i> Schltr. | | 38 | G88 |
| <i>B. unifoliatum</i> De Wild. | | 38 | G85 |
| <i>B. vagans</i> Ames & Rolfe | | 95 | G85 |
| <i>B. vaginatum</i> (Lindl.) Rchb.f. (as <i>C. vaginatum</i>) | | 38 | TK84, G88 |
| <i>B. velutinum</i> (Lindl.) Rchb.f. | 19 | | M73 |
| | | 40 | G84 |
| <i>Bulbophyllum viridiflorum</i> Lindl. | 19 + 1B | | G88 |
| <i>B. viridiflorum</i> (as <i>C. viridiflorum</i>) | 19 + 0–3B | | TK84, GJ94 |
| <i>B. wallichii</i> Rchb.f. (as <i>C. wallichii</i>) | 18 | | TK84 |
| <i>B. wallichii</i> Rchb.f. (as <i>B. refractoides</i>) | 19 | | M73 |
| <i>B. wendlandianum</i> (Kraenzl.) J.J.Sm. | | 57 | G88 |
| <i>B. winkleri</i> Schltr. | | 38 | G84 |
| <i>B. zenkerianum</i> Kraenzl. | | 38 | G85 |
| <i>Bulbophyllum</i> sp. | | 40 | TK84 |
| <i>Bulbophyllum</i> sp. | | 38 | PW |
| <i>Bulbophyllum</i> sp. | | 80 | PW |
| <i>Bulbophyllum</i> sp. nv. | | 38 + Bs | G88 |
| <i>Bulbophyllum</i> sp. nv. | | 38 | G88 |
| <i>Dendrobium acinaciforme</i> Roxb. | 19 | 38 | G81, G84, G88 GJ90 |
| <i>D. acerosum</i> Lindl. | | 38 | G84, G88 |
| <i>D. acuminatissimum</i> Lindl. | | 40 | TK84 |

Appendix 1. *Continued*

| TAXON | <i>n</i> | <i>2n</i> | Source |
|---|-----------|-----------|---------------------------|
| <i>D. acuminatum</i> (Rolfe) Kraenzl. (= <i>D. lyonii</i>) | | 38 | TK84 |
| | | 40 | GJ90 |
| <i>D. adae</i> F.M.Bayley | | 38 | G88 |
| <i>D. aduncum</i> Wall. ex Lindl. | | 38 | G85, GJ90 |
| | | 40 | G88, GJ90 |
| <i>D. aemulum</i> R.Br. | | 38 | G84, GJ90 |
| <i>D. agrostophyllum</i> F.Muell. | | 38 | GJ90 |
| | 20 | 40 | G84 |
| <i>D. alaticaulinum</i> Royen | | 38 | G85, G88 |
| <i>D. albayense</i> Ames | | 40 | TK84 |
| <i>D. albosanguineum</i> Lindl. & Paxton | | 40 | G88, GJ90 |
| <i>D. anosmum</i> Lindl. (as <i>D. leucorhodum</i>) | | 38 | TK84 |
| <i>D. anosmum</i> Lindl. (as <i>D. superbum</i>) | | 38 | G84, GJ90 |
| <i>D. antennatum</i> Lindl. (as <i>D. dalbertisii</i>) | | 38 | M73 |
| <i>D. aphyllum</i> (Roxb.) C.E.C.Fisch. (as <i>D. macrostachyum</i>) | | 38 | M73, M77 |
| <i>D. aphyllum</i> (Roxb.) C.E.C.Fisch. (as <i>D. pierardii</i>) | 19 | 38 | M73, G84, G85, GJ90 |
| <i>D. atroviolaceum</i> Rolfe | | 38 | M73, G88 |
| <i>D. aurantiroseum</i> P.Royen ex T.M.Reeve | | 76 | G88 |
| <i>D. baileyi</i> F.Muell. | | 38 | G85 |
| <i>D. barbatum</i> Lindl. | | 38 | G84, GJ90 |
| <i>D. bellatullum</i> Rolfe | | 38 | G85 |
| <i>D. bensoniae</i> Rchb.f. | | 38 | G88, GJ90 |
| <i>D. bicallosum</i> Ridl. | | 40 | TK84 |
| <i>D. bicameratum</i> Lindl. | 19 + 0–4B | 38 | G81, G85, G88, GJ90, GJ94 |
| <i>D. bifalce</i> Lindl. | | 38 | G85 |
| <i>D. biflorum</i> (Forst.) Sw. | | 38 | G85 |
| <i>D. bigibum</i> Lindl. | 19 | 38 | TK84, G84, GJ90 |
| <i>D. bigibbum</i> Lindl. (as <i>D. phalaenopsis</i>) | 19 | 38 | TK84, G84, GJ90 |
| <i>D. bilobum</i> Lindl. | | 38 | G85 |
| <i>D. brymerianum</i> Rchb.f. | | 38 | TK84, GJ90 |
| <i>D. bulbophylloides</i> Schltr. | | 38 | G88 |
| <i>D. bullenianum</i> Rchb.f. | | 38 | M73, GJ90 |
| <i>D. bullenianum</i> Rchb.f. (as <i>D. topaziacum</i>) | | 38 | TK84 |
| <i>D. calcaratum</i> A.Rich. | | 38 | G85 |
| <i>D. camaridiorum</i> Rchb.f. | | 38 | G85 |
| <i>D. canaliculatum</i> R.Br. | | 38 | M73, GJ90 |
| | 19 | 38 | G84 |
| <i>D. candidum</i> Wall. | 19 | 38 | G81, TK84, G84, G88, GJ90 |
| <i>D. capilipes</i> Rchb.f. | | 38 | TK84 |
| <i>D. capituliflorum</i> Rolfe | | 38 | G85, GJ90 |
| <i>D. capra</i> J.J.Sm. | 19 | | G84 |
| <i>D. cariniferum</i> Rchb.f. | | 38 | M73 |
| <i>D. catenatum</i> Lindl. (as <i>D. tosaense</i>) | 19 | 38 | M73, G84 |
| | | 40 | TK84 |
| <i>D. cathcartii</i> Hook.f. | 19 | | M73 |
| <i>D. chameleon</i> Ames | | 38 | G85 |
| <i>D. chrysanthum</i> Wall. | 20 | 40 | G81, TK84, G88, GJ94 |
| | 19 | 38 | G81, TK84, G85, GJ90 |
| | | 76 | GJ06 |
| <i>D. chryseum</i> Rolfe | | 38 | GJ06 |
| <i>D. chryseum</i> Rolfe (as <i>D. clavatum</i>) | 19 | 38 | M73, G81, G85, G88 |
| <i>D. chryseum</i> Rolfe (as <i>D. denneanum</i>) | 19 | 38 | G88, GJ90 |
| <i>D. chrysotoxum</i> Lindl. | 19 | 38 | M73, TK84, G84 G88, GJ90 |
| <i>Dendrobium chrysocrepis</i> E.C.Parish & Rchb.f. ex Hook.f. | | ca. 76 | TK84 |
| <i>D. clavator</i> Ridl. | | 38 | GJ90 |
| <i>D. coelogyne</i> Rchb.f. | | 40 | G85, GJ90 |
| <i>D. compactum</i> Rolfe | 20 | 40 | G84, GJ90 |
| <i>D. compressum</i> Lindl. (as <i>D. platycaulon</i>) | | 38 | TK84 |
| <i>D. connatum</i> Schltr. | | 38 | G85, G88 |
| <i>D. crassifolium</i> Schltr. | | 38 | G88 |
| <i>D. crassinodes</i> Benson & Rchb.f. | | 38 | TK84, G84, GJ90 |

Appendix 1. Continued

| TAXON | <i>n</i> | <i>2n</i> | Source |
|---|-------------|---------------|--------------------------------|
| <i>D. crepidatum</i> Lindl. | | 38 | M73, TK84, M77, G88 |
| <i>D. crispilinguum</i> Cribb. | | 38 | G85 |
| <i>D. cruentum</i> Rchb.f. | | 40 | M73, TK84 |
| | | 38 + 1B | G81 |
| <i>D. crumenatum</i> Sw. | | 38, 38 + 0–2B | M73, TK84, G84, G85 |
| <i>D. crumenatum</i> Sw. (as <i>D. kwashotense</i>) | | 38 | M74 |
| <i>D. crystallinum</i> Rchb.f. | | 38 | M73, G88 |
| <i>D. chryseum</i> Rolfe (as <i>D. flaviflorum</i>) | | 38 | M74 |
| <i>D. cruttwellii</i> T.M.Reeve | | 38 | G85 |
| <i>D. cucumerinum</i> Maclay ex Lindl. | | 38 | G84, GJ90 |
| <i>D. cumulatum</i> Lindl. | | 40 | G85 |
| <i>D. cunninghamii</i> Lindl. | | 38 | G85 |
| <i>D. cunninghamii</i> Lindl. (as <i>Winika cunninghamii</i>) | | 40 | D07 |
| <i>D. cuthbertsonii</i> F.Muell. | | 76 | G88 |
| <i>D. cuthbertsonii</i> F.Muell. (as <i>D. sophronites</i>) | | 38 | G84, GJ90 |
| <i>D. cyanocentrum</i> Shltr. | | 38 | G88 |
| <i>D. cymbidioides</i> (Blume) Lindl. | | 40 | G84, GJ90 |
| <i>D. delacourii</i> Guill. (= <i>D. ciliatum</i>) | | 38 | M73 |
| | 20 | 40 | G84, G88 |
| <i>D. × delicatum</i> (F.M.Bailey) F.M.Bailey | | 38 | G85, G88 |
| <i>D. denneanum</i> × <i>D. moschatum</i> (Buch.-Ham.) Sw. | | 44 | GJ06 |
| <i>D. densiflorum</i> Wall. | | 38 | G81, G85, G88 |
| | 20 + (0–2B) | 40, 40 + 1–3f | M73, G81, TK84, G84, G85, GJ90 |
| <i>D. denudans</i> D.Don | 20 | 40 | G81, G84, GJ90 |
| <i>D. devonianum</i> Paxton | 19 | 38 | M77, TK84, G88 |
| <i>D. dicuphum</i> F.Muell. | | 38 | TK84 |
| | | 39 | G84, GJ90 |
| | | 38 | G88 |
| <i>D. dichaeoides</i> Schltr. | | 38 | G88 |
| <i>D. dilonianum</i> Hawkes & Helter | | 38 | G88 |
| <i>D. distichum</i> Rchb.f. | 19 | 38 | M73, G84, GJ90 |
| <i>D. dixanthum</i> Rchb.f. | | 40 + 2–4f | M73, G84, G85, GJ90 |
| <i>D. draconis</i> Rchb.f. | | 38 | M73, G85 |
| <i>D. engae</i> Reeve | | 36 | G85, G88, GJ90 |
| <i>D. epiphedum</i> Lindl. | 20 | | G81 |
| <i>D. equitans</i> Kraenzl. | | 38 | G84, GJ90 |
| <i>D. equitans</i> Kraenzl. (as <i>D. batanense</i>) | 19 | 38 | G85 |
| <i>D. falconeri</i> Hook.f. | | 38 | G84, G88, GJ90 |
| <i>D. farmerii</i> Paxt. | | 40 | M73, M77, G84 |
| <i>D. farmerii</i> var. <i>aureoflava</i> Hook.f. | | 40 | M73, G85 |
| <i>D. fellowsii</i> F.Muell. (as <i>D. bairdianum</i>) | | 36 | G88 |
| <i>D. fimbriatum</i> Hook. | 20 | 40 | M73, G85, G88 |
| | 19 | 38, 38 + 0–2B | G81, TK84, G88, GJ90, GJ94 |
| <i>D. fimbriatum</i> Hook. (as <i>D. normale</i>) | | 38 | G81, GJ90 |
| <i>D. findlayanum</i> Par. & Rchb.f. | | 38 | M73, G84, JG90 |
| <i>D. finetianum</i> Schltr. | | 40 | GJ96 |
| <i>D. finisterrae</i> Schltr. | | 38 + 2B | G85 |
| | | 40 | G84, GJ90 |
| <i>D. flamula</i> Schltr. | | 38 | TK84 |
| <i>D. fleckeri</i> Rupp. & C.T.White | | 38 | G88 |
| <i>D. forbesii</i> Ridl. | | 38 + 2B | G85 |
| | | 40 | G84 |
| <i>D. formosanum</i> Roxb. ex Lindl. | 19 | 38 | M73, M77, G84, GJ90 |
| <i>D. friedericksianum</i> Rchb.f. | | 38 | M73, G84, G85, GJ90 |
| <i>D. gibsoni</i> Paxton | 19 | 38 | G81, G88, GJ90 |
| <i>D. goldfinchii</i> F.Muell. | | 38 | G85 |
| <i>D. goldschmidtianum</i> Kraenzl. (as <i>D. miyakei</i>) | | 38 | M74, GJ90 |
| <i>D. goldschmidtianum</i> Kraenzl. (as <i>D. victoriae-reginae</i> var. <i>miyakei</i>) | | 38 | |
| <i>D. gordonii</i> S.Moore | | 38 | TK84 |
| <i>Dendrobium gouldii</i> Rchb.f. | | 38 | M73, G85, GJ90 |
| <i>D. gracilicaule</i> F.Muell. | | 38 | G85 |
| <i>D. gracilicaule</i> var. <i>houneanum</i> Miden | | 38 | TK84 |

Appendix 1. *Continued*

| TAXON | <i>n</i> | <i>2n</i> | Source |
|--|----------|---------------|----------------------|
| <i>D. gratiotissimum</i> Rchb.f. | | 38 | G85 |
| <i>D. griffithianum</i> Lindl. | | 40 | G85 |
| <i>D. guerreroi</i> Ames & Quisumb. | | 40 | G84 |
| <i>D. haemoglossum</i> Thwaites (as <i>bambusiaefolium</i>) | | 38 | G85, GJ90 |
| <i>D. hancokii</i> Rolfe | | 40 | G88 |
| <i>D. heishanaense</i> Hayata | | 38 | M74 |
| <i>D. helix</i> Cribb | | 38 | G85 |
| <i>D. hellwigianum</i> Kraenzl. | | 38 | G85 |
| <i>D. hendersonii</i> A.D.Hawkes & A.H.Heller | | 38 | TK84 |
| <i>D. herbaceum</i> Lindl. | | 38 | G84, GJ90 |
| <i>D. hercoglossum</i> Rchb.f. | | 38 | G85 |
| <i>D. hercoglossum</i> Rchb.f. (as <i>D. wangi</i>) | | 38 | G88 |
| <i>D. heterocarpum</i> Wall. | | 38 | M73, M77, TK84 |
| | | | G84, G85, GJ90 |
| <i>D. hookerianum</i> Lindl. | 20 | 40 | G81, G85, GJ90 |
| <i>D. indivisum</i> var. <i>indivisum</i> (as <i>D. porphyrophyllum</i>) | 19 | | TK84 |
| <i>D. infudibulum</i> Lindl. | 19 | 38 | M73, TK84, G88, GJ90 |
| <i>D. infudibulum</i> Lindl. (as <i>D. jamesianum</i>) | | 38 | TK84 |
| <i>D. insigne</i> (Blume) Rchb.f. | | 36 + 2f | G88, GJ90 |
| <i>D. jenkinsii</i> Wall. ex Lindl. | | 38 | TK84 |
| <i>D. jenkinsii</i> Wall. ex Lindl. (as <i>D. aggregatum</i> var. <i>jenkinsii</i>) | | 38 | G85 |
| <i>D. johannis</i> Rchb.f. | 19 | | TK84 |
| <i>D. johnsoniae</i> F.Muell. | | 38 | G88 |
| <i>D. jonesii</i> var. <i>jonesii</i> (as <i>D. fusiforme</i>) | | 38 | TK84 |
| <i>D. jonesii</i> var. <i>jonesii</i> . (as <i>D. ruppianum</i>) | | 38 | G85, GJ90 |
| <i>D. kauldorunii</i> T.M.Reeve | | 36 | G85, G88 |
| <i>D. kingianum</i> Bidw. | | 76 | TK84 |
| | | ca. 76 | TK84 |
| <i>D. leucocyanum</i> T.M.Reeve | | 38 | G88 |
| <i>D. aff. leucohybos</i> | | 38 | G88 |
| <i>D. lichenastrum</i> (F.Muell.) Kraenzl. | | 38 | G85 |
| <i>D. linawianum</i> Rchb.f. | | 38, 40, 76 | G88 |
| <i>D. lindleyi</i> Steud. | | 38 | G85, G88, GJ90 |
| <i>D. lindleyi</i> Steud. (as <i>D. aggregatum</i>) | 19 | 38 | M73, TK84, GJ90 |
| <i>D. lineale</i> Rolfe | | 38 | G85 |
| <i>D. lineale</i> Rolfe (as <i>D. grantii</i>) | | 38 | M73 |
| <i>D. lineale</i> Rolfe (as <i>D. veratrifolium</i>) | | 38 | TK84 |
| <i>D. linguella</i> Rchb.f. | | 38 | M73, G85 |
| <i>D. linguiforme</i> Sw. | | 38 | G85, GJ90 |
| | | 40 | G84 |
| <i>D. lituiflorum</i> Lindl. | | 38 | M73, GJ90 |
| <i>D. lodgesii</i> Rolfe | | 38 | G85, G88 |
| <i>D. longicalcaratum</i> Hayata | | 38 | M74 |
| <i>D. longicornu</i> Lindl. | 19 | 38 | G81, G85, GJ90 |
| | | 43 | G84 |
| <i>D. lohohense</i> Tang & Wang | | 38 | G88 |
| <i>D. lyoni</i> Ames | 20 | 40 | G84 |
| <i>D. macranthum</i> A.Rich. | | 38 | G85 |
| <i>D. macrophyllum</i> A.Rich. | | 38 | G85, GJ90 |
| | | 38 + 2f | G88 |
| <i>D. macrophyllum</i> A.Rich. (as <i>D. musciferum</i>) | | 38, 38 + 3f | TK84 |
| <i>D. macrophyllum</i> A.Rich. (as <i>D. polysema</i>) | | 38, 38 + B | G85, GJ03 |
| <i>D. mannii</i> Ridl. | | 38 | GJ90 |
| <i>D. mayandyi</i> T.M.Reeve & Renz | | 36 | G85 |
| <i>D. microbulbon</i> Blatter & McCann | 19 | 38 | G84, GJ90 |
| <i>D. microchilos</i> Dalzell | | 38 | TK84 |
| <i>D. mirbelianum</i> Gaudich. | | 38 | M73, TK84 |
| <i>D. mohlianum</i> Kraenzl. | | 38 | G85, GJ03 |
| <i>D. moniliforme</i> (L.) Sw. | | ca.38 | M73 |
| | | 38 | M73, G84, G85, G88 |
| | | 38, 38 + 1=3f | TK84 |
| <i>D. moniliforme</i> (L.) Sw. (as <i>D. monile</i>) | | 38 | M73, GJ90 |
| <i>D. monophyllum</i> F.Muell. | | 38 | G85, GJ90 |

Appendix 1. Continued

| TAXON | <i>n</i> | <i>2n</i> | Source |
|---|----------|-------------|------------------------------------|
| <i>D. mooreanum</i> Lindl. | | 36 | G88 |
| <i>D. morrisonii</i> Schltr. | | 38 | GJ03 |
| <i>Dendrobium mortii</i> F.Muell. | | 38 | G88 |
| <i>D. moschatum</i> Sw. | 19 | 38 | M73, G81, G84, GJ90 |
| <i>D. mutabile</i> (Blume) Lindl. | | 40 | G85 |
| <i>D. nanum</i> Hook.f. (as <i>D. mabelae</i>) | | 38 | G84 |
| <i>D. nebularum</i> Schltr. | | 38 | G88 |
| <i>D. nindii</i> W.Hill (as <i>D. toffii</i>) | | 38 | TK84 |
| <i>D. nobile</i> Lindl. | 19 | 38 | M77, TK84, G85, G88, GJ90, GJ06 |
| | | ca. 57 | TK84 |
| | | 38–40 | TK84 |
| | | 57 | TK84 |
| <i>D. nobile</i> Lindl. misc. cultivars | | 38, 57, 76 | GJ03 |
| <i>D. ochreatum</i> Lindl. | | 38 | G85, G88, GJ90 |
| <i>D. oreodoxa</i> Lindl. | | 38 | G85 |
| | | 40 | G85 |
| <i>D. ovatum</i> (Willd.) Kraenzl. | | 40 | TK84 |
| | | 38 | GJ90 |
| <i>D. palpebrae</i> Lindl. | | 40 | TK84, GJ90 |
| <i>D. parcum</i> Rchb.f. (as <i>D. parcoides</i>) | 20 | | TK84 |
| <i>D. papilio</i> Lohner | | 38 | G85 |
| <i>D. parishii</i> Rchb.f. | | 38 | M73, G84, G88, GJ90 |
| <i>D. parishii</i> Rchb.f. (as <i>D. rhodopterigium</i>) | | 38 | G84 |
| <i>D. patentilobum</i> Ames & Schweif. | | 38 | G88 |
| <i>D. pendulum</i> Roxb. | | 38 | G85 |
| <i>D. petiolatum</i> Schltr. | | 38 | G88 |
| <i>D. philippinensis</i> Ames | | 38 | TK84 |
| <i>D. pinifolium</i> Ridl. | | 40 | G88 |
| <i>D. platygastrium</i> Rchb.f. | | 40 | G85, GJ90 |
| <i>D. plicatile</i> Lindl. | | 38 | G84 |
| <i>D. polyanthum</i> Wall. ex Lindl. (as <i>D. cretaceum</i>) | | 38 ± 1f | TK84 |
| <i>D. polyanthum</i> Wall. ex Lindl. (as <i>D. primulinum</i>) | 19 | 38 | M73, G88, GJ90, GJ94 |
| <i>D. polyschistum</i> Schltr. | | 38 | G88 |
| <i>D. porphyrochilum</i> Lindl. | 19 | | G81 |
| <i>D. praecinctum</i> Rchb.f. (as <i>D. pauciflorum</i>) | | 38 | G88, GJ90 |
| <i>D. pseudoglomeratum</i> T.M.Reeve & J.J.Wood | | 38 | G88 |
| <i>D. pugioniforme</i> A.Cunn. | | 38 | G85, GJ90, GJ96 |
| <i>D. pulchellum</i> Roxb. ex Lindl. | | 40 | M73 |
| | | 38 | TK84 |
| <i>D. punamense</i> Schltr. | | 38 | G85 |
| <i>D. pygmaeum</i> Sm. (as <i>Ichthyostomum pygmaeum</i>) | | 38 | D07 |
| <i>D. ramosii</i> Ames | | 40 | G84, GJ90 |
| <i>D. regium</i> Prain | | 38 | TK84 |
| <i>D. revolutum</i> Lindl. | | 40 | M73, G84 |
| <i>D. rhytidotece</i> Schltr. | | 38 | G88 |
| <i>D. rhodostictum</i> F.Muell. & Kraenzl. | | 36 | G85 |
| <i>D. rigidum</i> Lindl. | | 38 | G85, G88, GJ90 |
| <i>D. ruckeri</i> Lindl. (as <i>D. ramosum</i>) | | 40 | TK84 |
| <i>D. ruginosum</i> Ames | | 36 | G85 |
| <i>D. salascense</i> (Blume) Lindl. | | 38 | G85 |
| <i>D. sanderiae</i> Rolfe | 20 | 40 | TK84, GJ90 |
| <i>D. scabrilingue</i> Lindl. | | 38 | M73, G84, GJ90 |
| <i>D. schneiderae</i> F.M.Bailey | | 38 | G88, GJ90 |
| <i>D. schoeninum</i> Lindl. (as <i>D. beckeri</i>) | | 38 | G85, GJ90 |
| | 19 | 38 | G84 |
| <i>D. schuetzei</i> Rolfe | 20 | 40 | TK84 |
| <i>D. schulteri</i> J.J.Sm. | | 38 | TK84 |
| <i>D. secundum</i> (Blume) Lindl. | 20 | 40 | M73, TK84, G84, GJ90 |
| <i>D. senile</i> Par. & Rchb.f. | | 38 | M73, G88 |
| <i>D. signatum</i> Rchb.f. (as <i>D. hildebrandtii</i>) | | 38, 38 + 1f | M73, TK84, G88 |
| <i>D. smillie</i> F.Muell. | | 38 | TK84, G88, GJ90 |
| <i>D. smillie</i> F.Muell. (as <i>D. ophioglossum</i>) | | 38 | G84 |

Appendix 1. *Continued*

| TAXON | <i>n</i> | <i>2n</i> | Source |
|--|----------|-----------|------------------------------|
| <i>D. speciosum</i> Sm. | | 38 | G85 |
| <i>D. speciosum</i> Sm. (as <i>D. speciosum</i> var. <i>fusiforme</i>) | | 38 | TK84 |
| <i>D. speciosum</i> var. <i>hillii</i> Mast. | | 38 | TK84 |
| <i>D. spectabile</i> (Blume) Miq. | | 38 | M73, G85 |
| <i>D. sphenochilum</i> F.Muell. & Kraenzl. (as <i>D. confusum</i>) | | 38 | G88 |
| <i>D. spurium</i> (Blume) J.J.Sm. | | 40 | TK84 |
| <i>D. stuposum</i> Lindl. | | 40 | G85, G88, GJ90 |
| <i>Dendrobium stratiotes</i> Rchb.f. | | 38 | M73, TK84 |
| <i>D. strebloceras</i> Rchb.f. | | 38 | M73 |
| <i>D. striaenopsis</i> M.A.Clem. & D.L.Jones (as <i>D. phalaenopsis</i> var. <i>schroederianum</i>) | 19 | 38 | TK84 |
| <i>D. striolatum</i> Rchb.f. | | 38 | G85 |
| <i>D. stuposum</i> Lindl. | | 40 | GJ90 |
| <i>D. subclausum</i> var. <i>phlox</i> (Schltr.) J.J.Wood (as <i>D. phlox</i>) | | 38 | G85, G88, GJ90 |
| <i>D. × suffusum</i> Cady | | 57 | G85 |
| <i>D. sulphureum</i> Schltr. | | 76 | G85 |
| <i>D. subulatum</i> (Blume) Lindl. | | 38 | GJ90 |
| <i>D. sulcatum</i> Lindl. | | 40 | GJ90 |
| <i>D. × superbiens</i> Rchb.f. | 19 | 38 | G81, TK84, GJ90 |
| <i>D. sutepense</i> Rolfe ex Downie | | 38 | M73, GJ90 |
| <i>D. tangerinum</i> P.J.Cribb | | 38 | G85 |
| <i>D. taurinum</i> Lindl. | | 38 | TK84 |
| <i>D. tenuissimum</i> Rupp | | 38 | G88 |
| <i>D. teretifolium</i> R.Br. | | 76 | G85 |
| <i>D. teretifolium</i> var. <i>fasciculatum</i> Rupp | | 40 | G84 |
| <i>D. terminale</i> E.C.Parish & Rchb.f. | | 40 | G88 |
| | | 38 | G84 |
| <i>D. terrestre</i> J.J.Sm. | | 36 | G85 |
| <i>D. tetragonum</i> var. <i>giganteum</i> P.A.Gilbert | | 38 | G88 |
| <i>D. thyrsiflorum</i> Rchb.f. ex André | 20 | 40 | M73, TK84, G85, G88, GJ90 |
| <i>D. tokai</i> Rchb.f. | 19 | 38 | TK84 |
| <i>D. toressae</i> (F.M.Bailey) Dockrill | | 38 | G85 |
| <i>D. tortile</i> Lindl. | | 38 | M73, G85, GJ90 |
| <i>D. transparens</i> Wall. ex Lindl. | 20 | 40 | M73, TK84, GJ90 |
| | 19 | 38 | G84, G85 |
| <i>D. trigonopus</i> Rchb.f. | | 38 | M73, TK84, G88 |
| <i>D. undulatum</i> R.Br. | 19 | 38 | M73, TK84 |
| <i>D. undulatum</i> var. <i>broonfieldii</i> | 19 | | TK84 |
| <i>D. unicum</i> Scidenf. | | 38 | G85, G88 |
| <i>D. uniflorum</i> Griff. | | 40 | GJ90 |
| <i>D. vagans</i> Schltr. (as <i>D. semanii</i>) | | 38 | G85 |
| <i>D. vannouhuysii</i> J.J.Sm. | | 38 | G85 |
| <i>D. ventricosum</i> Kraenzl. | | 38 | TK84 |
| | | 20 | TK84 |
| <i>D. venustum</i> Teijsm. & Binn. (as <i>D. ciliatum</i>) | | 40 | GJ90 |
| <i>D. verruciferum</i> Rchb.f. | | 41 | GJ96 |
| <i>D. vexillarius</i> J.J.Sm. | | 38 | G85 |
| <i>D. victoria-reginae</i> Loher | | 38 | M73, G85 |
| <i>D. violaceum</i> Kraenzl. | | 38 | G85 |
| <i>D. violaceum</i> Kraenzl. (as <i>D. quinquecostatum</i>) | | 38 | G84, GJ90 |
| <i>D. wardianum</i> R.Warner | 19 | 38 | G81, TK84, GJ90 |
| | | ca. 57 | TK84 |
| | | 40 | TK84 |
| <i>D. wassellii</i> S.T.Blake | | 38 | G85, GJ90 |
| <i>D. wightii</i> A.D.Hawkes & A.H.Heller (as <i>D. graminifolium</i>) | | 38 | TK84 |
| <i>D. williamsianum</i> Rchb.f. | | 38 | G88, GJ90 |
| <i>D. williamsonii</i> Day & Rchb.f. | | 57 | G81, GJ90 |
| | | 38 | G85 |
| <i>D. woodsii</i> P.J.Cribb | | 36 | G85 |
| <i>Dendrobium</i> sp. | | 40 | G81 |
| <i>Dendrobium</i> sp. | | 38 | G81 |
| <i>Dendrobium</i> sp. | | 40 | G85 |
| <i>Dendrobium</i> spp. | | 40, 42 | GJ90 |
| <i>Diplocaulobium aratriferum</i> (J.J.Sm.) P.F.Hunt & Summerh. | | 38 | G88 |

Appendix 1. Continued

| TAXON | <i>n</i> | <i>2n</i> | Source |
|---|----------|-----------|----------------------|
| <i>D. chrysotropis</i> (Schltr.) A.D.Hawkes | | 38 | G88 |
| <i>D. chrysotropis</i> (Schltr.) A.D.Hawkes (as <i>Dendrobium chrysotropis</i>) | | 38 | TK84 |
| <i>D. aff. fariniferum</i> (Schltr.) Carr | | 38 | G88 |
| <i>D. hydrophilum</i> (J.J.Sm.) Kraenzl. | | 38 | G88 |
| <i>D. mekynosepalum</i> (Schltr.) Kraenzl. | | 38 | G88 |
| <i>Epigeneium amplum</i> (Lindl.) Summerh. | 20 | | G81 |
| <i>E. fuscescens</i> (Griff.) Summerh. (as <i>Dendrobium fuscescens</i>) | | 40 | G88, GJ90 |
| <i>E. nakaharai</i> (Schltr.) Summerh. (as <i>D. nakaharai</i>) | | 40 | G85, GJ90 |
| <i>Epigeneium nakaharai</i> (Schltr.) Summerh. (as <i>D. sanseiense</i>) | | 40 | G84 |
| <i>E. rotundatum</i> (Lindl.) Summerh. (as <i>D. rotundatum</i>) | 20 | 40 | M73, G88, GJ90 |
| <i>Flickingeria comata</i> (Blume) A.D.Hawkes (as <i>Dendrobium fimbriatolabellum</i>) | | 18 | TK84 |
| <i>F. macraei</i> (Lindl.) Seidenf. (as <i>Dendrobium macraei</i>) | 19 | 38 | M73, G81, GJ90 |
| <i>F. scopa</i> (Lindl.) Brieger (as <i>D. scopa</i>) | | 38 | GJ90 |
| <i>Genyorchis pumila</i> (Sw.) Schltr. | | 38 | G85 |
| <i>Saccoglossum verrucosum</i> L.O.Williams | | ca. 40 | G88 |
| <i>Trias stocksii</i> Benth. ex Hook. | | 38 | TK84 |
| Subtribe Collabiinae | | | |
| <i>Acanthephippium bicolor</i> Lindl. | 24 II | 48 | G84 |
| <i>A. pictum</i> Fukuy | | 48 | G85 |
| <i>A. striatum</i> Lindl. | | 48 | G84, G85 |
| <i>A. striatum</i> Lindl. (as <i>A. sinense</i>) | | 42 | GJ96 |
| <i>A. splendidum</i> J.J.Sm. | | 46 | GJ06 |
| <i>A. sylhetense</i> Lindl. | | 48 | G85 |
| <i>Acanthephippium</i> sp. | | 48 | G84 |
| <i>Calanthe actinomorpha</i> Fukuy. | | 40, 38 | G85 |
| <i>C. alismifolia</i> Lindl. | 22 | 44 | M73, G81 |
| | 20 | | G81 |
| <i>C. alismifolia</i> Lindl. (as <i>C. fauriei</i>) | | 40 | TK84 |
| <i>C. alismifolia</i> Lindl. (as <i>C. japonica</i>) | | 40 | G84, TK84, G85 |
| <i>C. alismifolia</i> Lindl. (as <i>C. okinawaensis</i>) | | 40 | G84 |
| <i>C. alpina</i> Hook.f. ex Lindl. | 20 | | M73 |
| <i>C. alpina</i> Hook.f. ex Lindl. (as <i>C. schlechteri</i>) | | 42 | G84 |
| <i>C. arcuata</i> Rolfe (as <i>C. caudatilabella</i>) | | 40 | G85 |
| | | 38 | GJ94 |
| <i>C. argenteostriata</i> C.Z.Tang & S.J.Cheng | | 45 | GJ94 |
| <i>C. arisanensis</i> Hayata | | 40 | G85, GJ94 |
| <i>C. aristulifera</i> Rchb.f. | | 40 | TK84, G84, GJ94 |
| <i>C. aristulifera</i> Rchb.f. (as <i>C. elliptica</i>) | | 40 | G85 |
| <i>C. aurantiaca</i> Ridl. | | 40 | G84, G88 |
| <i>C. biloba</i> Lindl. | 40 | | M73, TK84 |
| | | 38 | M73, G81 |
| <i>C. brevicornu</i> Lindl. | 20 | | M73 |
| <i>C. cardioglossa</i> Schltr. | | ca. 44 | TK84 |
| | | 46 | GJ94 |
| <i>C. chevalleri</i> Gagnep. | 20 | | TK84 |
| <i>C. chloroleuca</i> Lindl. | 20 | 40 | G81, G88 |
| <i>C. clavata</i> Lindl. | 20 | 40 | M77, G85, GJ94 |
| <i>C. coreana</i> Nakai | | 40 | GJ91 |
| <i>C. conspicua</i> Lindl. | | 40 | GJ94 |
| <i>C. cremeoviridis</i> J.J.Wood | | 46 | GJ94 |
| <i>C. davidii</i> Franch. (as <i>C. bungoana</i>) | | 42 | G84 |
| <i>C. davidii</i> Franch. (as <i>C. matsudae</i>) | | 40 | G85, GJ94 |
| <i>C. densiflora</i> Lindl. | 20 | 40 | G84, G85, GJ94 |
| <i>C. discolor</i> Lindl. | | 40 | M73, G84, G88, GJ91, |
| | | | GJ96 |
| <i>C. discolor</i> Lindl. (as <i>C. discolor</i> var. <i>kanashiroi</i>). | | 40 | G84, TK84 |
| <i>C. graciliflora</i> Hayata | | 40 | G85, GJ94 |
| <i>C. graciliflora</i> Hayata (as <i>C. hamata</i>) | | 40 | G88, GJ94 |
| <i>C. hancockii</i> Rolfe | | 40 | GJ94 |
| <i>C. hattorii</i> Schltr. | | 40 | G81, G84 |
| <i>C. hennisii</i> Loher | | 42 | GJ94 |
| <i>C. herbacea</i> Lindl. | | 40 + 0–2B | M73G81, GJ94 |
| | 21 | 42 | G81, GJ94 |
| <i>C. hirsuta</i> Seidenf. | | 46 | GJ94 |

Appendix 1. *Continued*

| TAXON | <i>n</i> | <i>2n</i> | Source |
|---|----------|-----------|----------------------------|
| <i>C. izu-insularis</i> (Satomi) Ohwi & Satomi | | 40 | G84 |
| <i>C. lyroglossa</i> Rehb.f. | | 40 | G84, G85, GJ94 |
| <i>C. lyroglossa</i> Rehb.f. (as <i>C. foertermannii</i>) | | 40 | TK84 |
| <i>C. lyroglossa</i> Rehb.f. (as <i>C. liukuensis</i>) | | 40 | M73 |
| <i>C. mannii</i> Hook.f. | 20 | 40 | M77, G81, G84, G88 |
| <i>C. musca</i> (D.Don) Lindl. | | 40 | G84 |
| <i>C. nipponica</i> Makino | | 38 | G84 |
| <i>C. oblanceolata</i> Owi & T.Koyama | | 40 | G84 |
| <i>C. plantaginea</i> Lindl. | | 40 | M73, GJ94 |
| <i>C. puberula</i> Lindl. | 20 | 40 + 0–1B | G81, G88, GJ94 |
| <i>C. puberula</i> Lindl. (as <i>C. reflexa</i>) | | 40 | M73, G84, G85, GJ90, GJ94, |
| | | | GJ94, |
| <i>C. pulchra</i> (Blume) Lindl. | | 40 | G84, G88 |
| <i>Calanthe rosea</i> (Lindl.) Benth. | | 44 | GJ94 |
| <i>C. rubens</i> Ridl. | | 40 + 0–2B | G84, G88, GJ94 |
| <i>C. rubens</i> Ridl., (as <i>C. elmeri</i>) | | 44 | GJ94 |
| <i>C. speciosa</i> (Blume) Lindl. (as <i>C. formosana</i>) | | 40 | G85, GJ94 |
| <i>C. speciosa</i> (Blume) Lindl. (as <i>C. yushuni</i>) | | 20 | M74 |
| <i>C. striata</i> R.Br. | 20 | 40 | M77 |
| <i>C. striata</i> R.Br. (as <i>C. striata</i> var. <i>sieboldii</i>) | | 40 | G85 |
| <i>C. striata</i> R.Br. ex Lindl. (as <i>C. bicolor</i>) | | 40 | G84 |
| <i>C. striata</i> R.Br. ex Lindl. (as <i>C. sieboldii</i>) | | 40 | G84, GJ90, GJ94 |
| <i>C. succedanea</i> Gagnep. | | 44 | GJ94 |
| <i>C. sylvatica</i> (Thouars) Lindl. | | 40 | GJ94 |
| <i>C. sylvatica</i> (Thouars) Lindl. (as <i>C. longicalcarata</i>) | | 40 | G85 |
| <i>C. sylvatica</i> (Thouars) Lindl. (as <i>C. masuca</i>) | 20 | 40 | M73, GJ94 |
| <i>C. tricarinata</i> Lindl. | 20 | 40 | M73, G85 GJ94 |
| | | 40, 60 | TK84 |
| <i>C. triplicata</i> (Willemet) Ames | | 40 | G84, G85, G88, GJ94 |
| <i>C. triplicata</i> (Willemet) Ames (as <i>C. triplicata</i> var. <i>anraecifolia</i>) | | 40 | GJ96 |
| <i>C. triplicata</i> (Willemet) Ames (as <i>C. furcata</i>) | | 40 | M73 |
| <i>C. triplicata</i> (Willemet) Ames (as <i>C. veratrifolia</i>) | | 40 + 0–2B | TK84, G84, G88 |
| <i>C. trulliformis</i> King & Pantl., | 20 | | M73 |
| <i>C. ventilabrum</i> Rehb.f. (as <i>C. langei</i>) | | 40 | GJ96 |
| <i>C. vestita</i> Wall. ex Lindl. | 20 | | TK84 |
| | 21 | 42 | GJ94 |
| <i>Calanthe</i> sp. | 20 | | M73 |
| <i>Calanthe</i> sp. | | 40 | TK84 |
| <i>Cephalantheropsis calanthoides</i> (Ames) T.S.Liu & H.J.Su (as <i>C. koshunensis</i>) | | 40 | GJ94 |
| <i>C. obcordata</i> (Lindl.) Ormerod (as <i>C. gracilis</i>) | 20 | 40 | M73, G88, GJ94 |
| <i>C. obcordata</i> (Lindl.) Ormerod (as <i>Calanthe venusta</i>) | | 40 | TK84 |
| <i>C. obcordata</i> (Lindl.) Ormerod (as <i>Phaius gracilis</i>) | | 42 | G85 |
| <i>Chrysoglossum ornatum</i> Blume | | 36 | GJ91 |
| <i>Gastrorchis francoisii</i> Schltr. | | 40 | GJ06 |
| <i>G. humblotii</i> (Rehb.f.) Schltr. | | 40 | GJ06 |
| <i>G. humblotii humblotii</i> var. <i>schlechteri</i> (H.Perrier) Senghas ex Bosser & P.J.Cribb | | 40 | GJ06 |
| <i>G. lutea</i> (Ursch & Toill.-Gen. ex Bosser) Senghas | | 40 | GJ06 |
| <i>G. tuberculosa</i> (Thouars) Schltr. | | 40 | GJ06 |
| <i>Nephelaphyllum cordifolium</i> (Lindl.) Blume | | 36 + 3–7B | G81 |
| <i>Pachystoma pubescens</i> Blume (as <i>Pachystoma senile</i>) | 20 | 40 | G81, G88, GJ94 |
| <i>Phaius elatus</i> | | 42 | TK84 |
| <i>P. flavus</i> (Blume) Lindl. | | 42 | G85, GJ90, GJ96 |
| <i>P. flavus</i> (Blume) Lindl. (as <i>P. maculatus</i>) | 21 | | G81 |
| <i>P. flavus</i> (Blume) Lindl. (as <i>P. minor</i>) | | | |
| <i>P. flavus</i> (Blume) Lindl. (as <i>P. minor</i> f. <i>punctatum</i>) | | 44 | TK84 |
| <i>P. luridus</i> Thwaites | | 44 | GJ90 |
| <i>P. mannii</i> Rehb.f. | | 28 | G84 |
| <i>P. mindorensis</i> Ames | | 42 | TK84 |
| <i>P. mishmensis</i> (Lindl. & Paxton) Rehb.f. | | 42 | G81 |
| | 22 + 2f | | G88 |
| <i>P. mishmensis</i> (Lindl. & Paxton) Rehb.f. (as <i>P. gracilis</i>) | | 42 | G85 |
| <i>P. pulchellus</i> Kraenzl. | | 40 | GJ06 |
| <i>P. pulchellus</i> var. <i>sandrangatensis</i> Bosser | | 40 | GJ06 |

Appendix 1. Continued

| TAXON | <i>n</i> | <i>2n</i> | Source |
|--|-----------|-----------|----------------|
| <i>P. tankervilleae</i> (Aiton) Blume | 23 | 42 | G81 |
| | | 48 | G85 |
| | | | G84, G88 |
| | 22 + 2B | | GJ90 |
| | | 38 | GJ90, GJ96 |
| <i>P. tankervilleae</i> (Aiton) Blume (as <i>P. grandifolius</i>) | | 38 | M73 |
| <i>P. wallichii</i> Lindl. | | 48 | M73 |
| | 21 | | M73 |
| <i>Phaius</i> sp. | | 38 | GJ90 |
| <i>Phaius</i> sp. | | 38 | GJ96 |
| <i>Plocoglottis javanica</i> Blume | | 38 | G84, G88 |
| <i>P. lowii</i> Rchb.f. | | 38 | G84 |
| <i>Spathoglottis affinis</i> de Vries | | 40 | G84 |
| <i>S. aurea</i> Lindl. (as <i>S. microchilina</i>) | | 40 | G84, G88, GJ96 |
| <i>S. pacifica</i> Rchb.f. | | 40 | GJ06 |
| <i>S. paulinae</i> F.Muell. (as <i>S. rivularis</i>) | | 40 | G88 |
| <i>S. petri</i> Rchb.f. | | 40 | GJ06 |
| <i>S. plicata</i> Blume | 20 | 40 | TK84, G84 G88 |
| <i>S. plicata</i> Blume (as <i>S. spicata</i>) | | 40 | G85 |
| <i>S. pubescences</i> Lindl. | | 36 | M77 |
| | 19 | | TK84 |
| <i>S. unguiculata</i> (Labill.) Rchb.f. | | 40 | GJ06 |
| <i>Tainia bicornis</i> Benth. | 15 + 1–3B | | G88 |
| <i>T. latifolia</i> Benth. | | 40 | G81 |
| | | 32 | G84 |
| <i>T. latifolia</i> (Lindl.) Rchb.f. (as <i>T. khasiana</i>) | | 32 | G84 |
| <i>T. laxiflora</i> Makino | | 36 + 0–9B | TK84 |
| <i>T. minor</i> Hook.f. | 20 | 40 | G85 |
| <i>T. penangiana</i> Hook.f. | | ca. 72 | TK84 |
| <i>T. penangiana</i> Hook.f. (as <i>T. hookeriana</i>) | | 40 | G84, GJ91, G96 |
| <i>T. viridifusca</i> (Hook.) Benth. ex Hook.f. | 20 | | G81 |
| <i>Tainia</i> spp. | | 32, 40 | G84 |
| <i>Tainia</i> sp. (as <i>Ania</i> sp.) | | 76 | GJ96 |

F69 = Fedorov, 1969; M73 = Moore, 1973; M74 = Moore, 1974; M77 = Moore, 1977; G81 = Goldblatt, 1981; TK84 = Tanaka and Kamemoto, 1984; G84 = Goldblatt, 1984; G85 = Goldblatt, 1985; G88 = Goldblatt, 1988; GJ90 = Goldblatt and Johnson, 1990; GJ91 = Goldblatt and Johnson, 1991; GJ94 = Goldblatt and Johnson, 1994; GJ96 = Goldblatt and Johnson, 1996; Goldblatt and Johnson, 2000; Goldblatt and Johnson, 2003; Goldblatt and Johnson, 2006; FG98 = Felix and Guerra, 1998; DA09 = Davinha *et al.* (2009); PI09 = Pinheiro *et al.* (2009); D07 = Dawson *et al.* (2007); PW = Present work.

Appendix 2. Species with chromosome numbers uncertain or unimportant to evolutionary interpretation of the group. Abbreviation according to Table 1.

| TAXON | <i>n</i> | <i>2n</i> | Source |
|--|----------|------------|-----------|
| <i>Acampe papillosa</i> (L.) Lindl. ¹ | 36 | | G88 |
| <i>A. papillosa</i> (L.) Lindl. ¹ | 18 | 36 | G81, GJ94 |
| | 18, 19 | | TK84 |
| <i>Aerangis compta</i> Summ. ² | | 51 | M73 |
| <i>A. hitchongii</i> ⁹ | | 40 | TK84 |
| <i>Aerides multiflorus</i> Roxb. ³ | | 40 (22) | TK84 |
| <i>A. odoratum</i> Lour. ¹ | 18 | 36 | G84, GJ94 |
| | 20 | 40 | TK84 |
| <i>A. suavissima</i> Lindl. ^{1,4} | | ca. 38 | M73 |
| <i>Anthogonium gracile</i> Lindl. ¹ | 27 | | M73 |
| <i>Arundina bambusifolia</i> Lindl. ¹ | 21 | | G81 |
| <i>A. graminifolia</i> (Don) Hochr. ¹ | | 32 | TK84 |
| | | 42 | TK84 |
| <i>Bletilla formosana</i> (Hay.) Schltr. ⁶ | | 16 | M74 |
| <i>B. striata</i> (Thumb.) Rehb.f. ⁴ | | ca. 38 | M73 |
| <i>Bulbophyllum cylindraceum</i> Lindl. | | 42 | G84 |
| <i>B. distans</i> Lindl. ² | | 57 | M73 |
| <i>B. leopardinum</i> Lindl. ¹ | 18 | | G81 |
| <i>B. lobbi</i> Lindl. ^{1,2} | | 38–42 | TK84 |
| <i>B. mastersianum</i> J.J.Smith (as <i>C. mastersianum</i>) ³ | | 38–40 | TK84 |
| <i>B. odoratissimum</i> (Sm.) Lindl. ¹ | 29 | | G81 |
| <i>B. oreonastes</i> Rehb.f. ¹ | | 80 | M73 |
| <i>B. patens</i> King ² | | 57 | G85 |
| <i>B. reptans</i> Lindl. ¹ | | 42 | G81, GJ90 |
| <i>B. vagans</i> Ames & Rolfe ² | | 95 | G85 |
| <i>B. wendlandianum</i> (Kraenzl.) U.Dammer ² | | 57 | G88 |
| <i>Calanthe argenteo-striata</i> C.Z.Tang & S.J.Cheng ² | | 45 | GJ94 |
| <i>C. brevicornu</i> Lindl. ^{1,3} | 24 | | M73, GJ94 |
| | | 38(57) | TK84 |
| <i>C. brevicorum</i> ⁹ | 24 | | G81 |
| <i>C. chloroleuca</i> Lindl. ¹ | | 28 | M73, G81 |
| <i>C. discolor</i> var. <i>amaniana</i> (Fukuyama) | | | |
| Nasamune ⁵ | | 60 | G84 |
| <i>C. longicalcarata</i> Hay. ⁶ | | 20 | M74 |
| <i>C. masuca</i> Lindl. ¹ | | 52 | M73 |
| | 21 | | G81 |
| <i>C. matsudai</i> Hayata ¹ | | 44 | G85 |
| <i>C. puberula</i> Lindl. ¹ | | 42 | G81 |
| <i>C. reflexa</i> Maxim. ¹ | | 42 | G85 |
| <i>C. tricarinata</i> Lindl. ^{1,5} | | 42 | M73 |
| | | 60 | TK84 |
| <i>C. triplicata</i> (Willemet) Ames ⁶ | | 20 | G85 |
| <i>Calanthe</i> sp. | | 20 | M74 |
| <i>Calanthe</i> sp. (Thailand) ⁹ | | 58 | TK84 |
| <i>Cattleya bicolor</i> Lindl. var. <i>measuresiana</i> ⁵ | | 80 | TK84 |
| <i>C. forbesii</i> Lindl. ³ | | 54–60 | TK84 |
| <i>C. intermedia</i> Grah. ^{1,3} | | 46, 55, 76 | GJ96 |
| <i>C. intermedia</i> var. <i>alba</i> ⁷ | | 41 + 1f | TK84 |
| <i>C. labiata</i> Lindl. ¹ | | 42 | TK84 |
| <i>C. labiata</i> var. <i>amesiana</i> ³ | 20, 21 | 40, 41 | TK84 |
| <i>Cattleya</i> sp. ^{1,3} | | 46, 56, 76 | GJ91 |
| <i>Cephalanthera damasonium</i> (Mill.) Druce ¹ | | 54 | G85 |
| | | 32 | TK84 |

Appendix 2. Continued

| TAXON | <i>n</i> | <i>2n</i> | Source |
|---|-----------|-----------------------|-----------|
| <i>C. longibracteata</i> Blume ³ | | 30, 42 | TG84, G88 |
| <i>C. longifolia</i> (L.) Fritsch ³ | | 16–34 + 2B, 33 | G84, G88 |
| <i>C. rubra</i> (L.) Rich. ¹ | 24 | 48 | TK84, G91 |
| <i>Cleisostoma micranthum</i> (como <i>Sarcanthus micranthus</i>) ¹ | | 36 | M74 |
| <i>C. pallida</i> (como <i>S. palidus</i> Lindl.) ¹ | 16 | | TK84 |
| <i>Coelogyne corymbosa</i> Lindl. ¹ | | 38 | G84 |
| <i>C. elata</i> Lindl. ¹ | | 43 | M73 |
| | 22 | 44 | G81 |
| | | 44 | G81 |
| <i>C. micranthum</i> Lindl. ¹ | | 76 | M77 |
| <i>Cyrtochis arcuata</i> subsp. <i>variabilis</i> Summ. ⁵ | | 138 | G85 |
| <i>Cryptopus elatus</i> (Thouars) Lindl. | | 95 | M73 |
| <i>Dendrobium agregatum</i> Roxb. ³ | | 32–35 | TK84 |
| <i>D. amoenum</i> Wall. ⁵ | | 80 | GJ90 |
| <i>D. anceps</i> Sw. ¹ | 18 + 0–6B | | GJ90 |
| <i>D. aphyllum</i> (Roxb.) Fischer ¹ | | 40 | G88 |
| <i>D. bicameratum</i> Lindl. ¹ | | 40 | M73, GJ90 |
| <i>D. brymerianum</i> Rehb. f. ¹ | | 40 | TK84, G88 |
| <i>D. candidum</i> Wall. ⁵ | | 57 | G88 |
| <i>D. chrysanthum</i> Wall. ⁵ | | 76 | G88 |
| <i>D. chrysotoxum</i> Lindl. | 20 | 40 | TK84 |
| <i>D. crumenatum</i> Sw. ¹ | | 40 | TK84 |
| <i>D. densiflorum</i> Lindl. ¹ | | 42 | GJ90 |
| <i>D. delicatum</i> Bailey ⁵ | | ca. 57 | TK84 |
| <i>D. dicuphum</i> F. Muell. ² | | 39 | G84, GJ90 |
| <i>D. digibum</i> var. <i>compactum</i> C.T. White ^{3,5} | | ca. 57 | TK84 |
| <i>D. distichum</i> Rehb. f. ⁵ | | 57 | TK84, G84 |
| <i>D. dixanthum</i> Rehb. f. ² | | 41 | TK84 |
| <i>D. fimbriatum</i> Hook. ¹ | 18 | | GJ90 |
| <i>D. fimbriatum</i> var. <i>oculatum</i> ^{1,2} | | 43 | G88 |
| <i>D. gibsoni</i> Lindl. ¹ | | 40 | G85 |
| <i>D. hercoglossum</i> Rehb.f. ^{5,1} | | 57 | G88 |
| | | 36 | G81 |
| <i>D. kingianum</i> Bidw. ⁴ | 20 | ca.57, 74, 112–114 | TK84 |
| <i>C. bowringiana</i> Weitch ex Gardn. ^{1,5} | 21 | 41 | TK84 |
| | | 42 | TK84 |
| | | 60 | TK84 |
| <i>D. kingianum</i> var. <i>album</i> ⁴ | | ca.57, ca. 76 | TK84 |
| <i>D. leonis</i> Rehb.f. ¹ | | 40 | M73 |
| <i>D. lodgesii</i> Rolfe ¹ | | 40 | TK84 |
| <i>D. longicornu</i> Lindl. ² | | 43 | G84 |
| <i>D. longispicatum</i> ⁹ | | 38 | TK84 |
| <i>D. macrostachyum</i> Lindl. ¹ | 20 | | M73 |
| <i>D. moschatum</i> Sw. ^{1,2} | | 39 | M73 |
| <i>D. nagasaki</i> ⁹ | | 38 | G84 |
| <i>D. nakaharaei</i> Schltr. ¹ | | 30 | M74 |
| <i>D. nobile</i> Lindl. ¹ | | 40 | G85 |
| <i>D. nobile</i> var. <i>nobilius</i> ^{4,5} | | ca. 57 | TK84 |
| <i>D. nobile</i> var. <i>virginale</i> ⁵ | | 57 | TK84 |

Appendix 2. *Continued*

| TAXON | <i>n</i> | <i>2n</i> | Source |
|---|----------------|-----------------|----------------|
| <i>D. parishii</i> Rchb.f. ^{1,5} | | 40 | G81 |
| | | 76 | GJ90 |
| <i>D. phlox</i> var. <i>flava</i> ⁹ | | 38 | G84 |
| <i>D. pierardii</i> Roxb. ^{1,3} | | 40 | G81 |
| | 19–20 | 38, 57 | TK84 |
| <i>D. primulinum</i> Lindl. ^{1,5} | | 40 | G81 |
| | | 57 | G81, GJ90 |
| <i>D. pitcherianum</i> Rchb.f. ⁹ | | 38 | G85 |
| <i>D. sawianum</i> Lindl. ⁹ | | 38 | M77 |
| <i>D. senile</i> Par. & Rchb.f. ¹ | | 40 | G84 |
| <i>D. sophronites</i> Schltr. ^{4,5} | | ca. 80 | TK84 |
| <i>D. suffusum</i> Cady ⁵ | | 57 | G85 |
| <i>D. toressae</i> (Bailey) Dockr. ⁴ | | ca. 36 | G88 |
| <i>D. transparens</i> Wall. ¹ | | (30) | TK84 |
| <i>D. ventricosum</i> Kraenzl. ¹ | | 20 | TK84 |
| <i>D. verruciferum</i> Rchb.f. ² | | 41 | GJ96 |
| <i>D. wardianum</i> Warm. ¹ | 20 | 40 | G85 |
| <i>D. wardianum</i> var. <i>album</i> ^{4,5} | | ca. 57 | TK84 |
| <i>D. williamsonii</i> Day & Reich. ⁵ | | 57 | GJ90 |
| <i>Doritis taenialis</i> Benth. ^{1,5} | 19 | 57 | G88, GJ94 |
| <i>Epidendrum atropurpureum</i> Willd. ^{3,5} | | 80–90 | TK84 |
| <i>E. difforme</i> Jacq. (= <i>Neolehmannia difforme</i>) ³ | | 39–40 | TK84 |
| <i>E. nocturnum</i> Jacq. ^{3,4} | | 45–85, ca. 80 | TK84 |
| <i>E. nocturnum</i> var. <i>guadetouense</i> ³ | | 42–48 | TK84 |
| <i>E. radicans</i> Pav. ³ | | 48–57 | TK85 |
| | | 57, 62 | GJ91, GJ96 |
| | 19 | | M73 |
| | | 40, 70 | TK84 |
| <i>Eria acervata</i> Lindl. ¹ | 20 | | G81 |
| <i>E. alba</i> L. ¹ | | 34 | M77 |
| <i>E. biflora</i> Griff. ¹ | | 46 | G88 |
| <i>E. coronaria</i> Rchb.f. ³ | 17, 19, 22, 26 | | G84 |
| <i>E. dalzellii</i> Lindl. ¹ | | 24 + 5–7B | TK84 |
| | | 24 + 10B | G84 |
| | | 24 + 5B | G84 |
| <i>E. microchilos</i> Lindl. ¹ | | 24 + 5–11B | TK84, G84 |
| <i>E. graminifolia</i> Lindl. ¹ | | 42 | G88 |
| <i>E. noodiana</i> ⁹ | | 44 | TK84 |
| <i>E. ovata</i> Lindl. ¹ | | 44 | TK84 |
| <i>E. pannea</i> Lindl. ¹ | 18 | | M73 |
| <i>E. spicata</i> (D. Don) Hand-Mazz. ¹ | | 20 + 2B | G88 |
| <i>Holcoglossum junceum</i> Tsi ⁵ | | 57 | GJ96 |
| <i>Laelia peduncularis</i> Lindl. ¹ | | 40–44 | TK84 |
| <i>Listera cordata</i> (L.) R.Br. ³ | | 39–42, 44 | G85 |
| <i>Listera ovata</i> (L.) R.Br. ^{3,4} | | 34–36 | G85, GJ91 |
| | | ca. 38 | GJ00 |
| | 16 | 17, 20, 32, 35, | TK84, G85, G88 |
| | | 37, 39, 40, | |
| | | 42, 44 | |
| <i>Luisia teres</i> Blume (= <i>L. teretifolia</i>) ¹ | 21 | | TK84 |
| <i>L. trichorhiza</i> Blume ¹ | 20 | | M73 |
| <i>Mediocalcar</i> aff. <i>pygmaeum</i> Schltr. ⁵ | | 85 | G88 |

Appendix 2. Continued

| TAXON | <i>n</i> | <i>2n</i> | Source |
|--|-----------|----------------|-----------------|
| <i>Microcoelia caespitosa</i> (Rolfe) Summ. ² | | 47 | G84 |
| <i>Neotia listeroides</i> Lindl. ^{1,3} | | 36, 46 | TK84 |
| <i>N. nidus-avis</i> (L.) Rich. ¹ | 16 | | TK84 |
| | | 60 | gj90 |
| <i>N. nigra</i> (L.) Rchb.f. ⁵ | | 60 | GJ94 |
| <i>Nephelaphyllum cordifolium</i> Lindl. ¹ | | 36 + 4–10B | G81 |
| | | 18 + 4–10B | G84 |
| | 18 + 3–8B | | GJ90 |
| <i>Ornithochilus fuscus</i> Wall. ¹ | | (36) | TK84 |
| <i>Phaius albus</i> Lindl. | | 44 | M73 |
| <i>P. mishmensis</i> Rchb.f. ^{1,4} | 31 | | M73 |
| | | ca. 50 | G81 |
| <i>Phalaenopsis amabilis</i> Blume ^{5,2} | | 114 | TK84 |
| | | 69 + 3f | TK84 |
| <i>P. schilleriana</i> Rchb.f. ⁵ | | 76 | TK84 |
| <i>Pholidota bicolor</i> Lindl. ⁹ | | 44 | G85 |
| <i>P. calcarata</i> Rchb.f. ⁹ | 21 | | M77 |
| <i>P. yunnanensis</i> (Rolfe) Rolfe | | 120 | M73 |
| <i>Pleione bulbocodioides</i> (Franch.) Rolfe ⁵ | | 120 | GJ91 |
| <i>P. forrestii</i> Schltr. ^{1,2} | | 38, 39, 42, 44 | GJ91, GJ96 |
| <i>P. humilis</i> Lindl. ⁵ | | 60 | GJ91 |
| <i>P. praecox</i> var. <i>wallichiana</i> ⁹ | | 40 | M73 |
| <i>P. versailles</i> ⁹ | | 80 | M73 |
| <i>Polystachya cultriformis</i> Lindl. ^{1,2} | | 38, 39 | TK84 |
| <i>P. galeata</i> (Sw.) Rchb.f. ⁴ | | ca. 40 | TK84 |
| <i>P. rhodoptera</i> Rchb.f. ¹ | 19 | | TK84 |
| <i>Renanthera coccinea</i> Lour. ^{5,2} | 54 + 1 | ca. 114, 115 | M73, TK84, GJ96 |
| <i>Saccolabium calceolare</i> Lindl. ^{3,1,2,6} | | 19–20 | TK84 |
| <i>S. papilosum</i> Lindl. ^{1,2,6} | | 19 | G85 |
| <i>S. japonicus</i> Miq. | | 36 | TK84 |
| <i>Sarcanthus crinaceus</i> ⁹ | | 38 | M73 |
| <i>Spatoglottis plicata</i> Blume ^{1,6,5} | | 18 | M74 |
| | | 60 | G84 |
| <i>Taeniophyllum aphyllum</i> Makino ¹ | | 24 | TK84 |
| <i>Tainia</i> spp. ⁸ | | 32, 40 | G84 |
| <i>Thunia alba</i> Rchb.f. ^{1,4} | | 42 | M73 |
| | | 44 | G81 |
| | | 36 | G81 |
| <i>Tunia alba</i> Rchb.f. ^{1,4} | | ca. 40 | G81 |
| | | ca. 40 | G85 |
| | | 38 | G88 |
| <i>T. marshaliana</i> Rchb.f. ⁴ | | ca. 40 | G81 |
| <i>Vanda alpina</i> Lindl. ¹ | 10 | | M73 |
| <i>V. coerulea</i> Griffith ¹ | | (36) | TK84 |
| <i>V. coerulescens</i> Griff. ¹ | | 40 | G85 |
| <i>V. cristata</i> Lindl. ¹ | | (36) | TK84 |
| <i>V. densiflora</i> Lindl. ¹ | | 36(42) | TK84 |
| <i>V. luzonica</i> Loher ex Rolfe ¹ | | 42 | TK84 |
| <i>V. parviflora</i> Lindl. ^{1,4} | | ca. 40 | M73 |
| <i>V. pumila</i> Hook.f. ^{1,5} | | 40 | G85 |
| | | 72, 76 | GJ91, GJ96 |
| <i>V. polyantha</i> (W.W.Sm.) Tang & Wang ⁹ | | 38 | GJ91, GJ96 |
| <i>V. roxburghii</i> R.Br. ¹ | | (42) | TK84 |

Appendix 2. *Continued*

| TAXON | <i>n</i> | <i>2n</i> | Source |
|--|----------|-----------------|-------------------|
| <i>V. spatulata</i> Spreng. ⁵ | | 114 114, 115 | TK84, G88 TK84 |
| <i>V. suavis</i> Lindl. ⁹ | | 38 | TK84 |
| <i>V. teres</i> Lindl. ¹ | | (36) | TK84 |
| <i>V. tricolor</i> Lindl. ^{1,4} | | ca. 16 | TK84 |
| | | ca. 18, ca. 20 | TK84 |
| | | 28 | TK84 |
| <i>V. tricolor</i> var. <i>suavis</i> ^{1,4} | ca. 16 | | TK84 |
| | ca. 18 | | TK84 |
| <i>Vanda</i> sp. ⁵ | | 57 | GJ96 |

- 1 Chromosome number clearly conflicting with previous counts to the species or the genus;
- 2 Odd diploid numbers;
- 3 Poorly defined count;
- 4 Imprecise counts (ca.) substituted by another more precise record;
- 5 Occasional polyploids in this species;
- 6 Apparently haploid number;
- 7 Occasional aneuploids;
- 8 Different chromosome numbers reported for several undetermined species.
- 9 Misidentification.